TSTF
TECHNICAL SPECIFICATIONS TASK FORCE
A JOINT OWNERS GROUP ACTIVITY

February 22, 2012

TSTF-12-01
PROJ0753

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

SUBJECT: Transmittal of TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)"

Enclosed for NRC review is Revision 2 of TSTF-454, "Extend PCIV Completion Times (NEDC-33046)." TSTF-454 is applicable to Boiling Water Reactors.

The Notice of Availability for TSTF-454, Revision 1, was published in the Federal Register on December 13, 2005. The model Safety Evaluation and model application contained a number of conditions on adoption of the Traveler. Revision 2 of TSTF-454 revises the proposed Technical Specifications and Bases and the model application to address the conditions in order to facilitate plant-specific adoption of the Traveler.

The TSTF requests that the NRC bill the Boiling Water Reactor Owners' Group for the review of this Traveler.

Should you have any questions, please do not hesitate to contact us.

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Enclosure

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PWROG
PWR Owners Group

BWR
OWNERS' GROUP

Technical Specifications Task Force
Improved Standard Technical Specifications Change Traveler

Extend PCIV Completion Times (NEDC-33046)

NUREGs Affected: ☐ 1430 ☐ 1431 ☐ 1432 ☑ 1433 ☑ 1434

Classification 1) Technical Change | Recommended for CLIIP?: No

Correction or Improvement: Improvement | NRC Fee Status: Not Exempt

Benefit: Provides Longer Completion Time

See attached.

Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by: BWROG

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 23-Jul-03

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 04-Aug-03

TSTF Review Information

TSTF Received Date: 05-Aug-03 Date Distributed for Review 05-Aug-03

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 04-Sep-03

NRC Review Information

NRC Received Date: 05-Sep-03

NRC Comments: Date of NRC Letter: 25-May-05

5/25/05 -NRC issues Notice for Comment.
7/25/05 - TSTF supplied comments.
8/12/05 - TSTF revises Traveler to reflect final version of Topical report.

Final Resolution: Superceded by Revision

TSTF Revision 1 Revision Status: Closed

TSTF Revision 1 Revision Status: Closed

Revision Proposed by: TSTF

Revision Description:
TSTF-454 is revised to incorporate changes made to the supporting Topical Report as reflected in the approved version, NEDC-33046-A, January 2005.

1. The title of the Traveler was revised from "Increase PCIV Completion Times from 4 hours, 24 hours, and 72 hours to 7 days (NEDC-33046)" to "Increase PCIV Completion Times (NEDC-33046)."

2. References to changing a 24 hour Completion Time were eliminated from the justification. Changes to the 24 hour purge valve Completion Time were eliminated from the Topical Report and were not included in the Revision 0 of the Traveler.

3. The approved version of the Topical Report is referenced in the justification and the Bases.

4. The Bases inserts and the justification contained a placeholder for any conditions in the Safety Evaluation. The placeholders were eliminated and a statement is substituted that use of the extended Completion Times is contingent on adoption of the Topical Report, including any conditions described in the included Safety Evaluation.

5. The No Significant Hazards Consideration was revised to be more consistent with other Travelers.

6. The ISTS Revision 2 marked up pages were replaced with pages from Revision 3 of the ISTS. This did not result in any changes to the Traveler.

TSTF Review Information

TSTF Received Date: 12-Aug-05 Date Distributed for Review 28-Aug-05

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 21-Sep-05

NRC Review Information

NRC Received Date: 21-Sep-05

NRC Comments: Date of NRC Letter: 13-Dec-05

Approved by NRC and published in the Federal Register on December 13, 2005.

Final Resolution: Superceded by Revision Final Resolution Date: 13-Dec-05

TSTF Revision 2 Revision Status: Active

Revision Proposed by: BWROG

Revision Description:
TSTF-454, Rev. 1, is revised to address the conditions and commitments for adoption.

TSTF Revision 2 **Revision Status: Active**

Owners Group Review Information

Date Originated by OG: 29-Dec-11

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 22-Jan-12

TSTF Review Information

TSTF Received Date: 22-Jan-12 Date Distributed for Review 22-Feb-12

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 22-Feb-12

NRC Review Information

NRC Received Date: 22-Feb-12

Affected Technical Specifications

Ref. 3.6.1.3	PCIVs		NUREG(s)- 1433 1434 Only
Action 3.6.1.3.A	PCIVs		NUREG(s)- 1433 1434 Only
Action 3.6.1.3.A Bases	PCIVs		NUREG(s)- 1433 1434 Only
Action 3.6.1.3.B	PCIVs		NUREG(s)- 1433 1434 Only
	Change Description:	New Condition	
Action 3.6.1.3.B	PCIVs		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed Cand Revised	
Action 3.6.1.3.B Bases	PCIVs		NUREG(s)- 1433 1434 Only
	Change Description:	New Condition	
Action 3.6.1.3.B Bases	PCIVs		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed Cand Revised	
Action 3.6.1.3.C	PCIVs		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed D and Revised	

Action 3.6.1.3.C Bases	PCIVs		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed D and Revised	
SR 3.6.1.3.1	PCIVs		NUREG(s)- 1433 1434 Only
SR 3.6.1.3.1 Bases	PCIVs		NUREG(s)- 1433 1434 Only
Action 3.6.1.3.D	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed E and Revised	
Action 3.6.1.3.D Bases	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed E and Revised	
Action 3.6.1.3.E	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed F	
Action 3.6.1.3.E Bases	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed F	
Action 3.6.1.3.F	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed G	
Action 3.6.1.3.F Bases	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed G	
Action 3.6.1.3.G	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed H	
Action 3.6.1.3.G Bases	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed H	
Action 3.6.1.3.H	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed I	
Action 3.6.1.3.H Bases	PCIVs		NUREG(s)- 1433 Only
	Change Description:	Renamed I	
SR 3.6.1.3.7 Bases	PCIVs		NUREG(s)- 1433 Only
SR 3.6.1.3.10 Bases	PCIVs		NUREG(s)- 1433 Only
SR 3.6.1.3.12 Bases	PCIVs		NUREG(s)- 1433 Only
SR 3.6.1.3.13 Bases	PCIVs		NUREG(s)- 1433 Only
SR 3.6.1.3.15 Bases	PCIVs		NUREG(s)- 1433 Only
Action 3.6.1.3.D	PCIVs		NUREG(s)- 1434 Only
	Change Description:	Renamed E	
Action 3.6.1.3.D Bases	PCIVs		NUREG(s)- 1434 Only
	Change Description:	Renamed E	
SR 3.6.1.3.6 Bases	PCIVs		NUREG(s)- 1434 Only

1.0 Short Description

This change extends the Completion Times for primary containment penetration flow paths with one primary containment isolation valve (PCIV) inoperable from 4 hours and 72 hours to 7 days based on a risk analysis in the Topical Report NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," dated January 2005 (Ref. 1). This change is applicable to primary containment penetrations with two [or more] PCIVs and to primary containment penetrations with only one PCIV. This change is not applicable to the Feedwater Isolation Valves, the Main Steam Isolation Valves, the PCIVs for the Residual Heat Removal (RHR) shutdown cooling suction line, and (for BWR 5 and BWR 6 designs only) the PCIVs for the Low Pressure Core Spray System.

TSTF-454, Rev. 1, "Extend PCIV Completion Times (NEDC-33046)," was approved by the NRC on December 13, 2005 (Ref. 2) and the Traveler was incorporated into Revision 4 of NUREG-1433 and NUREG-1434 (the Standard Technical Specifications for BWR/4 and BWR/6 plants, respectively). The model Safety Evaluation contained seven conditions for plant-specific adoption of the change. The difficulty of implementing these conditions has deterred licensees from adopting the generic change. This revision modifies the approved TSTF-454, Rev. 1, to address the conditions in order to facilitate plant-specific adoption.

2.0 Detailed Description

The Boiling Water Reactor Owners' Group (BWROG) Topical Report NEDC-33046-A provides a risk-informed technical basis for specific changes to Technical Specification Completion Times of STS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," in NUREG-1433 and NUREG-1434. The primary intent of the proposed change is to provide for the potential of on-line maintenance, repair, and testing of a PCIV that is declared inoperable during operation in the applicable Modes. These changes are warranted based on the low risk associated with the extended Completion Times and the relatively greater risk associated with transitioning from the existing Mode to cold shutdown (Mode 4).

This application is being pursued by the BWROG as a risk-informed plant modification in accordance with NRC Regulatory Guides 1.174 and 1.177 (Refs. 3 and 4). Risk-informed cumulative unavailability targets for PCIVs are already established as the PCIVs fall within the scope of the Maintenance Rule (10 CFR 50.65).

NEDC-33046-A provides generic bounding risk assessments of the impact of adopting these Technical Specification changes. The risk calculations consider all significant impacts of the PCIV Technical Specification modifications, including:

- Assessment of the Incremental Conditional Core Damage Probability (ICCDP) and Incremental Conditional Large Early Release Probability (ICLERP) resulting from allowing PCIVs to remain in the open position for the duration of the Completion Time;

- For systems with PCIVs that are connected to the Reactor Coolant System, ICCDP/ICLERP assessments include consideration of Interfacing System Loss of Coolant Accident (ISLOCA); and

- Assessment of ICCDP associated with valves which have a safety function in addition to primary containment isolation in the closed position for an extended period of time.

Risk evaluations also include explicit consideration of incremental risks associated with PCIVs connected to systems containing non-seismically qualified piping. All risk assessments consider the effect of maintaining the PCIV in the open position.

In accordance with Regulatory Guide 1.177, risks associated with a single Completion Time are evaluated against the "very small risk" metrics of 5.0E-7 for ICCDP and 5.0E-8 for ICLERP. The cumulative impact of multiple, simultaneous and sequential entries into the Conditions are also considered.

The supporting and analytical material contained within NEDC-33046-A is considered applicable to all General Electric Boiling Water Reactor units regardless of the details of the valve actuators.

The Conditions in TS 3.6.1.3 are currently modified by Notes that direct their use based on three configurations:

1. Penetration flow paths with two [or more] PCIVs (retained in proposed Conditions A, B and C);

2. Penetration flow paths with one PCIV (retained in proposed Condition D); and

3. Penetrations with leakage not within limit (retained in proposed Conditions E and F). Not all plants have these features and, therefore, Conditions E and F are optional (i.e., bracketed) in NUREG-1433 and NUREG-1434.

The proposed changes to Specification 3.6.1.3 are described below.

