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June 1, 2004
L-04-074

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

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
License Amendment Request Nos. 326 and 177

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) requests an amendment to the above licenses in the form of changes to the Beaver Valley Power Station (BVPS) Technical Specifications. The proposed Technical Specification changes are categorized as follows.

1) Those necessitated by the Unit No. 2 Surveillance Capsule W Overpressure Protection System (OPPS) Analysis.

2) Those proposed to incorporate an allowance, for both units, consistent with the Standard Technical Specifications (STS) for Westinghouse Plants, to have one residual heat removal (RHR) loop inoperable for surveillance testing.

3) Those proposed to achieve consistency between the two BVPS unit's Technical Specifications. These proposed changes also improve consistency with the STS and incorporate relevant NRC approved Technical Specification Task Force (TSTF) changes.

4) Administrative changes.

The primary initiator of the changes being proposed is the lowering of BVPS Unit No. 2 OPPS enable temperature from 350°F to 240°F. The enable temperature has been determined in accordance with the NRC approved methodology specified in BVPS Unit No. 2 Technical Specification 6.9.6.b. The Unit No. 2 OPPS analysis updates the OPPS setpoints to reflect the Unit No. 2 Surveillance Capsule W evaluation. The pressure-temperature (P/T) limit curves and the OPPS setpoints are contained in the Pressure and Temperature Limits Report (PTLR), which is a section of the Licensing Requirements Manual (LRM). The BVPS Licensing Document Control Program controls the review, approval and implementation of LRM/PTLR changes. Changes to the LRM/PTLR are

controlled by the 10 CFR 50.59 safety evaluation process and do not require NRC approval. However, the 10 CFR 50.59 safety evaluation of the Capsule W OPPS Analysis and corresponding LRM/PTLR changes indicated that Technical Specification changes are required before the LRM/PTLR can be revised to incorporate an OPPS enable temperature of 240°F for BVPS Unit 2.

The License Amendment Request contains four attachments. The proposed Technical Specification changes are provided in Attachments A-1 and A-2 for Unit Nos. 1 and 2, respectively. The changes proposed to the Technical Specification Bases are provided in Attachments B-1 and B-2 for Unit Nos. 1 and 2, respectively. The Technical Specification Bases changes are provided for information only. The LRM/PTLR changes are not included with this submittal but will be provided to the NRC upon issuance, as required by BVPS Unit No. 2 Technical Specification 6.9.6.c.

The proposed changes have been reviewed by the Beaver Valley Power Station review committees. The changes were determined to be safe and do not involve a significant hazard consideration as defined in 10 CFR 50.92 based on the attached safety analysis and no significant hazard evaluation.

FENOC requests approval of the proposed amendments by February 15, 2005, to support revision of the existing BVPS Unit No. 2 P/T limit curves prior to their expiration at 14 Effective Full Power Years which is estimated to occur in mid-March 2005. Once approved, the amendments shall be implemented within 30 days.

No new commitments are contained in this submittal. If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement at 724-682-5284.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 1, 2004.

Sincerely,

L. William Pearce

Attachments:
A-1 Unit 1 Proposed Technical Specification Changes
A-2 Unit 2 Proposed Technical Specification Changes
B-1 Unit 1 Proposed Technical Specification Bases Changes
B-2 Unit 2 Proposed Technical Specification Bases Changes

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, NRC Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

ENCLOSURE
FENOC Evaluation of the Proposed Changes

Beaver Valley Power Station
License Amendment Requests
326 (Unit 1) And 177 (Unit 2)

Subject: Unit 2 Capsule W Overpressure Protection System Analysis Related Technical Specification Changes.

Table of Contents

Attachments

1.0 DESCRIPTION

This is a request to amend Operating Licenses DPR-66 (Beaver Valley Power Station Unit No. 1) and NPF-73 (Beaver Valley Power Station Unit No. 2). The Beaver Valley Power Station (BVPS) Technical Specification (TS) changes proposed in these License Amendment Requests (LAR) can be categorized as follows:

1) those necessitated by the Unit 2 Surveillance Capsule W Overpressure Protection System (OPPS) Analysis (Reference 1) which lowers the OPPS Unit 2 enable temperature;

2) those proposed to incorporate an allowance, for both units, consistent with the Standard Technical Specifications (STS) for Westinghouse Plants (Reference 2), to have one residual heat removal (RHR) loop inoperable for surveillance testing;

3) those proposed to achieve consistency between the two BVPS unit's Technical Specifications. These proposed changes also improve consistency with the STS and incorporate some Industry/Technical Specification Task Force (TSTF) changes; and

4) an administrative change that removes the TS List of Figures and List of Tables from the Unit 1 Technical Specifications.

It is noted that some of the TS attached markups incorporate changes proposed in a pending submittal, i.e., Unit 1 LAR 321 and Unit 2 LAR 193 (Reference 3). These LARs incorporate the changes contained in TSTF-359, "Increased Flexibility in Mode Restraints." The changes proposed in LARs 321 and 193 are identified by their enclosure in a rectangular box. The changes proposed in LARs 321 and 193 are being provided for information since their approval is expected prior to the approval of the changes proposed in this submittal.

2.0 PROPOSED CHANGES

The primary initiator for the changes being proposed is the completion of the Unit 2 Surveillance Capsule W OPPS Analysis. This analysis updates the OPPS setpoints to reflect the Unit 2 Surveillance Capsule W evaluation. The pressure-temperature (P/T) limit curves and the OPPS setpoints are contained in the Pressure and Temperature Limits Report (PTLR), which is a section of the

Licensing Requirements Manual (LRM). The BVPS Licensing Document Control Program controls the review, approval and implementation of LRM changes. Changes to the LRM are controlled by the 10 CFR 50.59 process and do not require NRC approval. Therefore, the LRM changes are not included with this submittal but will be provided to the NRC, as per Technical Specification 6.9.6.c, upon issuance. However, the 10 CFR 50.59 evaluation of the Capsule W OPPS Analysis and corresponding LRM changes, indicated that TS changes are required before the LRM can be revised.

The proposed Technical Specification changes, which are submitted for NRC review and approval, are provided in Attachments A-1 and A-2 for Unit Nos. 1 and 2 respectively.

The changes proposed to the TS Bases are provided in Attachments B-1 and B-2 for Unit Nos. 1 and 2 respectively. The proposed TS Bases changes do not require NRC approval. The BVPS TS Bases Control Program controls the review, approval and implementation of TS Bases changes. The TS Bases changes are provided for information only.

The proposed changes to the Technical Specifications and Technical Specification Bases have been prepared electronically. Deletions are shown with a strike-through and insertions are shown double-underlined. This presentation allows the reviewer to readily identify the information that has been deleted and added.

To meet format requirements the applicable Indices, Technical Specifications and Technical Specification Bases pages will be revised and repaginated as necessary to reflect the changes being proposed in this submittal.

2.1 Summary of the Proposed Changes

The primary initiator of the changes being proposed in this submittal is the lowering of the Unit 2 OPPS enable temperature from 350°F to 240°F. The enable temperature has been determined in accordance with the NRC approved methodology specified in Technical Specification 6.9.6.b. When the Unit 2 OPPS enable temperature was 350°F, it was appropriate for the applicability of TS 3.4.3, "Safety Valves", to be "MODES 1, 2 and 3, With all RCS cold leg temperatures > the enable temperature specified in the PTLR", since the OPPS enable temperature extended into Mode 3. The new Unit 2 OPPS enable temperature of 240°F is well within Mode 4. Therefore the applicability's of TS 3.4.3, "Reactor Coolant System – Safety Valves", and 3.4.9.3, "Reactor Coolant System – Overpressure

Protection Systems", must mesh to provide complete overpressure protection of the RCS. This is Change Number 1.

A number of the Unit 2 TS contain notes that were applicable when the Unit 2 OPPS enable temperature was at the Mode 3 boundary, i.e., 350°F. The Capsule W OPPS analysis has established an OPPS enable temperature of 240°F for Unit 2. Since this temperature does not extend into Mode 3 these notes can be deleted or modified, such that a single note in TS 3.5.2 is sufficient to address charging pump operability limitations when transitioning into and out of the OPPS applicability. These changes are Change Numbers 2, 3, 5 and 6.

The Unit 2 Capsule W OPPS analysis assumed and verified that the RCP starting restriction (checking the secondary water temperature) is necessary when starting only the first pump because thermal equilibrium is achieved shortly after the first pump is started. This change is Change Number 4.

This submittal also proposes changes that are not related to the Unit 2 Capsule W OPPS analysis. These are Change Numbers 7, 8, 9, 10, 11 and 12.

2.2 Details of the Proposed Changes

Changes are being proposed to the following Technical Specifications. The TS Bases are appropriately changed to reflect the proposed changes.

