



Nebraska Public Power District

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50.90

NLS2003066
August 25, 2003

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

Subject: License Amendment Request to Revise Technical Specification 3.5.1 to Incorporate TS Task Force (TSTF) 318 for One Low Pressure Coolant Injection (LPCI) Pump Inoperable in Each of the Two Emergency Core Cooling Systems (ECCS) Divisions.
Cooper Nuclear Station, Docket 50-298, DPR-46

Reference: TSTF-318, Revision 1, "Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions."

The purpose of this letter is for the Nebraska Public Power District (NPPD) to request an amendment to Facility Operating License DPR-46 in accordance with the provisions of 10 CFR 50.4 and 10 CFR 50.90 to revise the Cooper Nuclear Station (CNS) Technical Specifications (TS). The current TS 3.5.1 Condition A provides for a seven-day Limiting Condition for Operation for one inoperable LPCI subsystem. The proposed amendment would modify TS Limiting Condition for Operation (LCO) requirement 3.5.1 for condition A to allow one Low Pressure Coolant Injection (LPCI) Pump inoperable in both LPCI subsystems for a period of seven days. The current TS actions require entry into shutdown LCO 3.0.3 for this condition. This change will also revise Conditions D, F, and H to be consistent with and reflect the change to condition A. The proposed addition to condition A with one LPCI pump inoperable in both subsystems, reflects an enhanced reliability of at least one LPCI pump being available for post-LOCA injection. Additionally, during an event that does not impact LPCI availability and requires LPCI injection, one pump in each LPCI subsystem provides more injection flow than two pumps in a single subsystem. The proposed change is consistent with the Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-318, Revision 1, "Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions."

NPPD requests NRC approval of the proposed TS change and issue of the requested license amendment by March 31, 2004. Once approved, the amendment will be implemented within 60 days.

ADD1

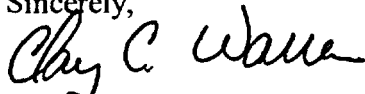
Attachment 1 provides a description of the TS change, the basis for the amendment, the no significant hazards consideration evaluation pursuant to 10 CFR 50.91(a)(1), and the environmental impact evaluation pursuant to 10 CFR 51.22. Attachment 2 provides the proposed changes to the current CNS TS and Bases (provided for information) on marked up pages. Attachment 3 provides the revised TS and Bases pages in final typed format.

This proposed TS change has been reviewed by the necessary safety review committees (Station Operations Review Committee and Safety Review and Audit Board). Amendments to the CNS Facility Operating License through Amendment 200 issued July 15, 2003, have been incorporated into this request. NPPD has concluded that the proposed change does not involve a significant hazards consideration and that it satisfies the categorical exclusion criterion of 10 CFR 51.22(c)(9). This request is submitted under oath pursuant to 10 CFR 50.30(b).

By copy of this letter and its attachments, the appropriate State of Nebraska official is notified in accordance with 10 CFR 50.91(b)(1). Copies to the NRC Region IV office and the CNS Resident Inspector are also being provided in accordance with 10 CFR 50.4(b)(1).

Should you have any questions concerning this matter, please contact Mr. Paul Fleming at (402) 825-2774.

Sincerely,



Clay C. Warren

Vice President - Nuclear and
Chief Nuclear Officer

/rar

Attachments

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cc: Regional Administrator w/ attachments
USNRC - Region IV

Senior Project Manager w/ attachments
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ attachments
USNRC

Nebraska Health and Human Services w/ attachments
Department of Regulation and Licensure

NPG Distribution w/o attachments

Records w/ attachments

NPPD's Evaluation

- 1.0 Introduction**
- 2.0 Description of Proposed Amendment**
- 3.0 Background**
- 4.0 Technical Analysis**
- 5.0 Regulatory Analysis**
 - 5.1 No Significant Hazards Consideration (NSHC)**
 - 5.2 Regulatory Requirements and Guidance**
- 6.0 Environmental Consideration**
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**LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION (TS)
3.5.1 TO INCORPORATE TS TASK FORCE (TSTF) 318 FOR ONE LOW PRESSURE
COOLANT INJECTION (LPCI) PUMP INOPERABLE IN EACH OF THE TWO
EMERGENCY CORE COOLING SYSTEMS (ECCS) DIVISIONS.**

Cooper Nuclear Station, NRC Docket 50-298, DPR-46

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1.0 Introduction

This letter is a request to amend Operating License (OL) DPR-46 for Cooper Nuclear Station (CNS).