1. The existing Condition A is revised. The condition is modified by a Note stating it is only applicable to penetration flow paths with two [or more] PCIVs. The condition is applicable when one or more penetration flow paths have one PCIV inoperable. The following changes are made:

    a. Condition A is revised to reflect changes to the renaming of existing Conditions D and E, described below. In addition, the Condition is revised by replacing "and" with "or" for consistency with similar Condition statements in other Standard Technical Specifications.

    b. A new Required Action A.1 is added to determine whether the Operable PCIV in the affected penetration flow path is inoperable due to a common cause failure. This determination must be made within 4 hours of discovery of a potential common cause failure mechanism. This limits use of the 7 day Completion Time to circumstances when there is no common cause failure. Should a new or different potential common cause failure mechanism be discovered, the 4 hour Completion Time is restarted. The Required Action is modified by a Note stating it is not applicable to MSIVs. The

proposed 7 day Completion Time in Required Action A.2 (which does not apply to MSIVs) is only applicable if the redundant PCIV in the penetration flow path is Operable.

c. Proposed Required Action A.2 is revised to implement the 7 day Completion Time.

i. The existing 4 hour Completion Time is limited to feedwater isolation valves (FWIVs) and residual heat removal (RHR) shutdown cooling suction line PCIVs, and for BWR/6 plants, Low Pressure Core Spray (LPCS) System PCIVs.

ii. A new 4 hour Completion Time is added for inoperable PCIVs when the PCIV pressure boundary is not intact. An intact PCIV pressure boundary is a condition for applying the 7 day Completion Time. The main steam isolation valves (MSIVs) retain the existing 8 hour Completion Time and are therefore excluded from the 4 hour Completion Time.

iii. The 8 hour Completion Time for "main steam lines" is revised to refer to main steam isolation valves (MSIVs) for consistency with the LCO requirements on PCIVs.

iv. A new 7 day Completion Time is added for all PCIVs when the pressure boundary is intact except for FWIVs, RHR shutdown cooling suction line PCIVs, MSIVs, and for BWR/6 plants, LPCS System PCIVs.

2. A new Condition B is proposed. The condition is modified by a Note stating it is only applicable to penetration flow paths with two [or more] PCIVs. New Condition B is applicable when two or more penetration flow paths have one PCIV inoperable [for reasons other than Condition[s] E and F]. New Required Action B.1 requires isolating all but one of the affected penetration flow paths within 4 hours. This Condition satisfies a condition on NRC approval of NEDC-33046-A that the extended CT be applied to a single penetration at a time.

3. Existing Condition B is renamed as Condition C. References to Conditions D and E are changed to Conditions E and F, respectively. In addition, the Condition is revised by replacing "and" with "or" for consistency with similar Condition statements in other Standard Technical Specifications.

4. Existing Condition C is renamed as Condition D and revised. The condition is modified by a Note stating it is only applicable to penetration flow paths with one PCIV. The condition is applicable when one or more penetration flow paths have one inoperable CIV.

a. References to Conditions D and E in the Condition are changed to Conditions E and F, respectively. In addition, the Condition is revised by replacing "and" with "or" for consistency with similar Condition statements in other Standard Technical Specifications.

b. Required Action C.1 (now D.1) has two Completion Times. For BWR/4 plants there is a Completion Time of 4 hours except for excess flow check valves (EFCVs) and penetrations with a closed system. For BWR/6 plants there is a 4 hour Completion Time for penetrations without a closed system. These requirements are unchanged.

c. The proposed change revises the second Completion Time of Required Action D.1 from 72 hours to 7 days. For BWR/4 plants, there is a 7 day Completion Time for EFCV leakage and penetrations with a closed system. For BWR/6 plants, there is a 7 day Completion Time for penetrations with a closed system.

d. Required Action C.2 (now D.2) requires periodic verification that the penetration flow path is isolated and is unchanged.

5. For BWR/4 plants, Condition D (now Condition E) is revised to provide a 7 day Completion time for EFCV leakage.

6. Conditions D, E, F, G, and H are renamed as Conditions E, F, G, H, and I, respectively.

7. Conditions F, G, and H (now G, H, and I) are revised to include new Condition B.

8. SR 3.6.1.3.1 is revised to refer to Condition F instead of Condition E to reflect the renaming of the Condition.

9. The Bases are revised to reflect these changes and to provide Reviewer's Notes that describe the conditions for utilizing the proposed changes.

The proposed change implements the changes justified in NEDC-33046-A, satisfies the conditions for use given in the NRC's Safety Evaluation for the Topical Report, and satisfies the conditions for use given in the NRC's Safety Evaluation for TSTF-454.

3.0 Technical Evaluation

NEDC-33046-A documented the process used for evaluating plant risk associated with the proposed changes to the PCIV Technical Specification Completion Times. The process involves grouping the various primary containment penetrations into defined classes. For each class, the primary containment penetrations are further subdivided into generic type configurations. An evaluation is then performed for each of the generic configurations of the primary containment penetrations to assess the impact on plant risk due to the proposed Completion Time extensions for the associated PCIVs. The evaluation of the impact on plant risk determines the change in core damage frequency (ΔCDF), the ICCDP, the change in large early release frequency (ΔLERF), and the ICLERP.

The results of the evaluations in NEDC-33046-A demonstrate that the proposed Completion Time extensions provide plant operational flexibility while simultaneously allowing plant operation with an acceptable level of risk. The results demonstrate that the risk level associated with the proposed Completion Time is below the guidelines set forth in Regulatory Guides 1.174 and 1.177.

Adoption of this Traveler is contingent on the adoption of NEDC-33046-A, including the conditions described in the incorporated NRC Safety Evaluation.

The Safety Evaluation for TSTF-454, Revision 1, Section 3.2, "Verification and Commitments" discussed seven plant-specific verifications and one regulatory commitment which licensees must address in their applications to adopt TS changes based on TSTF-454. These conditions as based on the NRC Safety Evaluation approving NEDC-33046-A (Ref. 2). Each of those conditions and commitments are given below and the implementation of the conditions and the commitment in TSTF-454, Rev. 2, is discussed.

(1) "Because not all penetrations have the same impact on core damage frequency (CDF), large early release frequency (LERF), incremental conditional core damage probability (ICCDP), or incremental conditional large early release probability (ICLERP), a licensee's application must provide supporting information that verifies the applicability of TR NEDC-33046, including verification that the PCIV configurations for the specific plant match the TR and the risk parameter values used in the TR are bounding for the specific plant. Any additional PCIV configurations or non-bounding risk parameter values not evaluated by the TR should be included in the licensee's plant-specific analysis. [Note that PCIV configurations or non-bounding risk parameter values outside the scope of the TR will require NRC staff review of the specific penetrations and related justifications for the proposed CTs.]"

The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

> "[LICENSEE] has confirmed that the supporting information in TR NEDC-33046 is applicable to [PLANT, UNIT NOS.] and the licensing TR and the risk parameter values used in the TR are bounding for the specific plant. The penetrations affected by this change fall within the containment penetration configurations in the report. [ALTERNATIVELY, IDENTIFY THOSE CONTAINMENT PENETRATION CONFIGURATIONS NOT ADDRESSED BY THE TR AND PROVIDE THE PLANT-SPECIFIC ANALYSIS TO SUPPORT THE PROPOSED CHANGE.] Attachment 1 provides [LICENSEE's] evaluation, including the supporting information."

<u>Implementation in TSTF-454, Revision 2</u>

- The model application requires licensees requesting the proposed change to verify the applicability of the analysis performed in the Topical Report and that the plant-specific risk meets the risk guidelines of Regulatory Guide 1.177.

- The proposed changes are restricted to the primary containment penetration configurations considered in the Topical Report. Application of the proposed CT extension using plant-specific analysis is not permitted under this proposed change.

2. "The licensee's application must provide supporting information that verifies that external event risk, either through quantitative or qualitative evaluation, will not have an adverse impact on the conclusions of the plant-specific analysis for extending the PCIV CTs."

   The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

   > "[LICENSEE] has confirmed that external event risk, either through quantitative or qualitative evaluation, will not have an adverse impact on the conclusions of the plant-specific analysis for extending the PCIV CTs. Attachment 2 provides [LICENSEE's] evaluation including the supporting information."

   Implementation in TSTF-454, Revision 2

   - The model application requires licensees requesting the proposed change to confirm that external event risk will not impact the results of the analysis supporting the revised technical specifications.

3. "Because TR NEDC-33046 was based on generic plant characteristics, each licensee adopting the TR must provide supporting information that confirms plant-specific Tier 3 information in their individual submittals. The licensee's application must provide supporting information that discusses conformance to the requirements of the maintenance rule (10 CFR 50.65(a)(4)), as they relate to the proposed PCIV CTs and the guidance contained in NUMARC 93-01, Section 11, as endorsed by RG 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." This should include verification that the licensee's maintenance rule program, with respect to PCIVs, includes a LERF and ICLERP assessment as part of the maintenance rule process. "

   The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

   > "[LICENSEE] has confirmed that the plant-specific Tier 3 information for [PLANT UNIT NOS.] is consistent with the generic plant characteristics used in TR NEDC-33046. Also, [LICENSEE] has confirmed that [PLANT UNIT NOS.] conform to the requirements of the maintenance rule (10 CFR 50.65(a)(4)), as they relate to the proposed PCIV CTs and the guidance contained in NUMARC 93-01, Section 11, as endorsed by RG 1.182, including verification that the licensee's maintenance rule program, with respect to PCIVs, includes a LERF and ICLERP assessment as part of the maintenance rule process. Attachment 3 provides [LICENSEE's] evaluation including the supporting information."

   Implementation in TSTF-454, Revision 2

   - The model application requires licensees requesting the proposed change to state that they have verified acceptable PRA quality with respect to its use for Tier 3 for this application as described in Regulatory Guide 1.177.

- Licensees are required to comply with 10 CFR 50.65(a)(4) and verification that the licensee complies with the regulation is unnecessary.

- The model application includes a regulatory commitment to follow the guidance of NUMARC 93–01, Revision 2, section 11, which provides guidance and details on the assessment and management of risk during maintenance as an ongoing commitment.

- The model application includes a regulatory commitment to assess LERF and ICLERP as part of the maintenance rule risk assessment when the PCIV extended Completion Time is used.

4. "The licensee's application must provide supporting information that verifies that a penetration remains intact during maintenance activities, including corrective maintenance activities. Regarding maintenance activities where the pressure boundary would be broken, the licensee must provide supporting information that confirms that the assumptions and results of the TR remain valid. This includes the assumption that maintenance on a PCIV will not break the pressure boundary for more than the currently allowed CT."

   The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

   > "[LICENSEE] has confirmed that the extended CT under the proposed amendment will only be used for a penetration that remains intact during maintenance activities, including corrective maintenance activities. Also, [LICENSEE] has confirmed that, regarding maintenance activities where the pressure boundary would be broken, the assumptions and results of the TR remain valid. This includes the assumption that maintenance on a PCIV will not break the pressure boundary for more than the currently allowed CT. Attachment 4 provides [LICENSEE's] evaluation including the supporting information."

   Implementation in TSTF-454, Revision 2

   - Proposed Condition A, which implements the proposed extended CT, only applies the 7 day Completion Time when the PCIV is physically intact. The existing Completion Time of 4 hours applies if the PCIV is not physically intact.

5. "The licensee's application must provide supporting information that it will verify the operability of the remaining PCIVs in the associated penetration flow path before applying an extended CT for an inoperable PCIV."