Affected Technical Specifications			
Unit 1	**Unit 2**	**Title**	**Change**
Index	N/A	List of Tables and List of Figures	12
3.4.1.2	3.4.1.2	Reactor Coolant System – Hot Standby	2 & 5
3.4.1.3	3.4.1.3	Reactor Coolant System – Shutdown	4, 5, 10 & 11
N/A	3.4.3	Reactor Coolant System – Safety Valves	1
N/A	3.4.9.3	Reactor Coolant System – Overpressure Protection Systems	3
3.5.2	3.5.2	ECCS Subsystems - $T_{avg} \geq 350°F$	6
3.5.3	3.5.3	ECCS Subsystems - $T_{avg} < 350°F$	7, 8 & 9

Change Number 1

This change consists of a modification to TS 3.4.3, "Reactor Coolant System – Safety Valves", for Unit 2 only. The change consists of adding Mode 4 to the applicability of the TS. This change is required to support the Capsule W OPPS Analysis. This change is the primary initiator for the LAR because, although the 10 CFR 50.59 process could change the value of OPPS enable temperature, the new lower value requires a change to the applicability of this TS.

Basis for Change Number 1

The modification to this TS is made so that its applicability meshes with the applicability of TS 3.4.9.3, "Reactor Coolant System – Overpressure Protection Systems." When the Unit 2 OPPS enable temperature was 350°F, it was appropriate for the applicability of TS 3.4.3 to be "MODES 1, 2 and 3, With all RCS cold leg temperatures > the enable temperature specified in the PTLR", since the OPPS enable temperature extended into Mode 3. The new Unit 2 OPPS enable temperature of 240°F is well within Mode 4 and the applicability of TS 3.4.3 and 3.4.9.3 must mesh to completely cover overpressure protection of the reactor coolant system (RCS). The change is also consistent with the STS.

Change Number 2

This change consists of a modification to TS 3.4.1.2, "Reactor Coolant System – Hot Standby", for Unit 2 only. Currently the Unit 2 TS contains a note, designated as "#", that imposes restrictions on starting a reactor coolant pump (RCP) in a non-isolated loop. The proposed change is to delete the note. This change is required to support the Capsule W OPPS Analysis. The change is applicable to only the Unit 2 TS, since the note does not appear in the Unit 1 TS.

Basis for Change Number 2

The note designated as "#" may be deleted from the Unit 2 TS because it was applicable when the Unit 2 OPPS enable temperature was 350°F. With an OPPS enable temperature of 350°F, the RCP starting restriction extended into Mode 3, the applicability of Unit 2 TS 3.4.1.2. The new Unit 2 OPPS enable temperature is 240°F, well below the Mode 3 boundary temperature; thus, the RCP starting restriction does not extend into the applicability of Unit 2 TS 3.4.1.2 and Note "#" is no longer needed. The necessary RCP starting restriction appears as a note in TS 3.4.1.3 for Modes 4 and 5 for both units.

Change Number 3

This change consists of modifications to TS 3.4.9.3, "Reactor Coolant System – Overpressure Protection Systems", for Unit 2 only where Note 1 is modified in two ways. The first modification consists of changing the time allowed for charging pump swapping from 15 minutes to 1 hour. The second modification consists of deleting the discussion of charging pump injection capability during Mode transitioning.

It is noted that the markup for Unit 2 indicates that LAR 193 has proposed a change to this TS. The change proposed in LAR 193 is enclosed in a rectangle. The LAR 193 change consists of adding a note that prohibits the use of Specification 3.0.4.b when entering the applicability of TS 3.4.9.3. As noted earlier, LAR 193 proposes changes contained in TSTF-359. The change that is proposed in this submittal does not affect the change that is proposed by LAR 193.

Basis for Change Number 3

The 15 minute swap time is consistent with a time estimate made for the charging pump swap being performed by two qualified operations personnel. The time estimate starts with an open, racked out pump breaker on one pump and ends with an open, racked out, and properly surveilled pump breaker on the other pump. Experience has shown 15 minutes to be overly burdensome and potentially adverse to safely and deliberately completing the pump swap actions. One hour is a more appropriate time period for these actions. This change is consistent with TSTF-285, "Charging Pump Swap LTOP Allowance" (Reference 4) and the Unit 1 version of TS 3.4.9.3, which allows up to one hour for pump swapping. The Unit 1 version of TS 3.4.9.3 is included for information.

Deletion of the discussion of charging pump injection capability during mode transitioning is due to the new OPPS enable temperature being below the Mode 3 boundary instead of the existing OPPS enable temperature of 350°F, which is at the Mode 3 boundary. Restrictions on charging pump injection capabilities are provided in Note 1 of TS 3.5.2, "ECCS Subsystems - $T_{avg} \geq 350°F$", which is discussed in Change Number 6. See Change Number 6 for a discussion of the relationship between the changes proposed in Change Numbers 3 and 6.

Adoption of the proposed change will provide consistency within the BVPS TS, improve consistency with the STS, incorporate TSTF-285, and will not change the intent of the TS or eliminate any requirements.

Change Number 4

This change consists of a modification to Note "#" of TS 3.4.1.3, "Reactor Coolant System – Shutdown", for Unit 2 only. The modification to the note consists of stating that the RCP starting restriction applies only to the first pump. This change is consistent with the Unit 2 Capsule W OPPS Analysis.

Basis for Change Number 4

The modification to Note "#" for Unit 2 reflects the Capsule W OPPS analysis and is consistent with the Unit 1 version of the TS. The analysis demonstrates that reactor coolant system/steam generator fluid mixing occurs such that thermal equilibrium temperature would be established within three-minutes following the start of the first RCP on a design basis heat injection transient. Therefore, if the second and third pumps would not be started until after the three-minute window has passed; there is no need to check the temperatures of the RCS and the steam generators prior to starting the second and third RCPs. The three-minute window is not in jeopardy of being violated when starting an RCP because plant procedures control the start of an RCP. The RCP startup procedure states that only one RCP may be started at a time. In addition there are associated physical and administrative restraints (running the oil lift pump, establishing the proper seal differential pressure, and performance verifications) whose duration exceeds three minutes. These restraints prohibit starting RCPs immediately after one another. Experience has shown that nearly 30 minutes may expire between pump starts.

Change Number 5

This change consists of modifications to TS 3.4.1.2, "Reactor Coolant System – Hot Standby", for both units. Each unit's version of TS 3.4.1.2 contains a note, designated as "*", that is being modified to be consistent with the STS and with TSTF-438, "Clarify Exception Notes to be Consistent with the Requirement Being Excepted" (Reference 5). This modification: provides clarification that the subject pumps may be removed from operation instead of being de-energized; imposes a 8 hour period during which the exception in the note may be applied; provides references to the Shutdown Margin TS; and deletes the sentence discussing natural

circulation under abnormal cooldown conditions. This change is also made to Note "***" of TS 3.4.1.3, "Reactor Coolant System – Shutdown", for both units.

Basis for Change Number 5

All of the modifications to the identified notes are being made to achieve greater consistency with the STS and with TSTF-438. The modifications are consistent with the wording in the STS. The revision imposes a more restrictive requirement in that the pumps may be removed from operation for less than or equal to 1 hour per 8 hours. The limit of an 8 hour period is the more restrictive requirement being added by incorporating the STS wording. The deletion of the sentence discussing natural circulation is acceptable because abnormal cooldown conditions are not specifically addressed or precluded by TS, and because it is consistent with the STS. None of these modifications change the intent of the TS or the Bases.

Change Number 6

This change consists of modifications to TS 3.5.2, "ECCS Subsystems - $T_{avg} \geq$ 350°F", for both units. The modifications consist of revising Note 1 to reflect the wording of the STS for Unit 2, and adding the revised note to Unit 1.

It is noted that the markup for Unit 2 TS 3.5.2 indicates that LAR 193 has proposed a change to this TS. The changes proposed in LAR 193 are enclosed in rectangles. The LAR 193 changes consist of modifying the charging pump note to reflect the wording of the STS, changing the callout to the note and renumbering the two notes. This LAR further modifies Note 1. Addition of the revised note to the Unit 1 version of TS 3.5.2 is done to achieve consistency between the two units and the STS.

Basis for Change Number 6

The changes to Note 1 are made to achieve consistency with the STS and to address charging pump injection capability when transitioning into and out of the OPPS applicability. Since the new Unit 2 OPPS and the existing Unit 1 enable temperatures are both less than 350°F, the proposed note allows time for an orderly transition into and out of the OPPS applicability. The modifications to this note are consistent with the modifications made to Note 1 of Unit 2 TS 3.4.9.3 discussed in Change Number 3. Changing the TS referenced within the note is necessary because of Change Number 7, where Surveillance Requirement 4.5.3.2

is deleted from the TS for each unit. None of these modifications change the intent of the TS or the Bases.

Change Numbers 3 and 6 address the number of charging pumps that may be capable of injecting into the RCS when transitioning between Modes 3 and 4. In Change Number 3 the existing statement that all charging pumps may be capable of RCS injection for a limited time period when changing from Mode 3 to Mode 4 is being deleted. The statement being deleted provides an allowance to be outside of the requirement of TS 3.4.9.3 and the OPPS analysis (a maximum of one charging pump capable of RCS injection) for a limited period of time so that the requirement of TS 3.5.2 (two charging pumps capable of RCS injection) would be met when transitioning from Mode 3 to Mode 4. With the existing TS 3.4.9.3 statement, for limited period of time there would be more charging pumps capable of RCS injection than is assumed in the OPPS analysis.

