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The Northeast Utilities System

FEB - 1 2000

Docket No. 50-336
B17905

Re: 10 CFR 50.90

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

Millstone Nuclear Power Station, Unit No. 2
Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains

Introduction

Pursuant to 10 CFR 50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend Operating License DPR-65 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 2. NNECO is proposing to change Technical Specifications 3.0.3, "Limiting Conditions for Operation and Surveillance Requirements - Applicability - Limiting Condition For Operation;" 3.4.1.1, "Reactor Coolant System - Coolant Loops and Coolant Circulation - Startup and Power Operation;" 3.4.1.2, "Reactor Coolant System - Coolant Loops and Coolant Circulation - Hot Standby;" 3.4.1.3, "Reactor Coolant System - Coolant Loops and Coolant Circulation - Shutdown;" 3.4.1.4, "Reactor Coolant System - Reactor Coolant Pumps - Shutdown;" 3.9.8.1, "Refueling Operations - Shutdown Cooling and Coolant Circulation;" and 3.9.8.2, "Refueling Operations - Shutdown Cooling and Coolant Circulation." The Index Pages and the Bases for these Technical Specifications will be modified to address the proposed changes.

Attachment 1 provides a discussion of the proposed changes and the Safety Summary. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides

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the marked-up version of the appropriate pages of the current Technical Specifications. Attachment 4 provides the retyped pages of the Technical Specifications.

Environmental Considerations

NNECO has reviewed the proposed License Amendment Request against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes will modify the Technical Specification requirements for the Reactor Coolant System loops and the Shutdown Cooling System trains during various modes of plant operation, and modify the Bases for the associated Technical Specifications. These changes do not significantly increase the type and amounts of effluents that may be released off site. In addition, this amendment request will not significantly increase individual or cumulative occupational radiation exposures. Therefore, NNECO has determined the proposed changes will not have a significant effect on the quality of the human environment.

Conclusions

The proposed changes were evaluated and we have concluded the proposed changes are safe. The proposed changes do not involve a significant 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).

Plant Operations Review Committee and Nuclear Safety Assessment Board

The Plant Operations Review Committee and Nuclear Safety Assessment Board have reviewed and concurred with the determinations.

Schedule

We request issuance of this amendment by September 30, 2000, with the amendment to be implemented within 60 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 on the above, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

M. H. Brothers
Vice President - Nuclear Operations

Subscribed and sworn to before me

this 1st day of February 2000

Notary Public

Date Commission Expires: Jun 30 2004

Attachments (4)

cc: H. J. Miller, Region I Administrator
J. I. Zimmerman, NRC Project Manager, Millstone Unit No. 2
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit No. 2

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
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Docket No. 50-336
B17905

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains
Discussion of Proposed Changes

February 2000

Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains
Discussion of Proposed Changes

Northeast Nuclear Energy Company (NNECO) hereby proposes to amend Operating License DPR-65 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 2. NNECO is proposing to change Technical Specifications 3.0.3, "Limiting Conditions for Operation and Surveillance Requirements - Applicability - Limiting Condition For Operation;" 3.4.1.1, "Reactor Coolant System - Coolant Loops and Coolant Circulation - Startup and Power Operation;" 3.4.1.2, "Reactor Coolant System - Coolant Loops and Coolant Circulation - Hot Standby;" 3.4.1.3, "Reactor Coolant System - Coolant Loops and Coolant Circulation - Shutdown;" 3.4.1.4, "Reactor Coolant System - Reactor Coolant Pumps - Shutdown;" 3.9.8.1, "Refueling Operations - Shutdown Cooling and Coolant Circulation;" and 3.9.8.2, "Refueling Operations - Shutdown Cooling and Coolant Circulation." The Index Pages and the Bases for these Technical Specifications will be modified to address the proposed changes.

The majority of the proposed changes will revise the Technical Specifications associated with the Reactor Coolant System (RCS) loops and the Shutdown Cooling (SDC) System trains. The proposed changes will correct various issues identified with these specifications. The structure of these specifications will be revised to achieve a consistent format that will be easier for the plant operators to use. The Bases for the affected Technical Specifications will be modified. Each proposed change will be discussed.

Technical Specification Changes

Index Pages

1. Index Page V will be revised to be consistent with the proposed changes to current Technical Specifications 3.4.1.3 and 3.4.1.4.

2. Index Page IX will be revised to be consistent with the proposed changes to Technical Specifications 3.9.8.1 and 3.9.8.2.

Technical Specification 3.0.3

The sentence "This specification is not applicable in MODES 5 or 6." will be added to Technical Specification 3.0.3. This is consistent with the model Technical Specifications provided in Enclosure 2 of Generic Letter 87-09[1] and with the current

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[1] U.S. NRC Generic Letter 87-09, "Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the Applicability of Limiting Conditions for Operation and Surveillance Requirements," dated June 4, 1987.

Millstone Unit No. 2 Bases for Technical Specification 3.0.3.

The current Millstone Unit No. 2 Technical Specifications already contain exemptions from Technical Specification 3.0.3 when the applicability of the Technical Specification is not mode related. However, the proposed changes to Technical Specifications 3.9.8.1 and 3.9.8.2, which will be discussed, will not include the exemptions to Technical Specification 3.0.3 that currently exist in these specifications. This proposed change will eliminate any potential confusion concerning the applicability of the shutdown requirements of Technical Specification 3.0.3 when the plant is in Modes 5 or 6.

This proposed change is also consistent with NUREG-1432,[2] which states that Technical Specification 3.0.3 is only applicable in Modes 1, 2, 3, and 4.

Technical Specification 3.4.1.1

1. The word "Both" will be replaced with "Two" in the Limiting Condition For Operation (LCO). This is a non-technical change for consistency between related Technical Specifications.

2. The phrase "and both reactor coolant pumps in each loop" will be removed from the LCO. This information will be added to the Bases for this Technical Specification. It is not necessary to include this in the LCO since plant operation in Modes 1 and 2 requires all four reactor coolant pumps (RCPs) to be in operation. If all four RCPs are not in operation, the Reactor Protection System (RPS) will initiate a reactor trip, placing the plant in Mode 3.

3. The words "OPERABLE and" will be added to the LCO. This change will ensure that the RCS loops must be operable, in addition to operating, to satisfy the LCO. This is a more restrictive change.

4. The action statement will be modified by replacing "less than the above required reactor coolant pumps in operation" with "the requirements of the above specification not met" to be consistent with the proposed changes to the LCO.

5. The action statement time requirement to be in Hot Standby within 1 hour will be changed to 6 hours. The current requirement to be in Hot Standby in 1 hour only applies if less than all four RCPs are in operation. If this situation occurs, the RPS will generate a reactor trip placing the plant in Hot Standby. However, as a result of the proposed change to the LCO to include the requirement for the RCS loops to be operable, a situation may occur with the plant at full power, where all RCPs remain in operation, but the RCS loops are declared inoperable.

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[2] U.S. NRC NUREG-1432, "Standard Technical Specifications Combustion Engineering Plants," Volume 1, Revision 1," dated April 1995.

In this situation, the current requirement to be in Hot Standby in 1 hour could only be achieved by initiating a manual reactor trip. Since the purpose of the action requirements in Technical Specifications is to require a controlled shut down of the plant to a safe condition based on equipment operability, the time requirements in the action statement should provide sufficient time to perform a controlled shutdown. The proposed change to 6 hours will provide sufficient time to accomplish a controlled shutdown, and is consistent with the time requirement to reach Mode 3 contained in most Technical Specifications, including Technical Specification 3.0.3.

6. The phrase "and circulating reactor coolant" will be removed from Surveillance Requirement (SR) 4.4.1.1. An RCS loop that is in operation is circulating reactor coolant. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

The proposed changes to Technical Specification 3.4.1.1 are consistent with NUREG-1432.

Technical Specification 3.4.1.2

1. LCOs a and b will be combined into one. The word "Two" will be added to the LCO. The format for "Reactor Coolant Loops" will be changed such that the first letter of each word will be lowercase. A period will also be added at the end of the LCO. These are non-technical changes for consistency between related Technical Specifications.

2. The phrases "Reactor Coolant Loop A and at least one associated reactor coolant pump" and "Reactor Coolant Loop B and at least one associated reactor coolant pump" will be removed from the LCO. This information will be added to the Bases for this Technical Specification. The Bases are an appropriate location for specific information such as this.

3. The footnote (*) will be modified by replacing the phrase "be de-energized" with "not be in operation," replacing "dilution" with "reduction," and capitalizing the first letters of "Reactor Coolant System." These are non-technical changes to eliminate any confusion on how to comply with the term de-energized, and to provide a consistent editorial format. In addition, the format of the footnote will be changed and the footnote will be moved to between the LCO and the Applicability. This format change, which is non-technical, will eliminate any potential confusion when multiple footnotes apply to a specification.

4. The footnote (*) will be modified by adding the phrase "per 8 hour period" to the 1 hour time period that the RCPs may be secured. This is a more restrictive change to limit how often the RCPs can be secured.

5. The applicability of this specification will not change, however a period will be added after Mode 3. This is a non-technical change for format consistency.

6. Action Statement a will be modified to only address one inoperable reactor coolant loop. Two inoperable reactor coolant loops will be addressed by the proposed change to Action Statement b. Minor wording changes will also be made to be consistent with the proposed change in scope of this action statement.

7. Action Statement b will be expanded to address two inoperable reactor coolant loops. Action Statement b will also be modified to require immediate action instead of within 1 hour. Requiring immediate action to restore one reactor coolant loop to operable status and operation is a conservative change.

8. SR 4.4.1.2.1 will be modified by changing the phrase "At least the above required reactor coolant pumps" to "The required reactor coolant pump." In addition, "alignments" will be changed to "alignment" and "availability" to "available." These are non-technical changes to provide consistency between related Technical Specifications and are consistent with the proposed changes to the LCO.

9. SR 4.4.1.2.2 will be modified by changing the phrase "At least one cooling loop" to "One reactor coolant loop." This is a non-technical change to provide consistency between related Technical Specifications and is consistent with the proposed changes to the LCO.

10. The phrase "and circulating reactor coolant" will be removed from SR 4.4.1.2.2. An RCS loop that is in operation is circulating reactor coolant. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

11. SR 4.4.1.2.3 will be added. An operable RCS loop requires an operable steam generator with sufficient secondary water level. Periodic verification of adequate secondary water level is appropriate and should be required by a SR. This is a more restrictive change, based on the current SR 4.4.1.3.3 and associated proposed changes.

The proposed changes to Technical Specification 3.4.1.2 are consistent with NUREG-1432.

Technical Specification 3.4.1.3

1. This Technical Specification, which currently addresses Modes 4 and 5 will be divided into 3 separate Technical Specifications; 3.4.1.3 - Hot Shutdown, 3.4.1.4 - Cold Shutdown - RCS Loops Filled, and 3.4.1.5 - Cold Shutdown - RCS Loops Not Filled. As a result, the title of this specification will be changed to "HOT SHUTDOWN." This is a non-technical change.

2. The structure of the LCO will be changed to be consistent with Technical Specifications 3.4.1.1 and 3.4.1.2. The term "loop" will be used to refer to the RCS, and the term "train" will be used to refer to the SDC System. The phrases "Reactor Coolant Loop A and its associated steam generator and at least one associated reactor coolant pump" and "Reactor Coolant Loop B and its associated steam generator and at least one associated reactor coolant pump" will be removed from the LCO. This information will be added to the Bases for this Technical Specification. The Bases are an appropriate location for specific information such as this. The requirement to maintain two operable loops or trains for heat removal, with one loop or train in operation, will not change.

3. The first footnote (#) will be deleted. This footnote, which is only applicable in Mode 5, is no longer necessary based on the proposed change to limit this specification to Mode 4.

4. The second footnote (*) will be modified by replacing the phrase "be de-energized" with "not be in operation," replacing "dilution" with "reduction," and capitalizing the first letters of 'Reactor Coolant System." These are non-technical changes to eliminate any confusion on how to comply with the term de-energized, and to provide a consistent editorial format.

5. The second footnote (*) will be modified by adding the phrase "per 8 hour period" to the 1 hour time period that the RCPs and SDC pumps may be secured. This is a more restrictive change to limit how often these pumps can be secured.

6. The format of the second (*) and third (**) footnotes will be changed and the footnotes will be moved to between the LCO and the Applicability. This format change, which is non-technical, will eliminate any potential confusion when multiple footnotes apply to a specification.

7. The Mode of Applicability for this specification will be reduced to just Mode 4. Mode 5 requirements will be addressed by proposed Technical Specifications 3.4.1.4 and 3.4.1.5.

8. The action requirements will be expanded and modified to address various combinations of inoperable equipment.

a. If one RCS loop and two SDC trains are inoperable, the proposed action statement will require immediate action, instead of the current time requirement of 1 hour, to restore a second RCS loop or one SDC train to operable status. The proposed change from 1 hour to immediate is conservative. In addition, the proposed action requirement will no longer require a cooldown to Mode 5 if no SDC trains are operable. It is not appropriate to require a cooldown to Mode 5 with no operable SDC trains since the SDC trains are the primary heat removal method in Mode 5.

b. If two RCS loops and one SDC train are inoperable, the proposed action statement will require immediate action, instead of the current time requirement of 1 hour, to restore one RCS loop or a second SDC train to operable status. The proposed change from 1 hour to immediate is conservative.

The current action requirement also requires a cooldown to Mode 5 within 20 hours. The cooldown to Mode 5 requirement will be retained. However, the proposed action time requirement will be increased to 24 hours to be consistent with the time requirement to reach Mode 5 contained in most Technical Specifications, including Technical Specification 3.0.3.

c. If all RCS loops and SDC trains are inoperable, or no RCS loop or SDC train is in operation, the proposed action statement will require immediate suspension of all activities involving a reduction in RCS boron concentration and immediate action to restore one RCS loop or SDC train to operable status and operation. This is consistent with the current required action if no RCS loop or SDC train is in operation. However, the time requirement has been changed to immediate from the current requirement of 1 hour. The proposed change from 1 hour to immediate is conservative.

In addition, this proposed action will now address the inoperability of all RCS loops and SDC trains. This situation is currently addressed in Action Statement a, which would require a plant cooldown to Mode 5. However, the proposed action requirement will not require a cooldown to Mode 5 since no SDC trains are operable. It is not appropriate to require a cooldown to Mode 5 with no operable SDC trains since the SDC trains are the primary heat removal method in Mode 5.

9. SR 4.4.1.3.1 will be modified by replacing the phrase "shutdown cooling loop(s)" with "pump." This will allow this SR to apply to either the RCP or the SDC pump that is not in operation, but that is being used to satisfy the LCO. The phrase "for pump and shutdown cooling loop valves" will be deleted. The verification of power to the SDC valves will still be performed as necessary to ensure that the

required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. In addition, "availability" will be changed to "available." These changes will provide consistency between related Technical Specifications and are consistent with the proposed changes to the LCO.

10. SR 4.4.1.3.2 will be deleted. The proposed change to SR 4.4.1.3.1 will include the requirements of this SR. Therefore, this duplicate SR can be deleted.

11. SRs 4.4.1.3.3 and 4.4.1.3.4 will be renumbered as 4.4.1.3.2 and 4.4.1.3.3, respectively, as a result of the deletion of the current SR 4.4.1.3.2.

12. The proposed SR 4.4.1.3.2 will be modified by removing the phrase "if it is being used to meet 3.4.1.3.a." It is not necessary to include this additional information since the SR already contains the word "required." Therefore, this SR would only apply if the reactor coolant loops and associated steam generators are being used to satisfy the LCO requirements. This is a non-technical change, consistent with the proposed changes to the LCO.

13. The proposed SR 4.4.1.3.2 will also be modified by replacing the phrase "10% of span" with "10% narrow range." The change in terminology will reflect the instrumentation currently used to verify compliance with this SR. The plant operators have two types of indication for steam generator secondary water inventory, wide range and narrow range. The wide range indication reads out in inches, and the narrow range indication reads out in percent. The narrow range indication is used to verify compliance with this SR. Since 10% of span is equivalent to 10% narrow range, this change will eliminate any ambiguity with respect to the proper instrumentation to use. There will be no technical change to the required secondary water volume for steam generator operability.