The current Technical Specification (TS) 3.5.1 Condition A action statement provides required actions to be taken for two Low Pressure Coolant Injection (LPCI) pumps inoperable in a single LPCI subsystem. The proposed change would add the provision to requirement TS 3.5.1 for Condition A to allow one LPCI pump inoperable in both LPCI subsystems for a period of seven days.

2.0 Description of Proposed Amendment

This proposed change will revise condition A of TS 3.5.1 to allow one LPCI pump inoperable in both LPCI subsystems for a period of seven days. The proposed change is consistent with the Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-318, Revision 1, "Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions." (Reference 2). In addition, the proposed change is consistent with NUREG-1433, Volume 1, Revision 2.

The Technical Specification Bases for TS 3.5.1 will be revised to provide supporting and clarifying information for the condition of one LPCI pump in both LPCI subsystems being inoperable at the same time for a period of seven days.

3.0 Background

The Updated Safety Analysis Report Section VI-1.1 states that the safety objective of the Emergency Core Cooling Systems (ECCS), in conjunction with the primary and secondary containment, is to limit the release of radioactive materials to the environs following a Loss of Coolant Accident (LOCA), so that off-site doses will be below the values stated in 10 CFR 100, and Control Room occupant doses are within the limits of General Design Criteria 19.

ECCS are designed to limit fuel clad temperatures over the complete spectrum of possible break sizes in the reactor coolant pressure boundary including the design basis break. The LPCI subsystems provide protection to the core for the case of a large break in the reactor coolant pressure boundary when level cannot be maintained and the reactor vessel rapidly depressurizes. Protection extends to a small break in which High Pressure Coolant Injection is unable to maintain the reactor water level and the Automatic Depressurization System has operated to lower reactor vessel pressure.

4.0 Technical Analysis

The Design Basis of the ECCS are not affected by the proposed change to the TS 3.5.1 Condition A. The standard Boiling Water Reactor LPCI designs consist of two LPCI pumps in each of two LPCI (ECCS injection) subsystems, for a total of four LPCI pumps. The CNS design includes this standard LPCI configuration.

The current TS 3.5.1 Condition A provides for a seven-day Limiting Condition for Operation for one inoperable LPCI subsystem. The TS change provides for revising condition A to also allow for the inoperability of one LPCI pump in each LPCI subsystem for seven days. The current TS actions require entry into shutdown LCO 3.0.3 for this condition. The proposed addition to Condition A reflects an enhanced reliability of at least one LPCI pump being available for post-LOCA injection. With one subsystem inoperable the LOCA can eliminate the availability of the remaining subsystem for injection; while a LOCA during operations with only one LPCI pump in each ECCS division will only remove the availability of one of the two remaining LPCI pumps. Additionally, during an event that does not impact LPCI availability and requires LPCI injection, one pump in each LPCI subsystem provides 400 gpm more injection flow than two pumps in a single subsystem.

Thus, allowing one LPCI pump inoperable in both subsystems for a period of seven days will not affect the ability of the LPCI subsystem components to perform their design function. This TS change represents a more reliable LPCI configuration than allowed by the current TS, the same seven-day Completion Time is justified.

TS amendments to revise TS 3.5.1, for one LPCI pump inoperable in each of the two ECCS divisions, have been approved by the NRC staff for Browns Ferry, Susquehanna, and Peach Bottom.

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

10 CFR 50.91(a)(1) requires that licensee requests for operating license amendments be accompanied by an evaluation of significant hazard posed by issuance of an amendment. Nebraska Public Power District (NPPD) has evaluated this proposed amendment with respect to the criteria given in 10 CFR 50.92 (c).

The proposed change to the Cooper Nuclear Station (CNS) Technical Specifications (TS) would add to Condition A of TS 3.5.1 a provision to allow one Low Pressure Coolant Injection (LPCI) pump inoperable in each subsystem for a period of seven days. This change is consistent with NUREG-1433, Volume 1, Revision 2, and the Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-318, Revision 1, Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions.”