In Change Number 6 the Note being modified provides an allowance to be outside of the Applicability of TS 3.5.2 (two charging pumps capable of RCS injection) for a limited period of time when in Mode 3. With the existing TS 3.5.2 statement, for specified period of time, the number of charging pumps capable of RCS injection would be consistent with the number assumed in the OPPS analysis, but less than required by TS 3.5.2 (two charging pumps capable of RCS injection).

With Change Numbers 3 and 6, the number of charging pumps capable of RCS injection when transitioning between Modes 3 and 4 is controlled by only one TS, namely 3.5.2, and it is assured that the number of charging pumps capable of RCS injection is limited, for the specified period of time, to no more than what is assumed in the OPPS analysis. This is acceptable in Mode 3 due to the limited time that only one charging pump is capable of injecting into the RCS and the fact that having only one charging capable of RCS injection meets the design basis accident safety analysis assumptions. The new Note proposed for TS 3.5.2 is to support the applicability of TS 3.4.9.3, i.e., a maximum of one charging pump capable of RCS injection. The Note does not permit having zero charging pumps capable of RCS injection when in the applicability of TS 3.5.2. Thus the changes being proposed in Change Numbers 3 and 6 provide a single TS location, i.e., TS 3.5.2, for charging pump RCS injection capability restrictions and greater assurance that the number of charging pumps capable of RCS injection will be consistent with the assumptions of the OPPS analysis.

Change Number 7

This change consists of modifications to TS 3.5.3, "ECCS Subsystems - T_{avg} < 350°F", for both units. The modification consists of deleting Surveillance Requirement 4.5.3.2 from the TS for both units.

It is noted that the markup for TS 3.5.3 indicates that LAR 321 and 193 have proposed a change to these TS. The changes proposed in LAR 321 and 193 are enclosed in a rectangle. The LAR 321 and 193 changes consist of adding a note that prohibits the use of Specification 3.0.4.b when entering the applicability of TS 3.5.3. As noted earlier LARs 321 and 193 propose changes contained in TSTF-359. The change that is proposed in this submittal does not affect the change that is proposed by LAR 321 or 193.

Basis for Change Number 7

Deletion of the Surveillance Requirement for both units is acceptable because the requirement to perform the same surveillance is specified in Specification 4.4.9.3.1.a for both units. Specification 4.4.9.3.1.a for both units is included for information. Therefore Surveillance Requirement 4.5.3.2 is redundant and unnecessary to assure plant safety. The Surveillance Requirement being deleted, i.e., 4.5.3.2, is to verify that all charging pumps, except the one required to be operable to meet Specification 3.5.3, are inoperable when in the OPPS applicability.

Deletion of Surveillance Requirement 4.5.3.2 will provide consistency within the BVPS TS, improve consistency with the STS, and will not change the intent of the TS or eliminate any requirements.

Change Number 8

This change consists of a modification to TS 3.5.3, "ECCS Subsystems - T_{avg} < 350°F", for Unit 1 only. The modification consists of deleting Note "#' which is associated with the operability of a centrifugal charging pump.

Basis for Change Number 8

Deletion of the Unit 1 note, designated as "#", is acceptable because this note repeats the requirements of TS 3.4.9.3, "Reactor Coolant System – Overpressure Protection Systems." Both the note and TS 3.4.9.3 state that a maximum of one

centrifugal charging pump is operable when any RCS cold leg temperature is less than or equal to the enable temperature. This note does not appear in the Unit 2 version of TS 3.5.3. This note was added to the Unit 1 TS by License Amendment 96 (Reference 6) which also added Surveillance Requirement 4.5.3.2. These additions were made to limit the number of operable charging pumps when the RCS temperature is less than or equal to the OPPS enable temperature. However, as stated above, and in the basis for Change Number 7, these requirements are contained elsewhere in the BVPS TS.

Deletion of the identified note will provide consistency within the BVPS TS, improve consistency with the STS, and will not change the intent of the TS or eliminate any requirements.

Change Number 9

This change consists of a modification to TS 3.5.3, "ECCS Subsystems - T_{avg} < 350°F", for Unit 2 only. The modification consists of deleting Note "**' which is associated with Surveillance Requirement 4.5.3.2. Surveillance Requirement 4.5.3.2 is deleted by Change Number 7.

Basis for Change Number 9

Deletion of the Unit 2 note, designated as "**", is acceptable because this note specifies one of the ways in which charging pumps can be demonstrated incapable of RCS injection. It is not necessary for this type of information to appear in the TS. There are others acceptable methods available to demonstrate that a charging pump is incapable of RCS injection and the appropriate discussion of these methods has been added to the TS Bases for both units. Locating this information in the Bases is consistent with the STS. This note does not appear in the Unit 1 version of TS 3.5.3.

Deletion of the identified note will provide consistency within the BVPS TS, improve consistency with the STS, and will not change the intent of the TS or eliminate any requirements.

Change Number 10

This change consists of a modification to TS 3.4.1.3, "Reactor Coolant System – Shutdown", for both units. The proposed modification consists of adding a new

note to the TS for both units. The note being added addresses the time one RHR loop may be inoperable for surveillance testing.

Basis for Change Number 10

The addition of the note is consistent with the STS and applies only in Mode 5 when the two RHR loops are being relied upon to meet the subject TS. Inclusion of the note provides surveillance testing flexibility during these conditions. The justification for this change is provided in the following paragraph.

One of the purposes of TS 3.4.1.3, "Reactor Coolant System – Shutdown", is to assure adequate decay heat removal capability with the plant in Mode 5. The principal means of providing this heat removal capability is via the RHR system. Although flow from one RHR loop is sufficient for heat removal and to prevent boric acid stratification, a second loop is required to meet single failure considerations. The new note being proposed for TS 3.4.1.3 allows one RHR loop to be inoperable, for a period of ≤ 2 hours, in Mode 5 when relying on two RHR loops to meet this TS provided the other RHR loop is operable and in operation. This permits periodic surveillance tests to be performed when the testing results in the required RHR loop being rendered inoperable. The remaining operable RHR loop is adequate to provide the required cooling during the time allowed by the added note. This change is consistent with the STS.

Change Number 11

This change consists of a modification to TS 3.4.1.3, "Reactor Coolant System – Shutdown", for both units. The proposed modifications consist of renumbering and rearranging the notes for both units to the order in which the notes are encountered. The renumbering includes the addition of the note discussed in Change Number 10.

Basis for Change Number 11

Renumbering and rearranging of the notes according to the order in which they are encountered is an editorial change that does not change the intent of the TS or eliminate any requirements.

Change Number 12

This administrative change consists of removing the List of Tables and List of Figures from the Unit 1 TS Index.

Basis for Change Number 12

The BVPS Unit 1 TS Index have a listing of the tables and figures that appear in the Unit 1 TSs. These lists do not appear in the Unit 2 TS or the STS. These lists are not necessary to ensure the safe operation of BVPS Unit 1, or to protect the health and safety of the public and are therefore being removed from the BVPS Unit TS Index. Their removal provides consistency with the Unit 2 TS Index and the STS. This is considered an administrative change.

3.0 BACKGROUND

License Amendments 256 (Unit 1) and 138 (Unit 2), issued on July 15, 2003, created a Pressure and Temperature Limits Report (PTLR) for each of the BVPS units. These amendments relocated the pressure-temperature (P/T) limit curves and the OPPS setpoints to the PTLR. The PTLR is a section of the LRM. The BVPS Unit 2 OPPS analysis has been updated to reflect the Capsule W evaluation. This analysis results in changes to the OPPS setpoints. Although the P/T limit curves and the OPPS setpoints may be changed by the 10 CFR 50.59 process and do not require NRC approval, the new Unit 2 OPPS enable temperature necessitates changes to some Unit 2 TS prior to implementation of the Capsule W analysis. In addition, since the Unit 2 Capsule W analysis was performed with an assumption regarding a restriction on starting a reactor coolant pump (RCP) in a non-isolated loop that is different than the current Unit 2 OPPS analysis, an additional Unit 2 TS change is required.

The proposed changes also include the addition of an allowance for both units, in the form of a note to TS 3.4.1.3, that permits testing of the RHR pumps in Mode 5. This proposed change is not related to the Unit 2 Capsule W OPPS analysis. It is being proposed to provide flexibility, consistent with the STS, such that necessary RHR pump testing can be performed without adversely affecting plant safety.

4.0 TECHNICAL ANALYSIS

The primary initiator of the changes being proposed in this submittal is the lowering of the Unit 2 OPPS enable temperature from 350°F to 240°F. When the Unit 2 OPPS enable temperature was 350°F, it was appropriate for the applicability of TS 3.4.3, "Safety Valves", to be "MODES 1, 2 and 3, With all RCS cold leg temperatures > the enable temperature specified in the PTLR", since the OPPS enable temperature extended into Mode 3. The new Unit 2 OPPS enable temperature of 240°F is well within Mode 4. Overpressure protection of the RCS is provided by the pressurizer code safety valves (TS 3.4.3) when RCS temperature is greater than the OPPS enable temperature and by the power operated relief valves (TS 3.4.9.3) when RCS temperature is equal to or less than the OPPS enable temperature. Therefore the applicability's of TS 3.4.3, "Reactor Coolant System – Safety Valves", and 3.4.9.3, "Reactor Coolant System – Overpressure Protection Systems", must mesh to provide complete overpressure protection of the RCS. Without changing the existing applicability of TS 3.4.3 for Unit 2, there would be a gap between the applicability of TS 3.4.3 and the applicability of TS 3.4.9.3, i.e., from 240°F to the Mode 3 boundary temperature. This change is described and justified in Section 2.0 under Change Number 1.

