December 20, 2006

TSTF-06-28
PROJ0753

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

SUBJECT: TSTF-498, Revision 0, "Risk-Informed Containment Isolation Valve Completion Times (BAW-2461)"

Dear Sir or Madam:

Enclosed for NRC review is Revision 0 of TSTF-498, "Risk-Informed Containment Isolation Valve Completion Times (BAW-2461)."

Any NRC review fees associated with the review of TSTF-498 should be billed to the Pressurized Water Reactor Owners Group.

The TSTF requests that the Traveler be made available under the Consolidated Line Item Improvement Process.

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

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Enclosure

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Technical Specification Task Force
Improved Standard Technical Specifications Change Traveler

Risk-Informed Containment Isolation Valve Completion Times (BAW-2461)

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

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1.0 Description

The proposed change extends the Completion Times for containment penetration flow paths with one containment isolation valve inoperable from 4 hours to 7 days for Babcock & Wilcox (B&W) NSSS plants. This change is applicable to containment penetrations with two [or more] containment isolation valves in which one containment isolation valve is inoperable [for reasons other than purge valve leakage not within limit. The extended Completion Time is not applicable to containment isolation valves in the main steam lines or those identified by plant-specific analysis as having high risk significance for interfacing systems loss of coolant accidents (ISLOCAs) and the existing 4 hour Completion Time applies. In addition, the Completion Time for one inoperable containment isolation valve in a penetration with one containment isolation valve and a closed system is extended from 72 hours to 7 days.

2.0 Proposed Change

The proposed change applies to B&W plants and allows 7 days, versus 4 hours or 72 hours, to restore an inoperable containment isolation valve (or isolate the affected penetration) based on the evaluations in BAW-2463-A, "Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change." The specific changes are described below.

For the Condition of one or more penetration flow paths with one containment isolation valve inoperable in a penetration flow path with two [or more] containment isolation valves, the Completion Time for isolating the affected penetration is revised from 4 hours to 7 days. This condition is modified by a Note which states that it is not applicable to containment isolation valves in the main steam lines or (as described in a Reviewer's Note) those identified by plant-specific analysis as having high risk significance for ISLOCAs. A new Required Action is added (Required Action A.1) which requires verification that the Operable containment isolation valve in the penetration is not inoperable due to common cause failure. Additional details on evaluating possible common cause failure is given in the Bases.

A new Condition, Condition B, is added which is identical to the existing Condition A. It contains a 4 hour Completion Time to isolate the affected flow path and is only applicable to the containment isolation valves excluded from Condition A (e.g., containment isolation valves in the main steam lines or (as described in a Reviewer's Note) those identified by plant-specific analysis as having high risk significance for ISLOCAs.)

Existing Condition C, now renamed Condition D due to the addition of Condition B, which applies to one or more penetrations with one containment isolation valve inoperable and is only applicable to penetration flow paths with only one containment isolation valve and a closed system, is revised to have a 7 day Completion Time instead of 72 hours.

Existing Conditions B thorough E are renumbered to reflect the addition of new Condition B.

The Bases are revised to reflect the changes to the Specifications.

3.0 Background

The Pressurized Water Reactor Owners Group (PWROG) Topical Report BAW-2461 provides a risk-informed technical basis for specific changes to Technical Specification Completion Times ofNUREG-1430 Specification 3.6.3, "Containment Isolation Valves," which is applicable to B&W plants. The primary intent of the proposed change is to provide for the potential of on-line maintenance, repair, and testing of a containment isolation valve that is declared inoperable during operation in the applicable Modes. These changes are warranted based on the low risk associated with the extended Completion Times.

This application is being pursued by the PWROG as a risk-informed plant modification for B&W plants in accordance with NRC Regulatory Guides 1.174 and 1.177. BAW-2461 provides generic risk assessments of the adoption of these Technical Specification changes.