14. The proposed SR 4.4.1.3.3 will be modified by changing the phrase "At least one coolant loop" to "One reactor coolant loop or shutdown cooling train." This is a non-technical change to provide consistency between related Technical Specifications and is consistent with the proposed changes to the LCO.

15. The phrase "and circulating reactor coolant" will be removed from SR 4.4.1.3.3. An RCS loop or SDC train that is in operation is circulating reactor coolant. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

16. Amendment No. 69 will be added to the bottom of page 3/4 4-1c. This page was previously changed by License Amendment No. 69, dated May 19, 1981.[3]

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[3] R. A. Clark letter to W. G. Counsil, Issuance of Amendment No. 69, dated May 19, 1981.

The proposed changes to Technical Specification 3.4.1.3 are consistent with NUREG-1432.

Technical Specification 3.4.1.4

1. The proposed Technical Specification 3.4.1.4 will address the Mode 5 requirements currently contained in Technical Specification 3.4.1.3. However, this new specification will only address Mode 5 requirements when the RCS loops are filled. As a result, the title of this specification will be changed to "COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED." This is a non-technical change.

2. The LCO will be changed to require at least one SDC train to be operable and in operation. A second heat removal path is also required to be operable. This second heat removal path can be either the second SDC train, or both steam generators, provided sufficient secondary water volume exists. The proposed LCO will no longer require the associated RCPs to be operable. However, both steam generators will be required to have sufficient secondary water level to support natural circulation before they can satisfy the LCO requirement for a second heat removal path. The requirement to maintain two flow paths for heat removal, with one train in operation, will not change.

   The SDC System is the primary method of decay heat removal when the plant is in Mode 5 ($\leq$ 200 °F). At this low temperature, use of the RCPs and steam generators for decay heat removal is not a viable option. RCS temperature is too low to support steam release from the steam generators, and bleed and feed of the steam generator secondary side is not a normal long term approach to remove heat from the RCS. Also, use of the RCPs would result in an additional heat source to the RCS that must be removed to remain in Mode 5. As a result, the proposed Technical Specification 3.4.1.4 will not place any requirement on RCP operability. Use of the RCPs for long term decay heat removal from the RCS would require the plant to be in Mode 4 at a high enough temperature to support steam flow from the steam generators. In addition, conditions to support RCP operation (e.g., RCS pressure) may not exist when the plant is in Mode 5.

   The proposed Technical Specification 3.4.1.4 would allow both steam generators to be an acceptable substitute for a second SDC train. If the second SDC train was not available, and the remaining SDC train became unavailable for decay heat removal, the steam generators would be able to remove RCS decay heat by natural circulation. Heat could then be removed from the steam generators by bleed and feed of the secondary side in Mode 5 for a short time period. However, this is not a normal method of heat removal from the steam generators, and this approach would be difficult to support for an extended time period. Therefore, if at least one SDC train could not be restored to operation, it is likely the plant would heat up to Mode 4 where steam release from the steam

generators could be used to support RCS decay heat removal via natural circulation. While a Mode transition may occur, the steam generators will ensure the safety function is maintained.

3. The format of the footnotes will be changed, and the footnotes will be moved to between the LCO and the Applicability. This format change, which is non-technical, will eliminate any potential confusion when multiple footnotes apply to a specification.

4. The second footnote (*) will be modified to remove the phrase "reactor coolant pumps and." This change is consistent with the proposed changes to the LCO which no longer place any requirement on RCP operation. In addition, this footnote will also be modified by replacing the phrase "be de-energized" with "not be in operation," replacing "dilution" with "reduction," and capitalizing the first letters of "Reactor Coolant System." These are non-technical changes to eliminate any confusion on how to comply with the term de-energized, and to provide a consistent editorial format.

5. The second footnote (*) will be modified by adding the phrase "per 8 hour period" to the 1 hour time period that the SDC pumps may be secured. This is a more restrictive change to limit how often these pumps can be secured.

6. Two additional notes will be added. The fourth note will allow one SDC train to be inoperable for up to 2 hours for surveillance testing. This is necessary to allow performance of required testing when the LCO requires both SDC trains to be operable.

   The fifth note will provide for an orderly transition from Mode 5 to Mode 4 during a planned heatup by permitting the SDC trains to not be in operation when at least one RCP is in operation. This allows the required RCS circulation from a SDC train to be replaced by RCS circulation from an RCP.

7. The Mode of Applicability for this specification will be reduced to Mode 5, with the RCS loops filled. Mode 4 requirements will be addressed by the proposed Technical Specification 3.4.1.3. Mode 5 requirements when the RCS loops are not filled will be addressed by the proposed Technical Specification 3.4.1.5. The Bases will be modified to discuss the requirements for the RCS to be considered full.

8. The action requirements will be modified to be consistent with the proposed changes to the LCO.

   a. If one SDC train is inoperable, and any steam generator does not have sufficient secondary water level, the proposed action statement will require immediate action, instead of the current time requirement of 1

hour, to restore a second SDC train or both steam generators to operable status. The proposed change from 1 hour to immediate is conservative. In addition, the proposed action requirement will no longer require a cooldown to Mode 5 since the proposed specification is only applicable when the plant is in Mode 5.

b. If all SDC trains are inoperable, or no SDC train is in operation, the proposed action statement will require an immediate suspension of any activity that would reduce the RCS boron concentration and immediate action to restore one SDC train to operable status and operation. This is consistent with the current required action if no RCS loop or SDC train is in operation. However, the time requirement has been changed to immediate from the current requirement of 1 hour. The proposed change from 1 hour to immediate is conservative. This is an additional action requirement for the situation when all SDC trains are inoperable.

9. The current SR 4.4.1.3.1 will be renumbered as SR 4.4.1.4.1, and it will be modified by replacing the word "loop(s)" with "pump." The phrase "for pump and shutdown cooling loop valves" will be deleted. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. In addition, "availability" will be changed to "available." These changes will provide consistency between related Technical Specifications and are consistent with the proposed changes to the LCO.

10. SR 4.4.1.3.2 will be deleted. The proposed changes to the LCO no longer address RCP operation.

11. SRs 4.4.1.3.3 and 4.4.1.3.4 will be renumbered as 4.4.1.4.2 and 4.4.1.4.3, respectively, as a result of the proposed changes to the LCO and the deletion of the current SR 4.4.1.3.2.

12. The proposed SR 4.4.1.4.2 will be modified by removing the parentheses from "generator(s)." The proposed LCO will require both steam generators to be operable to be an acceptable substitute for a SDC train. In addition, the phrase "if it is being used to meet 3.4.1.3.a" will be removed. It is not necessary to include this additional information since the SR already contains the word "required." Therefore, this SR would only apply if the steam generators are being used to satisfy the LCO requirements. These are non-technical changes, consistent with the proposed changes to the LCO.

13. The proposed SR 4.4.1.4.2 will also be modified by replacing the phrase "10% of span" with "10% narrow range." The change in terminology will reflect the instrumentation currently used to verify compliance with this SR. The plant

operators have two types of indication for steam generator secondary water inventory, wide range and narrow range. The wide range indication reads out in inches, and the narrow range indication reads out in percent. The narrow range indication is used to verify compliance with this SR. Since 10% of span is equivalent to 10% narrow range, this change will eliminate any ambiguity with respect to the proper instrumentation to use. There will be no technical change to the required secondary water volume for steam generator operability.

14. The proposed SR 4.4.1.4.3 will be modified by changing the phrase "At least one coolant loop" to "One shutdown cooling train." This is a non-technical change to provide consistency between related Technical Specifications and is consistent with the proposed changes to the LCO.

15. The phrase "and circulating reactor coolant" will be removed from SR 4.4.1.4.3. A SDC train that is in operation is circulating reactor coolant. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

The proposed changes to Technical Specification 3.4.1.4 are consistent with NUREG-1432.

Technical Specification 3.4.1.5

1. The proposed Technical Specification 3.4.1.5 will address the Mode 5 requirements currently contained in Technical Specification 3.4.1.3. However, this new specification will only address Mode 5 requirements when the RCS loops are not filled. As a result, the title of this specification will be changed to "COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED." This is a non-technical change.

2. The LCO will be changed to require two SDC trains to be operable, and at least one SDC train to be in operation. The proposed LCO will no longer take credit for the RCS loops since the applicability of this specification is limited to when the RCS loops are not filled. The requirement to maintain two flow paths for heat removal with one train in operation will not change.

3. The format of the footnotes will be changed, and the footnotes will be moved to between the LCO and the Applicability. This format change, which is non-technical, will eliminate any potential confusion when multiple footnotes apply to a specification.

4. The second footnote (*) will be modified as follows.

   a. The phrase "reactor coolant pumps and" will be removed. This change is consistent with the proposed changes to the LCO which no longer places

any requirement on RCP operation.

b. The phrase "be de-energized" will be replaced with "not be in operation," the word "dilution" will be replaced with "reduction," and the first letters of "Reactor Coolant System" will be capitalized. These are non-technical changes to eliminate any confusion on how to comply with the term de-energized and for consistency between footnotes.

c. The time that all SDC pumps can be secured will be reduced from 1 hour to 15 minutes, and this will only be allowed when switching from one SDC train to the other. An additional limitation will be added to prohibit draining operations that would reduce the RCS volume when switching the operating SDC train. These are more conservative changes to this footnote.

5. A fourth note will be added to allow one SDC train to be inoperable for up to 2 hours for surveillance testing. This is necessary to allow performance of required testing when the LCO requires both SDC trains to be operable.

6. The Mode of Applicability for this specification will be reduced to Mode 5, when the RCS loops are not filled. Mode 4 requirements will be addressed by proposed Technical Specification 3.4.1.3. Mode 5 requirements when the RCS loops are filled will be addressed by proposed Technical Specification 3.4.1.4. The Bases will be modified to discuss the requirements for the RCS to be considered full.

7. The action requirements will be modified to be consistent with the proposed changes to the LCO.

a. If one SDC train is inoperable the proposed action statement will require immediate action, instead of the current time requirement of 1 hour, to restore a SDC train to operable status. The proposed change from 1 hour to immediate is conservative. In addition, the proposed action requirement will no longer require a cooldown to Mode 5 since the proposed specification is only applicable when the plant is in Mode 5.

b. If all SDC trains are inoperable, or no SDC train is in operation, the proposed action statement will require an immediate suspension of any activity that would reduce the RCS boron concentration and immediate action to restore one SDC train to operable status and operation. This is consistent with the current required action if no RCS loop or SDC train is in operation. However, the time requirement has been changed to immediate from the current requirement of 1 hour. The proposed change from 1 hour to immediate is conservative. This is an additional action statement requirement if all SDC trains are inoperable.

8. The current SR 4.4.1.3.1 will be renumbered as SR 4.4.1.5.1, and it will be modified by replacing the word "loop(s)" with "pump." The phrase "for pump and shutdown cooling loop valves" will be deleted. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. In addition, "availability" will be changed to "available." These changes will provide consistency between related Technical Specifications and are consistent with the proposed changes to the LCO.

9. SRs 4.4.1.3.2 and 4.4.1.3.3 will be deleted. The proposed changes to the LCO no longer place any requirement on RCP or steam generator operation.

10. SR 4.4.1.3.4 will be renumbered as 4.4.1.5.2 as a result of the proposed changes to the LCO and the deletion of the current SRs 4.4.1.3.2 and 4.4.1.3.3.

11. The proposed SR 4.4.1.5.2 will be modified by changing the phrase "At least one coolant loop" to "One shutdown cooling train." This is a non-technical change to provide consistency between related Technical Specifications and is consistent with the proposed changes to the LCO.

12. The phrase "and circulating reactor coolant" will be removed from SR 4.4.1.5.2. A SDC train that is in operation is circulating reactor coolant. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

The proposed changes to Technical Specification 3.4.1.5 are consistent with NUREG-1432.

Technical Specification 3.4.1.6

1. The current Technical Specification 3.4.1.4 will be renumbered as 3.4.1.6. This is a result of the addition of two new Technical Specifications to address Mode 5 conditions. In addition, the title will be changed to "COLD SHUTDOWN" to be consistent with the format for Technical Specifications 3.4.1.1 through 3.4.1.5. These are non-technical changes.

2. The reference to the LCO number in the associated Action Statement will be changed to 3.4.1.6. This is a non-technical change to be consistent with the proposed change to the LCO.

3. The SR will be renumbered as 4.4.1.6. This is a non-technical change to be consistent with the proposed change to the LCO.

4. The page number for this specification will be changed to 3/4 4-1h. This is a

non-technical change.

Technical Specification 3.9.8.1

1. The proposed Technical Specification 3.9.8.1 will address the SDC System requirements when the plant is in Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange. This specification will combine the requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2. As a result, the title of this specification will be changed to "SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL." This is a non-technical change.

2. The LCO will be changed to require, as a minimum, one SDC train to be operable and in operation. The additional requirement for the SDC train to be operable is a more restrictive change. A second heat removal method will not be specified in the LCO. However, a second heat removal method will be available since the large volume of water above the reactor vessel flange is capable of providing a sufficient heat sink for core decay heat removal. In addition, the word "loop" will be replaced with "train" to be consistent with the terminology used when referring to the SDC System.

3. The format of the footnotes will be changed, and the footnotes will be moved to between the LCO and the Applicability. This format change, which is non-technical, will eliminate any potential confusion when multiple footnotes apply to a specification.

4. The first footnote (*) will be modified as follows.

   a. The phrase "The shutdown cooling loop" will be replaced with "The required shutdown cooling train." This change is consistent with the proposed changes to the LCO.

   b. The phrase "be removed from" will be replaced with "not be in." This is a non-technical change to be consistent with the wording of similar notes contained in Technical Specifications 3.4.1.2 through 3.4.1.5.

   c. The phrase "during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs" will be replaced with "provided no operations are permitted that would cause a reduction in Reactor Coolant System boron concentration." In addition to the removal of decay heat, the requirement to maintain a SDC train in operation ensures sufficient time exists for the plant operators to recognize an inadvertent dilution. Therefore, it is appropriate to prohibit operations that may reduce the RCS boron concentration when securing SDC flow. It is not necessary to restrict the time when SDC flow can be secured to just

when performing core alterations in the vicinity of the hot legs. Adequate heat removal is provided by the volume of water in the refueling cavity, and the time restriction of 1 hour per 8 hour period will ensure the RCS temperature increase is not significant.

5. The second footnote (**) will be modified by replacing the word "each" with "the required" and the word "loop" with "train." These changes are consistent with the proposed changes to the LCO.

6. A third note will be added to allow the SDC pumps to be removed from operation to perform local leak rate testing of the SDC suction line containment penetration (penetration number 10), and to perform maintenance on valves located in this common SDC suction line.

   This provision is being added to allow performance of work (local leak rate testing) that is currently performed during plant heatup after SDC has been removed from service. It will also allow the performance of work on the valves located in the common SDC suction line. Both SDC trains at Millstone Unit No. 2 share a common suction line from the RCS. Therefore, if work is required on the valves in this line it may be necessary to secure SDC flow and isolate this line. If this work can't be performed within the 1 hour constraint currently allowed by the first note, it would be necessary to completely defuel the reactor. However, if the work can be safely performed within a time period established by evaluating plant conditions (e.g., decay heat load), it may be more appropriate to leave the fuel in the reactor vessel. The addition of this note will provide flexibility to evaluate various options and determine the appropriate approach to perform the required work.

   In addition to the requirement to suspend operations that would reduce RCS boron concentration as specified in the first note, core alterations will not be allowed and containment penetrations must be configured to prevent a release of radioactivity from the containment atmosphere to use this provision.

   The proposed provision is similar to a provision approved by the NRC for the Calvert Cliffs Nuclear Power Plant, Unit No. 1 and Unit No. 2.[4] The design of the SDC System suction line at Calvert Cliffs is similar to Millstone Unit No. 2.

