March 27, 2012

TSTF-12-04
PROJ0753

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

SUBJECT: Transmittal of TSTF-537, Revision 0, "Increase CIV Completion Time; Update of TSTF-373"

Enclosed for NRC review is Revision 0 of TSTF-537, "Increase CIV Completion Time; Update of TSTF-373." TSTF-537 is applicable to Combustion Engineering plants.

The TSTF requests that the NRC bill the Pressurized 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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BWR OWNERS' GROUP

Technical Specifications Task Force
Improved Standard Technical Specifications Change Traveler

Increase CIV Completion Time; Update of TSTF-373

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

Classification 1) Technical Change | Recommended for CLIIP?: Yes

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

Benefit: Provides Longer Completion Time

See attached.

Revision History

OG Revision 0 Revision Status: Active

Revision Proposed by: PWROG

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 29-Dec-11

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 31-Jan-12

TSTF Review Information

TSTF Received Date: 03-Feb-12 Date Distributed for Review 03-Feb-12

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

TSTF Comments:
(No Comments)

TSTF Resolution: Date:

Affected Technical Specifications

Ref. 3.6.3 Bases	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.A	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.A Bases	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.B	Containment Isolation Valves (Atmospheric and Dual) Change Description: New Condition
Action 3.6.3.B	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed D

Action 3.6.3.B Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: New Condition
Action 3.6.3.B Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed D
Action 3.6.3.C	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed E
Action 3.6.3.C	Containment Isolation Valves (Atmospheric and Dual) Change Description: New Condition
Action 3.6.3.C Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: New Condition
Action 3.6.3.C Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed E
Action 3.6.3.D	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed F
Action 3.6.3.D Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed F
Action 3.6.3.E	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed G
Action 3.6.3.E Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed G
Action 3.6.3.F	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed H
Action 3.6.3.F Bases	Containment Isolation Valves (Atmospheric and Dual) Change Description: Renamed H
SR 3.6.3.6 Bases	Containment Isolation Valves (Atmospheric and Dual)

1 Summary Description

The proposed change to the Technical Specifications (TS) would extend to 7 days the Completion Time (CT) to isolate the affected penetration flow path when selected containment isolation valves (CIVs) are inoperable in either a penetration flow path with two CIVs or in a penetration flow path with one CIV in a closed system. This change is based on analyses provided in a generic topical report submitted by the former Combustion Engineering Owner's Group (CEOG; now incorporated into the Pressurized Water Reactor Owners Group).

The proposed change replaces TSTF -373, Revision 2, "Increase CIV Completion Time in accordance with CE NPSD-1168-A," which was approved by the Nuclear Regulatory Commission (NRC) in February 2004 (Ref. 1). TSTF-373 was incorporated into Revisions 3.1 and 4 of the Improved Standard Technical Specifications (ISTS).

The technical justification for the proposed change and for TSTF-373 is contained in the Topical Report CE NPSD-1168-A, "Joint Applications Report for Containment Isolation Valve AOT Extension," which was approved by the NRC on December 21, 2000 (Ref. 2).

The NRC verbally withdrew their approval of TSTF-373 after identifying differences between the Traveler and similar Travelers for other plant designs. No Combustion Engineering (CE) plants have adopted TSTF-373. Industry representatives met with the NRC on April 24, 2008 to discuss the changes needed to TSTF-373 to allow plant-specific adoption.

This proposed change supersedes TSTF-373 in its entirety. The proposed change revises the ISTS and provides a model application which addresses the NRC concerns.

2 Detailed Description

Limiting Condition for Operation (LCO) 3.6.3, "Containment Isolation Valves (Atmospheric and Dual)," in NUREG 1432 requires that each CIV be Operable. The Operability of CIVs ensures that the containment is isolated during a design basis accident and is able to perform its function as a barrier to the release of radioactive material. If a CIV is inoperable in one or more penetrations, the current required action is to isolate the penetration or restore the inoperable CIV to Operable status within 4 hours for penetrations with two CIVs and within 72 hours for penetrations with a single CIV and a closed system. The times specified for performing these actions were considered reasonable, given the time required to isolate the penetration and the relative importance of ensuring containment integrity during plant operation. In the case of a single CIV and a closed system, the specified CT takes into consideration the ability of the closed system to act as a penetration boundary.

The CEOG Joint Applications Report (JAR), CE NPSD-1168-A, provides a risk-informed technical basis for specific changes to the CTs of Specification 3.6.3. The proposed change provides a 7 day CT when one CIV in a containment penetration with

two CIVs or when one CIV in a penetration connected to a closed system are inoperable. The proposed change is justified based on the low risk associated with the extended CTs and the relatively greater risk associated with transitioning from the existing Mode to cold shutdown (Mode 5).

The Conditions in TS 3.6.3 are currently modified by Notes that direct their use based on three configurations:

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

2. Penetration flow paths with one CIV and a closed system (retained in proposed Condition E); and

3. Secondary containment penetrations and containment purge valves (retained in proposed Conditions F and G). Not all plants have these features and, therefore, Conditions F and G are optional (i.e., bracketed) in NUREG-1432.