A number of the Unit 2 TS contain notes that were applicable when the Unit 2 OPPS enable temperature was at the Mode 3 boundary, i.e., 350°F. The Capsule W OPPS analysis has established an OPPS enable temperature of 240°F for Unit 2. Since this temperature does not extend into Mode 3 these notes can be deleted or modified, such that a single note in TS 3.5.2 is sufficient to address charging pump operability limitations when transitioning into and out of the OPPS applicability. These changes are described and justified in Change Numbers 2, 3, 5 and 6.

The existing Unit 1 OPPS analysis assumed and verified that the RCP starting restriction (checking the secondary water temperature) is necessary when starting only the first pump because thermal equilibrium is achieved shortly after the first pump is started. The Unit 2 Capsule W OPPS analysis was conducted with the same assumption and verifies the same conclusion. As a result, the Unit 2 RCP starting restriction note is modified. With this change, the OPPS analysis and the RCP starting restriction note are consistent between the two BVPS units. This change is described and justified in Change Number 4.

As stated previously, this submittal proposes changes that are not related to the Unit 2 Capsule W OPPS analysis. These are Change Numbers 7, 8, 9, 10 11 and 12. These changes have been described and justified in Section 2.0.

5.0 REGULATORY SAFETY ANALYSIS

The Beaver Valley Power Station (BVPS) Technical Specification (TS) changes proposed in these License Amendment Requests can be categorized as follows:

1) those necessitated by the Unit 2 Surveillance Capsule W Overpressure Protection System (OPPS) Analysis, which lowers the OPPS Unit 2 enable temperature;

2) those proposed to incorporate an allowance, for both units, consistent with the Standard Technical Specifications (STS) for Westinghouse Plants, to have one residual heat removal (RHR) loop inoperable for surveillance testing;

3) those proposed to achieve consistency between the two BVPS unit's Technical Specifications. These proposed changes also improve consistency with the STS and incorporate some Industry/Technical Specification Task Force (TSTF) changes; and

4) administrative changes.

The Unit 2 OPPS enable temperature has been determined in accordance with the NRC approved methodology specified in Technical Specification 6.9.6.b. The actual changes to the pressure-temperature (P/T) limit curves and the OPPS setpoints may be made under the 10 CFR 50.59 process and do not require NRC approval since they are contained in the BVPS Pressure and Temperature Limits Report (PTLR), which is a section of the BVPS Licensing Requirement Manual. The BVPS Licensing Document Control Program controls the review, approval and implementation of BVPS Licensing Requirement Manual changes. However, since the Unit 2 Capsule W OPPS analysis lowers the Unit 2 OPPS enable temperature to well within Mode 4, and makes a new input assumption regarding starting a reactor coolant pump in a non-isolated loop, various Unit 2 TS changes that require NRC approval are necessary prior to implementing the results of the Capsule W OPPS analysis.

The proposed changes include the modification and deletion of existing notes that address charging pump operability when entering and exiting the applicability of the OPPS TS, imposing additional restraints on removing reactor coolant pumps and residual heat removal pumps from operation in Modes 4 and 5, increasing the time allowed for charging pump swapping operations, and a modification to an existing note that imposes a restriction on starting a reactor coolant pump in a non-isolated loop.

Lowering the Unit 2 OPPS enable temperature to well within Mode 4 renders various existing Technical Specification notes pertaining to charging pump operability unnecessary and requires that the applicability of Unit 2 Technical Specification 3.4.3, "Reactor Coolant System – Safety Valves", be modified to include Mode 4.

One of the proposed changes submitted for NRC approval is the addition of an allowance, in the form of a note to Technical Specification 3.4.1.3, "Reactor Coolant System – Shutdown", for both units that permits testing of the RHR pumps. This proposed change is not related to the Unit 2 Capsule W OPPS analysis. It is being proposed to provide additional operational flexibility, consistent with the STS, such that necessary RHR pump testing can be performed without adversely affecting plant safety.

Various administrative changes are also included in this submittal. One of these consists of renumbering and reordering the Notes in Technical Specification 3.4.1.2 "Reactor Coolant System – Hot Standby", for both units. This does not change the notes or their application, only the numbering and order in which they appear in the Technical Specification. Another consists of the removal of the List of Tables and List of Figures from the Unit 1 Technical Specifications Index. These lists do not appear in the Unit 2 TS or the STS. These lists are not necessary to ensure the safe operation of BVPS Unit 1, or to protect the health and safety of the public. Therefore, the lists are being removed from the BVPS Unit TS Index. Their removal from the Unit 1 TS Index provides consistency with the Unit 2 TS Index and the STS. The final set of changes consists of removing a surveillance requirement that specifies how a charging pump can be rendered inoperable, and its associated notes, because the requirement in presently contained in the TS. This set of changes eliminates unnecessary duplication within the TS and provides consistency between the unit's TS and with the STS.

5.1 No Significant Hazards Consideration

FirstEnergy Nuclear Operating Company (FENOC) has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No. The modification to the Applicability of TS 3.4.3, Safety Valves, provides alignment with the Applicability of TS 3.4.9.3, Overpressure Protection Systems, such that the TS assure that overpressure protection is specified over all operational modes.

The modification and deletion of Notes associated with RCS injection capability of the charging pumps during Mode transitioning results in a single Note that controls the charging pump restrictions and is consistent with the STS. As a result the charging pump RCS injection capabilities during Mode transitioning restrictions are either not changed or made more restrictive by the proposed changes.

The Unit 2 OPPS analysis documents that the TS imposed primary to secondary temperature restriction on starting each of the RCPs is necessary for only the first RCP because thermal equilibrium of the reactor coolant system (RCS) is achieved shortly after the first pump is started. As a result a RCS heat injection event continues to be precluded.

The change from 15 minutes to 1 hour for charging pump swapping operations will not result in a significant increase in the probability of a low temperature overpressure event because the overall time allowed for pump swapping is short. Although the increase in time permits two charging pumps being capable of RCS injection during the Applicability of the OPPS TS, the hour is very short and permitted only for pump swapping operations. These operations are deliberate actions that are well controlled and accomplished in the shortest time possible.

The addition of a Note associated with the testing of a RHR pump will not result in a significant increase in the probability of an accident during Mode 5 because the RHR pumps are not an accident initiator and will not result in

a significant increase in the consequences of a Mode 5 accident because the required cooling capability will be provided by the RHR train that is required to be in operation during the surveillance test of the inoperable RHR pump.

The additional restrictions imposed on removing the reactor coolant pumps and residual heat removal pumps from operation during Modes 4 and 5 further restrict removing these pumps from operation, thereby providing greater assurance the pumps will be operable when required.

The other changes, i.e., elimination of duplicated TS requirements, renumbering and reordering of various Notes and the deletion of the Unit 2 List of Figures and Tables, are made to improve the consistency between the BVPS TS and with the STS and have no affect on plant operations.

None of the proposed changes are initiators of any accident previously evaluated. Therefore, the probability of an accident previously evaluated is not significantly increased. The consequences of an accident are also not affected by the proposed changes because none of the proposed changes will result in a change in the effluent that may be released offsite, the release duration or the release path.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No. None of the proposed changes involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the operation of plant equipment. Entering into the applicability of a TS, or utilization of the applicable Notes, will not introduce new failure modes or effects and will not, in the absence of other unrelated failures, lead to an accident whose consequences exceed the consequences of accidents previously evaluated.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No. None of the proposed changes impact the existing margin of safety. The proposed changes assure that the affected components and systems are operable or incapable of RCS injection when required, thereby maintaining the existing margin of safety.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, FENOC concludes that the proposed amendments present 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 Applicable Regulatory Requirements/Criteria

A review of 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants" (Reference 7), was conducted to assess the potential impact associated with the proposed changes. The following table lists the criterion potentially impacted by the proposed changes. The review indicated that none of the proposed changes require a modification to the Updated Final Safety Analysis Report (UFSAR) description of BVPS design conformance to the criterion.

General Design Criteria	
14	Reactor coolant pressure boundary.
15	Reactor coolant system design.
31	Fracture prevention of reactor coolant pressure boundary.
34	Residual heat removal.
35	Emergency core cooling.

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

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. FENOC Calculation No. 10080-SP-2RCS-006, Revision 4, "BV-2 LTOPS Setpoint Evaluation Capsule W for 22 EFPY", March 9, 2004.

2. NUREG-1431, "Standard Technical Specifications - Westinghouse Plants", Revision 2, April 2001.

3. FENOC Letter L-04-040, "License Amendment Requests 321 and 193, March 22, 2004.

4. TSTF-285, "Charging Pump Swap LTOP Allowance", Revision 1, approved May 1999.

5. TSTF-438, "Clarify Exception Notes to be Consistent with the Requirement Being Excepted", Revision 0, approved October 2002.