7. The Mode of Applicability for this specification will be reduced to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange. This is a more restrictive change since it will provide additional plant requirements before only one SDC train will be required to be operable and in

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[4] R. A. Clark letter to A. E. Lundvall, Jr., Issuance of Amendment Nos. 55 and 38 for Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, dated June 16, 1981.

operation.

8. The action requirements will be modified by requiring the suspension of activities to load irradiated fuel assemblies in the core, instead of requiring the suspension of activities that would increase the reactor decay heat load. However, this will not result in a technical change to the action requirements since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core. In addition, an immediate time requirement will be added. The current action statement does not specify a time requirement for the suspension of this activity, or of activities that may reduce RCS boron concentration. This proposed change is more conservative.

9. The action requirements will also be expanded to specify the containment penetrations and required status. This additional detail will provide additional assurance that the action requirement will be met. There is no technical change to the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere.

10. The statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will be removed. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6. This is specified in the current Bases for Technical Specification 3.0.3, and is consistent with the proposed change to Technical Specification 3.0.3 previously discussed.

11. The current SR 4.9.8.1 will be modified by replacing the phrase "At least one shutdown cooling loop" with "One shutdown cooling train." This change will provide consistency between related Technical Specifications and is consistent with the proposed changes to the LCO.

12. The phrase "and consistent with decay heat requirements" will be removed from SR 4.9.8.1. SDC flow will be adjusted by the plant operators, within the flow requirements of this SR, as necessary to ensure sufficient decay heat is being removed. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

13. SR 4.9.8.2 will be deleted. As a result of the proposed changes to the LCO and to the applicability of this specification, it is no longer necessary to verify a second SDC train is available, or that sufficient water volume is available to add to the refueling cavity. If sufficient water level is not maintained above the reactor vessel flange, this specification will not apply. The verification of the second SDC train will be retained in the proposed Technical Specification 3.9.8.2.

14. The amendment number on page 3/4 9-8a will be changed from 69 to 71. This page was initially issued by License Amendment No. 71.[5]

The proposed changes to Technical Specification 3.9.8.1, with the exception of the addition of the third note discussed in item number 6, are consistent with NUREG-1432.

Technical Specification 3.9.8.2

The current structure of Technical Specification 3.9.8.2 was the result of a change requested by NNECO in a letter dated December 2, 1981,[6] and approved by the NRC as License Amendment No. 71.[7] The change was requested to provide operational flexibility in the performance of leak testing of certain containment isolation valves associated with the Reactor Building Closed Cooling Water (RBCCW) System. Since this flexibility is no longer necessary, the proposed changes described below will restore Technical Specification 3.9.8.2 to a format consistent with NUREG-1432.

1. The proposed Technical Specification 3.9.8.2 will address the SDC System requirements when the plant is in Mode 6 and the refueling cavity is not filled to a water level of at least 23 feet above the reactor vessel flange. This specification will combine the requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2. As a result, the title of this specification will be changed to "SHUTDOWN COOLING AND COOLANT CIRCULATION - LOW WATER LEVEL." This is a non-technical change.

2. The LCO will be changed to require two SDC trains to be operable and one SDC train to be in operation. The additional requirement for one SDC train to be in operation is already required by the current Technical Specification 3.9.8.1. Therefore, the additional requirement for a SDC train to be in operation is not a technical change.

   The word "independent" will be removed. The level of independence between the SDC trains is a design feature of the SDC System. The Millstone Unit No. 2 Final Safety Analysis Report (FSAR) describes the approved level of independence between SDC trains. If the approved level of independence is not maintained, the SDC trains may not be operable. Therefore, it is not necessary to include a check of SDC train independence in Technical Specifications.

   The word "loops" will be replaced with "trains" to be consistent with the

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(5) E. L. Conner letter to W. G. Counsil, Issuance of Amendment No. 71, dated December 18, 1981.

(6) W. G. Counsil letter to NRC, "Millstone Nuclear Power Station, Unit No. 2, Proposed Revision to Technical Specifications," dated December 2, 1981.

(7) E. L. Conner letter to W. G. Counsil, Issuance of Amendment No. 71, dated December 18, 1981.

terminology used when referring to the SDC System. This is a non-technical change.

3. The first footnote (*) will be deleted since this footnote is no longer necessary. There are no expected plant operations that would require all SDC flow to be secured before at least 23 feet of water is established above the reactor vessel flange. This is a more restrictive change.

4. The format for the second footnote (**) will be changed, and the footnote will be moved to between the LCO and the Applicability. This format change, which is non-technical, will eliminate any potential confusion when multiple footnotes apply to a specification.

   The word "loop" will be replaced with "train" to be consistent with the terminology used when referring to the SDC System. This is a non-technical change.

5. The Mode of Applicability for this specification will be changed such that to relax the requirement for two operable SDC trains, the refueling cavity must be filled to a water level of at least 23 feet above the reactor vessel flange. This is a more restrictive change.

6. The action requirements will be modified to be consistent with the proposed changes to the LCO.

   a. If one SDC train is inoperable, the proposed action statement will require immediate action, instead of the current time requirement of 1 hour, to restore the SDC train to operable status. The proposed change from 1 hour to immediate is conservative. In addition, the proposed action requirement will provide an additional action that can be taken. This new action will be to immediately initiate action to establish $\geq$ 23 feet of water above the reactor vessel flange. If at least 23 feet of water is established above the reactor vessel flange, this Technical Specification will no longer be applicable. Therefore, this proposed additional action is appropriate and is consistent with the proposed changes to this specification.

   b. If all SDC trains are inoperable, or no SDC train is in operation, the proposed action statement will require an immediate suspension of any activity that would reduce the RCS boron concentration. This is consistent with the action requirement associated with the current Technical Specification 3.9.8.1. However, the proposed action statement will require immediate action, instead of the current time requirement of 1 hour, to restore a SDC train to operable status and operation. The proposed change from 1 hour to immediate is conservative.

      In addition, this proposed action requirement will not require the

suspension of activities that would increase the reactor decay heat load. This is appropriate since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core, but fuel movement is not allowed unless at least 23 feet of water exists above the reactor vessel flange (Technical Specification 3.9.11, "Refueling Operations - Water Level - Reactor Vessel"). Therefore, it is not necessary to require the suspension of activities that could increase decay heat load in this specification.

c. The action requirements will also be expanded to specify the containment penetrations and required status. This additional detail will provide additional assurance that the action requirement will be met. There is no technical change to the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere.

7. The statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will be removed. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6. This is specified in the current Bases for Technical Specification 3.0.3, and is consistent with the proposed change to Technical Specification 3.0.3 previously discussed.

8. The current SR 4.9.8.1 will be renumbered as 4.9.8.2.1 and modified by replacing the phrase "At least one shutdown cooling loop" with "One shutdown cooling train." These changes will provide consistency between related Technical Specifications and are consistent with the proposed changes to the LCO.

9. The phrase "and consistent with decay heat requirements" will be removed from SR 4.9.8.2.1. SDC flow will be adjusted by the plant operators, within the flow requirements of this SR, as necessary to ensure sufficient decay heat is being removed. It is not necessary to include this phrase to ensure compliance with this Technical Specification. This is a non-technical change.

10. The current SR 4.9.8.2 will be renumbered as SR 4.9.8.2.2, and it will be modified by replacing the word "loops" with "pump." The phrase "for pump and shutdown cooling valves, or" will be deleted. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. The requirement to verify reactor vessel water level will also be deleted. Verification of reactor vessel water level is no longer necessary with the proposed change to the applicability of this specification. In addition, "availability" will be changed to "available." These changes will provide consistency between related Technical Specifications and are consistent with the proposed changes to the LCO.

11. The Bases for this specification, and 3.9.8.1, will be expanded to include a discussion of what constitutes an operable SDC train. The Bases will also specify that the SDC pumps may be aligned to the refueling water storage tank (RWST) to support filling the refueling cavity and to perform required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. These alternate lineups, which are necessary to perform normal evolutions and required equipment testing, will not affect the operability of the affected SDC train. In addition, these alternate lineups can be used to satisfy the requirement for a SDC train to be in operation, provided the minimum required SDC flow through the reactor core is maintained.

The proposed changes to Technical Specification 3.9.8.2 are consistent with NUREG-1432.

Technical Specification Bases Changes

The Bases for Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2 will be modified to be consistent with the proposed changes previously discussed.

Safety Summary

The proposed Technical Specification and Bases changes are associated with the requirements for the RCS loops and SDC trains during all modes of plant operation. The safety significance of each proposed change will be discussed.

Index Pages

The index pages will be revised to be consistent with the proposed changes to the current Technical Specifications. These are non-technical changes that will not adversely affect public safety.

Technical Specification 3.0.3

The modification to this Technical Specification will clarify that this specification does not apply in Modes 5 and 6. This is consistent with the current Millstone Unit No. 2 Bases for Technical Specification 3.0.3, the model Technical Specifications provided in Enclosure 2 of Generic Letter 87-09, and with NUREG-1432. It will not result in any change to plant operations at Millstone Unit No. 2. Therefore, the proposed change will not adversely affect public safety.

Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2

Standardizing the terminology and format of the LCOs, Action Statements, and Surveillance Requirements between these specifications will not result in any technical

change to the requirements of these specifications. Therefore, the proposed changes will not adversely affect public safety.

Changing the action statements to be consistent with the proposed changes to the LCO will ensure the required actions are appropriate to address situations when the requirements of the LCO are not met. This will ensure the LCO requirements are restored in a timely manner, or the plant is placed in a condition where the LCO does not apply, if applicable. In addition, changing the action statement time requirements to require immediate action instead of within 1 hour is a conservative change (Technical Specifications 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2). Therefore, the proposed changes will not adversely affect public safety.

The removal of extraneous information from the surveillance requirements ("and circulating reactor coolant" from SRs 4.4.1.1, 4.4.1.2.2, 4.4.1.3.3, 4.4.1.4.3, and 4.4.1.5.2; "and consistent with decay heat requirements" from SRs 4.9.8.1 and 4.9.8.2.1) will not result in any technical change to those requirements. Therefore, the proposed changes will not adversely affect public safety.

Technical Specification 3.4.1.1

1. Transferring the phrase "and both reactor coolant pumps in each loop" from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and in operation. It is not necessary to include this in the LCO since plant operation in Modes 1 and 2 requires all four RCPs to be in operation. If all four RCPs are not in operation, the RPS will initiate a reactor trip, placing the plant in Mode 3. In addition, any future changes to the information listed in the Bases will be evaluated in accordance with 10 CFR 50.59. Therefore, the proposed change will not adversely affect public safety.

2. Expanding the LCO to require the RCS loops to be operable, in addition to operating, is a more restrictive change. It will not adversely affect public safety.

3. Changing the action statement to be consistent with the proposed changes to the LCO will ensure the required actions are appropriate to address situations when the requirements of the LCO are not met. This will ensure the LCO requirements are restored in a timely manner, or the plant is placed in a condition where the LCO does not apply. As a result, the action statement time requirement to be in Hot Standby within 1 hour will be changed to 6 hours. The current requirement to be in Hot Standby in 1 hour only applies if less than all RCPs are in operation. If this situation occurs, the RPS will generate a reactor trip placing the plant in Hot Standby. However, as a result of the proposed change to the LCO to include the requirement for the RCS loops to be operable, a situation may occur with the plant at full power, where all RCPs remain in operation, but the RCS loops are declared inoperable. In this situation, the

current requirement to be in Hot Standby in 1 hour could only be achieved by initiating a manual reactor trip. Since the purpose of the action requirements in Technical Specifications is to require a controlled shutdown of the plant to a safe condition based on equipment operability, the time requirements in the action statement should provide sufficient time to perform a controlled shutdown. The proposed change to 6 hours will provide sufficient time to accomplish a controlled shutdown, and is consistent with the time requirement to reach Mode 3 contained in most Technical Specifications, including Technical Specification 3.0.3. Therefore, the proposed changes will not adversely affect public safety.

The proposed changes to Technical Specification 3.4.1.1 are consistent with NUREG-1432.

Technical Specification 3.4.1.2

1. Transferring the phrases "Reactor Coolant Loop A and at least one associated reactor coolant pump" and "Reactor Coolant Loop B and at least one associated reactor coolant pump" from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and one loop to be in operation. It is not necessary to include this in the LCO. The Bases are an appropriate location for specific information such as this. In addition, any future changes to the information listed in the Bases will be evaluated in accordance with 10 CFR 50.59. Therefore, the proposed changes will not adversely affect public safety.

2. Adding the phrase "per 8 hour period" to the 1 hour time period that the RCPs may be secured in the associated footnote will limit how often the RCPs can be secured. This more restrictive change will not adversely affect public safety.

3. Modifying Action Statement a to only address one inoperable reactor coolant loop, and expanding Action Statement b to address two inoperable reactor coolant loops in addition to no reactor coolant loop in operation will result in action statements that encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. Therefore, the proposed changes will not adversely affect public safety.

4. The addition of SR 4.4.1.2.3 to verify secondary water level will provide assurance the associated steam generators will function as heat sinks. The proposed SR is based on the current SR 4.4.1.3.3 and associated proposed changes to that SR. This is a more restrictive change that will not adversely affect public safety.

The proposed changes to Technical Specification 3.4.1.2 are consistent with NUREG-1432.

Technical Specification 3.4.1.3

1. Dividing this specification into three separate specifications (3.4.1.3, 3.4.1.4, and 3.4.1.5) based on operational mode and plant condition will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current requirements will be retained with the appropriate specification. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions. Therefore, the proposed change will not adversely affect public safety.

2. Transferring the phrases "Reactor Coolant Loop A and its associated steam generator and at least one associated reactor coolant pump" and "Reactor Coolant Loop B and its associated steam generator and at least one associated reactor coolant pump" from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and one loop to be in operation. It is not necessary to include this in the LCO. The Bases are an appropriate location for specific information such as this. In addition, any future changes to the information listed in the Bases will be evaluated in accordance with 10 CFR 50.59. Therefore, the proposed changes will not adversely affect public safety.

3. Deleting the first footnote (#), which is only applicable in Mode 5, is appropriate since the proposed change will limit this specification to Mode 4. This will not result in any technical change to the current requirements. The footnote will be retained with proposed Technical Specifications 3.4.1.4 and 3.4.1.5, which are applicable in Mode 5. Therefore, the proposed change will not adversely affect public safety.

4. Adding the phrase "per 8 hour period" to the 1 hour time period that the RCPs may be secured in the second footnote will limit how often the RCPs can be secured. This more restrictive change will not adversely affect public safety.

5. Changing the action statements to encompass all combinations of inoperable equipment will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable. It is not appropriate to require a cooldown to Mode 5 with no operable SDC trains since the SDC trains are the primary heat removal method in Mode 5. If two RCS loops and one SDC train are inoperable, a cooldown to Mode 5 will still be required. However, the time to reach Mode 5 will be increased from 20 hours to 24 hours to be consistent with the time requirement to reach Mode 5 contained in most Technical Specifications, including Technical Specification 3.0.3. This 4 hour increase will not result in any significant change to plant operations. Therefore, the proposed changes will not adversely affect public safety.

6. Deleting the phrase "for pump and shutdown cooling loop valves" from SR 4.4.1.3.1 will not change the requirement for a second cooling loop to be operable. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. In addition, any future changes to the information listed in the Bases will be evaluated in accordance with 10 CFR 50.59. Therefore, the proposed change will not adversely affect public safety.

7. Deleting SR 4.4.1.3.2 will remove duplicate requirements since the proposed SR 4.4.1.3.1 will now include the requirements of this SR. In addition, the removal of this SR will require SRs 4.4.1.3.3 and 4.4.1.3.4 to be renumbered as 4.4.1.3.2 and 4.4.1.3.3, respectively. There will be no technical change to any of these requirements. Therefore, the proposed changes will not adversely affect public safety.

8. Replacing the phrase "10% of span" with "10% narrow range" in the proposed SR 4.4.1.3.2 will change the terminology to reflect the instrumentation used to verify compliance with this SR. This will eliminate any ambiguity with respect to the proper instrumentation to use. Since 10% of span is equivalent to 10% narrow range, there will be no technical change to the required secondary water volume for steam generator operability. Therefore, the proposed change will not adversely affect public safety.