   The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

   > "[LICENSEE] has confirmed the operability of the remaining PCIVs in the associated penetration flow path before entering the CT for the inoperable PCIV. Attachment 5 provides [LICENSEE's] evaluation including the supporting information."

Implementation in TSTF-454, Revision 2

- Proposed Required Action A.1 requires verification that the redundant PCIV in a penetration flow path is not rendered inoperable due to a common cause failure prior to exceeding the existing 4 hour Completion Time. Should a new or different failure be discovered, 4 hours is provided to determine whether a common cause failure exists.

6. "Simultaneously utilizing the proposed extended CT for multiple inoperable PCIVs and the resulting impact on risk were not specifically evaluated by the BWROG. However, TR NEDC-33046 does state that multiple PCIVs can be out of service simultaneously during extended CTs and does not preclude the practice. Therefore, the licensee's application must provide supporting information that confirms that its Tier 3 CRMP (10 CFR 50.65(a)(4)) requires that simultaneous application of an extended CT to more than one inoperable PCIV in separate penetration flow paths is evaluated. The purpose of this evaluation is to ensure that the cumulative risk of continued plant operation with multiple inoperable PCIVs utilizing extended CTs does not exceed the plant risk value, as determined by the analysis presented in TR NEDC-33046."

   The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

   > "[LICENSEE'S] Tier 3 configuration risk management program (10 CFR 50.65(a)(4)) requires that simultaneous extended CT entries for inoperable PCIVs in separate penetration flow paths are evaluated so as to ensure that the cumulative risk of extended multiple PCIV CTs do not exceed the acceptance guidelines, as confirmed by the analysis presented in TR NEDC-33046, and that adequate defense-in-depth for safety systems is maintained. [BRIEFLY, DESCRIBE THE TIER 3 CONFIGURATION RISK MANAGEMENT PROGRAM AND PROCEDURES THAT REFLECT THE REQUIREMENTS]. [LICENSEE] will perform such evaluation [STATE WHETHER A QUANTITATIVE, QUALITATIVE, OR COMBINATION OF QUALITATIVE AND QUANTITATIVE EVALUATION WILL BE PERFORMED.] to confirm that such simultaneous extended CT entries for inoperable PCIVs in separate penetration flow paths will not exceed the acceptance guidelines, as confirmed by the analysis presented in TR NEDC-33046, and that adequate defense-in-depth for safety systems is maintained. Attachment 6 provides [LICENSEE's] evaluation including the supporting information."

   Implementation in TSTF-454, Revision 2

   - Simultaneous extended CT entries for inoperable PICVs in separate flow paths are not allowed under the proposed change. Proposed Condition B applies when two or more penetration flow paths with one PCIV are inoperable and requires isolating all but one affected penetration flow path within 1 hour.

7. "The licensee must provide supporting information that verifies that the plant-specific probabilistic risk assessment (PRA) quality is acceptable for this application in accordance with the guidelines given in RG 1.174, "An Approach for using Probabilistic Risk

Assessment in Risk-Informed Decisions on Plant Specific Changes to the Licensing Basis." To ensure the applicability of TR NEDC-33046 to a licensee's plant, each licensee requesting an amendment must provide additional information on PRA quality in the following areas:

a. Justification that the plant-specific PRA reflects the as-built, as-operated plant.

b. Applicable PRA updates including individual plant examinations (IPE) and individual plant examinations of external events (IPEEE) findings.

c. Conclusions of the peer review including any A or B facts and observations (F and Os) applicable to the proposed PCIV extended CTs.

d. The PRA quality assurance program and associated procedures.

e. PRA adequacy, completeness, and applicability with respect to evaluating the plant specific impact of the proposed PCIV extended CT."

The model safety evaluation published with the Notice of Availability of TSTF-454, Revision 1, contained the following guidance for satisfying this condition:

> "[LICENSEE] has confirmed that the plant-specific probabilistic risk assessment (PRA) quality is acceptable for this application in accordance with the guidelines given in RG 1.174. Attachment 7 provides the supporting information. To ensure the applicability of TR NEDC-33046, to [PLANT UNIT NOS.], as required by the condition described above, Attachment 7 provides additional information on PRA quality."

Implementation in TSTF-454, Revision 2

- The Topical Report used bounding values such that the risk assessment was applicable to all BWR plants. The proposed change does not allow plant-specific evaluation of PCIV configurations not addressed in the Topical report. The model application requires licensees to confirm that the evaluations in the Topical Report are applicable to the specific plant. Therefore, the only plant-specific risk evaluations required under the proposed change are Tier 3 evaluations of contemporaneous risk. The model application requires a verification by the licensee that there is acceptable PRA quality with respect to its use for Tier 3 for this application as described in Regulatory Guide 1.177 and that LERF and ICLERP will be assessed as part of the maintenance rule risk assessment when the PCIV extended Completion Time is used. These actions satisfy this condition.

  It appears that the NRC expectations regarding this requirement have evolved since the approval of TSTF-454 in 2005. A similar Traveler, TSTF-498, Rev. 1, "Risk-Informed Containment Isolation Valve Completion Times (BAW-2461),"was approved by the NRC on January 12, 2009. This change is applicable to Babcock & Wilcox plants and also extends containment isolation valve Completion Times. The supporting Topical Report, BAW-2461, "Risk-Informed Justification for Containment Isolation Valve

Allowed Outage Time [(AOT)] Change," was approved by the NRC on August 29. 2007. The Safety Evaluation for BAW-2461 contains several conditions that state that licensees utilizing the Topical Report would submit detailed information. However, the NRC model application for TSTF-498, which imposed similar limitations in the Technical Specifications as this proposed change, requires licensees to confirm that the plant-specific risk assessment is consistent with the Topical Report conditions without requiring that information to be included in the license amendment request.

There was also one commitment in the model Safety Evaluation:

1. "Therefore, each licensee requesting extended CTs for PCIVs under TSTF-454, Revision 1, must commit to enhancing its CRMP, including those implemented under 10 CFR 50.65(a)(4), the maintenance rule, to include a LERF methodology and assessment. This commitment and the CRMP enhancements must be documented in the licensee's plant-specific application."

   Implementation in TSTF-454, Revision 2

   - The model application requires licensees requesting the proposed change to state that they have verified acceptable PRA quality with respect to its use for Tier 3 for this application as described in Regulatory Guide 1.177.

   - The model application includes a regulatory commitment to assess LERF and ICLERP as part of the maintenance rule risk assessment when the PCIV extended Completion Time is used.

Differences between the NRC Approval of TSTF-454 and Subsequent Travelers

Subsequent to the approval by the NRC of TSTF-454, the NRC approved two additional Travelers that proposed similar changes:

- TSTF-498, Rev. 1, "Risk-Informed Containment Isolation Valve Completion Times (BAW-2461)" on 1/12/2009 (applicable to Babcock & Wilcox plants); and

- TSTF-446, Rev. 3, "Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP-15791), on 7/13/2010 (applicable to Westinghouse plants).

The NRC approvals of these changes were reviewed to identify additional issues which should be addressed in this proposed change. The following issues were identified and incorporated, as described below:

1. The staff requested that licensees commit to implementing methodologies for assessing large early release frequency (LERF) and incremental conditional large early release probability (ICLERP) in the application. The regulatory commitment should be controlled in accordance with NEI 99–04, Revision 0, "Guidelines for Managing NRC Commitment Changes". The NRC requested this regulatory commitment because a licensee's

implementation of Regulatory Guide 1.177 Tier 3 guidelines generally implies the assessment of risk with respect to core damage frequency (CDF). However, the proposed PCIV CT impacts containment isolation and consequently LERF and ICLERP, as well as CDF. Because the extended CIV CTs are also based on the LERF and ICLERP metrics, the management of risk in accordance with 10 CFR 50.65(a)(4) for these extended PCIV CTs must also assess LERF and ICLERP.

Implementation in TSTF-454, Revision 2

- The model application includes this regulatory commitment with a due date concurrent with implementation of the license amendment.

2. The NRC requested that licensees commit to the guidance of NUMARC 93–01, Revision 2, section 11, which provides guidance and details on the assessment and management of risk during maintenance as an ongoing commitment.

   Implementation in TSTF-454, Revision 2

   - The model application includes this regulatory commitment with a due date concurrent with implementation of the license amendment.

4.0 Regulatory Analysis

4.1 Applicable Regulatory Requirements/Criteria

Appendix A of 10 CFR Part 50 - General Design Criterion (GDC) 55, "Reactor Coolant Pressure Boundary Penetrating Containment," requires that each line that is part of the reactor coolant pressure boundary and that penetrates primary containment shall be provided with containment isolation valves.

Appendix A of 10 CFR 50 - GDC 56, "Primary Containment Isolation," requires that each line that connects directly to the containment atmosphere and penetrates primary reactor containment shall be provided with containment isolation valves.

The Maintenance Rule, 10 CFR 50.65(a)(4), as it relates to the proposed changes, requires the assessment and management of the increase in risk that may result from a proposed maintenance activity.

The design of the applicable plants is not changed and single failure protection is still a design requirement. However, the proposed changes extend the limited time during which single failure protection for isolation of a primary containment penetration is relaxed.

The proposed change does not affect plant compliance with these regulations.

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 approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

4.2 No Significant Hazards Consideration

The TSTF has evaluated whether or not a significant hazards consideration is involved with the proposed generic changes 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 proposed changes revise the Completion Times for restoring an inoperable primary containment isolation valve (PCIV) (or isolating the affected penetration) within the scope of Topical Report NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," transmitted to the NRC by letter dated January 20, 2005, from 4 hours and 72 hours to 7 days. PCIVs are not accident initiators in any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. PCIVs, individually and in combination, control the extent of leakage from the primary containment following an accident. As such, PCIVs are instrumental in controlling the consequences of an accident. However, the consequences of any accident previously evaluated are no different during the proposed extended Completion Times than during the existing Completion Times. As a result, the consequences of any accident previously evaluated are not significantly increased. 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.

   The proposed changes revise the Completion Times for restoring an inoperable PCIV (or isolating the affected penetration) within the scope of Topical Report NEDC-33046-A, transmitted to the NRC by letter dated January 20, 2005, from 4 hours and 72 hours to 7 days. PCIVs, individually and in combination, control the extent of leakage from the primary containment following an accident. The proposed Completion Time extensions apply to the reduction in redundancy in the primary containment isolation function provided by the PCIVs for a limited period of time, but do not alter the ability of the plant to meet the overall primary containment leakage requirements. The proposed changes do not change the design, configuration, or method of operation of the plant. The proposed changes do not involve a physical alteration of the plant (no new or different kind of equipment will be installed). Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   The proposed changes revise the Completion Times for restoring an inoperable PCIV (or isolating the affected penetration) within the scope of Topical Report NEDC-33046-A, transmitted to the NRC by letter dated January 20, 2005, from 4 hours and 72 hours to 7 days. PCIVs, individually and in combination, control the extent of leakage from the primary containment following an accident. The proposed Completion Time extensions apply to the reduction in redundancy in the primary containment isolation function provided by the PCIVs for a limited period of time, but do not alter the ability of the plant to meet the overall primary containment leakage requirements. In order to evaluate the proposed Completion Time extensions, a probabilistic risk evaluation was performed as documented in Topical Report NEDC-33046-A. The risk evaluation concluded that, based on the use of bounding risk parameters for General Electric designed plants, the proposed increase in the PCIV Completion Times from 4 hours and 72 hours to 7 days for the analyzed PCIVs does not result in an unacceptable incremental conditional core damage probability or incremental conditional large early release probability according to the guidelines of Regulatory Guide 1.177. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, the TSTF concludes that the proposed changes 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.