6. NRC Issuance of Amendment letter dated September 6, 1985, Beaver Valley Power Station License Amendment 96 (Unit 1).

7. 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants."

Attachment A-1

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Changes

License Amendment Request No. 326

The following is a list of the affected pages:

XVI
XVII
XIX
3/4 4-2b
3/4 4-2c
3/4 4-27a *
3/4 4-27b *
3/4 5-3
3/4 5-6

* No changes are proposed. The page is included for information only.

TABLE INDEX

Figure Index

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 a. At least two reactor coolant loops and associated steam generators and reactor coolant pumps shall be in operation* when the rod control system is capable of control bank rod withdrawal.

b. At least two reactor coolant loops and associated steam generators and reactor coolant pumps shall be OPERABLE and one reactor coolant loop shall be in operation* when the rod control system is incapable of control bank rod withdrawal.

APPLICABILITY: MODE 3.

ACTION:

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

b. With less than two reactor coolant loops in operation, immediately de-energize all control rod drive mechanisms or align the rod control system so that it is incapable of control bank rod withdrawal.

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

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 With the rod control system capable of rod withdrawal, at least two cooling loops shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

4.4.1.2.2 With the rod control system incapable of rod withdrawal, at least two cooling loops, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.3 With the rod control system incapable of rod withdrawal, at least one cooling loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

---

* All reactor coolant pumps may be ~~de-energized~~ removed from operation for ~~up to~~ ≤ 1 hour per 8 hour period provided: ~~(~~1) no operations are permitted that would cause ~~dilution of~~ introduction into the ~~r~~Reactor ~~c~~Coolant ~~s~~System, coolant with boron concentration less than required to meet the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 for Mode 3; and ~~(~~2) core outlet temperature is maintained at least 10°F below saturation temperature. ~~This does not preclude natural circulation cooldown under abnormal cooldown conditions.~~

REACTOR COOLANT SYSTEM

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 a. At least two of the coolant loops listed below shall be OPERABLE(1):

1. Reactor Coolant Loop (A) and its associated steam generator and reactor coolant pump,#(2)

2. Reactor Coolant Loop (B) and its associated steam generator and reactor coolant pump,#(2)

3. Reactor Coolant Loop (C) and its associated steam generator and reactor coolant pump,#(2)

4. Residual Heat Removal Pump (A) and a heat exchanger,**,(3)

5. Residual Heat Removal Pump (B) and a second heat exchanger.**.(3)

b. At least one of the above coolant loops shall be in operation.***.(4)

APPLICABILITY: Modes 4 AND 5.

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(1) In MODE 5, one RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

**(3) The normal or emergency power source may be inoperable in MODE 5.

***(4) All reactor coolant pumps and Residual Heat Removal pumps may be ~~de-energized~~removed from operation for ~~up to~~ ≤ 1 hour per 8 hour period provided: 1) no operations are permitted that would cause ~~dilution of~~ introduction into the ~~r~~Reactor ~~c~~Coolant ~~s~~System, coolant with boron concentration less than required to meet the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 for Mode 4 or Specification 3.1.1.2 for Mode 5; and 2) core outlet temperature is maintained at least 10°F below saturation temperature. ~~For purposes of this specification, the addition of borated water to the RCS does not constitute dilution of the RCS boron concentration provided the boron concentration of the borated water being added is greater than the minimum required to satisfy the requirements of Specification 3.1.1.1 for Mode 4; or Specification 3.1.1.2 for Mode 5.~~

#(2) The first reactor coolant pump in a non-isolated loop shall not be started with one or more non-isolated RCS cold leg temperatures less than or equal to the enable temperature specified in the PTLR, unless the secondary side water temperature of each steam generator in a non-isolated loop is less than 50°F above each of the non-isolated RCS cold leg temperatures.

No change proposed. Included for information only.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.9.3 An overpressure protection system shall be OPERABLE with a maximum of one charging pump(1) capable of injecting into the RCS and the accumulators isolated(2) and either a or b below:

a. Two power operated relief valves (PORVs) with a nominal maximum lift setting within limits specified in the PTLR, or

b. The RCS depressurized and an RCS vent of greater than or equal to 2.07 square inches.

APPLICABILITY: Mode 4 when any RCS cold leg temperature is less than or equal to an enable temperature specified in the PTLR,
Mode 5,
Mode 6 when the reactor vessel head is on.

ACTION:

a. With two or more charging pumps capable of injecting into the RCS, immediately initiate action to verify a maximum of one charging pump is capable of injecting into the RCS or depressurize and vent the RCS through a 2.07 square inch or larger vent within 12 hours.

b. With an accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the heatup and cooldown curves in the PTLR, isolate the affected accumulator within 1 hour or increase the RCS cold leg temperature above the enable temperature specified in the PTLR within the next 12 hours or depressurize the affected accumulator to less than the maximum RCS pressure for the existing cold leg temperature allowed by the heatup and cooldown curves in the PTLR within the next 12 hours.

---

(1) Two charging pumps may be capable of injecting into the RCS for pump swap operation for less than or equal to 1 hour.

(2) Accumulator isolation with power removed from the discharge isolation valves is only required when the accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the heatup and cooldown curves provided in the PTLR.

No change proposed. Included for information only.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

c. With one PORV inoperable in MODE 4 (when any RCS cold leg temperature is less than or equal to the enable temperature specified in the PTLR), restore the inoperable PORV to OPERABLE status within 7 days or depressurize and vent the RCS through a 2.07 square inch or larger vent within the next 12 hours.

d. With one PORV inoperable in MODES 5 or 6, restore the inoperable PORV to OPERABLE status within 24 hours or depressurize and vent the RCS through a 2.07 square inch or larger vent within the next 12 hours.

e. With two PORVs inoperable, depressurize and vent the RCS through a 2.07 square inch or larger vent within 12 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Verify at least once per 12 hours that:

a. A maximum of one charging pump is capable of injecting into the RCS, and

b. Each accumulator is isolated; however, with the accumulator pressure less than the low temperature overpressure protection setpoint, the accumulator discharge isolation valves may be opened to perform accumulator discharge check valve testing.

4.4.9.3.2 When PORVs are being used for overpressure protection, demonstrate each PORV is OPERABLE by:

a. Verifying each PORV block valve is open for each required PORV at least once per 72 hours, and

b. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required to be OPERABLE and placed in operation after decreasing the RCS cold leg temperature to less than or equal to the enable temperature specified in the PTLR and at least once per 31 days, and

c. Performance of a CHANNEL CALIBRATION on each required PORV actuation channel at least once per 18 months.

3/4.5.2 ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

3.5.2 Two separate and independent ECCS subsystems shall be OPERABLE[(1)] with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE low head safety injection pump, and

c. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted in accordance with 10 CFR 50.4 within 30 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

---

(1) In MODE 3, one of the required centrifugal charging pumps may be made incapable of injecting to support transition into or from the Applicability of Specification 3.4.9.3 for up to 4 hours or until the temperature of all RCS cold legs exceeds the OPPS enable temperature specified in the PTLR plus 25°F, whichever comes first.

This page contains changes proposed by LAR 321.

3/4.5.3 ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,#

b. One OPERABLE Low Head Safety Injection Pump, and

c. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODE 4.

- - - - - - - - - - - - - - - - - GENERAL NOTE - - - - - - - - - - - - - - -

Specification 3.0.4.b is not applicable to ECCS centrifugal charging pumps.

- -

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted in accordance with 10 CFR 50.4 within 30 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

~~4.5.3.2 All charging pumps except the above required OPERABLE pumps, shall be demonstrated inoperable at least once per 12 hours whenever the temperature of one or more of the non-isolated RCS cold legs is ≤ the enable temperature specified in the PTLR by verifying that the control switches are placed in the PULL-TO-LOCK position and tagged.~~

~~# A maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the non-isolated RCS cold legs is ≤ the enable temperature specified in the PTLR.~~

Attachment A-2

Beaver Valley Power Station, Unit No. 2
Proposed Technical Specification Changes

License Amendment Request No. 177

[redacted]

The following is a list of the affected pages:

3/4 4-2
3/4 4-3
3/4 4-9
3/4 4-35
3/4 4-36 *
3/4 5-3
3/4 5-6

* No changes are proposed. The page is included for information only.

LIMITING CONDITION FOR OPERATION

3.4.1.2 a. At least two reactor coolant loops and associated steam generators and reactor coolant pumps# shall be in operation* when the rod control system is capable of control bank rod withdrawal.

b. At least two reactor coolant loops and associated steam generators and reactor coolant pumps# shall be OPERABLE and one reactor coolant loop shall be in operation* when the rod control system is incapable of control bank rod withdrawal.

APPLICABILITY: MODE 3**

ACTION:

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

b. With less than two reactor coolant loops in operation, immediately deenergize all control rod drive mechanisms, or align the rod control system so that it is incapable of control bank rod withdrawal.