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

The proposed change does not affect the LPCI subsystem design or function. The change to TS 3.5.1 Condition A with one LPCI pump inoperable in both subsystems is more reliable than the current configuration allowed by Condition A. The current TS actions require entry into shutdown LCO 3.0.3 for this condition. In addition, for an event that does not impact LPCI availability the change provides for more injection flow than the current TS 3.5.1 Condition A LPCI pump configuration. Review of Updated Safety Analysis Report Section XIV-6.0 "Analysis of Design Basis Accidents" confirms that the LPCI mode of the Residual Heat Removal system is not assumed to be the initiator of any previously analyzed event.

Based on the above, NPPD concludes that the proposed TS change to TS 3.5.1 condition A does not significantly increase the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change does not involve a physical change to the plant, add any new equipment or require any existing equipment to be operated in a manner different from the present system design.

Based on the above, NPPD concludes that the proposed TS change to TS 3.5.1 condition A does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Do the proposed changes involve a significant reduction in the margin of safety?

The proposed TS change will not reduce the margin of safety. The proposed configuration of one LPCI pump in each LPCI subsystem represents a more reliable configuration. The current TS actions require entry into shutdown LCO 3.0.3 for this condition. In addition, for an event that does not impact LPCI availability the change provides for more injection flow than the current Limiting Condition for Operation requirement which only allows two LPCI pumps in one ECCS subsystem to be inoperable for seven days.

Based on the above NPPD concludes that the proposed TS change to TS 3.5.1 condition A does not involve a significant reduction in the margin of safety.

From the above discussions, NPPD concludes that the proposed amendment involves no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Regulatory Requirements and Guidance

ECCS are designed to limit fuel clad temperatures over the complete spectrum of possible break sizes in the reactor coolant pressure boundary including the design basis break. The LPCI subsystems provide protection to the core for the case of a large break in the reactor coolant pressure boundary when level cannot be maintained and the reactor vessel rapidly depressurizes. Protection extends to a small break in which High Pressure Coolant Injection is unable to maintain the reactor water level and the Automatic Depressurization System has operated to lower reactor vessel pressure.

The LPCI subsystem injection flow enters the reactor through the associated recirculation loop. The proposed TS change provides a more reliable configuration in that with one LPCI subsystem inoperable (current TS condition),

the LOCA can eliminate the remaining subsystem for injection. In addition, for an event that does not impact LPCI availability the proposed TS change provides for more injection flow. USAR Table V1-5-4 documents that two LPCI pumps injecting into one recirculation loop provides 13500 gpm flow, and two LPCI pumps injecting into two recirculation loops provides 13900 gpm flow.

The proposed change to condition A with one LPCI pump inoperable in both subsystems, reflects an enhanced reliability of at least one LPCI pump being available or post-LOCA injection. This change is consistent with NUREG-1433, Volume 1, Revision 2, and TSTF-318, Revision 1, "Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions."

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

6.0 Environmental Consideration

10 CFR 51.22(b) allows that an environmental assessment (EA) or an environmental impact statement (EIS) is not required for any action included in the list of categorical exclusions in 10 CFR 51.22(c). 10 CFR 51.22(c)(9) identifies an amendment to an operating license which changes a requirement with respect to installation or use of a facility component located within the restricted area, or which changes an inspection or a surveillance requirement, as a categorical exclusion if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration, (2) result in a significant change in the types or significant increase in the amount of any effluents that may be released off-site, or (3) result in an increase in individual or cumulative occupational radiation exposure.

NPPD has reviewed the proposed license amendment and concludes that it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(c), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the proposed license changes. The basis for this determination is as follows:

1. The proposed license amendment does not involve significant hazards as described previously in the No Significant Hazards Consideration Evaluation.
2. This proposed change does not result in a significant change in the types or significant increase in the amounts of any effluents that may be released off-site. The proposed license amendment does not introduce any new equipment, nor does

it require any existing equipment or systems to perform a different type of function than they are presently designed to perform. NPPD has concluded that there will not be a significant increase in the types or amounts of any effluents that may be released off-site and these changes do not involve irreversible environmental consequences beyond those already associated with normal operation.