5.0 Environmental Consideration

A review has determined that the proposed changes would change requirements 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 changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet 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 changes.

6.0 References

1. BWROG Topical Report NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," January 20, 2005.

2. "Notice of Availability of Model Application Concerning Technical Specification Improvement To Extend the Completion Times for Inoperable Containment Isolation Valves at General Electric Plants Using the Consolidated Line Item Improvement Process," (70FRN73802), December 13, 2005.

3. Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk- Informed Decision Making: Technical Specifications," August 1998.

4. Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant Specific Changes to the Licensing Basis," July 1998.

Enclosure 1
Model Application

[DATE] 10 CFR 50.90

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

SUBJECT: PLANT NAME
DOCKET NO. 50-[xxx]

APPLICATION TO REVISE TECHNICAL SPECIFICATIONS TO ADOPT TSTF-454, REVISION 2, "EXTEND PCIV COMPLETION TIMES (NEDC-33046)"

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.90, "Application for Amendment of License, Construction Permit, or Early Site Permit," [LICENSEE] is submitting a request for an amendment to [PLANT] Technical Specifications (TS) to incorporate the NRC-approved TSTF-454, Revision 2.

The proposed changes would revise TS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," by extending to 7 days the completion time (CT) to restore an inoperable PCIV to operable status or to isolate the affected penetration flow path for selected primary containment penetrations with two (or more) PCIVs and for selected primary containment penetrations with only one PCIV. The change is consistent with NRC approved Industry Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)." The availability of this TS improvement was announced in the Federal Register (FR) on [DATE OF NOTICE OF AVAILABILITY].

Attachment 1 provides a description and assessment of the proposed changes. Attachment 2 provides the existing TS pages marked up to show the proposed changes. Attachment 3 provides revised (clean) TS pages. Attachment 4 provides existing TS Bases pages for information marked to show the proposed changes.

Approval of the proposed amendment is requested by [date]. Once approved, the amendment shall be implemented within [ ] days.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated [STATE] Official.

[In accordance with 10 CFR 50.30(b), a license amendment request must be executed in a signed original under oath or affirmation. This can be accomplished by attaching a notarized affidavit confirming the signature authority of the signatory, or by including the following statement in the cover letter: "I declare under penalty of perjury that the foregoing is true and correct. Executed on (date)." The alternative statement is pursuant to 28 USC 1746. It does not require notarization.] Executed on [date] [Signature]

If you should have any questions about this submittal, please contact [NAME, TELEPHONE NUMBER].

Sincerely,

[Name, Title]

Attachments:
1. Description and Assessment
2. Proposed Technical Specification Changes (Mark-Up)
3. Revised Technical Specification Pages
4. Proposed Technical Specification Bases Changes (Mark-Up)

cc: NRC Project Manager
NRC Regional Office
NRC Resident Inspector
State Contact

ATTACHMENT 1: DESCRIPTION AND ASSESSMENT

1.0 DESCRIPTION

The proposed changes revise Technical Specification (TS) 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," by extending to 7 days the completion time (CT) to restore an inoperable PCIV to operable status or to isolate the affected penetration flow path for selected primary containment penetrations with two (or more) PCIVs and for selected primary containment penetrations with only one PCIV.

The changes are consistent with NRC approved Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)." The availability of this TS improvement was announced in the Federal Register on [DATE] as part of the consolidated line item improvement process (CLIIP) ([70 FR XXXXX]).

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

[LICENSEE] has reviewed the safety evaluation published on [DATE] ([70 FR XXXXX]). This verification included a review of the NRC staff's evaluation as well as the supporting information provided to support TSTF-454, Revision 2. [LICENSEE] has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to [PLANT, UNIT NOS.] and justify this amendment for the incorporation of the changes to the [PLANT] TSs.

2.2 Optional Changes and Variation

[LICENSEE] is not proposing any variations or deviations from the Standard Technical Specifications (STS) changes described in TSTF-454, Revision 2, and the NRC staff model SE, dated [DATE].

[The [PLANT] TS utilize different [numbering][and][titles] than the Standard Technical Specifications on which TSTF-454 was based. Specifically, [describe differences between the plant-specific TS numbering and/or titles and the TSTF-454 numbering and titles.] These differences are administrative and do not affect the applicability of TSTF-454 to the [PLANT] TS.]

2.3 Verifications and Commitments

1. [LICENSEE] confirms that the generic bounding analysis presented in NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," is applicable to [PLANT] and that the plant-specific risk, including the effects of external events, meets the risk guidelines of Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk- Informed Decision Making: Technical Specifications."

2. [LICENSEE] confirms that the quality of the PRA for [PLANT] is sufficient with respect to its use for Tier 3 for this application as described in Regulatory Guide 1.177.

4. [LICENSEE] commits to implementing methodologies for assessing large early release frequency (LERF) and incremental conditional large early release probability (ICLERP) when evaluating the risk of PCIV inoperability in accordance with 10 CFR 50.65(a)(4).

5. [LICENSEE] commits to the guidance of NUMARC 93–01, Revision 2, Section 11, which provides guidance and details on the assessment and management of risk during maintenance as an ongoing commitment.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration

[LICENSEE] requests adoption of TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," which is an approved change to the standard technical specifications (STS), into the [PLANT NAME, UNIT NOS] Technical Specifications (TS). The proposed amendment modifies the Technical Specifications (TS) CT for CIVs.

[LICENSEE] has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) 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 proposed changes revise the Completion Times for restoring an inoperable primary containment isolation valve (PCIV) (or isolating the affected penetration) within the scope of Topical Report NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," transmitted to the NRC by letter dated January 20, 2005, from 4 hours and 72 hours to 7 days. PCIVs are not accident initiators in any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. PCIVs, individually and in combination, control the extent of leakage from the primary containment following an accident. As such, PCIVs are instrumental in controlling the consequences of an accident. However, the consequences of any accident previously evaluated are no different during the proposed extended Completion Times than during the existing Completion Times. As a result, the consequences of any accident previously evaluated are not significantly increased. 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.

   The proposed changes revise the Completion Times for restoring an inoperable PCIV (or isolating the affected penetration) within the scope of Topical Report NEDC-33046-A, transmitted to the NRC by letter dated January 20, 2005, from 4 hours and 72 hours to 7 days. PCIVs, individually and in combination, control the extent of leakage from the primary containment following an accident. The proposed Completion Time extensions apply to the reduction in redundancy in the primary containment isolation function provided by the PCIVs for a limited period of time, but do not alter the ability of the plant to meet the overall primary containment leakage requirements. The proposed changes do not change the design, configuration, or method of operation of the plant. The proposed changes do not involve a physical alteration of the plant (no new or different kind of equipment will be installed). Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   The proposed changes revise the Completion Times for restoring an inoperable PCIV (or isolating the affected penetration) within the scope of Topical Report NEDC-33046-A, transmitted to the NRC by letter dated January 20, 2005, from 4 hours and 72 hours to 7 days. PCIVs, individually and in combination, control the extent of leakage from the primary containment following an accident. The proposed Completion Time extensions apply to the reduction in redundancy in the primary containment isolation function provided by the PCIVs for a limited period of time, but do not alter the ability of the plant to meet the overall primary containment leakage requirements. In order to evaluate the proposed Completion Time extensions, a probabilistic risk evaluation was performed as documented in Topical Report NEDC-33046-A. The risk evaluation concluded that, based on the use of bounding risk parameters for General Electric designed plants, the proposed increase in the PCIV Completion Times from 4 hours and 72 hours to 7 days for the analyzed PCIVs does not result in an unacceptable incremental conditional core damage probability or incremental conditional large early release probability according to the guidelines of Regulatory Guide 1.177. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, [LICENSEE] concludes that the proposed change presents 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.

4.0 ENVIRONMENTAL EVALUATION

A review by [LICENSEE] has determined that the proposed changes would change requirements 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 changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet 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 changes.

Enclosure 2
Technical Specifications and Bases Markup

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

ACTIONS

----------NOTES----------

1. Penetration flow paths [except for purge valve penetration flow paths] may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria in MODES 1, 2, and 3.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable [for reasons other than Condition[s] ED [orand FE]].	[A.1 ----------NOTE---------- Not applicable to inoperable MSIVs. ---------- Determine OPERABLE PCIV in the affected penetration flow path is not inoperable due to common cause failure. AND A.21 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve	4 hours from discovery of potential common cause failure mechanism] 4 hours [for feedwater isolation valves (FWIVs) and residual heat removal (RHR) shutdown cooling suction line PCIVs

CONDITION	REQUIRED ACTION	COMPLETION TIME
	with flow through the valve secured. AND	AND 4 hours for PCIVs when the PCIV pressure boundary is not intact] except for the main steam isolation valves (MSIVs) ~~except for main steam line~~ AND 8 hours for ~~main steam~~MSIVs ~~line~~ [AND 7 days except for FWIVs, RHR shutdown cooling suction line PCIVs, and MSIVs] when the PCIV pressure boundary is intact]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3~~2~~ ----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside primary containment AND Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment
[B. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] PCIVs. ---------- Two or more penetration flow paths with one PCIV inoperable [for reasons other than Condition E [or F]].	B.1 Isolate all but one of the affected penetration flow paths by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	4 hours except for MSIVs AND 8 hours for MSIVs]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
CB.----------NOTE---------- Only applicable to penetration flow paths with two [or more] PCIVs. ---------- One or more penetration flow paths with two [or more] PCIVs inoperable [for reasons other than Condition[s] ED [orand FE]].	CB.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
DC. ----------NOTE---------- Only applicable to penetration flow paths with only one PCIV. ---------- One or more penetration flow paths with one PCIV inoperable [for reasons other than Condition[s] ED [orand FE]].	DC.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	[4] hours except for excess flow check valves (EFCVs) and penetrations with a closed system AND [7 days] 72 hours for EFCVs and penetrations with a closed system