BAW-2461 provided example Technical Specification changes and noted that the actual Technical Specifications would be provided in a Technical Specifications Task Force (TSTF) Traveler. There are some differences between the examples in BAW-2461 and this Traveler, which are discussed in Attachment 1.

4.0 Technical Analysis

BAW-2461 documented the analysis used for evaluating plant risk associated with the proposed changes to the containment isolation valve Technical Specification Completion Times. The process involves grouping the various containment penetrations into groups and performing evaluations for each of the groups of containment penetrations to assess the impact on plant risk due to the proposed Completion Time extensions for the associated containment isolation valves. The evaluation of the impact on plant risk determines the change in core damage frequency (Δ CDF), the ICCDP, the change in large early release frequency (Δ LERF), and the ICLERP.

The results of the evaluations in BAW-2461 demonstrate that the proposed Completion Time extensions provide plant operational flexibility while simultaneously allowing plant operation with an acceptable level of risk. The results demonstrate that the risk level associated with the proposed Completion Time is below the guidelines set forth in Regulatory Guides 1.174 and 1.177.

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

The TSTF has evaluated whether or not a significant hazards consideration is involved with the proposed generic changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed changes revise the Completion Times for restoring an inoperable containment isolation valve (or isolating the affected penetration) within the scope of Topical Report BAW-2461-A, "Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change." The Completion Times are extended from 4 hours and 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 control the extent of leakage from the containment following an accident. As such, containment isolation valves are instrumental in controlling the consequences of an accident. However, the consequences of any accident previously evaluated are no different during the proposed extended Completion Times than during the existing Completion Times. As a result, the consequences of any accident previously evaluated are not significantly increased. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed changes revise the Completion Times for restoring an inoperable containment isolation valve (or isolating the affected penetration) within the scope of Topical Report BAW-2461-A, "Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change. The proposed changes do not change the design, configuration, or method of operation of the plant. The proposed changes do not involve a physical alteration of the plant (no new or different kind of equipment will be installed). Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   The proposed changes revise the Completion Times for restoring an inoperable containment isolation valve (or isolating the affected penetration) within the scope of Topical Report BAW-2461-A, "Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change. In order to evaluate the proposed Completion Time extensions, a probabilistic risk evaluation was performed as documented in Topical Report BAW-2461-A. The risk evaluation concluded that the proposed increase in the Completion Times does not result in an unacceptable incremental conditional core damage probability or incremental conditional large early release probability according to the guidelines of Regulatory Guide 1.177. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, the TSTF concludes that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

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

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

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

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

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

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

6.0 Environmental Consideration

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

7.0 References

1. BAW-2641-A, "Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change."

Revision History

OG Revision 0 Revision Status: Active

Revision Proposed by: Areva

Revision Description:
Original Issue

Owners Group Review Information

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Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 08-Oct-06

TSTF Review Information

TSTF Received Date: 31-Oct-06 Date Distributed for Review 31-Oct-06

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

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 18-Nov-06

NRC Review Information

NRC Received Date: 22-Dec-06

Affected Technical Specifications

Ref. 3.6.3	Containment Isolation Valves
Action 3.6.3.A	Containment Isolation Valves
Action 3.6.3.A Bases	Containment Isolation Valves
Action 3.6.3.B	Containment Isolation Valves Change Description: Renamed Condition C
Action 3.6.3.B	Containment Isolation Valves Change Description: New Condition
Action 3.6.3.B Bases	Containment Isolation Valves Change Description: Renamed Condition C

Action 3.6.3.B Bases	Containment Isolation Valves Change Description: New Condition
Action 3.6.3.C	Containment Isolation Valves Change Description: Renamed Condition D and Revised
Action 3.6.3.C Bases	Containment Isolation Valves Change Description: Renamed Condition D and Revised
Action 3.6.3.D	Containment Isolation Valves Change Description: Renamed Condition E
Action 3.6.3.D Bases	Containment Isolation Valves Change Description: Renamed Condition E
Action 3.6.3.E	Containment Isolation Valves Change Description: Renamed Condition F
Action 3.6.3.E Bases	Containment Isolation Valves Change Description: Renamed Condition F
SR 3.6.3.1 Bases	Containment Isolation Valves
SR 3.6.3.6 Bases	Containment Isolation Valves