The proposed changes to Specification 3.6.3 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] CIVs. The condition is applicable when one or more penetration flow paths have one CIV inoperable. Condition A is revised to apply the existing Required Actions and CTs to configurations to which the proposed extended CT is not applicable. Two changes are made:

    a. An additional condition is added which states "One or more penetration flow paths with one [containment sump supply valve to the ECCS or containment spray pumps] inoperable." The proposed extended CT is not applicable to the sump supply valves. The term is bracketed to allow for the plant-specific description of the valves.

    b. The existing condition, which states, "One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] D [and E]]" is revised to "One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] F or G] and the containment isolation valve pressure boundary not intact." As discussed below, the extended CT is only applicable if the CIV pressure boundary is intact. If the pressure boundary is not intact, the existing Required Actions and associated CTs are applied. The revised Condition reflects 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 NUREG-1432 TS.

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] CIVs. New Condition B is applicable when one or more penetration flow paths have one CIV inoperable [for

reasons other than Condition[s] F or G] and the CIV pressure boundary is intact. An intact CIV pressure boundary is necessary to justify a longer CT as discussed in CE NPSD-1168-A. New Condition B has the following Required Actions:

a. New Required Action B.1 requires determination that the Operable CIV in the affected penetration flow path is not inoperable due to a common cause failure. The CT of 4 hours was chosen to be consistent with the existing CT for Required Action A.1. This new Required Action is necessary to implement an analysis assumption in CE NPSD-1168-A. Should it be determined that the redundant CIV is inoperable due to a common cause failure, existing Condition B (now Condition D) requires isolation of the flow path within 1 hour.

b. New Required Action B.2 requires isolation of 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 secured within 7 days. The Required Action is unchanged from the existing requirements of Required Action A.1 but the CT is extended from 4 hours to 7 days.

c. New Required Action B.3 requires periodic verification that the affected penetration flow path is isolated. The Required Action and CT are unchanged from the existing requirements of Required Action A.2.

3. A new Condition C is proposed. The condition is modified by a Note stating it is only applicable to penetration flow paths with two [or more] CIVs. New Condition C is applicable when <u>two</u> or more penetration flow paths have one CIV inoperable [for reasons other than Condition[s] F and G] (i.e., secondary containment penetrations and the containment purge valves). New Required Action C.1 requires isolating all but one of the affected penetration flow paths within 4 hours. This Condition satisfies a condition on NRC approval of CE NPSD-1168-A that the extended CT be applied to a single penetration at a time.

4. Existing Condition B is renamed as Condition D. The condition is modified by a Note stating it is only applicable to penetration flow paths with two [or more] CIVs. Condition D is applicable when one or more penetration flow paths have <u>two</u> or more CIVs inoperable [for reasons other than existing Condition[s] F or G] (i.e., secondary containment penetrations and the containment purge valves). The Condition 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 NUREG-1432 TS. The Required Action requires isolation of the affected penetration flow path within 1 hour. The specified Required Action and associated CT are unchanged.

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

a. Required Action C.1 (now E.1) requires isolating the penetration flow path within 72 hours. The proposed change revises the CT to provide a 7 day CT for those penetrations that meet the 7 day criteria. The criteria for applying the 7 day CT to a penetration flow path are given in Section 6.3.2.4 of CE NPSD-1168-A and summarized in the proposed Bases.

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

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

7. The CT of Required Action E.3 (now G.3) is revised from "Once per [ ] days" to "Once per [92] days." The bracketed CT of 92 days is used in the Bases for the Required Action. The bracketed value is added to the TS CT to be consistent with the NUREG-1432 format. This is an editorial improvement with no change in intent.

8. 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 CE NPSD-1168-A, satisfies the conditions for use given in the NRC's Safety Evaluation for the Topical Report, satisfies the conditions for use given in the NRC's Safety Evaluation for TSTF-373, and addresses the NRC concerns stated at the April 24, 2008 public meeting.

3 Technical Evaluation

In June 1999, the CEOG submitted the JAR CE NPSD-1168-A which provided a risk-informed justification for extending the TS CT (also referred to as an Allowed Action Time), for an inoperable CIV from the current 4 hours or 72 hours to 7 days. The NRC approved CE NPSD-1168-A on June 16, 2000 and the approved version was published in January 2000. The NRC concluded that, based on the use of bounding risk parameters for CE designed plants, the proposed increase in the CIV CT from 4 hours (2 or more CIVs) or 72 hours (single CIV and closed system) to 7 days does not result in an unacceptable incremental conditional core damage probability (ICCDP) or incremental conditional large early release probability (ICLERP), according to the criteria of Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk- Informed Decision Making: Technical Specifications," provided that certain conditions specified in the staff Safety Evaluation were acceptably addressed by individual licensees referencing the JAR in plant-specific submittals. The JAR demonstrated that the proposed CT extension provides plant operational flexibility while simultaneously allowing plant operation with an acceptable level of risk and the risk level associated with the proposed CT is below the guidelines set forth in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk Informed Decisions on Plant-Specific Changes to the Licensing Basis."

The CIV penetration configurations may be categorized into three groups. These groups are:

1. CIV penetration configurations that fall within the 14 containment penetration configurations considered in the JAR;

2. CIV penetration configurations that were specifically excluded in the JAR; and

3. CIV penetration configurations that were not considered in the JAR but a plant specific analysis could be provided to justify a 7 day CT.

The proposed change applies to those CIV penetration configurations that fall within the 14 containment penetration configurations considered in the JAR. The model application requires the licensee to confirm that the generic bounding analysis presented in the JAR is applicable.