9. Adding Amendment No. 69 to the bottom of page 3/4 4-1c will not result in any technical change to this specification. Therefore, the proposed change will not adversely affect public safety.

The proposed changes to Technical Specification 3.4.1.3 are consistent with NUREG-1432.

Technical Specification 3.4.1.4

1. Relocating the Mode 5 requirements currently contained in Technical Specification 3.4.1.3 into a separate Technical Specification, 3.4.1.4, will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 5 requirements when the RCS loops are filled will be retained in this specification. Mode 5 requirements when the RCS loops are not filled will be addressed by proposed Technical Specification 3.4.1.5. The Bases will be modified to discuss the requirements for the RCS to be considered full. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions. Therefore, the proposed change will not adversely affect public safety.

2. Changing the LCO to require at least one SDC train to be operable and in operation, and to allow the second heat removal path to be either the second SDC train, or both steam generators with sufficient secondary water volume to support natural circulation will not change the LCO requirement to maintain two flow paths for heat removal, with one train in operation. However, there will no longer be any requirement associated with RCP operability.

   The proposed Technical Specification 3.4.1.4 would allow both steam generators to be an acceptable substitute for a second SDC train. If the second SDC train was not available, and the remaining SDC train became unavailable for decay heat removal, the steam generators would be able to remove RCS decay heat by natural circulation. Heat could then be removed from the steam generators by bleed and feed of the secondary side in Mode 5 for a short time period. However, this is not a normal method of heat removal from the steam generators, and this approach would be difficult to support for an extended time period. If at least one SDC train could not be restored to operation, it is likely the plant would heat up to Mode 4 where steam release from the steam generators could be used to support RCS decay heat removal via natural circulation, or forced circulation if the RCPs were available. Therefore, removal of the requirement for a RCP to be available to credit a steam generator will not result in any adverse effect on plant safety with respect to decay heat removal. While a mode transition may occur, the steam generators will ensure the safety function is maintained. Thus, the proposed change will not adversely affect public safety.

3. Adding the phrase "per 8 hour period" to the 1 hour time period that the SDC pumps may be secured in the second footnote will limit how often the SDC pumps can be secured. This more restrictive change will not adversely affect public safety.

4. Adding two additional notes, one to allow a SDC train to be inoperable for up to 2 hours for surveillance testing, and one to allow both SDC trains to not be in operation when at least one RCP is in operation will not change the requirement to have adequate decay heat removal capability available and in operation. In addition, when using these allowances the plant will be performing controlled evolutions (e.g., a plant heatup), and the amount of time will be small. Therefore, the proposed changes will not adversely affect public safety.

5. Changing the action statements to address the situation when no SDC trains are operable will encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable since the proposed specification is only applicable in Mode 5. Therefore, the proposed changes will not adversely affect public safety.

6. Deleting the phrase "for pump and shutdown cooling loop valves" from the proposed SR 4.4.1.4.1 will not change the requirement for a second cooling loop to be operable. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. In addition, any future changes to the information listed in the Bases will be evaluated in accordance with 10 CFR 50.59. Therefore, the proposed change will not adversely affect public safety.

7. Deleting SR 4.4.1.3.2 will remove requirements that are no longer applicable since the proposed changes to the LCO no longer address RCP operation. Renumbering SRs 4.4.1.3.3 and 4.4.1.3.4 as 4.4.1.4.2 and 4.4.1.4.3, respectively, will not result in any technical change to these SRs. Therefore, the proposed changes will not adversely affect public safety.

8. Replacing the phrase "10% of span" with "10% narrow range" in the proposed SR 4.4.1.4.2 will change the terminology to reflect the instrumentation used to verify compliance with this SR. This will eliminate any ambiguity with respect to the proper instrumentation to use. Since 10% of span is equivalent to 10% narrow range, there will be no technical change to the required secondary water volume for steam generator operability. Therefore, the proposed change will not adversely affect public safety.

The proposed changes to Technical Specification 3.4.1.4 are consistent with NUREG-1432.

Technical Specification 3.4.1.5

1. Relocating the Mode 5 requirements currently contained in Technical Specification 3.4.1.3 into a separate Technical Specification, 3.4.1.5, will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 5 requirements when the RCS loops are not filled will be retained in this specification. Mode 5 requirements when the RCS loops are filled will be addressed by proposed Technical Specification 3.4.1.4. The Bases will be modified to discuss the requirements for the RCS to be considered full. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions. Therefore, the proposed change will not adversely affect public safety.

2. Changing the LCO to require two SDC trains to be operable and at least one SDC train to be in operation, and no longer taking credit for the RCS loops since the applicability of this specification is limited to when the RCS loops are not filled will not change the LCO requirement to maintain two flow paths for heat removal, with one train in operation. Therefore, the proposed changes will not

adversely affect public safety.

3. Modifying the second footnote (*) such that all SDC pumps can be secured for only 15 minutes instead of 1 hour, and only when switching from one SDC train to the other are more restrictive changes. Adding a limitation to prohibit draining operations that would reduce the RCS volume when switching the operating SDC train is also a more restrictive change. Therefore, the proposed changes will not adversely affect public safety.

4. Adding an additional note to allow a SDC train to be inoperable for up to 2 hours for surveillance testing will not change the requirement to have adequate decay heat removal capability available and in operation. In addition, when using this allowance the plant will be performing controlled evolutions, and the amount of time will be small. Therefore, the proposed change will not adversely affect public safety.

5. Changing the action statements to address the situation when no SDC trains are operable will encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable since the proposed specification is only applicable in Mode 5. Therefore, the proposed changes will not adversely affect public safety.

6. Deleting the phrase "for pump and shutdown cooling loop valves" from the proposed SR 4.4.1.5.1 will not change the requirement for a second cooling loop to be operable. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable. In addition, any future changes to the information listed in the Bases will be evaluated in accordance with 10 CFR 50.59. Therefore, the proposed change will not adversely affect public safety.

7. Deleting SR 4.4.1.3.2 and 4.4.1.3.3 will remove requirements that are no longer applicable since the proposed LCO no longer addresses RCP or steam generator operation. Therefore, the proposed changes will not adversely affect public safety.

The proposed changes to Technical Specification 3.4.1.5 are consistent with NUREG-1432.

Technical Specification 3.4.1.6

Changing the title of this specification, the LCO number, the SR number, and the page number to accommodate the addition of two new Technical Specifications (3.4.1.4 and

3.4.1.5) will not result in any technical change to the requirements of this specification. Therefore, the proposed changes will not adversely affect public safety.

Technical Specification 3.9.8.1

1. Combining the Mode 6 requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2 into one Technical Specification, 3.9.8.1, that is limited in applicability to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 6 requirements when the refueling cavity water level is at least 23 feet above the reactor vessel flange will be retained in this specification. Mode 6 requirements when the refueling cavity water level is less than 23 feet above the reactor vessel flange will be addressed by proposed Technical Specification 3.9.8.2. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions. Therefore, the proposed change will not adversely affect public safety.

2. Changing the LCO to include a requirement for the operating SDC train to also be operable is a more restrictive change. The LCO will not specify that a second heat removal method be operable since the large volume of water above the reactor vessel flange is capable of providing a sufficient heat sink for core decay heat removal. Therefore, the proposed changes to the LCO will not adversely affect public safety.

3. Modifying the first footnote (*) to replace the phrase "during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs" with "provided no operations are permitted that would cause a reduction in Reactor Coolant System boron concentration" will expand the scope of this footnote. However, in addition to the removal of decay heat, the requirement to maintain a SDC train in operation ensures sufficient time exists for the plant operators to recognize an inadvertent dilution. Therefore, it is appropriate to prohibit operations that may reduce the RCS boron concentration when securing SDC flow. It is not necessary to restrict the time when SDC flow can be secured to just when performing core alterations in the vicinity of the hot legs. Adequate heat removal is provided by the volume of water in the refueling cavity, and the time restriction of 1 hour per 8 hour period will ensure the RCS temperature increase is not significant. Therefore, the proposed changes will not adversely affect public safety.

4. Adding a third note to allow the SDC pumps to be removed from operation will provide additional operational flexibility to perform work that is currently done during plant heatup after SDC has been removed from service (local leak rate testing of the SDC suction line), and to perform work on the valves located in the common SDC suction line. Since both SDC trains at Millstone Unit No. 2 share

a common suction line from the RCS, work required on the valves in this line may require SDC flow to be secured and this line isolated. If this work can't be performed within the 1 hour constraint currently allowed by the first note, it would be necessary to completely defuel the reactor. However, if the work can be safely performed within a time period established by evaluating plant conditions (e.g., decay heat load), it may be more appropriate to leave the fuel in the reactor vessel. In addition to the requirement to suspend operations that would reduce RCS boron concentration as specified in the first note, core alterations will not be allowed and containment penetrations must be configured to prevent a release of radioactivity from the containment atmosphere to use this provision. These additional requirements will minimize the potential for a release of radioactivity to the containment due to refueling operations and will ensure that any release of radioactivity to the containment atmosphere will not be released to the outside environment.

Prior to using this note, a review and approval of the evolution by the Plant Operations Review Committee (PORC) will be required. This review will evaluate plant conditions and the proposed work to determine if this provision should be used, and to establish the termination criteria and appropriate contingency plans. In addition, this provision would only apply when a large volume of water above the reactor vessel flange is available as a heat sink for core decay heat removal. Therefore, the proposed note will not adversely affect public safety.

5. Changing the Mode of Applicability for this specification to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange is a more restrictive change since it will provide additional plant requirements before only one SDC train will be required to be operable and in operation. Therefore, the proposed change will not adversely affect public safety.

6. Changing the action statements to require the suspension of activities to load irradiated fuel assemblies in the core, instead of requiring the suspension of activities that would increase the reactor decay heat load will not result in a technical change to the action requirements since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core. Expanding the action statements to specify the containment penetrations and required status will provide additional assurance that the action requirement will be met. It will not change the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere. In addition, the proposed changes will require immediate action instead of within 1 hour. This is a conservative change that will not result in any significant change to plant operations. Therefore, the proposed changes will not adversely affect public safety.

7. Removing the statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will not result in a technical change. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6. This is specified in the current Bases for Technical Specification 3.0.3, and is consistent with the proposed change to Technical Specification 3.0.3 previously discussed. Therefore, the proposed change will not adversely affect public safety.

8. Deleting SR 4.9.8.2 will remove a requirement no longer necessary as a result of the proposed changes to this specification. A second SDC train will no longer be required when at least 23 feet of water has been established above the reactor vessel flange. The verification of the second SDC train will be retained in proposed Technical Specification 3.9.8.2. Therefore, the proposed change will not adversely affect public safety.

9. Revising the amendment number on page 3/4 9-8a will not result in any technical change to this specification. Therefore, the proposed change will not adversely affect public safety.

The proposed changes to Technical Specification 3.9.8.1, with the exception of the addition of the third note discussed in item number 4, are consistent with NUREG-1432.

Technical Specification 3.9.8.2

1. Combining the Mode 6 requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2 into one Technical Specification, 3.9.8.2, that is limited in applicability to Mode 6 when the refueling cavity is not filled to a water level of at least 23 feet above the reactor vessel flange will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 6 requirements when the refueling cavity water level is below 23 feet above the reactor vessel flange will be retained in this specification. Mode 6 requirements when the refueling cavity water level is at least 23 feet above the reactor vessel flange will be addressed by proposed Technical Specification 3.9.8.1. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions. Therefore, the proposed change will not adversely affect public safety.

2. Changing the LCO to include a requirement for one SDC train to be in operation will not result in a technical change since this additional requirement is already required by the current Technical Specification 3.9.8.1. Removing the word "independent" from the LCO will not adversely affect the requirement for two SDC trains to be operable. The level of independence between the SDC trains is a design feature of the SDC System. The Millstone Unit No. 2 FSAR describes the approved level of independence between SDC trains. If the

approved level of independence is not maintained, the SDC trains may not be operable. Therefore, the proposed changes to the LCO will not adversely affect public safety.

3. Deleting the first footnote (*) is appropriate since there are no expected plant operations that would require all SDC flow to be secured before at least 23 feet of water is established above the reactor vessel flange. This is a more restrictive change. Therefore, the proposed change will not adversely affect public safety.

4. Changing the Mode of Applicability for this specification such that to relax the requirement for two operable SDC trains, the refueling cavity must be filled to a water level of at least 23 feet above the reactor vessel flange is a more restrictive change. Therefore, the proposed change will not adversely affect public safety.

5. Adding an action requirement to establish $\geq$ 23 feet of water above the reactor vessel flange if one SDC train is inoperable is appropriate since this action would establish plant conditions where this specification would no longer be applicable. Therefore, the proposed change will not adversely affect public safety.

6. Including an additional action to require an immediate suspension of any activity that would reduce the RCS boron concentration if both SDC trains are inoperable, or no SDC train is in operation is appropriate since there may be insufficient RCS flow to ensure proper mixing. This is consistent with the action requirement associated with current Technical Specification 3.9.8.1. Excluding the requirement to suspend activities that would increase the reactor decay heat load is appropriate since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core, but fuel movement is not allowed unless at least 23 feet of water exists above the reactor vessel flange (Technical Specification 3.9.11, "Refueling Operations - Water Level - Reactor Vessel"). Expanding the action statement to specify the containment penetrations and required status will provide additional assurance that the action requirement will be met. It will not change the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere. Therefore, the proposed changes will not adversely affect public safety.

7. Removing the statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will not result in a technical change. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6. This is specified in the current Bases for Technical Specification 3.0.3, and is consistent with the proposed change to Technical Specification 3.0.3 previously discussed.

Therefore, the proposed change will not adversely affect public safety.

8. Removing the requirement to verify reactor vessel water level contained in current SR 4.9.8.2 is appropriate since the verification of reactor vessel water level is no longer necessary with the proposed change to the applicability of this specification. Therefore, the proposed change will not adversely affect public safety.

9. Expanding the Bases for this specification, and 3.9.8.1, to include a discussion of what constitutes an operable SDC train will provide additional guidance to determine the impact of various degraded conditions on the operability of a SDC train. The Bases change will also specify that the SDC pumps may be aligned to the RWST to support filling the refueling cavity and to perform required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. These alternate lineups, which are necessary to perform normal evolutions and required equipment testing, will not affect the operability of the affected SDC train. In addition, these alternate lineups can be used to satisfy the requirement for a SDC train to be in operation, provided the minimum required SDC flow through the reactor core is maintained. This will ensure sufficient heat removal capability is available, sufficient flow is available to prevent boron stratification, and the boron dilution analysis assumptions are met. Therefore, the proposed changes will not adversely affect public safety.

The proposed changes to Technical Specification 3.9.8.2 are consistent with NUREG-1432.

Technical Specification Bases Changes

The Bases for Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.4.1.6, 3.9.8.1, and 3.9.8.2 will be modified to be consistent with the proposed changes previously discussed. Therefore, the proposed changes will not adversely affect public safety.

The proposed changes to the Technical Specifications and Bases 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 are safe.

Docket No. 50-336
B17905

Attachment 2

Millstone Nuclear Power Station, Unit No. 2

Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains
Significant Hazards Consideration

February 2000

Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains
Significant Hazards Consideration

Significant Hazards Consideration

In accordance with 10 CFR 50.92, NNECO 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 an SHC because the changes would not:

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

   The proposed Technical Specification and Bases changes are associated with the requirements for the Reactor Coolant System (RCS) loops and Shutdown Cooling (SDC) trains during all modes of plant operation.

   Each proposed change will be discussed. Common changes will be grouped together by Technical Specifications.

   Index Pages

   The index pages will be revised to be consistent with the proposed changes to current Technical Specifications. These are non-technical changes that will not result in a significant increase in the probability or consequences of an accident previously evaluated.