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	DC.2 ----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E~~D~~.[One or more [secondary containment bypass leakage rate,] [MSIV leakage rate,] [purge valve leakage rate,] [hydrostatically tested line leakage rate,] [or] [EFCV leakage rate] not within limit.	E~~D~~.1 Restore leakage rate to within limit.	[4 hours for hydrostatically tested line leakage [not on a closed system]] AND [4 hours for secondary containment bypass leakage] AND [8 hours for MSIV leakage] AND [24 hours for purge valve leakage] AND [72 hours for hydrostatically tested line leakage [on a closed system] [AND 7 days for [~~and~~ EFCV leakage]]
F~~E~~. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	F~~E~~.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange]. AND	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	FE.2 ----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ----------	
	Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 2 or 3 from MODE 4 if not performed within the previous 92 days for isolation devices inside containment
	AND	
	FE.3 Perform SR 3.6.1.3.7 for the resilient seal purge valves closed to comply with Required Action FE.1.	Once per [92] days]
GF. Required Action and associated Completion Time of Condition A, B, C, D, E, or FE not met in MODE 1, 2, or 3.	GF.1 Be in MODE 3. AND GF.2 Be in MODE 4.	12 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~H~~G. [Required Action and associated Completion Time of Condition A, B, C, D, E, or F~~E~~ not met for PCIV(s) required to be OPERABLE during movement of [recently] irradiated fuel assemblies in [secondary] containment.	~~H~~G.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment.	Immediately]
~~I~~H. [Required Action and associated Completion Time of Condition A, B, C, D, E, or F~~E~~ not met for PCIV(s) required to be OPERABLE during MODE 4 or 5 or during operations with a potential for draining the reactor vessel (OPDRVs).	~~I~~H.1 Initiate action to suspend OPDRVs. OR ~~I~~H.2 Initiate action to restore valve(s) to OPERABLE status.	Immediately Immediately]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	----------NOTE---------- [[Only required to be met in MODES 1, 2, and 3.] ---------- Verify each [18] inch primary containment purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition F~~E~~ of this LCO.	31 days]
SR 3.6.1.3.2	----------NOTES---------- [1. [Only required to be met in MODES 1, 2, and 3.] 2. Not required to be met when the [18] inch primary containment purge valves are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. ---------- Verify each [18] inch primary containment purge valve is closed.	31 days]
SR 3.6.1.3.3	----------NOTES---------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. ---------- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	31 days

BASES

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, most PCIVs are not required to be OPERABLE and the primary containment purge valves are not required to be sealed closed in MODES 4 and 5. Certain valves, however, are required to be OPERABLE to prevent inadvertent reactor vessel draindown. These valves are those whose associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." (This does not include the valves that isolate the associated instrumentation.)

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow path(s) [except for purge valve flow path(s)] to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated. Due to the size of the primary containment purge line penetration and the fact that those penetrations exhaust directly from the containment atmosphere to the environment, the penetration flow path containing these valves is not allowed to be opened under administrative controls. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.1.3.1.

A second Note has been added to provide clarification that, for the purpose of this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable PCIV. Complying with the Required Actions may allow for continued operation, and subsequent inoperable PCIVs are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are modified by Notes 3 and 4. Note 3 ensures that appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable PCIV (e.g., an Emergency Core Cooling System subsystem is inoperable due to a failed open test return valve). Note 4 ensures appropriate remedial actions are taken when the primary containment leakage limits are exceeded. Pursuant to LCO 3.0.6, these actions are not required even when the associated LCO is not met. Therefore, Notes 3 and 4 are added to require the proper actions be taken.

BASES

ACTIONS (continued)

[A.1], A.2 and A.3~~2~~

With one or more penetration flow paths with one PCIV inoperable, [except for secondary containment bypass leakage rate, MSIV leakage rate, purge valve leakage rate, or hydrostatically tested line leakage rate or EFCV leakage rate not within limit], the affected penetration flow paths must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration isolated in accordance with Required Action A.2~~1~~, the device used to isolate the penetration should be the closest available valve to the primary containment.

---------- Reviewer's Note ----------
Adoption of the 7 day Completion Time in Required Action A.2 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," [Federal Register Notice Reference]. Otherwise, a 4 hour Completion Time must be maintained for PCIVs other than MSIVs.

The Required Action must be completed within the specified~~4 hour~~ Completion Time [(4 hours for PCIVs other than MSIVs; 8 hours for MSIVs)] [(4 hours for feedwater isolation valves (FWIVs) and residual heat removal (RHR) shutdown cooling suction line PCIVs; 4 hours for inoperable PCIVs when the PCIV pressure boundary is not intact; 8 hours for MSIVs; and 7 days for other PCIVs in primary containment penetration flow paths with two [or more] PCIVs when the PCIV pressure boundary is intact)]. ~~(8 hours for main steam lines).~~ The Completion Time of 4 hours is reasonable considering the time required to isolate the affected penetration and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. For MSIVs~~main steam lines~~, an 8 hour Completion Time is allowed. The Completion Time of 8 hours ~~for the main steam lines~~ allows a period of time to restore the MSIVs to OPERABLE status given the fact that MSIV closure will result in isolation of the main steam line(s) and a potential for plant shutdown.

[For other PCIVs in primary containment penetration flow paths with two [or more] PCIVs, a 7 day Completion Time is allowed if the PCIV pressure boundary is intact. The Completion Time of 7 days provides the capability for on-line maintenance, repair, and testing of a PCIV and is

reasonable considering the relative importance of supporting primary containment OPERABILITY in MODES 1, 2, and 3 (Ref. 3).]

[Required Action A.1 requires a determination that the OPERABLE PCIV in the affected penetration is not inoperable due to a common cause failure within 4 hours of discovery of a potential common cause failure mechanism. This determination supports the 7 day Completion Time (Ref. 3). If the inoperable PCIV and the OPERABLE PCIV share a similar design in a feature that is related to the valve inoperability, a situation-specific verification of the OPERABLE PCIV (e.g., inspection, partial stroke, functionality test, or engineering evaluation) must be performed with 4 hours. Should a new or different potential common cause failure mechanism be identified, the 4 hour Completion Time is restarted. Required Action A.1 is modified by a Note stating that the verification is not required for MSIVs since the 7 day Completion Time is not applicable to that class of PCIVs.]

For affected penetrations that have been isolated in accordance with Required Action A.2~~1~~, the affected penetration flow path(s) must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident, and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those devices outside containment and capable of potentially being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside primary containment" is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For the devices inside primary containment, the time period specified "prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility.

BASES

ACTIONS (continued)

Condition A is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two [or more] PCIVs. For penetration flow paths with one PCIV, Condition DC provides the appropriate Required Actions.

Required Action A.32 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas, and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is low.

[B.1

In the event one PCIV in two or more penetration flow paths are inoperable, all but one of the affected PCIVs must be isolated within 4 hours (8 hours for MSIVs). Therefore, all but one penetration must be isolated using a closed and de-activated automatic valve, a closed manual valve, or a blind flange within the Completion Time. This limits the 7 day Completion Time of Required Action A.2 to a single inoperable PCIV in a single penetration (Ref. 3).

When the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.3, which remains in effect. This periodic verification is necessary to assure leak tightness of primary containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative controls and the probability of their misalignment is low.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two [or more] containment isolation valves. Condition A addresses the Condition of one containment isolation valve inoperable in a single penetration flow path containing two [or more] isolation valves.]

CB.1

With one or more penetration flow paths with two [or more] PCIVs inoperable, [except for secondary containment bypass leakage rate, MSIV leakage rate, purge valve leakage rate, or hydrostatically tested line leakage rate or EFCV leakage rate not within limit,] either the inoperable PCIVs must be restored to OPERABLE status or the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

Condition CB is modified by a Note indicating this Condition is only applicable to penetration flow paths with two [or more] PCIVs. For penetration flow paths with one PCIV, Condition DC provides the appropriate Required Actions.

BASES

ACTIONS (continued)

DC.1 and DC.2

With one or more penetration flow paths with one PCIV inoperable, [except for secondary containment bypass leakage rate, MSIV leakage rate, purge valve leakage rate, or hydrostatically tested line leakage rate or EFCV leakage rate not within limit,] the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration.

----------REVIEWER'S NOTE----------
Adoption of the 7 day Completion Time in Required Action D.1 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," [Federal Register Notice Reference]. ~~The [4] hour Completion Time is left as 4 hours consistent with the Completion Time of Required Action A.1 for most penetrations; or a plant specific evaluation is provided for NRC review for cases other than for closed system penetrations and EFCVs (which have been reviewed and approved for 72 hours).~~ If all penetrations have a ~~are accepted for~~ 72 hour~~s~~ Completion Time, the Completion Time is simplified to state 72 hours.

The Completion Time of [4] hours is reasonable considering the time required to isolate the penetration and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. [The Completion Time of 72 hours for penetrations with a closed system is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. The closed system must meet the requirements of Reference 6~~5~~. The Completion Time of 72 hours for EFCVs is also reasonable considering the instrument and the small pipe diameter of penetration (hence, reliability) to act as a penetration isolation boundary and the small pipe diameter of the affected penetrations.] [The Completion Time of 7 days, for EFCVs and penetrations with a closed system, provides the capability for on-line maintenance, repair, and testing of a PCIV and is reasonable considering the relative importance of supporting primary containment OPERABILITY in MODES 1, 2, and 3 (Ref. 3).] In the event the affected penetration flow path is isolated in accordance with Required Action DC.1, the affected penetration must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an

accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

BASES

ACTIONS (continued)

Condition DC is modified by a Note indicating that this Condition is only applicable to penetration flow paths with only one PCIV. For penetration flow paths with two [or more] PCIVs, Conditions A, B, and CB provide the appropriate Required Actions.

Required Action DC.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is low.

[ED.1

With the [secondary containment bypass leakage rate (SR 3.6.1.3.12),] [MSIV leakage rate (SR 3.6.1.3.13),] [purge valve leakage rate (SR 3.6.1.3.7),] [or] [hydrostatically tested line leakage rate (SR 3.6.1.3.14),] [or] [EFCV leakage rate (SR 3.6.1.3.10)] not within limit, the assumptions of the safety analysis may not be met. Therefore, the leakage must be restored to within limit. Restoration can be accomplished by isolating the penetration that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated, the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time for hydrostatically tested line leakage [not on a closed system] and for secondary containment bypass leakage is reasonable considering the time required to restore the leakage by isolating the penetration and the relative importance of secondary containment bypass leakage to the overall containment function. For MSIV leakage, an 8 hour Completion Time is allowed. The Completion Time of 8 hours for MSIV leakage allows a period of time to restore the MSIVs to OPERABLE status given the fact the MSIV closure will result in isolation of the main steam line(s) and potential for plant shutdown. [The 24 hour Completion Time for

BASES

ACTIONS (continued)

purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of the containment does not exist.] [The 72 hour Completion Time for hydrostatically tested line leakage [on a closed system] is acceptable based on the available water seal expected to remain as a gaseous fission product boundary during the accident, and the associated closed system.] [The 72 hour Completion Time for EFCV leakage is acceptable based on the instrument and the small pipe diameter of the penetration (hence, reliability) to act as a penetration isolation boundary.]
[The 7 day Completion Time for EFCV leakage is acceptable based on the evaluations documented in Reference 3.]

----------REVIEWER'S NOTE----------
The bracketed options provided in ACTION ED reflect options in plant design and options in adopting the associated leakage rate Surveillances.

The options (both in ACTION ED and ACTION FE) for purge valve leakage, are based primarily on the design. If leakage rates can be measured separately for each purge valve, ACTION FE is intended to apply. This would be required to be able to implement Required Action FE.3. Should the design allow only for leak testing both purge valves simultaneously, then the Completion Time for ACTION ED should include the "24 hours for purge valve leakage" and ACTION FE should be eliminated.