The CIVs that were specifically excluded in the JAR include the containment sump supply valves to the Emergency Core Cooling System (ECCS) and containment spray pumps and valves associated with the Main Feedwater System or Main Steam Isolation Valves. For these CIVs, the CTs for an inoperable valve will not change. Thus, either the existing 4 hour CT or the 72 hour CT, depending on whether the penetration has two valves or has a single CIV within a closed system, respectively.

The proposed change is not applicable to CIV penetration configurations that are not considered in the JAR. Plants desiring to extend the CTs in Specification 3.6.3 using a plant-specific justification are not eligible to utilize this proposed change.

NRC Acceptance of CE NPSD-1168-A as the Technical Basis

The NRC approved CE NPSD-1168-A on June 16, 2000. The Safety Evaluation concluded that the proposed CT extension was acceptable based on the following:

- The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the CIVs for a limited period of time but should not alter the ability of the plant to meet the overall containment leakage requirements.

- The risk analyses in the JAR are generic using upper-bound values for parameters that are conservative for all Combustion Engineering plants. The Total Core Damage Frequency used in the calculations include are based on the most limiting CE plant Core Damage Frequency (CDF) value including internal fire, seismic, and external events.

- The risk analyses consider all significant impacts of CIV TS modification, including:

    - Assessment of the ICCDP and ICLERP resulting from allowing CIVs to remain in the open position for the duration of the CT.

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

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

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

- In accordance with Regulatory Guide 1.177, risks associated with a single CT 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 Condition are also considered.

The NRC Safety Evaluation for CE NPSD-1168-A included a number of conditions on its use. The proposed change generically addresses these conditions by limitations in the TS and requirements in the model application. Each Safety Evaluation condition is given below and the manner in which the condition is addressed is discussed.

Analysis

a. Since the JAR is generic, individual licensees requesting CIV CT relaxations should state in their plant-specific applications that they have verified the applicability of the JAR results to their particular plant. Licensees should ensure that the relaxed CT will only apply to penetrations analyzed to meet the risk guidelines of Regulatory Guide 1.177. The JAR considers 14 containment penetration configurations. Any other CIV configurations which were not analyzed in the JAR to which the revised Completion Time will apply are not permitted under this change.

   In addition, the JAR identified three sets of valves (containment sump supply valves to the ECCS and containment spray system pumps, valves associated with the main feedwater system, and main steam isolation valves), to which the revised CT will not apply. Licensees' plant-specific technical specification submittals must maintain the current technical specifications Completion Time value for these valves.

   Incorporation

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

- The proposed changes are restricted to the 14 containment penetration configurations considered in the JAR. Application of the proposed CT extension using plant-specific analysis is not permitted under this proposed change.

- The proposed changes do not revise the TS requirements for the containment sump supply valves to the ECCS and containment spray system pumps, valves associated with the main feedwater system, and main steam isolation valves.

b. Licensees should provide sufficient quantitative or qualitative substantiation to demonstrate that external events will not impact the results of the analysis supporting the revised technical specifications.

Incorporation

- The model application requires licensees requesting the proposed change to confirm that the generic bounding analysis presented in CE NPSD 1168-A is applicable and that the plant-specific risk, including the effects of external events, meets the risk guidelines of Regulatory Guide 1.177.

c. Licensees should state in their plant-specific applications that they have verified acceptable PRA quality as described in Regulatory Guide 1.177.

Incorporation

- 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.

Configuration Risk Management Program

a. Licensees must state in their plant-specific applications that a risk-informed plant Configuration Risk Management Program (CRMP) to assess the risk associated with the removal of equipment from service during the Completion Time has been implemented (unless the submittal is made after the revised maintenance rule has become effective). An acceptable CRMP must be incorporated into documents that the staff finds acceptable.

Incorporation

- The NRC Safety Evaluation associated with CE NPSD-1168-A was issued prior to the changes associated with 10 CFR 50.65(a)(4) becoming effective. (The NRC Safety Evaluation for NPSD-1168 is dated 6/26/2000 and 10 CFR 50.65(a)(4) became effective on 11/28/2000.) With the implementation of 10 CFR 50.65(a)(4), licensees are required to assess and manage the risk that may result from proposed maintenance activities. The staff concluded in the Safety Evaluation for TSTF-373 that the activities necessary for implementation of 10 CFR 50.65(a)(4) satisfy the condition in the NRC Safety Evaluation for implementing a CRMP and supersede the need for a separate program.

b. Concerns with common-cause failures were not addressed in the JAR. Licensees should require verification of the operability of the remaining CIV(s) in a penetration flow path before entering the relaxed Completion Time interval for corrective maintenance.

Incorporation

- Proposed Required Action B.1 requires verification that the redundant CIVs in a penetration flow path are not rendered inoperable due to a common cause failure prior to exceeding the existing 4 hour CT.

c. The JAR assumes that the penetrations remain physically intact (except following seismic events or spurious lifting of relief valves) while in modes requiring these valves to be operable during corrective or preventive maintenance. Licensees should describe in their plant-specific applications how the affected penetration will remain physically intact, or state in their plant-specific applications that the penetration will be isolated so as not to permit a release to the outside environment.

Incorporation

- Proposed Condition B, which implements the proposed extended CT, states it is only applicable when the CIV pressure boundary is intact. Condition A, which retains the current Required Actions and CTs, is modified to be applicable when the inoperable CIV pressure boundary is not intact.

d. The licensee's CRMP should consider the additive nature of multiple failed CIVs, and the possibility of entering multiple Completion Times and verify that these situations will result in risks consistent with the incremental conditional core damage probability and incremental large early release probability guidelines so that defense-in-depth for safety systems will be maintained.