   Technical Specification 3.0.3

   The modification to this Technical Specification will clarify that this specification does not apply in Modes 5 and 6. This is consistent with the current Millstone Unit No. 2 Bases for this specification, and with current industry documentation (Generic Letter 87-09 and NUREG-1432). It will not result in any change to plant operations at Millstone Unit No. 2. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

   Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2

   Standardizing the terminology and format of the Limiting Conditions of Operation (LCOs), Action Statements, and Surveillance Requirements (SRs) between these specifications will not result in any technical change to the requirements of these specifications.

Changing the action statements to be consistent with the proposed changes to the LCO will ensure the required actions are appropriate to address situations when the requirements of the LCO are not met. This will ensure the LCO requirements are restored in a timely manner, or the plant is placed in a condition where the LCO does not apply, if applicable. In addition, changing the action statement time requirements to require immediate action instead of within 1 hour is a conservative change (Technical Specifications 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2).

The removal of extraneous information from the surveillance requirements ("and circulating reactor coolant" from SRs 4.4.1.1, 4.4.1.2.2, 4.4.1.3.3, 4.4.1.4.3, and 4.4.1.5.2; "and consistent with decay heat requirements" from SRs 4.9.8.1 and 4.9.8.2.1) will not result in any technical change to those requirements.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.4.1.1

Transferring the phrase "and both reactor coolant pumps in each loop" from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and in operation. It is not necessary to include this in the LCO since plant operation in Modes 1 and 2 requires all four reactor coolant pumps (RCPs) to be in operation. If all four RCPs are not in operation, the Reactor Protection System (RPS) will initiate a reactor trip, placing the plant in Mode 3. Expanding the LCO to require the RCS loops to be operable, in addition to operating, is a more restrictive change.

Changing the action statement to be consistent with the proposed changes to the LCO will ensure the required actions are appropriate to address situations when the requirements of the LCO are not met. This will ensure the LCO requirements are restored in a timely manner, or the plant is placed in a condition where the LCO does not apply. As a result, the action statement time requirement to be in Hot Standby within 1 hour will be changed to 6 hours. The current requirement to be in Hot Standby in 1 hour only applies if less than all RCPs are in operation. If this situation occurs, the RPS will generate a reactor trip placing the plant in Hot Standby. However, as a result of the proposed change to the LCO to include the requirement for the RCS loops to be operable, a situation may occur with the plant at full power, where all RCPs remain in operation, but the RCS loops are declared inoperable. In this situation, the current requirement to be in Hot Standby in 1 hour could only be achieved by

initiating a manual reactor trip. Since the purpose of the action requirements in Technical Specifications is to require a controlled shutdown of the plant to a safe condition based on equipment operability, the time requirements in the action statement should provide sufficient time to perform a controlled shutdown. The proposed change to 6 hours will provide sufficient time to accomplish a controlled shutdown, and is consistent with the time requirement to reach Mode 3 contained in most Technical Specifications, including Technical Specification 3.0.3.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.4.1.2

Transferring the phrases "Reactor Coolant Loop A and at least one associated reactor coolant pump" and "Reactor Coolant Loop B and at least one associated reactor coolant pump" from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and one loop to be in operation. It is not necessary to include this in the LCO. The Bases are an appropriate location for specific information such as this.

Adding the phrase "per 8 hour period" to the 1 hour time period that the RCPs may be secured in the associated footnote will limit how often the RCPs can be secured. This is a more restrictive change.

Modifying Action Statement a to only address one inoperable reactor coolant loop, and expanding Action Statement b to address two inoperable reactor coolant loops in addition to no reactor coolant loop in operation will result in action statements that encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation.

Adding a SR to verify secondary water level will provide assurance the associated steam generators will function as heat sinks. This is a more restrictive change.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously

evaluated.

Technical Specification 3.4.1.3

Dividing this specification into three separate specifications (3.4.1.3, 3.4.1.4, and 3.4.1.5) based on operational mode and plant condition will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current requirements will be retained with the appropriate specification. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Transferring the phrases "Reactor Coolant Loop A and its associated steam generator and at least one associated reactor coolant pump" and "Reactor Coolant Loop B and its associated steam generator and at least one associated reactor coolant pump" from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and one loop to be in operation. It is not necessary to include this in the LCO. The Bases are an appropriate location for specific information such as this.

Deleting the first footnote (#), which is only applicable in Mode 5, is appropriate since the proposed change will limit this specification to Mode 4. This will not result in any technical change to the current requirements. The footnote will be retained with proposed Technical Specifications 3.4.1.4 and 3.4.1.5, which are applicable in Mode 5.

Adding the phrase "per 8 hour period" to the 1 hour time period that the RCPs may be secured in the second footnote will limit how often the RCPs can be secured. This is a more restrictive change.

Changing the action statements to encompass all combinations of inoperable equipment will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable. It is not appropriate to require a cooldown to Mode 5 with no operable SDC trains since the SDC trains are the primary heat removal method in Mode 5. If two RCS loops and one SDC train are inoperable, a cooldown to Mode 5 will still be required. However, the time to reach Mode 5 will be increased from 20 hours to 24 hours to be consistent with the time requirement to reach Mode 5 contained in most Technical Specifications, including Technical Specification 3.0.3. This 4 hour increase will not result in any significant change to plant operations.

Deleting the phrase "for pump and shutdown cooling loop valves" from SR 4.4.1.3.1 will not change the requirement for a second cooling loop to be operable. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable.

The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable.

Deleting SR 4.4.1.3.2 will remove duplicate requirements since the proposed SR 4.4.1.3.1 will now include the requirements of this SR. Subsequent SRs will be renumbered to reflect the deletion of this SR. There will be no technical change to any of these requirements.

Replacing the phrase "10% of span" with "10% narrow range" in the proposed SR will change the terminology to reflect the instrumentation used to verify compliance with this SR. This will eliminate any ambiguity with respect to the proper instrumentation to use. Since 10% of span is equivalent to 10% narrow range, there will be no technical change to the required secondary water volume for steam generator operability.

Adding the amendment number to the bottom of page 3/4 4-1c will not result in any technical change to this specification.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.4.1.4

Relocating the Mode 5 requirements currently contained in Technical Specification 3.4.1.3 into this new specification will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 5 requirements when the RCS loops are filled will be retained in this specification. Mode 5 requirements when the RCS loops are not filled will be addressed by proposed Technical Specification 3.4.1.5. The Bases will be modified to discuss the requirements for the RCS to be considered full. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to require at least one SDC train to be operable and in operation, to allow the second heat removal path to be either the second SDC train, or both steam generators with sufficient secondary water volume to support natural circulation, and no longer requiring the associated RCPs to be operable will not change the LCO requirement to maintain two flow paths for heat removal, with one train in operation.

Adding the phrase "per 8 hour period" to the 1 hour time period that the SDC pumps may be secured in the second footnote will limit how often the SDC pumps can be secured. This is a more restrictive change.

Adding two additional notes, one to allow a SDC train to be inoperable for up to 2 hours for surveillance testing, and one to allow both SDC trains to not be in operation when at least one RCP is in operation will not change the requirement to have adequate decay heat removal capability available and in operation. In addition, when using these allowances the plant will be performing controlled evolutions (e.g., a plant heatup), and the amount of time will be small.

Changing the action statements to address the situation when no SDC trains are operable will encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable since the proposed specification is only applicable in Mode 5.

Deleting the phrase "for pump and shutdown cooling loop valves" from the proposed SR 4.4.1.4.1 will not change the requirement for a second cooling loop to be operable. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable.

Deleting SR 4.4.1.3.2 will remove requirements that are no longer applicable since the proposed changes to the LCO no longer address RCP operation.

Replacing the phrase "10% of span" with "10% narrow range" in the proposed SR will change the terminology to reflect the instrumentation used to verify compliance with this SR. This will eliminate any ambiguity with respect to the proper instrumentation to use. Since 10% of span is equivalent to 10% narrow range, there will be no technical change to the required secondary water volume for steam generator operability.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.4.1.5

Relocating the Mode 5 requirements currently contained in Technical

Specification 3.4.1.3 into this new specification will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 5 requirements when the RCS loops are not filled will be retained in this specification. Mode 5 requirements when the RCS loops are filled will be addressed by proposed Technical Specification 3.4.1.4. The Bases will be modified to discuss the requirements for the RCS to be considered full. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to require two SDC trains to be operable and at least one SDC train to be in operation, and no longer taking credit for the RCS loops since the applicability of this specification is limited to when the RCS loops are not filled will not change the LCO requirement to maintain two flow paths for heat removal, with one train in operation.

Modifying the second footnote (*) such that all SDC pumps can be secured for only 15 minutes instead of 1 hour, and only when switching from one SDC train to the other are more restrictive changes. Adding a limitation to prohibit draining operations that would reduce the RCS volume when switching the operating SDC train is also a more restrictive change.

Adding an additional note to allow a SDC train to be inoperable for up to 2 hours for surveillance testing will not change the requirement to have adequate decay heat removal capability available and in operation. In addition, when using this allowance the plant will be performing controlled evolutions, and the amount of time will be small.

Changing the action statements to address the situation when no SDC trains are operable will encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable since the proposed specification is only applicable in Mode 5.

Deleting the phrase "for pump and shutdown cooling loop valves" from the proposed SR 4.4.1.5.1 will not change the requirement for a second cooling loop to be operable. The verification of power to the SDC valves will still be performed as necessary to ensure that the required SDC train not in operation is operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable.

Deleting SR 4.4.1.3.2 and 4.4.1.3.3 will remove requirements that are no longer applicable since the proposed LCO no longer addresses RCP or steam generator operation.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.4.1.6

Changing the title of this specification, the LCO number, the SR number, and the page number to accommodate the addition of two new Technical Specifications (3.4.1.4 and 3.4.1.5) will not result in any technical change to the requirements of this specification. Therefore, the proposed changes will not result in a significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.9.8.1

Combining the Mode 6 requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2 into this specification which is limited in applicability to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 6 requirements when the refueling cavity water level is at least 23 feet above the reactor vessel flange will be retained in this specification. Mode 6 requirements when the refueling cavity water level is less than 23 feet above the reactor vessel flange will be addressed by proposed Technical Specification 3.9.8.2. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to include a requirement for the operating SDC train to also be operable is a more restrictive change. The LCO will not specify that a second heat removal method be operable since the large volume of water above the reactor vessel flange is capable of providing a sufficient heat sink for core decay heat removal.

Modifying the first footnote (*) to replace the phrase "during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs" with "provided no operations are permitted that would cause a reduction in Reactor Coolant System boron concentration" will expand the scope of this footnote. However, in addition to the removal of decay heat, the requirement to maintain a SDC train in operation ensures sufficient time exists for the plant operators to recognize an inadvertent dilution. Therefore, it is appropriate to prohibit operations that may reduce the RCS boron concentration when securing SDC flow. It is not necessary to restrict the time when SDC flow can be secured to

just when performing core alterations in the vicinity of the hot legs. Adequate heat removal is provided by the volume of water in the refueling cavity, and the time restriction of 1 hour per 8 hour period will ensure the RCS temperature increase is not significant.

Adding a third note to allow the SDC pumps to be removed from operation will provide additional operational flexibility to perform work that is currently done during plant heatup after SDC has been removed from service (local leak rate testing of the SDC suction line), and to perform work on the valves located in the common SDC suction line. Since both SDC trains at Millstone Unit No. 2 share a common suction line from the RCS, work required on the valves in this line may require SDC flow to be secured and this line isolated. If this work can't be performed within the 1 hour constraint currently allowed by the first note, it would be necessary to completely defuel the reactor. However, if the work can be safely performed within a time period established by evaluating plant conditions (e.g., decay heat load), it may be more appropriate to leave the fuel in the reactor vessel. In addition to the requirement to suspend operations that would reduce RCS boron concentration as specified in the first note, core alterations will not be allowed and containment penetrations must be configured to prevent a release of radioactivity from the containment atmosphere to use this provision. These additional requirements will minimize the potential for a release of radioactivity to the containment due to refueling operations and will ensure that any release of radioactivity to the containment atmosphere will not be released to the outside environment. In addition, this provision would only apply when a large volume of water above the reactor vessel flange is available as a heat sink for core decay heat removal.

Changing the Mode of Applicability for this specification to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange is a more restrictive change since it will provide additional plant requirements before only one SDC train will be required to be operable and in operation.

Changing the action statements to require the suspension of activities to load irradiated fuel assemblies in the core, instead of requiring the suspension of activities that would increase the reactor decay heat load will not result in a technical change to the action requirements since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core. Expanding the action statements to specify the containment penetrations and required status will provide additional assurance that the action requirement will be met. It will not change the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere.

Removing the statement that the provisions of Specification 3.0.3 are not

applicable for 3.9.8.1 and 3.9.8.2 will not result in a technical change. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6. This is specified in the current Bases for Technical Specification 3.0.3, and is consistent with the proposed change to Technical Specification 3.0.3 previously discussed.

Deleting SR 4.9.8.2 will remove a requirement no longer necessary as a result of the proposed changes to this specification. A second SDC train will no longer be required when at least 23 feet of water has been established above the reactor vessel flange. The verification of the second SDC train will be retained in proposed Technical Specification 3.9.8.2.

Revising the amendment number on page 3/4 9-8a will not result in any technical change to this specification.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification 3.9.8.2

Combining the Mode 6 requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2 into this specification which is limited in applicability to Mode 6 when the refueling cavity is not filled to a water level of at least 23 feet above the reactor vessel flange will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 6 requirements when the refueling cavity water level is below 23 feet above the reactor vessel flange will be retained in this specification. Mode 6 requirements when the refueling cavity water level is at least 23 feet above the reactor vessel flange will be addressed by proposed Technical Specification 3.9.8.1. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to include a requirement for one SDC train to be in operation will not result in a technical change since this additional requirement is already required by current Technical Specification 3.9.8.1. Removing the word "independent" from the LCO will not adversely affect the requirement for two SDC trains to be operable. The level of independence between the SDC trains is a design feature of the SDC System. The Millstone Unit No. 2 Final Safety Analysis Report (FSAR) describes the approved level of independence between SDC trains. If the approved level of independence is not maintained, the SDC trains may not be operable.

Deleting the first footnote (*) is appropriate since there are no expected plant operations that would require all SDC flow to be secured before at least 23 feet of water is established above the reactor vessel flange. This is a more restrictive change.

Changing the Mode of Applicability for this specification such that to relax the requirement for two operable SDC trains, the refueling cavity must be filled to a water level of at least 23 feet above the reactor vessel flange is a more restrictive change.

Adding an action requirement to establish $\geq$ 23 feet of water above the reactor vessel flange if one SDC train is inoperable is appropriate since this action would establish plant conditions where this specification would no longer be applicable. Including an additional action to require an immediate suspension of any activity that would reduce the RCS boron concentration if both SDC trains are inoperable, or no SDC train is in operation is appropriate since there may be insufficient RCS flow to ensure proper mixing. This is consistent with the action requirement associated with current Technical Specification 3.9.8.1. Excluding the requirement to suspend activities that would increase the reactor decay heat load is appropriate since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core, but fuel movement is not allowed unless at least 23 feet of water exists above the reactor vessel flange (Technical Specification 3.9.11, "Refueling Operations - Water Level - Reactor Vessel"). Expanding the action statements to specify the containment penetrations and required status will provide additional assurance that the action requirement will be met. It will not change the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere.

Removing the statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will not result in a technical change. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6. This is specified in the current Bases for Technical Specification 3.0.3, and is consistent with the proposed change to Technical Specification 3.0.3 previously discussed.

Removing the requirement to verify reactor vessel water level contained in the current SR 4.9.8.2 is appropriate since the verification of reactor vessel water level is no longer necessary with the proposed change to the applicability of this specification.

Expanding the Bases for this specification, and 3.9.8.1, to include a discussion of what constitutes an operable SDC train will provide additional guidance to determine the impact of various degraded conditions on the operability of a SDC train. The Bases change will also specify that the SDC pumps may be aligned to

the refueling water storage tank (RWST) to support filling the refueling cavity and to perform required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. These alternate lineups, which are necessary to perform normal evolutions and required equipment testing, will not affect the operability of the affected SDC train. In addition, these alternate lineups can be used to satisfy the requirement for a SDC train to be in operation, provided the minimum required SDC flow through the reactor core is maintained.