The option for EFCV is based on the acceptance criteria of SR 3.6.1.3.10. If the acceptance criteria is a specific leakage rate (e.g., 1 gph) then the Completion Time for ACTION ED should include the "72 hours for EFCV leakage," or "7 days for EFCV leakage." If the acceptance criteria for SR 3.6.1.3.10 is non-specific (e.g., "actuates to the closed position") then there is no specific leakage criteria and the EFCV Completion Time is not adopted.

Similarly, adopting Completion Times for secondary containment bypass and/or hydrostatically tested lines is based on whether the associated SRs are adopted.

The additional bracketed options for whether the hydrostatically tested line is with or without a closed system is predicated on plant-specific design. If the design is such that there are not both types of hydrostatically tested lines (some with and some without closed systems), the specific 'closed system' wording can be removed and the appropriate 4 or 72 hour Completion Time retained. In the event there are both types, the clarifying wording remains and the brackets are removed.]

Adoption of the 7 day Completion Time in Required Action E.1 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," [Federal Register Notice Reference]. Otherwise, a 72 hour Completion Time is provided for the condition of EFCV leakage not within limits.

BASES

ACTIONS (continued)

[FE.1, FE.2, and FE.3

In the event one or more containment purge valves are not within the purge valve leakage limits, purge valve leakage must be restored to within limits or the affected penetration must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a [closed and de-activated automatic valve, closed manual valve, and blind flange]. If a purge valve with resilient seals is utilized to satisfy Required Action FE.1, it must have been demonstrated to meet the leakage requirements of SR 3.6.1.3.7. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist.

In accordance with Required Action FE.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside containment and potentially capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 2 or 3 from MODE 4 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment purge valve with resilient seal that is isolated in accordance with Required Action FE.1, SR 3.6.1.3.7 must be performed at least once every [92] days. This provides assurance that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.1.3.7 is 184 days. Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [92] days was chosen and has been shown to be acceptable based on operating experience.

BASES

ACTIONS (continued)

Required Action FE.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned.]

GF.1 and GF.2

If any Required Action and associated Completion Time cannot be met in MODE 1, 2, or 3, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

[HG.1, IH.1, and IH.2

If any Required Action and associated Completion Time cannot be met, the unit must be placed in a condition in which the LCO does not apply. If applicable, movement of [recently] irradiated fuel assemblies must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe condition. Also, if applicable, action must be immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended and valve(s) are restored to OPERABLE status. If suspending an OPDRV would result in closing the residual heat removal (RHR) shutdown cooling isolation valves, an alternative Required Action is provided to immediately initiate action to restore the valve(s) to OPERABLE status. This allows RHR to remain in service while actions are being taken to restore the valve.]

BASES

SURVEILLANCE REQUIREMENTS

[SR 3.6.1.3.1

Each [18] inch primary containment purge valve is required to be verified sealed closed at 31 day intervals. This SR is designed to ensure that a gross breach of primary containment is not caused by an inadvertent or spurious opening of a primary containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Primary containment purge valves that are sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The 31 day Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 54) related to primary containment purge valve use during unit operations.

This SR allows a valve that is open under administrative controls to not meet the SR during the time the valve is open. Opening a purge valve under administrative controls is restricted to one valve in a penetration flow path at a given time (refer to discussion for Note 1 of the ACTIONS) in order to effect repairs to that valve. This allows one purge valve to be opened without resulting in a failure of the Surveillance and resultant entry into the ACTIONS for this purge valve, provided the stated restrictions are met. Condition FE must be entered during this allowance, and the valve opened only as necessary for effecting repairs. Each purge valve in the penetration flow path may be alternately opened, provided one remains sealed closed, if necessary, to complete repairs on the penetration.

[The SR is modified by a Note stating that primary containment purge valves are only required to be sealed closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves or the release of radioactive material will exceed limits prior to the closing of the purge valves. At other times when the purge valves are required to be capable of closing (e.g., during handling of [recently] irradiated fuel), pressurization concerns are not present and the purge valves are allowed to be open.]]

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.1.3.2

This SR ensures that the primary containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. [The SR is also modified by a Note (Note 1), stating that primary containment purge valves are only required to be closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves, or the release of radioactive material will exceed limits prior to the purge valves closing. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are allowed to be open.] The SR is modified by a Note (Note 2) stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. The [18] inch purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The 31 day Frequency is consistent with other PCIV requirements discussed in SR 3.6.1.3.3.]

SR 3.6.1.3.3

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits.

This SR does not require any testing or valve manipulation. Rather, it involves verification that those PCIVs outside primary containment, and capable of being mispositioned, are in the correct position. Since verification of valve position for PCIVs outside primary containment is relatively easy, the 31 day Frequency was chosen to provide added assurance that the PCIVs are in the correct positions. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

SURVEILLANCE REQUIREMENTS (continued)

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since the primary containment is inerted and access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in the proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open.

SR 3.6.1.3.4

This SR verifies that each primary containment manual isolation valve and blind flange that is located inside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits. For PCIVs inside primary containment, the Frequency defined as "prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is appropriate since these PCIVs are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since the primary containment is inerted and access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in their proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.5

The traversing incore probe (TIP) shear isolation valves are actuated by explosive charges. Surveillance of explosive charge continuity provides assurance that TIP valves will actuate when required. Other administrative controls, such as those that limit the shelf life of the explosive charges, must be followed. The 31 day Frequency is based on operating experience that has demonstrated the reliability of the explosive charge continuity.

SR 3.6.1.3.6

Verifying the isolation time of each power operated, automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the safety analyses. The isolation time and Frequency of this SR are [in accordance with the requirements of the Inservice Testing Program or 92 days].

[SR 3.6.1.3.7

For primary containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option [A][B] (Ref. 4~~3~~), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established.

Additionally, this SR must be performed once within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that which occurs to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.

SURVEILLANCE REQUIREMENTS (continued)

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during handling of [recently] irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.]

SR 3.6.1.3.8

Verifying that the isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. This ensures that the calculated radiological consequences of these events remain within 10 CFR 100 limits. The Frequency of this SR is [in accordance with the requirements of the Inservice Testing Program or 18 months].

SR 3.6.1.3.9

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.3.7 overlaps this SR to provide complete testing of the safety function. The [18] month Frequency was developed considering it is prudent that this Surveillance be performed only during a unit outage since isolation of penetrations would eliminate cooling water flow and disrupt the normal operation of many critical components. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.10

----------REVIEWER'S NOTE----------
The Surveillance is only allowed for those plants for which NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation," June 2000, is applicable. In addition, the licensee must develop EFCV performance criteria and basis to ensure that their corrective action program can provide meaningful feedback for appropriate corrective actions. The EFCV performance criteria and basis must be found acceptable by the technical staff. If required, an Inservice Testing Program relief request pursuant to 10 CFR 50.55a needs to be approved by the Technical Staff in order to implement this Surveillance. Otherwise, each EFCV shall be verified to actuate on an [18] month Frequency. The bracketed portions of these Bases apply to the representative sample as discussed in NEDO-32977-A.

This SR requires a demonstration that each [a representative sample of] reactor instrumentation line excess flow check valves (EFCV) is OPERABLE by verifying that the valve [reduces flow to ≤ 1 gph on a simulated instrument line break]. [The representative sample consists of an approximately equal number of EFCVs, such that each EFCV is tested at least once every 10 years (nominal). In addition, the EFCVs in the sample are representative of the various plant configurations, models, sizes and operating environments. This ensures that any potentially common problem with a specific type or application of EFCV is detected at the earliest possible time.]

This SR provides assurance that the instrumentation line EFCVs will perform so that predicted radiological consequences will not be exceeded during the postulated instrument line break event evaluated in Reference 7~~6~~. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. [The nominal 10 year interval is based on performance testing as discussed in NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation." Furthermore, any EFCV failures will be evaluated to determine if additional testing in that test interval is warranted to ensure overall reliability is maintained. Operating experience has demonstrated that these components are highly reliable and that failures to isolate are very infrequent. Therefore, testing of a representative sample was concluded to be acceptable from a reliability standpoint.]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.11

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. The Frequency of 18 months on a STAGGERED TEST BASIS is considered adequate given the administrative controls on replacement charges and the frequent checks of circuit continuity (SR 3.6.1.3.5).

[SR 3.6.1.3.12

This SR ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions in the radiological evaluations of Reference 8~~7~~ are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Primary Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. [This SR is modified by a Note that states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required.]

[Bypass leakage is considered part of L_a.

----------REVIEWER'S NOTE----------
Unless specifically exempted.]]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.13

The analyses in References 1 and 8~~7~~ are based on leakage that is less than the specified leakage rate. Leakage through each MSIV must be ≤ [11.5] scfh when tested at ≥ P_t ([28.8] psig). A Note is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required. This ensures that MSIV leakage is properly accounted for in determining the overall primary containment leakage rate. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

SR 3.6.1.3.14

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of Reference 2 are met. The acceptance criteria for the combined leakage of all hydrostatically tested lines is [1.0 gpm times the total number of hydrostatically tested PCIVs] when tested at 1.1 P_a ([63.25] psig). The combined leakage rates must be demonstrated in accordance with the leakage rate test Frequency required by the Primary Containment Leakage Rate Testing Program.

[This SR has been modified by a Note that states that these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3, since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.]

[SR 3.6.1.3.15

----------REVIEWER'S NOTE----------
This SR is only required for those plants with purge valves with resilient seals allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices that are not permanently installed on the valves.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Verifying each [ ] inch primary containment purge valve is blocked to restrict opening to ≤ [50]% is required to ensure that the valves can close under DBA conditions within the times assumed in the analysis of References 1 and 5~~6~~. [The SR is modified by a Note stating that this SR is only required to be met in MODES 1, 2, and 3.] If a LOCA occurs, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. The [18] month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.]

REFERENCES

1. FSAR, Chapter [15].

2. FSAR, Table [6.2-5].

3. NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," January 2005.

4~~3~~. 10 CFR 50, Appendix J, Option [A][B].

5~~4~~. Generic Issue B-24.

6~~5~~. FSAR, Section 6.2.[ ].

7~~6~~. FSAR, Section [15.1.39].

8~~7~~. FSAR, Section [6.2].