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

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* All reactor coolant pumps may be ~~deenergized~~ removed from operation for ~~up to~~ ≤ 1 hour per 8 hour period provided: ~~(~~1) no operations are permitted that would cause ~~dilution of~~ introduction into the Reactor Coolant System, coolant with boron concentration less than required to meet the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 for Mode 3; and ~~(~~2) core outlet temperature is maintained at least 10°F below saturation temperature. ~~This does not preclude natural circulation cooldown under abnormal cooldown conditions.~~

** See Special Test Exception 3.10.4.

~~# No reactor coolant pump in a non-isolated loop shall be started with one or more non-isolated RCS cold leg temperatures less than or equal to the enable temperature specified in the PTLR, unless the secondary side water temperature of each steam generator in a non-isolated loop is less than 50°F above each of the non-isolated RCS cold leg temperatures.~~

REACTOR COOLANT SYSTEM

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 a. At least two of the coolant loops listed below shall be OPERABLE(1).

1. Reactor Coolant Loop (A) and its associated steam generator and reactor coolant pump~~,#~~,(2)

2. Reactor Coolant Loop (B) and its associated steam generator and reactor coolant pump,(2)~~#~~

3. Reactor Coolant Loop (C) and its associated steam generator and reactor coolant pump,(2)~~#~~

4. Residual Heat Removal Pump (A) and the (A) RHR heat exchanger,~~**~~(3)

5. Residual Heat Removal Pump (B) and the (B) RHR heat exchanger.~~**~~(3)

b. At least one of the above coolant loops shall be in operation.~~***~~(4)

APPLICABILITY: MODES 4 and 5.

ACTION:

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

(1) In MODE 5, one RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

~~**~~(3) The normal or emergency power source may be inoperable in MODE 5.

~~***~~(4) All reactor coolant pumps and Residual Heat Removal pumps may be ~~deenergized~~ removed from operation for ~~up to~~ ≤ 1 hour per 8 hour period provided: ~~—~~1) no operations are permitted that would cause ~~dilution of~~ introduction into the Reactor Coolant System, coolant with boron concentration less than required to meet the SHUTDOWN MARGIN requirements of Specification 3.1.1.1

for Mode 4 or Specification 3.1.1.2 for Mode 5;~~,~~ and 2) core outlet temperature is maintained at least 10°F below saturation temperature.

#(2) ~~No~~ The first reactor coolant pump in a non-isolated loop shall not be started with one or more non-isolated RCS cold leg temperatures less than or equal to the enable temperature specified in the PTLR, unless the secondary side water temperature of each steam generator in a non-isolated loop is less than 50°F above each of the non-isolated RCS cold leg temperatures.

3/4.4.3 SAFETY VALVES

LIMITING CONDITION FOR OPERATION

3.4.3 All pressurizer code safety valves shall be OPERABLE with a lift setting* of 2485 psig + 1% - 3%.**

APPLICABILITY: MODES 1, 2, and 3, MODE 4 with all RCS cold leg temperatures > the enable temperature specified in the PTLR.

ACTION:

a. With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes or be in HOT SHUTDOWN with any RCS cold leg temperature ≤ the enable temperature specified in the PTLR and apply RCS overpressure protection requirements in accordance with Specification 3.4.9.3 within 12 hours.

b. After any pressurizer code safety valve lift, as indicated by the safety valve position indicator, involving loop seal or water discharge; be in at least HOT STANDBY within the next 6 hours, and in HOT SHUTDOWN with any RCS cold leg temperature ≤ the enable temperature specified in the PTLR and apply RCS overpressure protection requirements in accordance with Specification 3.4.9.3 within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.3 No additional requirements other than those required by Specification 4.0.5.

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* The lift setting shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

** Within ± 1% following pressurizer code safety valve testing.

This page contains changes proposed by LAR 193.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.9.3 An overpressure protection system shall be OPERABLE with a maximum of one charging pump(1) capable of injecting into the RCS and the accumulators isolated(2) and either a or b below:

a. Two power-operated relief valves (PORVs) with nominal maximum lift settings which vary with the RCS temperature and which do not exceed the limits specified in the PTLR, or

b. The RCS depressurized and an RCS vent of greater than or equal to 3.14 square inches.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is less than or equal to an enable temperature specified in the PTLR, MODE 5, MODE 6 when the reactor vessel head is on.

ACTION:

- - - - - - - - - - - - - - - - GENERAL NOTE - - - - - - - - - - - - - -

Specification 3.0.4.b is not applicable when entering MODE 4 or MODE 5.

- -

a. With two or more charging pumps capable of injecting into the RCS, immediately initiate action to verify a maximum of one charging pump is capable of injecting into the RCS or depressurize and vent the RCS through a 3.14 square inch or larger vent within 12 hours.

b. With an accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the heatup and cooldown curves in the PTLR, isolate the affected accumulator within 1 hour or increase the RCS cold

---

(1) Two charging pumps may be capable of injecting into the RCS for pump swap operation for less than or equal to ~~15 minutes~~1 hour. ~~All charging pumps may be capable of injecting into the RCS for less than or equal to 4 hours immediately following a change from MODE 3 to MODE 4 or prior to the temperature of one or more of the RCS cold legs decreasing below the enable temperature specified in the PTLR minus 25°F, whichever comes first.~~

(2) Accumulator isolation with power removed from the discharge isolation valves is only required when the accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the heatup and cooldown curves provided in the PTLR.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

leg temperature above the enable temperature specified in the PTLR within the next 12 hours or depressurize the affected accumulator to less than the maximum RCS pressure for the existing cold leg temperature allowed by the heatup and cooldown curves in the PTLR within the next 12 hours.

c. With one PORV inoperable in MODE 4 (when any RCS cold leg temperature is less than or equal to the enable temperature specified in the PTLR), restore the inoperable PORV to OPERABLE status within 7 days or depressurize and vent the RCS through a 3.14 square inch or larger vent within the next 12 hours. The provisions of Specification 3.0.4 are not applicable when in this action.

d. With one PORV inoperable in MODES 5 or 6, restore the inoperable PORV to OPERABLE status within 24 hours or depressurize and vent the RCS through a 3.14 square inch or larger vent within the next 12 hours.

e. With two PORVs inoperable, depressurize and vent the RCS through a 3.14 square inch or larger vent within 12 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Verify at least once per 12 hours that:

a. A maximum of one charging pump is capable of injecting into the RCS, and

b. Each accumulator is isolated; however, with the accumulator pressure less than the low temperature overpressure protection setpoint, the accumulator discharge isolation valves may be opened to perform accumulator discharge check valve testing.

4.4.9.3.2 When PORVs are being used for overpressure protection, demonstrate each PORV is OPERABLE by:

a. Verifying each PORV block valve is open for each required PORV at least once per 72 hours, and

This page contains changes proposed by LAR 193.

3/4.5.2 ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

3.5.2 Two separate and independent ECCS subsystems shall be OPERABLE(1) with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE low head safety injection pump,

c. One OPERABLE recirculation spray pump(2) capable of supplying the safety injection flow path during recirculation phase, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted in accordance with 10 CFR 50.4 within 30 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a.1. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operator control circuits disconnected by removal of the plug in the lock out circuit from each circuit:

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(1) In MODE 3, ~~the~~ one of the required centrifugal charging pumps may be ~~inoperable pursuant to~~made incapable of injecting to support transition into or from the Applicability of Specification 3.4.9.3 ~~4.5.3.2 provided the centrifugal charging pumps are restored to OPERABLE status within~~ for up to 4 hours or until the temperature of all RCS cold legs exceeds the OPPS enable temperature specified in the PTLR plus 25°F, whichever comes first.

(2) Recirculation spray pump 2RSS-P21C or 2RSS-P21D.

This page contains changes proposed by LAR 193.

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE Low Head Safety Injection Pump, and

c. One OPERABLE recirculation spray pump* capable of supplying the safety injection flow path during recirculation phase, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODE 4.

ACTION:

- - - - - - - - - - - - - - - - - GENERAL NOTE - - - - - - - - - - - - - - -
Specification 3.0.4.b is not applicable to ECCS centrifugal charging pumps.
- -

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted in accordance with 10 CFR 50.4 within 30 days describing the circumstances of the actuation and the total accumulated actuation cycle to date.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

~~4.5.3.2 All charging pumps, except the above required OPERABLE charging pump, shall be demonstrated inoperable** by verifying that the control switches are placed in the PULL-TO-LOCK position and tagged within 4 hours after entering MODE 4 from MODE 3 prior to the temperature of one or more of the RCS cold legs decreasing below the enable temperature specified in the PTLR minus 25°F, whichever comes first, and at least once per 12 hours thereafter.~~

* Recirculation spray pump 2RSS-P21C or 2RSS-P21D.

~~** An inoperable pump may be energized for testing provided the discharge of the pump has been isolated from the RCS by a closed isolation valve with power removed from the valve operator, or by a manual isolation valve secured in the closed position.~~

Attachment B-1

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Bases Changes

License Amendment Request No. 326

The following is a list of the affected pages:

B-VI
B 3/4 4-1
B 3/4 4-1g
B 3/4 4-10a
B 3/4 4-10e
B 3/4 5-1b

TECHNICAL SPECIFICATION BASES FIGURE INDEX

BASES

3/4.4.1.1, 2, 3 REACTOR COOLANT LOOPS

The plant is designed to operate with all reactor coolant loops in operation and maintain DNBR above the design DNBR limit during all normal operations and anticipated transients. In Modes 1 and 2, with one reactor coolant loop not in operation, THERMAL POWER is restricted to less than or equal to 31 percent of RATED THERMAL POWER until the Overtemperature ΔT trip is reset. Either action ensures that the DNBR will be maintained above the design DNBR limit. A loss of flow in two loops will cause a reactor trip if operating above P-7 (11 percent of RATED THERMAL POWER) while a loss of flow in one loop will cause a reactor trip if operating above P-8 (31 percent of RATED THERMAL POWER).