Incorporation

- Proposed Condition C applies when two or more penetration flow paths with one CIV are inoperable and requires isolating all but one affected penetration flow path within 1 hour.

Conditions of Implementation for TSTF-373, Rev. 2

The proposed change supersedes TSTF-373, Rev. 2, "Increase CIV Completion Time in Accordance With CE-NPSD-1168," (Ref. 1). However, the NRC's approval of TSTF-373 modified or added to the verifications and conditions of CE NPSD-1168-A. Therefore, it is beneficial to consider and implement the conditions in the NRC Safety Evaluation for TSTF-373, Rev. 2. Each Safety Evaluation condition is given below and the manner in which the condition is implemented is discussed.

(a) The supporting information in CE NPSD–1168–A is applicable to the plant and the specific penetrations for which the licensee is requesting an extended CT (i.e., the

specific penetrations are consistent with those analyzed per the risk guidelines of Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk- Informed Decision Making: Technical Specifications," and fall within the 14 containment penetration configurations in the report).

Incorporation

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

- The proposed TS are limited to the 14 containment penetration configurations in the JAR.

- The model application requires verification that the extended CT is only applied to the 14 containment penetration configurations in the JAR.

(b) They have evaluated and substantiated that external events will not affect the results of the analysis supporting the extended CTs.

Incorporation

- The model application requires licensees requesting the proposed change to confirm that the generic bounding analysis presented in CE NPSD 1168-A is applicable and that the plant-specific risk, including the effects of external events, meets the risk guidelines of Regulatory Guide 1.177.

(c) Any plant-specific analyses used to support the amendment request have used an acceptable probabilistic risk analyses (PRA) quality as described in Regulatory Guide 1.177.

Incorporation

- Application of the proposed CT extension using plant-specific analysis is not permitted under this proposed change.

(d) Plant-specific implementation of this change includes verification of the operability of the remaining CIV(s) in a penetration flow path before entering the extended CT for corrective maintenance. Plant-specific implementation of this change includes verification that the affected penetration will remain physically intact or be isolated so as to not permit a release to the outside environment.

Incorporation

- Proposed Required Action B.1 requires verification that the redundant CIVs in a penetration flow path are not rendered inoperable due to a common cause failure prior to exceeding the existing 4 hour CT.

- Proposed Condition B, which implements the proposed extended CT, states it is only applicable when the CIV pressure boundary is physically intact. Condition A, which retains the current Required Actions and CTs, is modified to be applicable when the inoperable CIV pressure boundary is not intact.

(e) They have verified that the additive nature of multiple failed CIVs and the possibility of entering multiple allowed Completion Times have been addressed as part of the analysis.

Incorporation

- Proposed Condition C applies when two or more penetration flow paths with one CIV are inoperable and requires isolating all but one affected penetration flow path within 1 hour.

(f) Applications that propose changes for configurations not addressed by the groups described in CE NPSD–1168–A include a plant-specific analysis to justify the CT extension. [Note that such proposals will require staff review of the specific penetrations and related justifications for the proposed extension in CTs.]

Incorporation

- Application of the proposed CT extension using plant-specific analysis is not permitted under this proposed change.

NRC Additional Concerns

A public meeting was held with the NRC on April 24, 2008, to discuss the NRC verbal withdrawal of support for TSTF-373. The NRC concerns are given below and the manner in which the concern is addressed is discussed:

1. The JAR analysis did not adequately address the risk presented from multiple inoperable CIVs.

   Incorporation

   - Proposed Condition C applies when two or more penetration flow paths with one CIV are inoperable and requires isolating all but one affected penetration flow path within 1 hour. This is consistent with the approach accepted by the NRC in their approval of similar Travelers for Babcock & Wilcox plants and Westinghouse plants.

2. The JAR analysis assumed the remaining valve in the containment penetration is Operable and not affected by a common cause failure mechanism.

Incorporation

- Proposed Required Action B.1 requires verification that the redundant CIV in a penetration flow path is not rendered inoperable due to a common cause failure prior to exceeding the existing 4 hour CT.

3. The JAR analysis assumed that the penetration was intact.

   Incorporation

   - Proposed Condition B, which implements the proposed extended CT, states it is only applicable when the CIV pressure boundary is physically intact. Condition A, which retains the current Required Actions and CTs, is modified to be applicable when the inoperable CIV pressure boundary is not intact.

The NRC stated that it did not appear that a revision to CE NPSD-1169-A would be needed and the stated concerns could be addressed in a revised Traveler.

Differences Between the NRC Approval of TSTF-373 and Subsequent Travelers

Subsequent to the approval by the NRC of TSTF-373, the NRC approved three additional Travelers that proposed similar changes:

- TSTF-454, Rev. 1, "Extend PCIV Completion Times (NEDC-33046)," on 12/13/2005 (applicable to Boiling Water Reactor plants);

- 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 approval of these changes was 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 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 CDF. However, the proposed CIV 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 CIV CTs must also assess LERF and ICLERP.

Incorporation

- 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 4, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Section 11, which provides guidance and details on the assessment and management of risk during maintenance as an ongoing commitment.