Attachment 1

Differences Between BAW-2461 and TSTF-498

The following comments apply to BAW-2461, Table 2-1, "Summary of Proposed Technical Specifications Change." As noted in the footnote to Table 2-1, the Table is for illustration only and the TSTF Traveler will provide the specific wording, as discussed below.

1. BAW-2461, Table 2-1, Condition A note states "Only applicable to penetration flow paths with two [or more] containment isolation valves with the exception of containment isolation valves in the main steam lines [and list of specific penetrations (if any) identified by the plant-specific risk-informed process to have high risk significance for ISLOCA.]" To be consistent with the ITS format and content rules, the Condition A Note was written as "Only applicable to penetration flow paths with two [or more] containment isolation valves except containment isolation valves in the main steam lines and [ ]." The Condition is modified by a Reviewer's Note which states, "The Condition A Note should list the specific penetrations (if any) identified by the plant-specific risk analysis as having high risk significance for an inter-system loss of coolant accident (ISLOCA)." This change is editorial and does not affect the application of the TS.

2. The July 5, 2006 RAI response to NRC Question 1 stated that the following action would be added as Required Action A.1 with a 4 hour Completion Time, "Verify that the redundant CIV on the same penetration is operable [applicable only if the redundant CIV has an operator and/or body type that is not diverse from the inoperable CIV depending on which parts are inoperable." In the Traveler, Required Action A.1 has a 4 hour Completion Time and states, "Determine the OPERABLE containment isolation valve in the affected penetration is not inoperable due to common cause failure." The wording was chosen to be consistent with LCO 3.8.1, Required Action B.3.1, regarding inoperable diesel generators. The discussion of what is required to be evaluated, "applicable only if the redundant CIV has an operator and/or body type that is not diverse from the inoperable CIV depending on which parts are inoperable," is placed in the Required Action A.1 Bases. This is consistent with the ITS format and content rules and is considered editorial as the intent of the Required Action has not been changed.

3. BAW-2461 added a new Condition which contained the same Note as Condition A. The new Condition (Condition B) was revised similar to the changes to Condition A discussed in Item 1, above (i.e., revising the Note and including a Reviewer's Note).

4. BAW-2461 proposes two new Conditions, both modified by a Note which states, "Only applicable to penetration flow paths with only one containment isolation valve and a closed system." These Conditions are not included in the Traveler.

    a. The first new Condition states, "One or more penetration flow paths with the closed system pressure boundary inoperable (and the inoperable portion of the closed system pressure boundary is not an RCS pressure boundary.)" This Condition has a 7 day Completion Time. There is a footnote that recognizes that

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RCS pressure boundary leakage is governed by Specification 3.4.13, "RCS Operational Leakage."

This Condition is not included in the Traveler for the following reasons:

i. This Condition would never be entered. Conditions are entered when the LCO is not met. The 3.6.3 LCO states, "Each containment isolation valve shall be OPERABLE." A degradation affecting a closed system would not result in LCO 3.6.3 not being met and, therefore, the Condition would not be entered.