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, due to the initial conditions assumed in the analysis for the control rod bank withdrawal from a subcritical condition, two operating coolant loops are required to meet the DNB design basis for this Condition II event.

In MODES 4 and 5, a single reactor coolant loop or RHR subsystem 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 RHR loops to be OPERABLE.

Note 1 allows one RHR loop to be inoperable in MODE 5, when relying on two RHR loops to meet the LCO, for a period of $\leq$ 2 hours, provided the other RHR loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed when the testing results in the required RHR loop being rendered inoperable. The remaining OPERABLE RHR loop is adequate to provide the required cooling during the time allowed by Note 1.

The operation of one Reactor Coolant Pump or one RHR 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 reduction will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump with one or more non-isolated RCS cold legs less than or equal to the enable temperature specified in the PTLR 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 restricting starting of the RCPs to when the secondary side water temperature of each steam generator in a non-isolated loop is less than 50°F above each of the non-isolated RCS cold leg temperatures. The secondary side water temperature is to be verified by direct measurements of the fluid

temperature, or contact temperature readings on the steam generator secondary, or blowdown piping after purging of stagnant water within the piping. This shall be determined within 10 minutes prior to starting the first reactor coolant pump.

BASES

3/4.4.2 (This Specification number is not used.)

3/4.4.3 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2735 psig. Each safety valve is designed to relieve 345,000 lbs. per hour of saturated steam at the valve set point.

During shutdown conditions (MODE 4 with any RCS cold leg temperature below the enable temperature specified in 3.4.9.3) RCS overpressure protection is provided by the Overpressure Protection Systems addressed in Specification 3.4.9.3.

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its safety limit of 2735 psig. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss of load assuming no reactor trip until the first Reactor Protective System trip set point is reached (i.e., no credit is taken for a direct reactor trip on the loss of load) and also assuming no operation of the power operated relief valves or steam dump valves.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

HEAT INPUT TYPE TRANSIENTS (Continued)

The following are required during the OPPS MODES to ensure that mass and heat input transients do not occur, which either of the OPPS overpressure protection means cannot handle:

a. ~~Deactivating~~ Rendering all but one OPERABLE charging pump, except during pump swapping operations as addressed in the LCO, incapable of injection;

b. Deactivating the accumulator discharge isolation valves in their closed positions;

c. Deactivating the boron injection tank inlet or outlet isolation valves as specified in LCO 3.5.4.1.2, "Boron Injection Tanks < 350°F"; and

d. Meeting the secondary side water to RCS cold leg temperature difference requirement specified in LCO 3.4.1.3, "Reactor Coolant System - Shutdown."

The analyses demonstrate that either one RCS relief valve or the depressurized RCS and RCS vent can maintain the RCS pressure below the limits when only one charging pump is capable of mass input through the charging line. Thus, the LCO allows only one charging pump OPERABLE during the OPPS MODES. Since neither one RCS relief valve nor the RCS vent can handle a full SI actuation, the LCO also requires that the accumulators are isolated with power removed. In addition LCO 3.5.4.1.2 requires that the SI injection automatic flow path through the boron injection tank isolation valves is isolated and power to the boron injection tank flow path valves is removed.

The isolated accumulators must have their discharge valves closed with power removed. Fracture mechanics analyses established the temperature of OPPS Applicability at the enable temperature specified in the PTLR.

PORV PERFORMANCE

The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below the limit specified in the PTLR. The setpoint is derived by analyses that model the performance of the OPPS assuming the limiting OPPS transient of SI actuation of one charging pump. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing, resulting from signal processing and valve stroke times. The PORV setpoints at or below the derived limit ensures the P/T limits will be met.

BASES (Continued)

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

ACTION (Continued)

time period is very low. If plant operation results in transitioning to MODE 5, the completion time to restore an inoperable PORV may not exceed 7 days as required by this ACTION.

d. The consequences of operational events that will overpressurize the RCS are more severe at lower temperature. Thus, with one of the two RCS relief valves inoperable in MODE 5 or in MODE 6 with the head on, the completion time to restore two valves to OPERABLE status is 24 hours.

The completion time represents a reasonable time to investigate and repair several types of relief valve failures without exposure to a lengthy period with only one OPERABLE RCS relief valve to protect against overpressure events. If a PORV is inoperable when the plant enters MODE 5 from MODE 4, the completion time to restore an inoperable PORV changes to 24 hours but the cumulative inoperable time may not exceed 7 days before taking action to depressurize and vent.

e. The RCS must be depressurized and a vent must be established within 12 hours when both required RCS relief valves are inoperable. The vent must be sized greater than or equal to 2.07 square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

The completion time considers the time required to place the plant in this condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS (SR)

SR 4.4.9.3.1

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, a maximum of one charging pump is ~~OPERABLE~~ verified capable of injecting into the RCS~~with the others verified deactivated with power removed~~ and the accumulator discharge isolation valves are verified closed and locked out.

A charging pump may be rendered incapable of injecting into the RCS by verifying that its control switch is placed in the PULL-TO-LOCK

position and tagged, or by removing the power from the pump by racking out and tagging its breaker, or by isolating the discharge of the pump with a closed valve that is tagged. A charging pump rendered incapable of injecting into the RCS may be energized for testing provided the discharge of the pump has been isolated from the RCS as described above.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

the analysis assumes the pump delivers different flows at different times during accident mitigation. These multiple points are represented by a curve. The values at various flow points are defined by the Minimum Operating Point (MOP) curve in the Inservice Testing (IST) Program. The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using the MOP curve. Surveillance requirements are specified in the IST Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

~~The limitation for a maximum of one charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps except the required OPERABLE pump to be inoperable ≤ the enable temperature specified in the PTLR provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.~~ As indicated in Note 1, operation in MODE 3 with one of the required charging pumps made incapable of injecting in order to support transition into or from the Applicability of Specification 3.4.9.3 is necessary when the OPPS enable temperature is at or near the MODE 3 boundary temperature of 350°F. Specification 3.4.9.3 requires that all but one charging pumps are rendered incapable of injecting at and below the OPPS enable temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to render the charging pumps incapable of injecting prior to entering the Applicability of Specification 3.4.9.3, and to restore the inoperable pumps to OPERABLE status upon exiting the Applicability of Specification 3.4.9.3.

Attachment B-2

Beaver Valley Power Station, Unit No. 2
Proposed Technical Specification Bases Changes

License Amendment Request No. 177

The following is a list of the affected pages:

B 3/4 4-1
B 3/4 4-2
B 3/4 4-15a
B 3/4 4-15c
B 3/4 4-15d
B 3/4 4-15g
B 3/4 5-1b

BASES

3/4.4.1.1, 2, 3 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with all reactor coolant loops in operation and maintain DNBR above the design DNBR limit during all normal operations and anticipated transients. In MODES 1 and 2, with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 6 hours.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, due to the initial conditions assumed in the analysis for the control rod bank withdrawal from a subcritical condition, two operating coolant loops are required to meet the DNB design basis for this Condition II event when the rod control system is capable of control bank rod withdrawal.

In MODES 4 and 5, a single reactor coolant loop or RHR subsystem 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 RHR loops to be OPERABLE.

Note 1 allows one RHR loop to be inoperable in MODE 5, when relying on two RHR loops to meet the LCO, for a period of ≤ 2 hours, provided the other RHR loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed when the testing results in the required RHR loop being rendered inoperable. The remaining OPERABLE RHR loop is adequate to provide the required cooling during the time allowed by Note 1.

The operation of one Reactor Coolant Pump or one RHR 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 reduction will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump with one or more non-isolated RCS cold legs less than or equal to the enable temperature specified in the PTLR 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 restricting starting of the RCPs to when the secondary side water temperature of each steam generator in a non-isolated loop is less than 50°F above each of the non-isolated RCS cold leg temperatures. The secondary side water temperature is to be verified by direct measurements of the fluid temperature, or contact temperature readings on the steam generator secondary, or blowdown piping after purging of stagnant water within the piping. This shall be determined within 10 minutes prior to starting ~~a~~ the first reactor coolant pump.

3/4.4.2 (This Specification number is not used.)

3/4.4.3 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2735 psig. Each safety valve is designed to relieve 345,000 lbs. per hour of saturated steam at the valve set point.

During shutdown conditions (MODE 4 with any RCS cold leg temperature below the enable temperature specified in 3.4.9.3) RCS overpressure protection is provided by the Overpressure Protection Systems addressed in Specification 3.4.9.3.

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its safety limit of 2735 psig. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss of load assuming no reactor trip until the first Reactor Protective System trip set point is reached (i.e., no credit is taken for a direct reactor trip on the loss of load) and also assuming no operation of the power operated relief valves or steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Code.