   Incorporation

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

Summary

The proposed change implements the extended CT for certain CIVs as justified by CE NPSD-1168-A and implements the NRC conditions for use in the Safety Evaluation. The proposed change also addresses the NRC conditions for use given in the TSTF-373 Safety Evaluation, and also addressed conditions on use applied by the NRC to similar TS changes.

4 Regulatory Evaluation

4.1 Applicable Regulatory Requirements / Criteria

In Title 10 of the Code of Federal Regulations (10 CFR) Section 50.36, "Technical Specifications," the NRC established its regulatory requirements related to the content of TS. Pursuant to 10 CFR 50.36, TS are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings, (2) LCOs, (3) surveillance requirements, (4) design features, and (5) administrative controls. However, the regulation does not specify the particular TS to be included in a plant's license. The proposed change concerns CIVs. The LCOs are the lowest functional capability, or performance levels, of equipment required for safe operation of the facility. When an LCO of a nuclear reactor is not met, the licensee shall follow any remedial actions permitted by the TS until the condition can be met or shall shut down the reactor.

Furthermore, the CTs specified in the TS must be based on the reasonable protection of public health and safety. As set forth in 10 CFR 50.36, a licensee's TS must establish the LCOs that are the lowest functional capability, or performance levels, of equipment required for safe operation of the facility. The TS specify CTs for structures, systems, and components (SSCs), such as CIVs. These CTs allow a certain amount of time in which to correct a condition that does not meet the LCO before the reactor must be brought to a condition that exits the mode of applicability, in most cases resulting in the reactor being shut down.

The Maintenance Rule, 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," requires licensees to monitor the performance, or condition of SSCs against licensee-established goals in a manner sufficient to provide reasonable assurance that SSCs are capable of fulfilling their intended functions. The implementation and monitoring program guidance in Section 2.3 of Regulatory Guide 1.174 states that monitoring performed in conformance with the Maintenance Rule can be used when such monitoring is sufficient for the SSCs affected by the risk informed application recognizing the additional guidance for a configuration risk management program (CRMP) identified in Regulatory Guide 1.177. In addition, 10 CFR 50.65(a)(4), as it relates to the proposed extension of CIV CTs, requires the assessment and management of the increase in risk that may result from a proposed maintenance activity.

The CIVs help ensure that adequate primary containment boundaries are maintained during and after accidents by minimizing potential pathways to the environment and help ensure that the primary containment function assumed in the safety analysis is maintained. The following general design criteria (GDC) apply to this change and establish the necessary design, fabrication, construction, testing, and performance requirements for SSCs important to safety, which provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. Pre-GDC (PGDC) facilities not licensed under the GDC in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," are licensed under similar plant-specific design criteria, as described in the facility's licensing-basis documents (such as updated final safety analysis reports).

- GDC 54 (or PGDC), "Piping Systems Penetrating Containment," requires the following: Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities that reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.

- GDC 55 (or PGDC), "Reactor Coolant Pressure Boundary Penetrating Containment," requires the following:

  > Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with CIVs as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:
  >
  > (1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or
  >
  > (2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

(3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

(4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Other appropriate requirements to minimize the probability or consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements, such as higher quality in design, fabrication, and testing, additional provisions for inservice inspection, protection against more severe natural phenomena, and additional isolation valves and containment, shall include consideration of the population density, use characteristics, and physical characteristics of the site environs.

- GDC 56 (or PGDC), "Primary Containment Isolation," requires the following:

  Each line that connects directly to the containment atmosphere and penetrates primary reactor containment shall be provided with CIVs as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

  (1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or

  (2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

  (3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

  (4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

  Isolation valves outside containment shall be located as close to the containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

- GDC 57 (or PGDC), "Closed System Isolation Valves," requires the following: Each line that penetrates the primary reactor containment and is neither part of the reactor

coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one CIV which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.

The proposed change does not affect compliance with the GDC (or PGDC).

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 change 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 change does not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed change revises the Completion Time for an inoperable containment isolation valve within the scope of the report CE NPSD-1168-A, "Joint Applications Report for Containment Isolation Valve AOT Extension," January 2001, from 4 hours or 72 hours to 7 days. Containment isolation valves are not accident initiators in any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased.

   Containment isolation valves, individually and in combination, control the extent of leakage from the containment following an accident. The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the containment isolation valves for a limited period of time but does not alter the ability of the plant to meet the overall containment leakage requirements. In order to evaluate the proposed Completion Time extension a probabilistic risk assessment evaluation was performed in CE NPSD-1168-A. The risk assessment concluded that, based on the use of bounding risk parameters, the proposed increase in the containment isolation valve Completion Time from four hours to seven days does not alter the ability of the plant to meet the overall containment leakage requirements. It also concluded that the proposed change 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, "An Approach for Plant-Specific, Risk- Informed Decision Making: Technical