The proposed changes will have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents will not change. In addition, the proposed changes can not cause an accident. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

Technical Specification Bases Changes

The Bases for Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.4.1.6, 3.9.8.1, and 3.9.8.2 will be modified to be consistent with the proposed changes previously discussed. Therefore, the proposed changes will not result in a significant increase in 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.

   The proposed Technical Specification and Bases changes will not alter the plant configuration (no new or different type of equipment will be installed) or require any new or unusual operator actions. They do not alter the way any structure, system, or component functions and do not significantly alter the manner in which the plant is operated. The proposed changes do not introduce any new failure modes. Also, the response of the plant and the operators following these accidents is unaffected by the changes. Therefore, the proposed changes will not 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 Technical Specification and Bases changes are associated with the requirements for the RCS loops and SDC trains during all modes of plant operation.

Index Pages

The index pages will be revised to be consistent with the proposed changes to current Technical Specifications. These are non-technical changes.

Technical Specification 3.0.3

The modification to this Technical Specification will clarify that this specification does not apply in Modes 5 and 6. This is consistent with the current Millstone Unit No. 2 Bases for this specification, and with current industry documentation (Generic Letter 87-09 and NUREG-1432). It will not result in any change to plant operations at Millstone Unit No. 2.

Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2

Standardizing the terminology and format of the LCOs, Action Statements, and SRs between these specifications will not result in any technical changes to the requirements of these specifications.

Changing the action statements to be consistent with the proposed changes to the LCO will ensure the required actions are appropriate to address situations when the requirements of the LCO are not met. This will ensure the LCO requirements are restored in a timely manner, or the plant is placed in a condition where the LCO does not apply, if applicable. In addition, changing the action statement time requirements to require immediate action instead of within 1 hour is a conservative change (Technical Specifications 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.9.8.1, and 3.9.8.2).

The removal of extraneous information from the SRs ("and circulating reactor coolant" from SRs 4.4.1.1, 4.4.1.2.2, 4.4.1.3.3, 4.4.1.4.3, and 4.4.1.5.2 ; "and consistent with decay heat requirements" from SRs 4.9.8.1 and 4.9.8.2.1) will not result in any technical change to those requirements.

Technical Specification 3.4.1.1

Transferring information from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and in operation. Expanding the LCO to require the RCS loops to be operable, in addition to operating, is a more restrictive change.

Changing the action statement to be consistent with the proposed changes to the LCO will ensure the required actions are appropriate to address situations when the requirements of the LCO are not met. This will ensure the LCO requirements are restored in a timely manner, or the plant is placed in a

condition where the LCO does not apply. The proposed changes to the LCO will also require the action statement time requirement to be in Hot Standby within 1 hour to be changed to 6 hours. This is necessary to provide sufficient time to accomplish a controlled shutdown, and is consistent with the time requirement to reach Mode 3 contained in most Technical Specifications, including Technical Specification 3.0.3.

Technical Specification 3.4.1.2

Transferring information from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and one loop to be in operation.

Adding a restriction to limit how often the RCPs can be secured is a more restrictive change.

Modifying Action Statement a to only address one inoperable reactor coolant loop, and expanding Action Statement b to address two inoperable reactor coolant loops in addition to no reactor coolant loop in operation will result in action statements that encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation.

Adding a SR to verify secondary water level will provide assurance the associated steam generators will function as heat sinks. This is a more restrictive change.

Technical Specification 3.4.1.3

Dividing this specification into three separate specifications (3.4.1.3, 3.4.1.4, and 3.4.1.5) based on operational mode and plant condition will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current requirements will be retained with the appropriate specification. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Transferring information from the LCO to the Bases for this Technical Specification will not change the requirement for both RCS loops to be operable and one loop to be in operation.

Deleting the first footnote (#), which is only applicable in Mode 5, is appropriate since the proposed change will limit this specification to Mode 4. This will not result in any technical change to the current requirements.

Adding a restriction to limit how often the RCPs can be secured is a more restrictive change.

Changing the action statements to encompass all combinations of inoperable equipment will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable. It is not appropriate to require a cooldown to Mode 5 with no operable SDC trains since the SDC trains are the primary heat removal method in Mode 5. If two RCS loops and one SDC train are inoperable, a cooldown to Mode 5 will still be required. However, the time to reach Mode 5 will be increased from 20 hours to 24 hours to be consistent with the time requirement to reach Mode 5 contained in most Technical Specifications, including Technical Specification 3.0.3. This 4 hour increase will not result in any significant change to plant operations.

Deleting the phrase "for pump and shutdown cooling loop valves" from SR 4.4.1.3.1 will not change the requirement for a second cooling loop to be operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable.

Deleting SR 4.4.1.3.2 will remove duplicate requirements since the proposed SR 4.4.1.3.1 will now include the requirements of this SR. Subsequent SRs will be renumbered to reflect the deletion of this SR. There will be no technical change to any of these requirements.

Replacing SR terminology to reflect the instrumentation used to verify compliance will eliminate any ambiguity with respect to the proper instrumentation to use. There will be no technical change to the required secondary water volume for steam generator operability.

Adding the amendment number to the bottom of page 3/4 4-1c will not result in any technical change to this specification.

Technical Specification 3.4.1.4

Relocating the Mode 5 requirements currently contained in Technical Specification 3.4.1.3 into this new specification will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 5 requirements when the RCS loops are filled will be retained in this specification. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to require at least one SDC train to be operable and in operation, to allow the second heat removal path to be either the second SDC train, or both steam generators with sufficient secondary water volume to support

natural circulation, and no longer requiring the associated RCPs to be operable will not change the LCO requirement to maintain two flow paths for heat removal, with one train in operation.

Adding a restriction to limit how often the SDC pumps can be secured is a more restrictive change.

Adding two additional notes, one to allow a SDC train to be inoperable for up to 2 hours for surveillance testing, and one to allow both SDC trains to not be in operation when at least one RCP is in operation will not change the requirement to have adequate decay heat removal capability available and in operation.

Changing the action statements to address the situation when no SDC trains are operable will encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable since the proposed specification is only applicable in Mode 5.

Deleting the phrase "for pump and shutdown cooling loop valves" from the proposed SR 4.4.1.4.1 will not change the requirement for a second cooling loop to be operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable.

Deleting SR 4.4.1.3.2 will remove requirements that are no longer applicable since the proposed changes to the LCO no longer address RCP operation.

Replacing SR terminology to reflect the instrumentation used to verify compliance will eliminate any ambiguity with respect to the proper instrumentation to use. There will be no technical change to the required secondary water volume for steam generator operability.

Technical Specification 3.4.1.5

Relocating the Mode 5 requirements currently contained in Technical Specification 3.4.1.3 into this new specification will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 5 requirements when the RCS loops are not filled will be retained in this specification. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to require two SDC trains to be operable and at least one SDC train to be in operation, and no longer taking credit for the RCS loops since the applicability of this specification is limited to when the RCS loops are not filled will not change the LCO requirement to maintain two flow paths for heat

removal, with one train in operation.

Modifying the second footnote (*) such that all SDC pumps can be secured for only 15 minutes instead of 1 hour, and only when switching from one SDC train to the other are more restrictive changes. Adding a limitation to prohibit draining operations that would reduce the RCS volume when switching the operating SDC train is also a more restrictive change.

Adding an additional note to allow a SDC train to be inoperable for up to 2 hours for surveillance testing will not change the requirement to have adequate decay heat removal capability available and in operation.

Changing the action statements to address the situation when no SDC trains are operable will encompass all combinations of inoperable equipment. This will ensure the proper action statement is used by the plant operators to address the situation. In addition, a cooldown to Mode 5 will no longer be required if both SDC trains are inoperable since the proposed specification is only applicable in Mode 5.

Deleting the phrase "for pump and shutdown cooling loop valves" from the proposed SR 4.4.1.5.1 will not change the requirement for a second cooling loop to be operable. The Bases for this specification will be modified to include the component requirements for a SDC train to be considered operable.

Deleting SR 4.4.1.3.2 and 4.4.1.3.3 will remove requirements that are no longer applicable since the proposed LCO no longer addresses RCP or steam generator operation.

Technical Specification 3.4.1.6

Changing the title of this specification, the LCO number, the SR number, and the page number to accommodate the addition of two new Technical Specifications (3.4.1.4 and 3.4.1.5) will not result in any technical change to the requirements of this specification.

Technical Specification 3.9.8.1

Combining the Mode 6 requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2 into this specification which is limited in applicability to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to include a requirement for the operating SDC train to also be operable is a more restrictive change. The LCO will not specify that a second heat removal method be operable since the large volume of water above the reactor vessel flange is capable of providing a sufficient heat sink for core decay heat removal.

Modifying the first footnote to prohibit operations that may reduce the RCS boron concentration when securing SDC flow is appropriate. It is not necessary to restrict the time when SDC flow can be secured to just when performing core alterations in the vicinity of the hot legs. Adequate heat removal is provided by the volume of water in the refueling cavity, and the time restriction of 1 hour per 8 hour period will ensure the RCS temperature increase is not significant.

Adding a third note to allow the SDC pumps to be removed from operation will provide additional operational flexibility to perform work that is currently done during plant heatup after SDC has been removed from service (local leak rate testing of the SDC suction line), and to perform work on the valves located in the common SDC suction line. If the work can be safely performed within a time period established by evaluating plant conditions (e.g., decay heat load), it may be more appropriate to leave the fuel in the reactor vessel, instead of completely defueling the reactor. In addition to the requirement to suspend operations that would reduce RCS boron concentration as specified in the first note, core alterations will not be allowed and containment penetrations must be configured to prevent a release of radioactivity from the containment atmosphere to use this provision. These additional requirements will minimize the potential for a release of radioactivity to the containment due to refueling operations and will ensure that any release of radioactivity to the containment atmosphere will not be released to the outside environment. This provision would only apply when a large volume of water above the reactor vessel flange is available as a heat sink for core decay heat removal. In addition, prior review and approval of the planned evolution by the Plant Operations Review Committee (PORC) will be required before the provisions of this note can be used.

Changing the Mode of Applicability for this specification to Mode 6 with the refueling cavity filled to a water level of at least 23 feet above the reactor vessel flange is a more restrictive change since it will provide additional plant requirements before only one SDC train will be required to be operable and in operation.

Changing the action statements to require the suspension of activities to load irradiated fuel assemblies in the core, instead of requiring the suspension of activities that would increase the reactor decay heat load will not result in a technical change to the action requirements since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core. Expanding the action statements to specify the containment penetrations and

required status will provide additional assurance that the action requirement will be met. It will not change the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere.

Removing the statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will not result in a technical change. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6.

Deleting SR 4.9.8.2 will remove a requirement no longer necessary as a result of the proposed changes to this specification. A second SDC train will no longer be required when at least 23 feet of water has been established above the reactor vessel flange.

Revising the amendment number on page 3/4 9-8a will not result in any technical change to this specification.

Technical Specification 3.9.8.2

Combining the Mode 6 requirements currently contained in Technical Specifications 3.9.8.1 and 3.9.8.2 into this specification which is limited in applicability to Mode 6 when the refueling cavity is not filled to a water level of at least 23 feet above the reactor vessel flange will result in Technical Specifications that are clear, concise, and easier for the plant operators to use. The current Mode 6 requirements when the refueling cavity water level is below 23 feet above the reactor vessel flange will be retained in this specification. This will not result in any technical change to the current requirements, except as specifically noted in the following discussions.

Changing the LCO to include a requirement for one SDC train to be in operation will not result in a technical change since this additional requirement is already required by the current Technical Specification 3.9.8.1. Removing the word "independent" from the LCO will not adversely affect the requirement for two SDC trains to be operable. The level of independence between the SDC trains is a design feature of the SDC System. The Millstone Unit No. 2 FSAR describes the approved level of independence between SDC trains. If the approved level of independence is not maintained, the SDC trains may not be operable.

Deleting the first footnote (*) is appropriate since there are no expected plant operations that would require all SDC flow to be secured before at least 23 feet of water is established above the reactor vessel flange. This is a more restrictive change.

Changing the Mode of Applicability for this specification such that to relax the requirement for two operable SDC trains, the refueling cavity must be filled to a water level of at least 23 feet above the reactor vessel flange is a more restrictive change.

Adding an action requirement to establish $\geq$ 23 feet of water above the reactor vessel flange if one SDC train is inoperable is appropriate since this action would establish plant conditions where this specification will no longer be applicable. Including an additional action to require an immediate suspension of any activity that would reduce the RCS boron concentration if both SDC trains are inoperable, or no SDC train is in operation is appropriate since there may be insufficient RCS flow to ensure proper mixing. Excluding the requirement to suspend activities that would increase the reactor decay heat load is appropriate since the only way to increase the reactor decay heat load is by loading irradiated fuel assemblies in the core, but fuel movement is not allowed unless at least 23 feet of water exists above the reactor vessel flange (Technical Specification 3.9.11, "Refueling Operations - Water Level - Reactor Vessel"). Expanding the action statements to specify the containment penetrations and required status will provide additional assurance that the action requirement will be met. It will not change the requirement to secure the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere.

Removing the statement that the provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2 will not result in a technical change. This statement is not necessary since the shutdown requirements of Technical Specification 3.0.3 do not apply in Modes 5 and 6.

Removing the requirement to verify reactor vessel water level contained in the current SR 4.9.8.2 is appropriate since the verification of reactor vessel water level is no longer necessary with the proposed change to the applicability of this specification.

Expanding the Bases for this specification, and 3.9.8.1, to include a discussion of what constitutes an operable SDC train will provide additional guidance to determine the impact of various degraded conditions on the operability of a SDC train. The Bases change will also specify that the SDC pumps may be aligned to the RWST to support filling the refueling cavity and to perform required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. These alternate lineups, which are necessary to perform normal evolutions and required equipment testing, will not affect the operability of the affected SDC train. In addition, these alternate lineups can be used to satisfy the requirement for a SDC train to be in operation, provided the minimum required SDC flow through the reactor core is maintained.

Technical Specification Bases Changes

The Bases for Technical Specifications 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.4.1.5, 3.4.1.6, 3.9.8.1, and 3.9.8.2 will be modified to be consistent with the proposed changes previously discussed.

The proposed changes will have no adverse effect on plant operation or equipment important to safety. The plant response to the design basis accidents will not change and the accident mitigation equipment will continue to function as assumed in the design basis accident analysis. Therefore, there will be no significant reduction in a margin of safety.

The proposed changes do not alter the design, function, or operation of the equipment involved. The impact of the proposed changes has been analyzed, and it has been determined they do not involve a significant increase in the probability or consequences of an accident previously evaluated, do not create the possibility of a new or different kind of accident from any accident previously evaluated, and do not involve a significant reduction in a margin of safety. Therefore, NNECO has concluded the proposed changes do not involve an SHC.

Docket No. 50-336
B17905

Attachment 3

Millstone Nuclear Power Station, Unit No. 2

Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains
Marked Up Pages

February 2000

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

High Water Level 3/4 9-8
Low Water Level 3/4 9-8a

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals, except as provided in LCO 3.0.6. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour ACTION shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

This specification is not applicable in MODES 5 or 6.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time it is identified that a Limiting Condition for Operation is not met. Exceptions to these requirements are stated in the individual specifications.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Condition for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements.

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied within 2 hours, ACTION shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it, as applicable, in:

COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1 ~~Both~~ Two reactor coolant loops ~~and both reactor coolant pumps in each loop~~ shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2*.

ACTION:

With the requirements of the above specification not met, ~~less than the above required reactor coolant pumps in operation,~~ be in at least HOT STANDBY within ~~1 hour~~ 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.1 The above required reactor coolant loops shall be verified to be in operation ~~and circulating reactor coolant~~ at least once per 12 hours.

* See Special Test Exception 3.10.4.