3. This change does not adversely affect plant systems or operation and therefore, does not significantly increase individual or cumulative occupational radiation exposure beyond that already associated with normal operation.

7.0 References

1. TSTF-318, Rev. 0, "Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions."
2. TSTF-318, Rev. 1, "Revise 3.5.1 to include in Condition A, one LPCI loop inoperable in each of the two ECCS divisions."
3. USAR VI-1.1, - Emergency Core Cooling Systems
4. NUREG-1433, Standard Technical Specifications General Electric Plants, BWR/4, Revision 2, June 2001
5. USAR XIV-6.0, - Analysis of Design Basis Accidents

ATTACHMENT 2
**PROPOSED TECHNICAL SPECIFICATIONS
AND ASSOCIATED BASES REVISIONS
MARKUP FORMAT**

**COOPER NUCLEAR STATION
NRC DOCKET 50-298, LICENSE DPR-46**

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TS Bases Pages

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Note: Bases are provided for information. Following approval of the proposed TS change, Bases changes will be implemented in accordance with TS 5.5.10, Technical Specification (TS) Bases Control Program.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS — Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1, MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure \leq 150 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One low pressure ECCS injection/spray subsystem inoperable.</p> <p><i>OR</i> <i>one LPCI pump in both LPCI subsystems inoperable</i></p>	<p>A.1 Restore low pressure ECCS injection/spray subsystem to OPERABLE status. (S)</p>	7 days
<p>B. Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1 Be in MODE 3.</p>	12 hours
	<p>AND</p> <p>B.2 Be in MODE 4.</p>	36 hours
<p>C. HPCI System inoperable.</p>	<p>C.1 Verify by administrative means RCIC System is OPERABLE.</p>	1 hour
	<p>AND</p> <p>C.2 Restore HPCI System to OPERABLE status.</p>	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. HPCI System inoperable.</p> <p><u>AND</u></p> <p>One low pressure ECCS injection/spray subsystem is inoperable.</p> <p><i>Condition A entered</i></p>	<p>D.1 Restore HPCI System to OPERABLE status.</p> <p><u>OR</u></p> <p>D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.</p>	<p>72 hours</p> <p>72 hours</p>
<p>E. One ADS valve inoperable.</p>	<p>E.1 Restore ADS valve to OPERABLE status.</p>	<p>14 days</p>
<p>F. One ADS valve inoperable.</p> <p><u>AND</u></p> <p>One low pressure ECCS injection/spray subsystem inoperable.</p> <p><i>Condition A entered</i></p>	<p>F.1 Restore ADS valve to OPERABLE status.</p> <p><u>OR</u></p> <p>F.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.</p>	<p>72 hours</p> <p>72 hours</p>
<p>G. Required Action and associated Completion Time of Condition C, D, E, or F not met.</p> <p><u>OR</u></p> <p>Two or more ADS valves inoperable.</p>	<p>G.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>G.2 Reduce reactor steam dome pressure to ≤ 150 psig.</p>	<p>12 hours</p> <p>36 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. Two or more low pressure ECCS injection/spray subsystems inoperable</p> <p>OR</p> <p>HPCI System and one or more ADS valves inoperable.</p>	<p>H.1 Enter LCO 3.0.3.</p> <p><i>for reasons other than condition A.</i></p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.1 Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.</p>	<p>31 days</p>

(continued)

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

e. Adequate long term cooling capability is maintained.

The limiting single failures are discussed in Reference 9. For large or small break LOCA, failure of a DC power source is considered the most severe failure. Credit is taken for 5 of 6 ADS valves. The remaining OPERABLE ECCS subsystems provide the capability to adequately cool the core and prevent excessive fuel damage.

The ECCS satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 10).

LCO

Each ECCS injection/spray subsystem and six ADS valves are required to be OPERABLE. The ECCS injection/spray subsystems are defined as the two CS subsystems, the two LPCI subsystems, and one HPCI System. The low pressure ECCS injection/spray subsystems are defined as the two CS subsystems and the two LPCI subsystems.