Specifications." As a result, there would be no significant increase in the consequences of an accident previously evaluated. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. The change revises the Completion Time for an inoperable containment isolation valve within the scope of CE NPSD-1168-A from 4 hours or 72 hours to 7 days. Containment isolation valves, individually and in combination, control the extent of leakage from the containment following an accident. The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the containment isolation valves for a limited period of time but does not alter the ability of the plant to meet the overall containment leakage requirements. The proposed change does not change the design, configuration, or method of operation of the plant. The proposed change does not involve a physical alteration of the plant and no new of different type of equipment will be installed. Therefore, the proposed change does 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 change does not involve a significant reduction in a margin of safety. The proposed change revises the Completion Time for an inoperable containment isolation valve within the scope of CE NPSD-1168-A from 4 hours or 72 hours to 7 days. Containment isolation valves, individually and in combination, control the extent of leakage from the containment following an accident. The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the containment isolation valves for a limited period of time but does not alter the ability of the plant to meet the overall containment leakage requirements. In order to evaluate the proposed Completion Time extension, a probabilistic risk assessment evaluation was performed in CE NPSD-1168-A. The risk assessment concluded that, based on the use of bounding risk parameters, the proposed increase in the containment isolation valve Completion Time from four hours or seventy-two hours to seven days does not alter the ability of the plant to meet the overall containment leakage requirements. It also concluded that the proposed change 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 change does not involve a significant reduction in a margin of safety.

Based on the above, the TSTF 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.

4.3 Conclusions

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.

5 Environmental Consideration

A review has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does 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 change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

6 References

1. Notice of Availability of Model Application Concerning Technical Specification Improvement To Extend the Completion Times for Inoperable Containment Isolation Valves at Combustion Engineering Plants Using the Consolidated Line Item Improvement Process, 69 FRN 7986, February 20, 2004.

2. CE NPSD-1168-A, "Joint Applications Report for Containment Isolation Valve AOT Extension," January 2001, ADAMS Accession Number ML010780257.

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-537, "INCREASE CIV COMPLETION TIME; UPDATE OF TSTF-373"

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).

The proposed amendment would modify the TS Completion Times for inoperable containment isolation valves with the implementation of Technical Specifications Task Force (TSTF) Traveler TSTF-537, Revision 0, "Increase CIV Completion Time; Update of TSTF-373."

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 amendment would modify Technical Specifications (TS) Completion Times (CTs) for inoperable containment isolation valves (CIVs) with the adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-537, Revision 0, "Increase CIV Completion Time; Update of TSTF-373." The *Federal Register* notice published on [DATE] ([ ] FR [ ]) announced the availability of this TS improvement.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

[LICENSEE] has reviewed the model Safety Evaluation (SE) dated [DATE] for TSTF-537. [LICENSEE] has also reviewed the Nuclear Regulatory Commission (NRC) SE approving Topical Report (TR) CE NPSD-1168-A, "Joint Applications Report for Containment Isolation Valve AOT Extension." [LICENSEE] has concluded that the justifications and Probabilistic Risk Assessment (PRA) assumptions presented in the TR and the SE are applicable to [PLANT] and justify this amendment to the plant TS.

2.2 Optional Changes and Variation

[LICENSEE] is not proposing any variations or deviations from the Standard Technical Specifications (STS) changes described in TSTF-537, Revision 0, and the NRC staff model SE, dated [DATE], for implementation of the CTs based on the generic analysis.

[The [PLANT] TS utilize different [numbering][and][titles] than the STS on which TSTF-537 was based. Specifically, [describe differences between the plant-specific TS numbering and/or titles and the TSTF-535 numbering and titles.] These differences are administrative and do not affect the applicability of TSTF-537 to the [PLANT] TS.]

2.3 Verifications and Commitments

1. [LICENSEE] confirms that the CIV penetration configurations eligible for use of the extended CT fall within the 14 containment penetration configurations considered in CE NPSD-1168-A.

2. [LICENSEE] confirms that the generic bounding analysis presented in CE NPSD-1168-A 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."

3. [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 CIV inoperability in accordance with 10 CFR 50.65(a)(4).

5. [LICENSEE] commits to the guidance of NUMARC 93–01, Revision 4, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Section 11, which provides guidance and details on the assessment and management of risk during maintenance as an ongoing commitment.

6. [LICENSEE] will control these commitments in accordance with NEI 99–04, Revision 0, "Guidelines for Managing NRC Commitment Changes."

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration

[LICENSEE] requests adoption of TSTF-537, Revision 0, "Increase CIV Completion Time; Update of TSTF-373," into the [PLANT NAME, UNIT NOS] Technical Specifications (TS). The proposed amendment modifies the Technical Specifications Completion Time for Containment Isolation Valves (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 change revises the Completion Time for an inoperable CIV within the scope of the report CE NPSD-1168-A, "Joint Applications Report for Containment Isolation Valve AOT Extension," January 2001, from 4 hours or 72 hours to 7 days. Containment isolation valves are not accident initiators in any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased.

   Containment isolation valves, individually and in combination, control the extent of leakage from the containment following an accident. The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the containment isolation valves for a limited period of time but does not alter the ability of the plant to meet the overall containment leakage requirements. In order to evaluate the proposed Completion

Time extension a probabilistic risk assessment evaluation was performed in CE NPSD-1168-A. The risk assessment concluded that, based on the use of bounding risk parameters, the proposed increase in the containment isolation valve Completion Time from four hours to seven days does not alter the ability of the plant to meet the overall containment leakage requirements. It also concluded that the proposed change 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, "An Approach for Plant-Specific, Risk- Informed Decision Making: Technical Specifications." As a result, there would be no significant increase in the consequences of an accident previously evaluated.

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

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

   Response: No.