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

ACTIONS

----------NOTES----------

1. Penetration flow paths [except for [ ] inch purge valve penetration flow paths] may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria in MODES 1, 2, and 3.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable [for reasons other than Condition[s] ED [or F and E]].	[A.1 ----------NOTE---------- Not applicable to inoperable MSIVs. ---------- Determine OPERABLE PCIV in the affected penetration flow path is not inoperable due to common cause failure.	4 hours from discovery of potential common cause failure mechanism]
	AND	
	A.2 1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve	4 hours [for feedwater isolation valves (FWIVs), residual heat removal (RHR) shutdown cooling suction line PCIVs, and Low Pressure

CONDITION	REQUIRED ACTION	COMPLETION TIME
	secured. AND	Core Spray (LPCS) System PCIVs ~~except for main steam line~~ AND 4 hours for PCIVs when the PCIV pressure boundary is not intact] except for the main steam isolation valves (MSIVs) AND 8 hours for main steam ~~line~~isolation valves (MSIVs) [AND 7 days except for FWIVs, RHR shutdown cooling suction line PCIVs, LPCS System PCIVs, and MSIVs] when the PCIV pressure boundary is intact]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3~~2~~ ----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside primary containment, drywell, and steam tunnel AND Prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment, drywell, or steam tunnel

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
[B. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] PCIVs. --- Two or more penetration flow paths with one PCIV inoperable [for reasons other than Condition E [or F]].	B.1 Isolate all but one of the affected penetration flow paths by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	4 hours except for MSIVs AND 8 hours for main steam isolation valves (MSIVs)]
CB.----------NOTE---------- Only applicable to penetration flow paths with two [or more] PCIVs. --- One or more penetration flow paths with two [or more] PCIVs inoperable [for reasons other than Condition[s] ED [orand FE]].	CB.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
DC. ----------NOTE---------- Only applicable to penetration flow paths with only one PCIV. --- One or more penetration flow paths with one PCIV inoperable [for reasons other than Condition[s] ED [or Fand E]].	DC.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND DC.2 ----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means.	[4] hours except for penetrations with a closed system AND [7 days] 72 hours for penetrations with a closed system

	2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. --- Verify the affected penetration flow path is isolated.	Once per 31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ED. [One or more [secondary containment bypass leakage rate,] [MSIV leakage rate,] [purge valve leakage rate,] [or] [hydrostatically tested line leakage rate] not within limit.	ED.1 Restore leakage rate to within limit.	[4 hours for hydrostatically tested line leakage [not on a closed system] AND [4 hours for secondary containment bypass leakage] AND [8 hours for MSIV leakage] AND [24 hours for purge valve leakage] AND [72 hours for hydrostatically tested line leakage] [on a closed system]]
FE. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	FE.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange]. AND	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	FE.2	----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ----------	
		Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 2 or 3 from MODE 4 if not performed within the previous 92 days for isolation devices inside containment
	AND		
	FE.3	Perform SR 3.6.1.3.6 for the resilient seal purge valves closed to comply with Required Action FE.1.	Once per [92] days]
GF. Required Action and associated Completion Time of Condition A, B, C, D, E, or FE not met in MODE 1, 2, or 3.	GF.1	Be in MODE 3.	12 hours
	AND		
	GF.2	Be in MODE 4.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
HG. [Required Action and associated Completion Time of Condition A, B, C, D, E, or E F not met for PCIV(s) required to be OPERABLE during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment].	HG.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Suspend movement of [recently] irradiated fuel assemblies in [primary and secondary containment].	Immediately]
IH. [Required Action and Associated Completion Time of Condition A, B, C, D, D, or FE not met for PCIV(s) required to be OPERABLE during MODE 4 or 5 or during operations with a potential for draining the reactor vessel (OPDRVs).	IH.1 Initiate action to suspend OPDRVs. OR IH.2 Initiate action to restore valve(s) to OPERABLE status.	Immediately Immediately]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	----------NOTE---------- [[Only required to be met in MODES 1, 2, and 3.] ---------- Verify each [ ] inch primary containment purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition FE of this LCO.	31 days]

BASES

LCO

PCIVs form a part of the primary containment boundary. The PCIV safety function is related to minimizing the loss of reactor coolant inventory and establishing the primary containment boundary during a DBA.

The power operated, automatic isolation valves are required to have isolation times within limits and actuate on an automatic isolation signal. Primary containment purge valves that are not qualified to close under accident conditions must be sealed closed [or blocked to prevent full opening] to be OPERABLE. The valves covered by this LCO are listed with their associated stroke times in the FSAR (Ref. 3).

The normally closed PCIVs are considered OPERABLE when manual valves are closed or open in accordance with appropriate administrative controls, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves and devices are those listed in Reference 3. Purge valves with resilient seals, secondary bypass valves, MSIVs, and hydrostatically tested valves must meet additional leakage rate requirements. Other PCIV leakage rates are addressed by LCO 3.6.1.1, "Primary Containment," as Type B or C testing.

This LCO provides assurance that the PCIVs will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the primary containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, most PCIVs are not required to be OPERABLE and the primary containment purge valves are not required to be sealed closed in MODES 4 and 5. Certain valves are required to be OPERABLE, however, to prevent inadvertent reactor vessel draindown and release of radioactive material during a postulated fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]. These valves are those whose associated instrumentation is required to be OPERABLE according to LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." (This does not include the valves that isolate the associated instrumentation.)

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow path(s) [except for the [ ] inch primary containment purge valve flow path(s)] to be unisolated intermittently under administrative controls. [The primary containment purge valve exception applies to primary containment purge valves that are not qualified to close under accident conditions.] These controls consist of stationing a dedicated operator at the controls of the

ACTIONS (continued)

valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated. Due to the size of the containment purge line penetration and the fact that those penetrations exhaust directly from the primary containment atmosphere to the environment, the penetration flow path containing these valves may not be opened under administrative controls. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by the exception to SR 3.6.1.3.1 and Note 2 to SR 3.6.1.3.2.

A second Note has been added to provide clarification that, for the purpose of this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable PCIV. Complying with the Required Actions may allow for continued operation, and subsequent inoperable PCIVs are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are modified by Notes 3 and 4. Note 3 ensures appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable PCIV (e.g., an Emergency Core Cooling System subsystem is inoperable due to a failed open test return valve). Note 4 ensures appropriate remedial actions are taken when the primary containment leakage limits are exceeded. Pursuant to LCO 3.0.6, these ACTIONS are not required even when the associated LCO is not met. Therefore, Notes 3 and 4 are added to require the proper actions are taken.

[A.1], A.2, and A.~~3~~2

With one or more penetration flow paths with one PCIV inoperable, [except for secondary containment bypass leakage rate, MSIV leakage rate, purge valve leakage rate, or hydrostatically tested line leakage rate not within limits], the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For penetrations isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to the primary containment.

---------- Reviewer's Note ----------

Adoption of the 7 day Completion Time in Required Action A.2 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," [Federal Register Notice Reference]. Otherwise, a 4 hour Completion Time must be maintained for PCIVs other than MSIVs.

The Required

BASES

ACTIONS (continued)

Action must be completed within the specified ~~4 hour~~ Completion Time ~~(8 hours for main steam lines)~~ [(4 hours for PCIVs other than MSIVs; 8 hours for MSIVs)] [(4 hours for feedwater isolation valves (FWIVs) and residual heat removal (RHR) shutdown cooling suction line PCIVs; 4 hours for inoperable PCIVs when the PCIV pressure boundary is not intact; 8 hours for MSIVs; and 7 days for other PCIVs in primary containment penetration flow paths with two [or more] PCIVs when the PCIV pressure boundary is intact)]. The Completion Time ~~specified time period~~ of 4 hours is reasonable considering the time required to isolate the affected penetration and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. For MSIVs~~main steam lines~~, an 8 hour Completion Time is allowed. The Completion Time of 8 hours ~~for the main steam lines~~ allows a period of time to restore the MSIVs to OPERABLE status given the fact that MSIV closure will result in isolation of the main steam line(s) and a potential for plant shutdown.

---------- Reviewer's Note ----------
Adoption of the 7 day Completion Time in Required Action A.2 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," [Federal Register Notice Reference]. Otherwise, a 4 hour Completion Time must be maintained for PCIVs other than MSIVs.

[For other PCIVs in primary containment penetration flow paths with two [or more] PCIVs, a 7 day Completion Time is allowed if the PCIV pressure boundary is intact. The Completion Time of 7 days provides the capability for on-line maintenance, repair, and testing of a PCIV and is reasonable considering the relative importance of supporting primary containment OPERABILITY in MODES 1, 2, and 3 (Ref. 4).]

[Required Action A.1 requires a determination that the OPERABLE PCIV in the affected penetration is not inoperable due to a common cause failure within 4 hours of discovery of a potential common cause failure mechanism. This determination supports the 7 day Completion Time (Ref. 4). If the inoperable PCIV and the OPERABLE PCIV share a similar design in a feature that is related to the valve inoperability, a situation-specific verification of the OPERABLE PCIV (e.g., inspection, partial stroke, functionality test, or engineering evaluation) must be performed with 4 hours. Should a new or different potential common cause failure mechanism be identified, the 4 hour Completion Time is restarted. Required Action A.1 is modified by a Note stating that the verification is not required for MSIVs since the 7 day Completion Time is not applicable to that class of PCIVs.]

For affected penetrations that have been isolated in accordance with Required Action A.2~~1~~, the affected penetration flow path must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident, and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those devices outside the primary containment, drywell, and steam tunnel and capable of being mispositioned are in the correct position. The Completion Time for this verification of "once per 31 days for isolation devices outside primary containment, drywell, and steam tunnel," is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For devices inside the primary containment, drywell, or steam tunnel, the specified time period of "prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days," is based on engineering judgment and is considered reasonable in view of the inaccessibility of the devices and the existence of other administrative controls ensuring that device misalignment is an unlikely possibility.

Condition A is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two [or more] PCIVs. For penetration flow paths with one PCIV, Condition D~~C~~ provides appropriate Required Actions.

Required Action A.3~~2~~ is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by

[B.1

In the event one PCIV in two or more penetration flow paths are inoperable, all but one of the affected PCIVs must be isolated within 4 hours (8 hours for MSIVs). Therefore, all but one penetration must be isolated using a closed and de-activated automatic valve, a closed manual valve, or a blind flange within the Completion Time. This limits the 7 day Completion Time of Required Action A.2 to a single inoperable PCIV in a single penetration (Ref. 4).

When the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.3, which remains in effect. This periodic verification is necessary to assure leak tightness of primary

containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative controls and the probability of their misalignment is low.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two [or more] containment isolation valves. Condition A addresses the Condition of one containment isolation valve inoperable in a single penetration flow path containing two [or more] isolation valves.]

BASES

ACTIONS (continued)

administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is low.

CB.1

With one or more penetration flow paths with two [or more] PCIVs inoperable, [except for secondary containment bypass leakage rate, MSIV leakage rate, purge valve leakage rate, or hydrostatically tested line leakage rate not within limit], either the inoperable PCIVs must be restored to OPERABLE status or the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure.

Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

Condition CB is modified by a Note indicating this Condition is only applicable to penetration flow paths with two [or more] PCIVs. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions.

DC.1 and DC.2

When one or more penetration flow paths with one PCIV inoperable, [except for secondary containment bypass leakage rate, MSIV leakage rate, purge valve leakage rate, or hydrostatically tested line leakage rate not within limit], the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration.