With less than the required number of ECCS subsystems OPERABLE, the potential exists that during a limiting design basis LOCA concurrent with the worst case single failure, the limits specified in Reference 8 could be exceeded. All ECCS subsystems must therefore be OPERABLE to satisfy the single failure criterion required by Reference 8.

Two pumps are required for an OPERABLE LPCI subsystem. LPCI subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the actual RHR cut in permissive pressure in MODE 3, if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. Alignment and operation for decay heat removal includes when the required RHR pump is not operating or when the system is realigned from or to the RHR shutdown cooling mode. At these low pressures and decay heat levels, a reduced complement of ECCS subsystems should provide the required core cooling, thereby allowing operation of RHR shutdown cooling when necessary.

However, continued operation is permitted for a period of seven days with one pump inoperable in both subsystems

(continued)

BASES (continued)

APPLICABILITY All ECCS subsystems are required to be OPERABLE during MODES 1, 2, and 3, when there is considerable energy in the reactor core and core cooling would be required to prevent fuel damage in the event of a break in the primary system piping. In MODES 2 and 3, when reactor steam dome pressure is \leq 150 psig, ADS and HPCI are not required to be OPERABLE because the low pressure ECCS subsystems can provide sufficient flow below this pressure. ECCS requirements for MODES 4 and 5 are specified in LCO 3.5.2, "ECCS - Shutdown."

ACTIONS

A.1

or if one LPCI pump in both LPCI subsystems is inoperable

If any one low pressure ECCS injection/spray subsystem is inoperable, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this condition, the remaining OPERABLE subsystems provide adequate core cooling during a LOCA. However, overall ECCS reliability is reduced, because a single failure in one of the remaining OPERABLE subsystems, concurrent with a LOCA, may result in the ECCS not being able to perform its intended safety function. The 7 day Completion Time is consistent with the recommendations provided in a reliability study (Ref. 11) that evaluated the impact on ECCS availability, assuming various components and subsystems were taken out of service. The results were used to calculate the average availability of ECCS equipment needed to mitigate the consequences of a LOCA as a function of allowed Completion Times.

(5)

B.1 and B.2

If the inoperable low pressure ECCS subsystem cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS
(continued)C.1 and C.2

If the HPCI System is inoperable and the RCIC System is verified to be OPERABLE, the HPCI System must be restored to OPERABLE status within 14 days. In this condition, adequate core cooling is ensured by the OPERABILITY of the redundant and diverse low pressure ECCS injection/spray subsystems in conjunction with ADS. Also, the RCIC System will automatically provide makeup water at most reactor operating pressures. Verification of RCIC OPERABILITY within 1 hour is therefore required when HPCI is inoperable. This may be performed as an administrative check by examining logs or other information, to determine if RCIC is out of service for maintenance or other reasons. It does not mean to perform the Surveillances needed to demonstrate the OPERABILITY of the RCIC System. If the OPERABILITY of the RCIC System cannot be verified, however, Condition G must be immediately entered. If a single active component fails concurrent with a design basis LOCA, there is a potential, depending on the specific failure, that the minimum required ECCS equipment will not be available. A 14 day Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

D.1 and D.2

, or one LPCI pump in both LPCI subsystems,

If any one low pressure ECCS injection/spray subsystem is inoperable in addition to an inoperable HPCI System, the inoperable low pressure ECCS injection/spray subsystem or the HPCI System must be restored to OPERABLE status within 72 hours. In this condition, adequate core cooling is ensured by the OPERABILITY of the ADS and the remaining low pressure ECCS subsystems. However, the overall ECCS reliability is significantly reduced because a single failure in one of the remaining OPERABLE subsystems concurrent with a design basis LOCA may result in the ECCS not being able to perform its intended safety function. Since both a high pressure system (HPCI) and a low pressure subsystem are inoperable, a more restrictive Completion Time

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

of 72 hours is required to restore either the HPCI System or the low pressure ECCS injection/spray subsystem to OPERABLE status. This Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

E.1

The LCO requires six ADS valves to be OPERABLE in order to provide the ADS function. Reference 9 contains the results of an analysis that evaluated the effect of one ADS valve being out of service. This analysis shows that, assuming a failure of the HPCI System, operation of only five ADS valves will provide the required depressurization. However, overall reliability of the ADS is reduced, because a single failure in the OPERABLE ADS valves could result in a reduction in depressurization capability. Therefore, operation is only allowed for a limited time. The 14 day Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