~~May 19, 1981~~

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 ~~a. The~~ reactor coolant loops ~~listed below~~ shall be OPERABLE:

Two

~~1. Reactor Coolant Loop A and at least one associated reactor coolant pump.~~

~~2. Reactor Coolant Loop B and at least one associated reactor coolant pump.~~ and one reactor coolant loop

~~b. At least one of the above Reactor Coolant loops~~ shall be in operation.

APPLICABILITY: MODE 3

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

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

SURVEILLANCE REQUIREMENTS

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

4.4.1.2.2 ~~At least one cooling~~ loop shall be verified to be in operation ~~and circulating reactor coolant~~ at least once per 12 hours.

One reactor coolant

INSERT A

Move to after LCO and before Applicability

NOTE

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

INSERT A - Page 3/4 4-1a (LCO 3.4.1.2)

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

COOLANT LOOPS AND COOLANT CIRCULATION

SHUTDOWN HOT

LIMITING CONDITION FOR OPERATION

3.4.1.3 a. At least two of the coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop A and its associated steam generator and at least one associated reactor coolant pump,
2. Reactor Coolant Loop B and its associated steam generator and at least one associated reactor coolant pump,
3. Shutdown Cooling Loop A#,
4. Shutdown Cooling Loop B#,

b. At least one of the above coolant loops shall be in operation*.

INSERT B

APPLICABILITY: MODES ~~4** and 5**~~.

ACTION:

a. With less than the above required coolant loops OPERABLE, initiate corrective action to return the required coolant loops to OPERABLE status within one hour; be in COLD SHUTDOWN within 20 hours.

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

INSERT C

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required ~~shutdown cooling loop(s)~~ pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power ~~availability for pump and shutdown cooling loop valves~~ available.

move to after LCO and before Applicability

NOTES

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

* All reactor coolant pumps and shutdown cooling pumps may ~~be deenergized~~ not be in operation for up to 1 hour per 8 hour period provided: ~~(1)~~ no operations are permitted that would cause ~~dilution~~ reduction of the reactor coolant system boron concentration, and ~~(2)~~ core outlet temperature is maintained at least 10°F below saturation temperature.

** The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless: ~~(1)~~ pressurizer water level is < 43.7%; ~~(2)~~ pressurizer pressure is < 340 psia; and ~~(3)~~ secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.

INSERT B - Page 3/4 4-1b (LCO 3.4.1.3)

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

INSERT C - Page 3/4 4-1b (LCO 3.4.1.3)

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

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

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

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

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

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

~~May 19, 1981~~

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

SHUTDOWN HOT

SURVEILLANCE REQUIREMENTS (Continued)

~~4.4.1.3.2~~ The required reactor coolant pump(s), if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

(2) 4.4.1.3.~~2~~ The required steam generator(s) shall be determined OPERABLE ~~if it is being used to meet 3.4.1.3.a,~~ by verifying the secondary side water level to be $\geq$ 10% ~~of span~~ at least once per 12 hours. narrow range

(3) 4.4.1.3.~~4~~ ~~At least one~~ coolant loop shall be verified to be in operation ~~and circulating reactor coolant~~ at least once per 12 hours.

One reactor

or shutdown cooling train

55

~~July 1, 1998~~

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

~~SHUTDOWN~~ COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.~~3~~ (4)

a. At least two of the coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop A and its associated steam generator and at least one associated reactor coolant pump,
2. Reactor Coolant Loop B and its associated steam generator and at least one associated reactor coolant pump,
3. Shutdown Cooling Loop A#,
4. Shutdown Cooling Loop B#,

b. At least one of the above coolant loops shall be in operation*.

INSERT D

APPLICABILITY: ~~MODES 4** and 5**.~~ MODES with Reactor Coolant System loops filled.

ACTION:

a. With less than the above required coolant loops OPERABLE, initiate corrective action to return the required coolant loops to OPERABLE status within one hour; be in COLD SHUTDOWN within 20 hours.

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

INSERT E

SURVEILLANCE REQUIREMENTS

(4) 4.4.1.~~3~~.1 The required shutdown cooling ~~loop(s)~~ (pump), if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power ~~availability for pump and shutdown cooling loop valves~~ (available).

move to after LCO and before Applicability

- - - - NOTES - - - -

1. # The normal or emergency power source may be inoperable in MODE 5. (not be in operation)

2. * All ~~reactor coolant pumps and~~ (a.) shutdown cooling pumps may ~~be deenergized~~ for up to 1 hour (per 8 hour period) provided: ~~(1)~~ no operations are permitted that would cause ~~dilution~~ of the reactor coolant system boron concentration, and (b.) ~~(2)~~ core outlet temperature is maintained at least 10°F below saturation temperature. (reduction) (R) (C) (S) (J)

3. ** The following restrictions apply when starting the (a.) first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless: ~~(1)~~ pressurizer water level is (b.) < 43.7%; ~~(2)~~ pressurizer pressure is < 340 psia; and ~~(3)~~ secondary water temperature in each steam generator is < 50°F above (c.) each RCS cold leg temperature.

INSERT F

INSERT D - Page 3/4 4-1d (LCO 3.4.1.4)

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

a. One additional shutdown cooling train shall be OPERABLE;

OR

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

INSERT E - Page 3/4 4-1d (LCO 3.4.1.4)

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

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

INSERT F - Page 3/4 4-1d (LCO 3.4.1.4)

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

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

~~May 19, 1981~~

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

~~SHUTDOWN~~ COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

SURVEILLANCE REQUIREMENTS (Continued)

~~4.4.1.3.2 The required reactor coolant pump(s), if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.~~

4.2 4.4.1.~~3.3~~ The required steam generator~~(s)~~ shall be determined OPERABLE~~, if it is being used to meet 3.4.1.3.a,~~ by verifying the secondary side water level to be $\geq$ 10% ~~of span~~ at least once per 12 hours. narrow range

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4.3 4.4.1.~~3.4~~ ~~At least one coolant loop and circulating reactor coolant~~ shall be verified to be in operation at least once per 12 hours.

One shutdown cooling train

COOLANT LOOPS AND COOLANT CIRCULATION

~~SHUTDOWN~~ COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.~~2~~ (5)

a. At least two of the coolant loops listed below shall be OPERABLE:

1. Reactor Coolant Loop A and its associated steam generator and at least one associated reactor coolant pump,
2. Reactor Coolant Loop B and its associated steam generator and at least one associated reactor coolant pump,
3. Shutdown Cooling Loop A#,
4. Shutdown Cooling Loop B#,

b. At least one of the above coolant loops shall be in operation*.

INSERT G

APPLICABILITY: ~~MODES 4** and 5**.~~ MODE 5 with Reactor Coolant System loops not filled.

ACTION:

a. With less than the above required coolant loops OPERABLE, initiate corrective action to return the required coolant loops to OPERABLE status within one hour; be in COLD SHUTDOWN within 20 hours.

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

INSERT H

SURVEILLANCE REQUIREMENTS

(5)

4.4.1.~~2~~.1 The required shutdown cooling ~~loop(s)~~ (pump), if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power ~~availability for pump and shutdown cooling loop valves~~ (available).

move to after LCO and before Applicability

- - - - NOTES - - - - -

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

(2.) * All ~~reactor coolant pumps and~~ shutdown cooling pumps (not be in operation) may ~~be deenergized~~ for up to ~~1 hour~~ (15 minutes when switching from one train to another) provided: (a.) ~~(1)~~ no operations are permitted that would cause ~~dilution~~ (reduction) of the reactor coolant system boron concentration, ~~and~~ (b.) ~~(2)~~ core outlet temperature is maintained at least 10°F below saturation temperature. (; and c. no draining operations to further reduce Reactor Coolant System water volume are permitted) (; (c) (5))

(3.) ** The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless: ~~(1)~~ pressurizer water level is < 43.7%; ~~(2)~~ pressurizer pressure is < 340 psia; and ~~(3)~~ secondary water temperature in each steam generator is < 50°F above (a.) each RCS cold leg temperature. (c.) (b.)

INSERT I

No previous amendment number

INSERT G - Page 3/4 4-1f (LCO 3.4.1.5)

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

INSERT H - Page 3/4 4-1f (LCO 3.4.1.5)

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

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

INSERT I - Page 3/4 4-1f (LCO 3.4.1.5)

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

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

~~SHUTDOWN~~ COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

SURVEILLANCE REQUIREMENTS (Continued)

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

4.4.1.3.3 The required steam generator(s) shall be determined OPERABLE, if it is being used to meet 3.4.1.3.a, by verifying the secondary side water level to be > 10% of span at least once per 12 hours.

55

5.2

4.4.1.~~3.4~~ ~~At least one coolant loop~~ shall be verified to be in operation ~~and circulating reactor coolant~~ at least once per 12 hours.

One shutdown cooling train

REACTOR COOLANT SYSTEM

REACTOR COOLANT PUMPS ~~SHUTDOWN~~

SHUTDOWN COLD

LIMITING CONDITION FOR OPERATION

3.4.1.~~4~~ 6 A maximum of two reactor coolant pumps shall be OPERABLE.

APPLICABILITY: MODE 5

ACTION:

With more than two reactor coolant pumps OPERABLE, take immediate action to comply with Specification 3.4.1.~~4~~. 6

SURVEILLANCE REQUIREMENTS

6 4.4.1.~~4~~ Two reactor coolant pumps shall be demonstrated inoperable at least once per 12 hours by verifying that the motor circuit breakers have been disconnected from their electrical power supply circuits.

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION ← - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 ~~At least~~ one shutdown cooling ~~loop~~ train shall be in operation and OPERABLE.

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

ACTION: INSERT J

With less than one shutdown cooling loop in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

3.9.8.2 Two independent shutdown cooling loops shall be OPERABLE**.

APPLICABILITY: MODE 6, whenever all the following conditions are not satisfied:

a. reactor vessel water level at or above the vessel flange; and

b. the reactor vessel pit seal installed; and

c. the combined available volume of water in the refuel pool and refueling water storage tank exceeds 370,000 gallons; and

d. (1) one LPSI pump not in shutdown cooling service and aligned to take suction from the RWST and deliver flow to the RCS is OPERABLE,**; or

(2) one HPSI pump aligned to take suction from the RWST and deliver flow to the RCS is OPERABLE.**

ACTION:

With less than the required shutdown cooling loops OPERABLE, initiate corrective action to return the loop(s) to OPERABLE status within one hour.

The provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2.

---- NOTES ----

(1) * The shutdown cooling ~~loop~~ may ~~be removed from~~ operation for up to 1 hour per 8 hour period ~~during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.~~

(2) ** The normal or emergency power source may be inoperable for ~~each~~ the required shutdown cooling ~~loop~~ train. provided no operations are permitted that would cause a reduction in Reactor Coolant System boron concentration.

INSERT K

Move to after LCO and before Applicability

INSERT J - Page 3/4 9-8 (LCO 3.9.8.1)

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

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

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

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

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

   2. Close at least one personnel air lock door; and

   3. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

      a. Closed with a manual or automatic isolation valve, blind flange, or equivalent, or

      b. Be capable of being closed by an OPERABLE Containment Purge Valve Isolation System.

INSERT K - Page 3/4 9-8 (LCO 3.9.8.1)

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

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

   b. CORE ALTERATIONS are suspended, and

   c. Containment penetrations are in the following status:

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

      2) At least one personnel air lock door is closed; and

      3) Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

         a) Closed with a manual or automatic isolation valve, blind flange, or equivalent, or

         b) Be capable of being closed by an OPERABLE Containment Purge Valve Isolation System.

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

SURVEILLANCE REQUIREMENTS

4.9.8.1 ~~At least~~ one shutdown cooling ~~loop~~ train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm ~~and consistent with decay heat requirements~~ at least once per 12 hours.

4.9.8.2 Once per 7 days, the required shutdown cooling loops, if not in operation, shall be determined OPERABLE by verifying correct breaker alignments and indicated power availability for pump and shutdown cooling valves, or:

Verifying that the reactor vessel water level is at or above the vessel flange, the reactor vessel pit seal is installed, and greater than 370,000 gallons of water is available as a heat sink, as indicated by either:

a. refuel pool level greater than 23 feet above the reactor vessel flange, or

b. the combined volume of the refuel pool and refueling water storage tank exceeds 370,000 gallons and a flow path is available from the refueling water storage tank to the refuel pool.

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION ← - LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling loop shall be in operation*.

APPLICABILITY: MODE 6 at all reactor water levels.

ACTION:

With less than one shutdown cooling loop in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

3.9.8.2 Two ~~independent~~ shutdown cooling ~~loops~~ (trains) shall be OPERABLE**. (and one shutdown cooling train shall be in operation)

APPLICABILITY: MODE 6, ~~whenever all the following conditions are not satisfied:~~ (with the water level ≥ 23 feet above the top of the reactor vessel flange.)

a. reactor vessel water level at or above the vessel flange; and

b. the reactor vessel pit seal installed; and

c. the combined available volume of water in the refuel pool and refueling water storage tank exceeds 370,000 gallons; and

d. (1) one LPSI pump not in shutdown cooling service and aligned to take suction from the RWST and deliver flow to the RCS is OPERABLE,**; or

(2) one HPSI pump aligned to take suction from the RWST and deliver flow to the RCS is OPERABLE.**

ACTION: (INSERT L)

With less than the required shutdown cooling loops OPERABLE, initiate corrective action to return the loop(s) to OPERABLE status within one hour.

The provisions of Specification 3.0.3 are not applicable for 3.9.8.1 and 3.9.8.2.

- - - - NOTE - - - - -

* The shutdown cooling loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

** The normal or emergency power source may be inoperable for each shutdown cooling ~~loop~~ (train).

No amendment numbers

move to after LCO and before Applicability

INSERT L - Page 3/4 9-8b (LCO 3.9.8.2)

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

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

1. Immediately suspend all operations involving a reduction in Reactor Coolant System boron concentration; and

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

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

a) Close the equipment door and secure with at least four bolts; and

b) Close at least one personnel air lock door; and

c) Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1) Closed with a manual or automatic isolation valve, blind flange, or equivalent, or

2) Be capable of being closed by an OPERABLE Containment Purge Valve Isolation System.

~~February 15, 1995~~

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - LOW WATER LEVEL

SURVEILLANCE REQUIREMENTS

4.9.8.1 ~~At least~~ one shutdown cooling ~~loop~~ train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm ~~and consistent with decay heat requirements~~ at least once per 12 hours.

4.9.8.2 ~~Once per 7 days,~~ the required shutdown cooling ~~loops~~ pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power ~~availability for pump and shutdown cooling valves,~~ available. ~~or:~~

Verifying that the reactor vessel water level is at or above the vessel flange, the reactor vessel pit seal is installed, and greater than 370,000 gallons of water is available as a heat sink, as indicated by either:

a. refuel pool level greater than 23 feet above the reactor vessel flange, or

b. the combined volume of the refuel pool and refueling water storage tank exceeds 370,000 gallons and a flow path is available from the refueling water storage tank to the refuel pool.

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

INSERT N

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.17 during all normal operations and anticipated transients.

A single reactor coolant loop with its steam generator filled above 10% of the span provides sufficient heat removal capability for core cooling while in MODES 2 and 3; however, single failure considerations require plant cooldown if component repairs and/or corrective actions cannot be made within the allowable out-of-service time.

In MODES 4 and 5, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires two shutdown cooling loops to be OPERABLE.

The operation of one Reactor Coolant Pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump in MODE 4 with one or more RCS cold legs $\leq$ 275°F and in MODE 5 are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by:

1. Restricting pressurizer water volume to ensure sufficient steam volume is available to accommodate the insurge;

2. Restricting pressurizer pressure to establish an initial pressure that will ensure system pressure does not exceed the limit; and

3. Restricting primary to secondary system delta-T to reduce the energy addition from the secondary system.

If these restrictions are met, the steam bubble in the pressurizer is sufficient to ensure the Appendix G limits will not be exceeded. No credit has been taken for PORV actuation to limit RCS pressure in the analysis of the energy addition transient.