BASES

ACTIONS (continued)

----------REVIEWER'S NOTE----------
Adoption of the 7 day Completion Time in Required Action D.1 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-454, Revision 2, "Extend PCIV Completion Times (NEDC-33046)," [Federal Register Notice Reference]. ~~The [4] hour Completion Time is left as 4 hours consistent with the Completion Time of Required Action A.1 for most penetrations; or a plant specific evaluation is provided for NRC review for cases other than for closed system penetrations and EFCVs (which have been reviewed and approved for 72 hours).~~ If all penetrations have a ~~are accepted for~~ 72 hour~~s~~ Completion time, the Completion Time is simplified to state 72 hours.

The Completion Time of [4] hours is reasonable considering the time required to isolate the penetration and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. [The 72 hour Completion Time is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. The closed system must meet the requirements of Ref. 5.] [The Completion Time of 7 days, for penetrations with a closed system, provides the capability for on-line maintenance, repair, and testing of a PCIV and is reasonable considering the relative importance of supporting primary containment OPERABILITY in MODES 1, 2, and 3 (Ref. 4).] In the event the affected penetration is isolated in accordance with Required Action D~~C~~.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

Condition D~~C~~ is modified by a Note indicating this Condition is applicable only to those penetration flow paths with only one PCIV. For penetration flow paths with two PCIVs, Conditions A, B, and C~~B~~ provide the appropriate Required Actions. This Note is necessary since this Condition is written specifically to address those penetrations with a single PCIV.

Required Action D~~C~~.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are

locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is low.

BASES

ACTIONS (continued)

[ED.1

With the [secondary containment bypass leakage rate (SR 3.6.1.3.9),] MSIV leakage rate (SR 3.6.1.3.10), [purge valve leakage rate (SR 3.6.1.3.6),] [or] [hydrostatically tested line leakage rate (SR 3.6.1.3.11)], not within limit, the assumptions of the safety analysis are not met. Therefore, the leakage must be restored to within limit. Restoration can be accomplished by isolating the penetration that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated, the leakage rate for the isolation penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time for hydrostatically tested line leakage [not on a closed system] and for secondary containment bypass leakage is reasonable considering the time required to restore the leakage by isolating the penetration and the relative importance of secondary containment bypass leakage to the overall containment function. For MSIV leakage, an 8 hour Completion Time is allowed. The Completion Time of 8 hours for MSIV leakage allows a period of time to restore the MSIVs to OPERABLE status given the fact that MSIV closure will result in isolation of the main steam line(s) and potential for plant shutdown. [The 24 hour Completion Time for purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of the containment does not exist.] [The 72 hour Completion Time for hydrostatically tested line leakage [on a closed system] is acceptable based on the available water seal expected to remain as a gaseous fission product boundary during the accident [, and, in many cases, an associated closed system].

----------REVIEWER'S NOTE----------
The bracketed options provided in ACTION ED reflect options in plant design and options in adopting the associated leakage rate Surveillances.

The options (both in ACTION ED and ACTION FE) for purge valve leakage, are based primarily on the design. If leakage rates can be measured separately for each purge valve, ACTION FE is intended to apply. This would be required to be able to implement Required Action FE.3. Should the design allow only for leak testing both purge valves simultaneously, then the Completion Time for ACTION ED should include the "24 hours for purge valve leakage" and ACTION FE should be eliminated.

BASES

ACTIONS (continued)

Adopting Completion Times for secondary containment bypass and/or hydrostatically tested lines is based on whether the associated SRs are adopted.

The additional bracketed options for whether the hydrostatically tested line is with or without a closed system is predicated on plant-specific design. If the design is such that there are not both types of hydrostatically tested lines (some with and some without closed systems), the specific 'closed system' wording can be removed and the appropriate 4 or 72 hour Completion Time retained. In the event there are both types, the clarifying wording remains and the brackets are removed.]

[FE.1, FE.2, and FE.3

In the event one or more containment purge valves are not within the purge valve leakage limits, purge valve leakage must be restored to within limits or the affected penetration must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a [closed and de-activated automatic valve, closed manual valve, and blind flange]. If a purge valve with resilient seals is utilized to satisfy Required Action FE.1 it must have been demonstrated to meet the leakage requirements of SR 3.6.1.3.6. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist.

In accordance with Required Action FE.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside containment and potentially capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 2 or 3 from MODE 4 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

BASES

ACTIONS (continued)

For the containment purge valve with resilient seal that is isolated in accordance with Required Action FE.1, SR 3.6.1.3.6 must be performed at least once every [92–] days. This provides assurance that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.1.3.6 is 184 days. Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [92–] days was chosen and has been shown acceptable based on operating experience.

Required Action FE.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned.]

GF.1 and GF.2

If any Required Action and associated Completion Time cannot be met in MODE 1, 2, or 3, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

[HG.1, IH.1, and IH.2

If any Required Action and associated Completion Time cannot be met, the plant must be placed in a condition in which the LCO does not apply. If applicable, movement of [recently] irradiated fuel assemblies must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe condition. Also, if applicable, action must be immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown and subsequent potential for fission

BASES

ACTIONS (continued)

product release. Actions must continue until OPDRVs are suspended. If suspending the OPDRVs would result in closing the residual heat removal (RHR) shutdown cooling isolation valves, an alternative Required Action is provided to immediately initiate action to restore the valves to OPERABLE status. This allows RHR to remain in service while actions are being taken to restore the valve.]

SURVEILLANCE REQUIREMENTS

[SR 3.6.1.3.1

Each [ ] inch primary containment purge valve is required to be verified sealed closed at 31 day intervals. This SR is intended to apply to primary containment purge valves that are not fully qualified to open under accident conditions. This SR is designed to ensure that a gross breach of primary containment is not caused by an inadvertent or spurious opening of a primary containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Primary containment purge valves that are sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The 31 day Frequency is a result of an NRC initiative, Generic Issue B-24, (Ref. 6) related to primary containment purge valve use during unit operations.

This SR allows a valve that is open under administrative controls to not meet the SR during the time the valve is open. Opening a purge valve under administrative controls is restricted to one valve in a penetration flow path at a given time (refer to discussion for Note 1 of the ACTIONS) in order to effect repairs to that valve. This allows one purge valve to be opened without resulting in a failure of the Surveillance and resultant entry into the ACTIONS for this purge valve, provided the stated restrictions are met. Condition F~~E~~ must be entered during this allowance, and the valve opened only as necessary for effecting repairs. Each purge valve in the penetration flow path may be alternately opened, provided one remains sealed closed, if necessary, to complete repairs on the penetration.

SURVEILLANCE REQUIREMENTS (continued)

[The SR is modified by a Note stating that primary containment purge valves are only required to be sealed closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves or the release of radioactive material will exceed limits prior to the closing of the purge valves. At other times when the purge valves are required to be capable of closing (e.g., during movement of [recently] irradiated fuel assemblies), pressurization concerns are not present and the purge valves are allowed to be open.]]

[SR 3.6.1.3.2

This SR verifies that the [20] inch primary containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits.

The SR is also modified by a Note (Note 1) stating that primary containment purge valves are only required to be closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves, or the release of radioactive material will exceed limits prior to the purge valves closing. At other times when the purge valves are required to be capable of closing (e.g., during movement of irradiated fuel assemblies) pressurization concerns are not present and the purge valves are allowed to be open.

The SR is modified by a Note (Note 2) stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for pressure control, ALARA, or air quality considerations for personnel entry, or for Surveillances that require the valves to be open, provided the drywell [purge supply and exhaust] lines are isolated. These primary containment purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The 31 day Frequency is consistent with other primary containment purge valve requirements discussed in SR 3.6.1.3.1.]

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.3

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment, drywell, and steam tunnel, and not locked, sealed, or otherwise secured and is required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the primary containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those PCIVs outside primary containment, and capable of being mispositioned, are in the correct position. Since verification of valve position for PCIVs outside primary containment is relatively easy, the 31 day Frequency was chosen to provide added assurance that the PCIVs are in the correct positions. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes are added to this SR. The first Note applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in the proper position, is low. A second Note is included to clarify that PCIVs open under administrative controls are not required to meet the SR during the time the PCIVs are open.

SR 3.6.1.3.4

This SR verifies that each primary containment manual isolation valve and blind flange located inside primary containment, drywell, or steam tunnel, and not locked, sealed, or otherwise secured and required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits. For PCIVs inside primary containment, drywell, or steam tunnel the Frequency of "prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days," is appropriate since these PCIVs are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Two Notes are added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since access to these areas is typically restricted during MODES 1, 2, and 3. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in their proper position, is low. A second Note is included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open.

SR 3.6.1.3.5

Verifying the isolation time of each power operated, automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV full closure isolation time is demonstrated by SR 3.6.1.3.6. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the safety analysis. The isolation time and Frequency of this SR are [in accordance with the Inservice Testing Program or 92 days].

[SR 3.6.1.3.6

For primary containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option [A][B] (Ref. 74), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation, and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established. Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that which occurs to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.

SURVEILLANCE REQUIREMENTS (continued)

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during handling of [recently] irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.]

SR 3.6.1.3.7

Verifying that the full closure isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The full closure isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. The Frequency of this SR is [in accordance with the Inservice Testing Program or 18 months].

SR 3.6.1.3.8

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.1.6 overlaps this SR to provide complete testing of the safety function. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.1.3.9

This SR ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions in the radiological evaluations of Reference 2 are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Primary Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria.

[This SR is modified by a Note that states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required.]

[Bypass leakage is considered part of La.

----------REVIEWER'S NOTE----------
Unless specifically exempted.]]

SR 3.6.1.3.10

The analyses in References 1 and 2 are based on leakage that is less than the specified leakage rate. Leakage through all four MSIVs must be ≤ [100] scfh when tested at P_t ([11.5] psig). A Note is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required. This ensures that MSIV leakage is properly accounted for in determining the overall primary containment leakage rate. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.11

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of References 1 and 2 are met. The acceptance criteria for the combined leakage of all hydrostatically tested lines is [1.0 gpm times the total number of hydrostatically tested PCIVs] when tested at 1.1 P_a ([63.25] psig). The combined leakage rates must be demonstrated to be in accordance with the leakage test frequency required by the Primary Containment Leakage Rate Testing Program.

[This SR is modified by a Note that states that these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3 since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.]

[SR 3.6.1.3.12

----------REVIEWER'S NOTE----------
This SR is only required for those plants with purge valves with resilient seals allowed to be open during [MODE 1, 2, or 3] and having blocking devices on the valves that are not permanently installed.

Verifying that each [ ] inch primary containment purge valve is blocked to restrict opening to ≤ [50%] is required to ensure that the valves can close under DBA conditions within the time limits assumed in the analyses of References 1 and 2.

[The SR is modified by a Note stating that this SR is only required to be met in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of [recently] irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. The [18] month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.]]

BASES

REFERENCES

1. FSAR, Chapter [15].

2. FSAR, Section [6.2].

3. FSAR, [Table 6.2-44].

4. NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," January 2005

~~4. 10 CFR 50, Appendix J, Option [A][B].~~

5. FSAR, Section 6.2.[ ].

6. Generic Issue B-24.

7. 10 CFR 50, Appendix J, Option [A][B].