Safety valves similar to the pressurizer code safety valves were tested under an Electric Power Research Institute (EPRI) program to determine if the valves would operate stably under feedwater line break accident conditions. The test results indicated the need for inspection and maintenance of the safety valves to determine the potential damage that may have occurred after a safety valve has lifted and either discharged the loop seal or discharged water through the valve. Additional action statements require safety valve inspection to determine the extent of the corrective actions required to ensure the valves will be capable of performing their intended function in the future.

3/4.4.4 PRESSURIZER

The requirement that 150 kw of pressurizer heaters and their associated controls and emergency bus provides assurance that these heaters can be energized during a loss of offsite power condition to maintain natural circulation at HOT STANDBY.

3/4.4.5 STEAM GENERATORS

One OPERABLE steam generator in a non-isolated reactor coolant loop provides sufficient heat removal capability to remove decay heat after a reactor shutdown. The requirement for two OPERABLE steam generators, combined with other requirements of the Limiting Conditions for Operation ensures adequate

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

APPLICABLE SAFETY ANALYSES (Continued)

MASS INPUT TYPE TRANSIENTS

a. Inadvertent safety injection; or

b. Charging/letdown flow mismatch.

HEAT INPUT TYPE TRANSIENTS

a. Inadvertent actuation of pressurizer heaters;

b. Loss of RHR cooling; or

c. Reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The following are required during the OPPS MODES to ensure that mass and heat input transients do not occur, which either of the OPPS overpressure protection means cannot handle:

a. ~~Deactivating~~ Rendering all but one OPERABLE charging pump, except during pump swapping operations as addressed in the LCO, incapable of injection ~~OPERABLE~~;

b. Deactivating the accumulator discharge isolation valves in their closed positions; and

c. Meeting the secondary side water to RCS cold leg temperature difference requirement specified in LCO 3.4.1.3, "Reactor Coolant System - Shutdown."~~Disallowing start of an RCP if the secondary side water temperature of each steam generator in a non-isolated loop is greater than or equal to 50°F above the non-isolated RCS cold leg temperature in any non-isolated loop. LCO 3.4.1.2, "Reactor Coolant System - Hot Standby," and LCO 3.4.1.3, "Reactor Coolant System - Shutdown," provide this protection.~~

The analyses demonstrate that either one RCS relief valve or the depressurized RCS and RCS vent can maintain the RCS pressure below the limits when only one charging pump is actuated by SI. Thus, the LCO allows only one charging pump OPERABLE during the OPPS MODES. Since neither one RCS relief valve nor the RCS vent can handle a full SI actuation, the LCO also requires the accumulators isolated.

The isolated accumulators must have their discharge valves closed with power removed. Fracture mechanics analyses established the temperature of OPPS Applicability at the enable temperature specified in the PTLR.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

RCS VENT PERFORMANCE (Continued)

The RCS vent size is based on the PORV size, therefore, the vent is bounded by the PORV analyses.

The RCS vent is passive and is not subject to active failure.

LCO

This LCO requires that the OPPS is OPERABLE. The OPPS is OPERABLE when the minimum coolant input and pressure relief capabilities are OPERABLE. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the limits as a result of an operational transient.

The Maximum Allowable Nominal Setpoint Curve of the PTLR defines the maximum nominal setpoint at which the PORVs can be set which will ensure that Appendix G limits are not exceeded. To maximize operating margin, the setpoint for the higher PORV is set at the Maximum Allowable Nominal Operating Curve within the respective instrumentation loop calibration tolerance band. The PORV setpoint uncertainty is calculated with reference to the methodology in ISA 67.04-1994 for performing instrumentation uncertainty calculations. The instrumentation calibration tolerances are provided in plant procedures. The overall setpoint calculation accounts for the instrumentation calibration tolerances in the uncertainty calculation.

Since actuation of both PORVs can result in excessive undershoot below the PORV setpoint, the lower PORV setpoints are staggered by an amount greater than or equal to the limiting overshoot (from either the mass injection or heat addition events). The staggered setpoints are provided in plant procedures.

To limit the coolant input capability, the LCO requires that a maximum of one charging pump be capable of injecting into the RCS and all accumulator discharge isolation valves be closed and immobilized. The LCO is qualified by a note that permits two pumps capable of RCS injection for less than or equal to ~~15 minutes~~1 hour to allow for pump swaps. ~~This note also allows all charging pumps capable of injecting into the RCS during a change from MODE 3 to MODE 4 to be OPERABLE for a limited period of time.~~

Provided for Information Only.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

LCO (Continued)

The LCO is also qualified by a note stating that accumulator isolation with power removed from the discharge isolation valves is only required when the accumulator pressure is greater than or at the maximum RCS pressure for the existing temperature, as allowed by the PTLR P/T limit curves. This note permits the accumulator discharge isolation valve surveillance to be performed only under these pressure and temperature conditions.

~~Operation above the enable temperature specified in the PTLR, but less than the enable temperature specified in the PTLR plus 25°F with only one centrifugal charging pump OPERABLE is allowed for up to 4 hours. As shown by analysis, LOCAs occurring at low temperature, low pressure conditions can be successfully mitigated by the operation of a single centrifugal charging pump and a single LHSI pump with no credit for accumulator injection. Given the short time duration that the condition of having only one centrifugal charging pump OPERABLE is allowed and the probability of a LOCA occurring during this time, the failure of the single centrifugal charging pump is not assumed.~~

~~Operation below the enable temperature specified in the PTLR, but greater than the enable temperature specified in the PTLR minus 25°F with all centrifugal charging pumps OPERABLE is allowed for up to 4 hours immediately following a change from MODE 3 to MODE 4. This provides a reasonable period of time for the operators to secure an OPERABLE pump following entry into MODE 4. Since the charging pump is required to be OPERABLE in MODE 3, but is not required in MODE 4 due to OPPS limitations, some time constraints for making the transition must be identified. During low pressure, low temperature operation, all automatic Safety Injection actuation signals are blocked. In normal conditions, a single failure of the ESF actuation circuitry will result in the starting of at most one train of Safety Injection (one centrifugal charging pump, and one LHSI pump). For temperatures above the enable temperature specified in the PTLR minus 25°F, an overpressure event occurring as a result of starting these two pumps can be successfully mitigated by operation of both PORVs without exceeding Appendix G limits. Given the short time duration that this condition is allowed and the low probability of a single failure causing an overpressure event during this time, the single failure of a PORV is not assumed. Initiation of both trains of Safety Injection during this 4-hour time frame due to operator error or a single failure occurring during testing of a redundant channel are not considered to be credible accidents.~~

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

ACTION (Continued)

The completion time represents a reasonable time to investigate and repair several types of relief valve failures without exposure to a lengthy period with only one OPERABLE RCS relief valve to protect against overpressure events. If a PORV is inoperable when the plant enters MODE 5 from MODE 4, the completion time to restore an inoperable PORV changes to 24 hours but the cumulative inoperable time may not exceed 7 days before taking action to depressurize and vent.

e. The RCS must be depressurized and a vent must be established within 12 hours when both required RCS relief valves are inoperable. The vent must be sized greater than or equal to 3.14 square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

The completion time considers the time required to place the plant in this condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS (SR)

SR 4.4.9.3.1

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, a maximum of one charging pump is ~~OPERABLE~~ verified capable of injecting into the RCS~~with the others verified deactivated with power removed~~ and the accumulator discharge isolation valves are verified closed and locked out.

A charging pump may be rendered incapable of injecting into the RCS by verifying that its control switch is placed in the PULL-TO-LOCK position and tagged, or by removing the power from the pump by racking out and tagging its breaker, or by isolating the discharge of the pump with a closed valve that is tagged. A charging pump rendered incapable of injecting into the RCS may be energized for testing provided the discharge of the pump has been isolated from the RCS as described above.

The frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.

SR 4.4.9.3.1.b allows opening the accumulator discharge isolation valves to perform accumulator discharge check valve testing.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

that is assumed in the ECCS Flow Analysis. This is possible since the analysis assumes the pump delivers different flows at different times during accident mitigation. These multiple points are represented by a curve. The values at various flow points are defined by the Minimum Operating Point (MOP) curve in the Inservice Testing (IST) Program. The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using the MOP curve. Surveillance requirements are specified in the IST Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

The 18-month surveillance interval is consistent with expected length of fuel cycles and allows for component testing to be performed during plant shutdown conditions if necessary to avoid a plant transient that could occur if the component were tested at power. However, for those components that may be safely tested at power, the 18-month surveillance may be met by performing the required testing at power.

~~The limitation for a maximum of one charging pump to be OPERABLE and the surveillance requirement to verify all charging pumps except the required OPERABLE pump to be inoperable below the enable temperature specified in the PTLR provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.~~ As indicated in Note 1, operation in MODE 3 with one of the required charging pumps made incapable of injecting in order to support transition into or from the Applicability of Specification 3.4.9.3 is necessary when the OPPS enable temperature is at or near the MODE 3 boundary temperature of 350°F. Specification 3.4.9.3 requires that all but one charging pumps are rendered incapable of injecting at and below the OPPS enable temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to render the charging pumps incapable of injecting prior to entering the Applicability of Specification 3.4.9.3, and to restore the inoperable pumps to OPERABLE status upon exiting the Applicability of Specification 3.4.9.3.