F.1 and F.2

, or one LPCI pump in both LPCI subsystems,

If any one low pressure ECCS injection/spray subsystem is inoperable in addition to one ADS valve inoperable, adequate core cooling is ensured by the OPERABILITY of HPCI and the remaining low pressure ECCS injection/spray subsystem. However, overall ECCS reliability is reduced because a single active component failure concurrent with a design basis LOCA could result in the minimum required ECCS equipment not being available. Since both a high pressure system (ADS) and a low pressure subsystem are inoperable, a more restrictive Completion Time of 72 hours is required to restore either the low pressure ECCS subsystem or the ADS valve to OPERABLE status. This Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

(continued)

ATTACHMENT 3

**PROPOSED TECHNICAL SPECIFICATIONS
AND ASSOCIATED BASES REVISIONS
FINAL TYPED FORMAT**

**COOPER NUCLEAR STATION
NRC DOCKET 50-298, LICENSE DPR-46**

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TS Bases Pages

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Note: Bases are provided for information. Following approval of the proposed TS change, Bases changes will be implemented in accordance with TS 5.5.10, Technical Specification (TS) Bases Control Program.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS - Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure \leq 150 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable. <u>OR</u> One LPCI pump in both LPCI subsystems inoperable	A.1 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	12 hours
	<u>AND</u> B.2 Be in MODE 4.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. HPCI System inoperable.	C.1 Verify by administrative means RCIC System is OPERABLE. <u>AND</u> C.2 Restore HPCI System to OPERABLE status.	1 hour 14 days
(continued)		
D. HPCI System inoperable. <u>AND</u> Condition A entered	D.1 Restore HPCI System to OPERABLE status. <u>OR</u> D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours 72 hours
E. One ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days
F. One ADS valve inoperable. <u>AND</u> Condition A entered	F.1 Restore ADS valve to OPERABLE status. <u>OR</u> F.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours 72 hours

ACTIONS	CONDITION (continued)	REQUIRED ACTION	COMPLETION TIME
G.	Required Action and associated Completion Time of Condition C, D, E, or F not met. <u>OR</u> Two or more ADS valves inoperable.	G.1 Be in MODE 3. <u>AND</u> G.2 Reduce reactor steam dome pressure to ≤ 150 psig.	12 hours 36 hours

(continued)

H.	Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A. <u>OR</u> HPCI System and one or more ADS valves inoperable.	H.1 Enter LCO 3.0.3.	Immediately
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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days

(continued)

BASES

OPERABLE ECCS subsystems provide the capability to adequately cool the core and prevent excessive fuel damage.

The ECCS satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 10).

LCO

Each ECCS injection/spray subsystem and six ADS valves are required to be OPERABLE. The ECCS injection/spray subsystems are defined as the two CS subsystems, the two LPCI subsystems, and one HPCI System. The low pressure ECCS injection/spray subsystems are defined as the two CS subsystems and the two LPCI subsystems.

With less than the required number of ECCS subsystems OPERABLE, the potential exists that during a limiting design basis LOCA concurrent with the worst case single failure, the limits specified in Reference 8 could be exceeded. All ECCS subsystems must therefore be OPERABLE to satisfy the single failure criterion required by Reference 8.

Two pumps are required for an OPERABLE LPCI subsystem. However, continued operation is permitted for a period of seven days with one pump inoperable in both subsystems. LPCI subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the actual RHR cut in permissive pressure in MODE 3, if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. Alignment and operation for decay heat removal includes when the required RHR pump is not operating or when the system is realigned from or to the RHR shutdown cooling mode. At these low pressures and decay heat levels, a reduced complement of ECCS subsystems should provide the required core cooling, thereby allowing operation of RHR shutdown cooling when necessary.