ii. There is no definition of what is meant by "the closed system pressure boundary inoperable." The discussion in BAW-2461, Section 2.2.3, (as confirmed by discussions with the principle author of BAW-2461) states that an inoperable closed system is "analogous to the Condition A for a penetration connected to the containment atmosphere." In other words, an inoperable closed system pressure boundary is equivalent to the closed system being completely removed. This is not a realistic assumption. A typical scenario regarding a degraded boundary on a closed system is a valve packing leak or a small through-wall leak. Leakage sufficient to render the closed system inoperable would result in failure to meet the LCO for the closed system or the systems supported by the closed system. Leakage below that threshold would be evaluated under LCO 3.6.1, "Containment," to determine if the leakage from the closed system would result in leakage in excess of L_a. If so, Specification 3.6.1 directs a shutdown. If not, plant operation can continue just as if the leakage was associated with a containment isolation valve. (Note, containment isolation valve leakage does not render the CIV inoperable if overall containment leakage is less than L_a.) As an additional consideration, many of the closed systems operate at pressures above the post-accident containment pressure, effectively eliminating the closed system as a leakage path. Adopting a Condition which equates any degradation of the closed system boundary with a completely open system is overly conservative, inconsistent with the treatment of containment isolation valves, and will lead to plant shutdowns (a plant transient) for conditions that have no significant effect on plant risk.

iii. It is not necessary to specifically discuss RCS pressure boundary leakage in Specification 3.6.3. As noted in Section 2.2.3, RCS pressure boundary leakage is governed by Specification 3.4.13. Pressure boundary leakage requires an immediate shutdown.

b. The second new Condition states, "One or more penetration flow paths with one containment isolation valve and the closed system pressure boundary inoperable." This Condition has a 1 hour Completion Time.

This Condition is not included in the Traveler for the following reasons:

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i. As discussed above, there is no definition of what is meant by "the closed system pressure boundary inoperable." An inoperable closed system pressure boundary is assumed to be equivalent to the closed system being completely removed, which is not a realistic assumption.

ii. The boundary condition of the closed system is not a subject of the LCO (which governs only containment isolation valves). Conditions address situations in which the LCO is not met. Therefore, the construction of this action is inconsistent with the ITS format and content.

iii. Without the inoperable closed system boundary condition (which is inconsistent with the LCO), the Condition is equivalent to the existing Condition for one CIV inoperable on a penetration with one CIV and a closed system.

CONDITION	REQUIRED ACTION	COMPLETION TIME
---- REVIEWER'S NOTE----- The Condition A Note should list the specific penetrations (if any) identified by the plant-specific risk analysis as having high risk significance for an interfacing systems loss of coolant accident (ISLOCA). ----------	A.1 Determine the OPERABLE containment isolation valve in the affected penetration is not inoperable due to common cause failure.	4 hours
	AND	
A. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves except containment isolation valves in the main steam lines and [ ]. ----------	A.2~~1~~ Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	7 days ~~4 hours~~
	AND	
One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than purge valve leakage not within limit].	A.3~~2~~ ----------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
---- REVIEWER'S NOTE----- The Condition B Note should list the specific penetrations (if any) identified by the plant-specific risk analysis as having high risk significance for an interfacing systems loss of coolant accident (ISLOCA). ----------	B.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.	4 hours
	AND	
B. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves in the main steam lines and [ ]. ----------	B.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. ----------	
One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than purge valve leakage not within limit].	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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C~~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 purge valve leakage not within limit].	C~~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
D~~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.	D~~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	7 days~~72 hours~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	D~~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.	Once per 31 days
E~~D~~.[One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	E~~D~~.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange]. AND	24 hours

ACTIONS (continued)

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

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

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

In the event isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

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

Condition A has been modified by a Note indicating this Condition is only applicable to those penetration flow paths with two [or more] containment isolation valves. The Note also states that the Condition is not applicable to containment isolation valves in the main steam lines and [any specific penetrations identified by the plant-specific risk analysis as having high risk significance for an interfacing systems loss of coolant accident (ISLOCA), as described in Reference 6]. For penetration flow paths with only one containment isolation valve and a closed system, Condition D provides appropriate actions.