   The proposed change revises the Completion Time for an inoperable CIV within the scope of the report CE NPSD-1168-A from 4 hours or 72 hours to 7 days. Containment isolation valves, individually and in combination, control the extent of leakage from the containment following an accident. The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the containment isolation valves for a limited period of time but does not alter the ability of the plant to meet the overall containment leakage requirements. The proposed change does not change the design, configuration, or method of operation of the plant. The proposed change does not involve a physical alteration of the plant and no new of different type of equipment will be installed.

   Therefore, the proposed change does 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 change revises the Completion Time for an inoperable CIV within the scope of the report CE NPSD-1168-A from 4 hours or 72 hours to 7 days. Containment isolation valves, individually and in combination, control the extent of leakage from the containment following an accident. The proposed Completion Time extension applies to the reduction in redundancy in the containment isolation function by the containment isolation valves for a limited period of time but does not alter the ability of the plant to meet the overall containment leakage requirements. In order to evaluate the proposed Completion Time extension, a probabilistic risk assessment evaluation was performed in

CE NPSD-1168-A. The risk assessment concluded that, based on the use of bounding risk parameters, the proposed increase in the containment isolation valve Completion Time from four hours or seventy-two hours to seven days does not alter the ability of the plant to meet the overall containment leakage requirements. It also concluded that the proposed change 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 change does 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

[LICENSEE] has reviewed the environmental evaluation included in the model safety evaluation dated [DATE]. [LICENSEE] has concluded that the proposed determination presented in the notice is applicable to [PLANT] and the determination is provided as an attachment to this LAR to satisfy the requirements of 10 CFR 50.91(a).

Enclosure 2

Technical Specifications and Bases Revisions

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves (Atmospheric and Dual)

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

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

1. Penetration flow paths [except for [42] 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 system(s) made inoperable by containment isolation valves.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves. ---------- One or more penetration flow paths with one [containment sump supply valve to the ECCS or containment spray pumps] inoperable. OR One or more penetration flow paths with one	A.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 secured. AND	4 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
containment isolation valve inoperable [for reasons other than Condition[s] FD ~~[and~~ or GE~~]~~] and the containment isolation valve pressure boundary not intact.		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.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 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
B. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves. ---------- One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] F or G] and the containment isolation valve pressure boundary intact.	B.1 Determine OPERABLE containment isolation valve in the affected penetration flow path is not inoperable due to common cause failure. AND B.2 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 secured.	4 hours 7 days

	AND		
	B.3	----------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 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
C. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves. ---------- Two or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] F or G].	C.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
~~D~~B. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves. ---------- One or more penetration flow paths with two [or more] containment isolation valves inoperable [for reasons other than Condition[s]	~~D~~B.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

FD ~~[and or GE]~~].		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E~~C~~.----------NOTE---------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. --- One or more penetration flow paths with one containment isolation valve inoperable.	E~~C~~.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 E~~C~~.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.	~~[~~72~~]~~ hours for those penetrations that do not meet the 7 day criteria AND 7 days for those penetrations that meet the 7 day criteria Once per 31 days
F~~D~~.[One or more secondary containment bypass leakage [or purge valve leakage] not within limit.	F~~D~~.1 Restore leakage within limit.	4 hours for secondary containment bypass leakage AND 24 hours for purge valve leakage]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
GE. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	GE.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve with resilient seals, closed manual valve with resilient seals, or blind flange].	24 hours
	AND	
	GE.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 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	AND	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	GE.3 Perform SR 3.6.3.6 for the resilient seal purge valves closed to comply with Required Action GE.1.	Once per [–92] days]
HF. Required Action and associated Completion Time not met.	HF.1 Be in MODE 3 AND HF.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	[Verify each [42] inch purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition E of this LCO.	31 days]
SR 3.6.3.2	Verify each [8] inch purge valve is closed except when the [8] inch purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	31 days
SR 3.6.3.3	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	31 days

BASES

ACTIONS (continued)

A fourth Note has been added that requires entry into the applicable Conditions and Required Actions of LCO 3.6.1 when leakage results in exceeding the overall containment leakage limit.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths of the [containment sump supply valve to the ECCS or containment spray pumps] is inoperable, or one or more penetration flow paths with one containment isolation valve are inoperable and the containment isolation valve pressure boundary is not intact [except for purge valve leakage and shield building bypass leakage not within limit], 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 containment isolation 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 containment. Required Action A.1 must be completed within the 4 hour Completion Time. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that 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 isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 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)

Condition A has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two [or more] containment isolation valves. For penetration flow paths with only one containment isolation valve and a closed system, Condition ~~C~~ E provides appropriate actions.

Required Action A.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. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is small.

B.1, B.2 and B.3

----------REVIEWER'S NOTE----------
Adoption of the 7 day Completion Time in Required Action B.2 requires providing the verifications and making the commitments requested in the Notice of Availability for TSTF-537, Revision 0, "Increase CIV Completion Time; Update of TSTF-373," [Federal Register Notice Reference].

In the event one containment isolation valve in one or more penetration flow paths is inoperable and the containment isolation valve pressure boundary is intact [except for purge valve leakage and shield building bypass leakage not within limit], 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 containment isolation 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 B.2, the device used to isolate the penetration should be the closest available one to containment. Required Action B.2 must be completed within 7 days. The 7 day Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4 (Ref. 3).