(continued)

BASES (continued)

APPLICABILITY All ECCS subsystems are required to be OPERABLE during MODES 1, 2, and 3, when there is considerable energy in the reactor core and core cooling would be required to prevent fuel damage in the event of a break in the primary system piping. In MODES 2 and 3, when reactor steam dome pressure is ≤ 150 psig, ADS and HPCI are not required to be OPERABLE because the low pressure ECCS subsystems can provide sufficient flow below this pressure. ECCS requirements for MODES 4 and 5 are specified in LCO 3.5.2, "ECCS — Shutdown."

ACTIONS

A.1

If any one low pressure ECCS injection/spray subsystem is inoperable, or if one LPCI pump in both LPCI subsystems is inoperable, the inoperable subsystem(s) must be restored to OPERABLE status within 7 days. In this condition, the remaining OPERABLE subsystems provide adequate core cooling during a LOCA. However, overall ECCS reliability is reduced, because a single failure in one of the remaining OPERABLE subsystems, concurrent with a LOCA, may result in the ECCS not being able to perform its intended safety function. The 7 day Completion Time is consistent with the recommendations provided in a reliability study (Ref. 11) that evaluated the impact on ECCS availability, assuming various components and subsystems were taken out of service. The results were used to calculate the average availability of ECCS equipment needed to mitigate the consequences of a LOCA as a function of allowed Completion Times.

B.1 and B.2

If the inoperable low pressure ECCS subsystem cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS
(continued)C.1 and C.2

If the HPCI System is inoperable and the RCIC System is verified to be OPERABLE, the HPCI System must be restored to OPERABLE status within 14 days. In this condition, adequate core cooling is ensured by the OPERABILITY of the redundant and diverse low pressure ECCS injection/spray subsystems in conjunction with ADS. Also, the RCIC System will automatically provide makeup water at most reactor operating pressures. Verification of RCIC OPERABILITY within 1 hour is therefore required when HPCI is inoperable. This may be performed as an administrative check by examining logs or other information, to determine if RCIC is out of service for maintenance or other reasons. It does not mean to perform the Surveillances needed to demonstrate the OPERABILITY of the RCIC System. If the OPERABILITY of the RCIC System cannot be verified, however, Condition G must be immediately entered. If a single active component fails concurrent with a design basis LOCA, there is a potential, depending on the specific failure, that the minimum required ECCS equipment will not be available. A 14 day Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

D.1 and D.2

If any one low pressure ECCS injection/spray subsystem, or one LPCI pump in both LPCI subsystems, is inoperable in addition to an inoperable HPCI System, the inoperable low pressure ECCS injection/spray subsystem or the HPCI System must be restored to OPERABLE status within 72 hours. In this condition, adequate core cooling is ensured by the OPERABILITY of the ADS and the remaining low pressure ECCS subsystems. However, the overall ECCS reliability is significantly reduced because a single failure in one of the remaining OPERABLE subsystems concurrent with a design basis LOCA may result in the ECCS not being able to perform its intended safety function. Since both a high pressure system (HPCI) and a low pressure subsystem are inoperable, a more restrictive Completion Time

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

of 72 hours is required to restore either the HPCI System or the low pressure ECCS injection/spray subsystem to OPERABLE status. This Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

E.1

The LCO requires six ADS valves to be OPERABLE in order to provide the ADS function. Reference 9 contains the results of an analysis that evaluated the effect of one ADS valve being out of service. This analysis shows that, assuming a failure of the HPCI System, operation of only five ADS valves will provide the required depressurization. However, overall reliability of the ADS is reduced, because a single failure in the OPERABLE ADS valves could result in a reduction in depressurization capability. Therefore, operation is only allowed for a limited time. The 14 day Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

F.1 and F.2

If any one low pressure ECCS injection/spray subsystem, or one LPCI pump in both LPCI subsystems, is inoperable in addition to one ADS valve inoperable, adequate core cooling is ensured by the OPERABILITY of HPCI and the remaining low pressure ECCS injection/spray subsystem. However, overall ECCS reliability is reduced because a single active component failure concurrent with a design basis LOCA could result in the minimum required ECCS equipment not being available. Since both a high pressure system (ADS) and a low pressure subsystem are inoperable, a more restrictive Completion Time of 72 hours is required to restore either the low pressure ECCS subsystem or the ADS valve to OPERABLE status. This Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 11 and has been found to be acceptable through operating experience.

(continued)