The limitations on pressurizer water level, pressurizer pressure, and primary to secondary delta-T are necessary to ensure the validity of the analysis of the energy addition due to starting an RCP. The values for pressurizer water level and pressure can be obtained from control room indications. The primary to secondary system delta-T can be obtained from Shutdown Cooling (SDC) System outlet temperature and the saturation temperature for indicated steam

INSERT N - Page B 3/4 4-1 (Page 1 of 2)

The plant is designed to operate with both Reactor Coolant System (RCS) loops and associated reactor coolant pumps (RCPs) in operation, and maintain DNBR above 1.17 during all normal operations and anticipated transients. In MODES 1 and 2, both RCS loops and associated RCPs are required to be OPERABLE and in operation.

In MODE 3, a single RCS loop with one RCP and adequate steam generator secondary water inventory provides sufficient heat removal capability. However, both RCS loops with at least one RCP per loop are required to be OPERABLE to provide redundant paths for decay heat removal. In addition, as a minimum, one RCS loop must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

In MODE 4, one RCS loop with one RCP and adequate steam generator secondary water inventory, or one shutdown cooling (SDC) train provides sufficient heat removal capability. However, two loops or trains, consisting of any combination of RCS loops or SDC trains, are required to be OPERABLE to provide redundant paths for decay heat removal. In addition, as a minimum, one RCS loop or SDC train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

In MODES 3 and 4, an OPERABLE RCS loop consists of the RCS loop, associated steam generator, and at least one RCP. The steam generator must have sufficient secondary water inventory for heat removal.

In MODE 5, with the RCS loops filled, the SDC trains are the primary means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for decay heat removal either two SDC trains are required to be OPERABLE, or one SDC train is required to be OPERABLE and both steam generators are required to have adequate steam generator secondary water inventory. In addition, as a minimum, one SDC train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

By maintaining adequate secondary water inventory and makeup capability, the steam generators will be able to support natural circulation in the RCS loops. In addition, the ability to pressurize and control RCS pressure is necessary to support RCS natural circulation. If the pressurizer steam bubble has been collapsed and the RCS has been depressurized or drained sufficiently that voiding of the steam generator U-tubes may have occurred, the RCS loops should be considered not filled unless an evaluation is performed to verify the ability of the RCS to support natural circulation. If the RCS loops are considered not filled, the RCS must be refilled, pressurized, and the RCPs bumped (unless a vacuum fill of the RCS was performed) before the RCS loops can be considered filled.

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In MODE 5, with the RCS loops not filled, the SDC trains are the only means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for decay heat removal, two SDC trains are required to be OPERABLE. In addition, as a minimum, one SDC train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

An OPERABLE SDC train, for plant operation in MODES 4 and 5, includes a pump, heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine RCS temperature. The flow path starts at the RCS hot leg and is returned to the RCS cold legs. An OPERABLE SDC train consists of the following equipment:

1. An OPERABLE SDC pump (low pressure safety injection pump);

2. All valves required to support SDC System flow to and from the RCS are in the required position or are capable of being placed in the required position;

3. The associated SDC heat exchanger from the same facility as the SDC pump;

4. The associated reactor building closed cooling water loop from the same facility as the SDC pump; and

5. The associated service water loop from the same facility as the SDC pump.

3/4.9.6 CRANE OPERABILITY - CONTAINMENT BUILDING

The OPERABILITY requirements of the cranes used for movement of fuel assemblies ensures that: 1) each crane has sufficient load capacity to lift a fuel element, and 2) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel assembly and CEA over irradiated fuel assemblies ensures that no more than the contents of one fuel assembly will be ruptured in the event of a fuel handling accident. Specific analysis has been performed for the drop of a consolidated fuel storage box on an intact fuel assembly. This assumption is consistent with the activity release assumed in the accident analyses.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION (INSERT O)

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

The requirement to have two shutdown cooling loops OPERABLE when the refuel pool is unavailable as a heat sink ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel water level at or above the vessel flange, the reactor vessel pit seal installed, and a combined available volume of water in the refueling pool and refueling water storage tank in excess of 370,000 gallons, a large heat sink is readily available for core cooling. Adequate time is thus available to initiate emergency procedures to provide core cooling in the event of a failure of the operating shutdown cooling loop.

3/4.9.9 and 3/4.9.10 CONTAINMENT RADIATION MONITORING AND CONTAINMENT PURGE VALVE ISOLATION SYSTEM

The OPERABILITY of these systems ensures that the containment purge valves will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of these systems is required to restrict the release of radioactive material from the containment atmosphere to the environment.

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In MODE 6, the shutdown cooling (SDC) trains are the primary means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for decay heat removal either two SDC trains are required to be OPERABLE and one SDC train must be in operation, or one SDC train is required to be OPERABLE and in operation with the refueling cavity water level $\geq$ 23 feet above the reactor vessel flange. This volume of water in the refueling cavity will provide a large heat sink in the event of a failure of the operating SDC train. Any exceptions to these requirements are contained in the LCO Notes.

An OPERABLE SDC train, for plant operation in MODE 6, includes a pump, heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine RCS temperature. The flow path starts at the RCS hot leg and is returned to the RCS cold legs. An OPERABLE SDC train consists of the following equipment:

1. An OPERABLE SDC pump (low pressure safety injection pump);

2. All valves required to support SDC System flow to and from the RCS are in the required position or are capable of being placed in the required position;

3. The associated SDC heat exchanger from the same facility as the SDC pump;

4. The associated reactor building closed cooling water loop from the same facility as the SDC pump; and

5. The associated service water loop from the same facility as the SDC pump.

Either SDC pump may be aligned to the refueling water storage tank (RWST) to support filling the refueling cavity or for performance of required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. These alternate lineups do not affect the OPERABILITY of the SDC train. In addition, these alternate lineups will satisfy the requirement for a SDC train to be in operation if the minimum required SDC flow through the reactor core is maintained.

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

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

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

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

Docket No. 50-336
B17905

Attachment 4

Millstone Nuclear Power Station, Unit No. 2

Proposed Revision to Technical Specifications
Reactor Coolant Loops and Shutdown Cooling Trains
Retyped Pages

February 2000

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals, except as provided in LCO 3.0.6. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour ACTION shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time it is identified that a Limiting Condition for Operation is not met. Exceptions to these requirements are stated in the individual specifications.

This specification is not applicable in MODES 5 or 6.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Condition for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements.

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied within 2 hours, ACTION shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it, as applicable, in:

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1 Two reactor coolant loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2*.

ACTION:

With the requirements of the above specification not met, be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.1 The above required reactor coolant loops shall be verified to be in operation at least once per 12 hours.

* See Special Test Exception 3.10.4.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT STANDBY

LIMITING CONDITION FOR OPERATION

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

NOTE

All reactor coolant pumps may not be in operation for up to 1 hour per 8 hour period provided:

a. no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration; and
b. core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

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

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

SURVEILLANCE REQUIREMENTS

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

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

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

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

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

NOTES

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

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

APPLICABILITY: MODE 4.

ACTION:

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

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

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

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

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

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

SURVEILLANCE REQUIREMENTS

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

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

4.4.1.3.3 One reactor coolant loop or shutdown cooling train shall be verified to be in operation at least once per 12 hours.

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

LIMITING CONDITION FOR OPERATION

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

a. One additional shutdown cooling train shall be OPERABLE;

OR

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

NOTES

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

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

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

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

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

APPLICABILITY: MODE 5 with Reactor Coolant System loops filled.

ACTION:

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

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

SURVEILLANCE REQUIREMENTS

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

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

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

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

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

NOTES

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

2. All shutdown cooling pumps may not be in operation for up to 15 minutes when switching from one train to another provided:
   a. no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration;
   b. core outlet temperature is maintained at least 10°F below saturation temperature; and
   c. no draining operations to further reduce Reactor Coolant System water volume are permitted.

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

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

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

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

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

SURVEILLANCE REQUIREMENTS

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

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

REACTOR COOLANT SYSTEM

REACTOR COOLANT PUMPS

COLD SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.6 A maximum of two reactor coolant pumps shall be OPERABLE.

APPLICABILITY: MODE 5

ACTION:

With more than two reactor coolant pumps OPERABLE, take immediate action to comply with Specification 3.4.1.6.

SURVEILLANCE REQUIREMENTS

4.4.1.6 Two reactor coolant pumps shall be demonstrated inoperable at least once per 12 hours by verifying that the motor circuit breakers have been disconnected from their electrical power supply circuits.

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

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

NOTE

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

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

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

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

   b. CORE ALTERATIONS are suspended, and

   c. Containment penetrations are in the following status:

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

      2) At least one personnel air lock door is closed; and

      3) Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

         a) Closed with a manual or automatic isolation valve, blind flange, or equivalent, or

         b) Be capable of being closed by an OPERABLE Containment Purge Valve Isolation System.

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

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

ACTION:

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

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

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

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

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

   2. Close at least one personnel air lock door; and

   3. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

      a. Closed with a manual or automatic isolation valve, blind flange, or equivalent, or

      b. Be capable of being closed by an OPERABLE Containment Purge Valve Isolation System.

SURVEILLANCE REQUIREMENTS

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

SHUTDOWN COOLING AND COOLANT CIRCULATION - LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

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

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

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

ACTION:

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

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

1. Immediately suspend all operations involving a reduction in Reactor Coolant System boron concentration; and

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

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

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

b) Close at least one personnel air lock door; and

c) Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1) Closed with a manual or automatic isolation valve, blind flange, or equivalent, or

2) Be capable of being closed by an OPERABLE Containment Purge Valve Isolation System.

SURVEILLANCE REQUIREMENTS

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

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

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both Reactor Coolant System (RCS) loops and associated reactor coolant pumps (RCPs) in operation, and maintain DNBR above 1.17 during all normal operations and anticipated transients. In MODES 1 and 2, both RCS loops and associated RCPs are required to be OPERABLE and in operation.

In MODE 3, a single RCS loop with one RCP and adequate steam generator secondary water inventory provides sufficient heat removal capability. However, both RCS loops with at least one RCP per loop are required to be OPERABLE to provide redundant paths for decay heat removal. In addition, as a minimum, one RCS loop must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

In MODE 4, one RCS loop with one RCP and adequate steam generator secondary water inventory, or one shutdown cooling (SDC) train provides sufficient heat removal capability. However, two loops or trains, consisting of any combination of RCS loops or SDC trains, are required to be OPERABLE to provide redundant paths for decay heat removal. In addition, as a minimum, one RCS loop or SDC train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

In MODES 3 and 4, an OPERABLE RCS loop consists of the RCS loop, associated steam generator, and at least one RCP. The steam generator must have sufficient secondary water inventory for heat removal.

In MODE 5, with the RCS loops filled, the SDC trains are the primary means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for decay heat removal either two SDC trains are required to be OPERABLE, or one SDC train is required to be OPERABLE and both steam generators are required to have adequate steam generator secondary water inventory. In addition, as a minimum, one SDC train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

By maintaining adequate secondary water inventory and makeup capability, the steam generators will be able to support natural circulation in the RCS loops. In addition, the ability to pressurize and control RCS pressure is necessary to support RCS natural circulation. If the pressurizer steam bubble has been collapsed and the RCS has been depressurized or drained sufficiently that voiding of the steam generator U-tubes may have occurred, the RCS loops should be considered not filled unless an evaluation is performed to verify the ability of the RCS to support natural circulation. If the RCS loops are considered not filled, the RCS must be refilled, pressurized, and the RCPs bumped (unless a vacuum fill of the RCS was performed) before the RCS loops can be considered filled.

In MODE 5, with the RCS loops not filled, the SDC trains are the only means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for decay heat removal, two SDC trains are required to be OPERABLE. In addition, as a minimum, one SDC

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION (Continued)

train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

An OPERABLE SDC train, for plant operation in MODES 4 and 5, includes a pump, heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine RCS temperature. The flow path starts at the RCS hot leg and is returned to the RCS cold legs. An OPERABLE SDC train consists of the following equipment:

1. An OPERABLE SDC pump (low pressure safety injection pump);

2. All valves required to support SDC System flow to and from the RCS are in the required position or are capable of being placed in the required position;

3. The associated SDC heat exchanger from the same facility as the SDC pump;

4. The associated reactor building closed cooling water loop from the same facility as the SDC pump; and

5. The associated service water loop from the same facility as the SDC pump.

The operation of one Reactor Coolant Pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump in MODE 4 with one or more RCS cold legs $\leq$ 275°F and in MODE 5 are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by:

1. Restricting pressurizer water volume to ensure sufficient steam volume is available to accommodate the insurge;

2. Restricting pressurizer pressure to establish an initial pressure that will ensure system pressure does not exceed the limit; and

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION (continued)

3. Restricting primary to secondary system delta-T to reduce the energy addition from the secondary system.

If these restrictions are met, the steam bubble in the pressurizer is sufficient to ensure the Appendix G limits will not be exceeded. No credit has been taken for PORV actuation to limit RCS pressure in the analysis of the energy addition transient.

The limitations on pressurizer water level, pressurizer pressure, and primary to secondary delta-T are necessary to ensure the validity of the analysis of the energy addition due to starting an RCP. The values for pressurizer water level and pressure can be obtained from control room indications. The primary to secondary system delta-T can be obtained from Shutdown Cooling (SDC) System outlet temperature and the saturation temperature for indicated steam generator pressure. If there is no indicated steam generator pressure, the steam generator shell temperature indicators can be used. If these indications are not available, other appropriate instrumentation can be used.

The RCP starting criteria values for pressurizer water level, pressurizer pressure, and primary to secondary delta-T contained in Technical Specification 3.4.1.3 have not been adjusted for instrument uncertainty. The values for these parameters contained in the procedures that will be used to start an RCP have been adjusted to compensate for instrument uncertainty.

The value of RCS cold leg temperature ($\leq$ 275 °F) used to determine if the RCP start criteria applies, will be obtained from SDC return temperature if SDC is in service. If SDC is not in service, or natural circulation is occurring, RCS cold leg temperature will be used.

3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve 296,000 lbs per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

3/4.9.6 CRANE OPERABILITY - CONTAINMENT BUILDING

The OPERABILITY requirements of the cranes used for movement of fuel assemblies ensures that: 1) each crane has sufficient load capacity to lift a fuel element, and 2) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel assembly and CEA over irradiated fuel assemblies ensures that no more than the contents of one fuel assembly will be ruptured in the event of a fuel handling accident. Specific analysis has been performed for the drop of a consolidated fuel storage box on an intact fuel assembly. This assumption is consistent with the activity release assumed in the accident analyses.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

In MODE 6, the shutdown cooling (SDC) trains are the primary means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for decay heat removal either two SDC trains are required to be OPERABLE and one SDC train must be in operation, or one SDC train is required to be OPERABLE and in operation with the refueling cavity water level must be $\geq$ 23 feet above the reactor vessel flange. This volume of water in the refueling cavity will provide a large heat sink in the event of a failure of the operating SDC train. Any exceptions to these requirements are contained in the LCO Notes.

An OPERABLE SDC train, for plant operation in MODE 6, includes a pump, heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine RCS temperature. The flow path starts at the RCS hot leg and is returned to the RCS cold legs. An OPERABLE SDC train consists of the following equipment.

1. An OPERABLE SDC pump (low pressure safety injection pump);
2. All valves required to support SDC System flow to and from the RCS are in the required position or are capable of being placed in the required position;
3. The associated SDC heat exchanger from the same facility as the SDC pump;
4. The associated reactor building closed cooling water loop from the same facility as the SDC pump; and
5. The associated service water loop from the same facility as the SDC pump.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION (Continued)

Either SDC pump may be aligned to the refueling water storage tank (RWST) to support filling the refueling cavity or for performance of required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. These alternate lineups do not affect the OPERABILITY of the SDC train. In addition, these alternate lineups will satisfy the requirement for a SDC train to be in operation if the minimum required SDC flow through the reactor core is maintained.

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

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

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

3/4.9.9 and 3/4.9.10 CONTAINMENT RADIATION MONITORING AND CONTAINMENT PURGE VALVE ISOLATION SYSTEM

The OPERABILITY of these systems ensures that the containment purge valves will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of these systems is required to restrict the release of radioactive material from the containment atmosphere to the environment.

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

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