Required Action B.1 requires a determination that the OPERABLE containment isolation valve in the affected penetration is not inoperable due to a common cause failure. If the inoperable containment isolation valve and the OPERABLE containment isolation valve in the penetration share a similar design in a feature that is related to the valve inoperability, a situation-specific verification of the OPERABLE containment isolation valve (e.g., inspection, partial stroke, functionality test, or engineering evaluation) must be performed with 4 hours.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 7 day Completion Time and that have been isolated in accordance with Required Action B.2, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that 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 isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 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.

Condition B has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two [or more] containment isolation valves. For penetration flow paths with only one containment isolation valve and a closed system, Condition E provides appropriate actions.

Required Action B.3 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. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is small.

C.1

In the event one containment isolation valve in two or more penetration flow paths are inoperable, all but one of the affected containment isolation valves must be isolated within 4 hours. 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 4 hour Completion Time.

When the affected penetration is isolated in accordance with Required Action C.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2 or B.3, which remain in effect. This periodic verification is necessary to assure leak tightness of 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 C is modified by a Note indicating this Condition is only applicable to penetration flow paths with two [or more] containment isolation valves. Conditions A and B of this LCO address the condition of one containment isolation valve inoperable in one penetration flow path of this type.

DB.1

With two [or more] containment isolation valves in one or more penetration flow paths inoperable, [except for purge valve leakage and shield building bypass leakage not within limit], 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. In the event the affected penetration is isolated in accordance with Required Action BD.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2 or B.3, which remains in effect. This periodic verification is necessary to assure leak tightness of 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.

BASES

ACTIONS (continued)

Condition ~~B~~ D is modified by a Note indicating this Condition is only applicable to penetration flow paths with two [or more] containment isolation valves. Conditions A, B, and C of this LCO address the condition of one containment isolation valve inoperable in this type of penetration flow path.

~~C~~E.1 and ~~C~~E.2

----------REVIEWER'S NOTE----------
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-537, Revision 0, "Increase CIV Completion Time; Update of TSTF-373," [Federal Register Notice Reference].

With one or more penetration flow paths with one containment isolation valve inoperable, 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. Required Action ~~C~~E.1 must be completed within the ~~[~~72~~]~~ hour Completion Time for those penetrations that do not meet the 7 day Completion Time criteria and 7 days for penetrations that do meet the 7 day Completion criteria.

Penetration flow paths eligible for application of the 7 day Completion Time meet the following criteria:

- Containment isolation valves in penetrations connected to non-essential containment cooling systems;
- The closed system piping inside containment is seismically qualified; and
- Containment isolation valves in the penetration flow paths are air operated valves designed to fail in the closed position and are designed to close automatically by an engineered safety feature actuation system (ESFAS) signal.

The specified time period 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 containment OPERABILITY during MODES 1, 2, 3, and 4. In the event the affected penetration is isolated in accordance with Required Action ~~C~~E.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This is necessary to assure leak tightness of containment and that

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

Condition E~~C~~ is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Reference 4~~3~~. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system.

Required Action E~~C~~.2 is modified by two Notes. Note 1 applies to valves and blind flanges 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

BASES

ACTIONS (continued)

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 small.

[FD.1

With the secondary containment bypass leakage rate (SR 3.6.3.9) [or purge valve leakage rate (SR 3.6.3.6)] 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(s) 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 secondary containment bypass leakage is reasonable considering the time required to restore the leakage by isolating the penetration(s) and the relative importance of secondary containment bypass leakage to the overall containment function. [The 24 hour Completion Time for purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of containment does not exist.]

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

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

ACTIONS (continued)

[GE.1, GE.2, and GE.3

In the event one or more containment purge valves in one or more penetration flow paths 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 with resilient seals, a closed manual valve with resilient seals, or a blind flange]. A purge valve with resilient seals utilized to satisfy Required Action GE.1 must have been demonstrated to meet the leakage requirements of SR 3.6.3.6. 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 GE.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 capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 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 GE.1, SR 3.6.3.6 must be performed at least once every [92] days. This assures 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 3.6.3.6, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 54). 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 GE.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.]

HF.1 and HF.2

If the Required Actions and associated Completion Times are not met, 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

[SR 3.6.3.1

Each [42] inch containment purge valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a 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. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 65), related to containment purge valve use during unit operations. This SR is not required to be met while in Condition E of this LCO. This is reasonable since the penetration flow path would be isolated.]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.6

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option [A][B], (Ref. 7~~6~~), 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 containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 5~~4~~).

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 occurring 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.

SR 3.6.3.7

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures each automatic containment isolation valve will actuate to its isolation position on a containment isolation actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency was developed considering it is prudent that this SR be performed only during a unit outage, since isolation of penetrations would eliminate cooling water flow and disrupt normal operation of many critical components. Operating experience has shown that these components usually pass this SR when performed on the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

[SR 3.6.3.8

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

Verifying that each [42] inch 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 analyses of References 1 and 2. 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 [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.]

[SR 3.6.3.9

This SR ensures that the combined leakage rate of all secondary containment bypass leakage paths is less than or equal to the specified leakage rate. This provides assurance that the assumptions in the safety analysis 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 Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria.

[Bypass leakage is considered part of L_a.

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

REFERENCES

1. FSAR, Section [ ].

2. FSAR, Section [ ].

3. CE NPSD-1168-A, "Joint Applications Report for Containment Isolation Valve AOT Extension," January 2001.

43. Standard Review Plan 6.2.4.

54. Generic Issue B-20.

6~~5~~. Generic Issue B-24.

7~~6~~. 10 CFR 50, Appendix J, Option [A][B].