In the event one containment isolation valve in one or more penetration flow paths is inoperable, [except for purge valve 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 a penetration isolated in accordance with Required Action A.2~~1~~, the device used to isolate the penetration should be the closest available one to containment. Required Action A.~~1~~ 2 must be completed within the 7 day ~~4 hour~~ Completion Time. The specified time period is based on an analysis of plant risk (Ref. 6).~~reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.~~ Required Action A.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 ~~4 hour~~ Completion Time and that have been isolated in accordance with Required Action A.2~~1~~, the affected penetration flow paths must be verified to be isolated on a periodic basis. This periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of

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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 A has been modified by a Note indicating 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 provides appropriate actions.~~

Required Action A.~~2~~ 3 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows the devices to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is small.

B.1 and B.2

Condition B has been modified by a Note indicating this Condition is only applicable to those penetration flow paths with two [or more] containment isolation valves that are containment isolation valves in the main steam lines or are [any specific penetrations identified by the plant-specific risk analysis as having high risk significance for an interfacing systems loss of coolant accident (ISLOCA), as described in Reference 6].

In the event one containment isolation valve in one or more penetration flow paths is inoperable, [except for purge valve 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 a penetration isolated in accordance with Required Action B.1, the device used to isolate the penetration should be the closest available one to containment. Required Action B.1 must be completed within the 4 hour Completion Time. The specified time period 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 B.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This periodic verification 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.

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

C~~B~~.1

With two [or more] containment isolation valves in one or more penetration flow paths inoperable, [except for purge valve 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

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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 C~~B~~.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.3~~2~~, 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.

Condition C~~B~~ 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~~es~~ the condition of one containment isolation valve inoperable in this type of penetration flow path.

D~~C~~.1 and D~~C~~.2

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 D~~C~~.1 must be completed within the 7 day ~~72 hour~~ Completion Time. The specified time period is based on an analysis of plant risk (Ref. 6)~~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~~D.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification 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 fact that the valves are operated under administrative controls and the probability of their misalignment is low.

BASES

ACTIONS (continued)

Condition ~~C~~ D 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 ~~6~~7. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system. In the event the closed system is degraded, compliance with any Limiting Condition for Operation on the closed system or a system required to be OPERABLE for which the closed system is a support system, or Specification 3.6.1, should be evaluated.

Required Action ~~C~~D.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 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 verified to be in the proper position, is small.

[~~E~~D.1, ~~E~~D.2, and ~~E~~D.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 flow path must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a [closed and de-activated automatic valve, closed manual valve, and blind flange]. A purge valve with resilient seals utilized to satisfy Required Action E~~D~~.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 E~~D~~.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

BASES

ACTIONS (continued)

Required Action does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside containment and potentially capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 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 E~~D~~.1, SR 3.6.3.6 must be performed at least once every [ ] days. This provides assurance that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.3.6, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. ~~8~~9). 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 [ ] days was chosen and has been shown acceptable based on operating experience.

Required Action E~~D~~.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.]

F~~E~~.1 and F~~E~~.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.

BASES

SURVEILLANCE REQUIREMENTS

[SR 3.6.3.1

Each [48] 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. ~~7~~8), related to containment purge valve use during unit operations. In the event purge valve leakage requires entry into Condition E~~D~~, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.]

SR 3.6.3.2

This SR ensures that the minipurge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the minipurge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The minipurge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The 31 day Frequency is consistent with other containment isolation valve requirements discussed in SR 3.6.3.3.

SR 3.6.3.3

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the access to these areas is typically restricted during MODES 1, 2, 3, and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.5

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses. [The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program or 92 days.]

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] 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 once per 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. ~~8~~9).

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 (greater than 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.

BASES

REFERENCES

1. 10 CFR 20.
2. FSAR, Section [5.6].
3. FSAR, Sections [14.1 and 14.2].
4. FSAR, Section [5.3].
5. FSAR, Section [5.3].
6. BAW-2461-A, Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change.
7~~6~~. Standard Review Plan 6.2.4.
8~~7~~. Generic Issue B-24.
9~~8~~. Generic Issue B-20.