Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385

Dominion

DEC 19 2002

Docket No. 50-423
B18800

RE: 10 CFR 50.90

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

Millstone Power Station, Unit No. 3
Response to Request for Additional Information on
License Basis Document Change Request (LBDCR) 3-6-02,
Containment Isolation Valves

In a letter dated August 14, 2002,[1] Dominion Nuclear Connecticut, Inc. (DNC) submitted a license amendment request in the form of changes to the Millstone Unit No. 3 Technical Specifications. The request proposed to clarify and change requirements related to Containment Integrity and Containment Isolation Valves in the Millstone Unit No. 3 Technical Specifications.

In a facsimile dated October 7, 2002,[2] the Nuclear Regulatory Commission (NRC) requested additional information related to this proposal. The DNC responses to these questions are provided in Attachment 1. The additional information in Attachment 1 and the new marked up pages provided by this response are consistent with the discussion held in teleconference with the NRC on October 31, 2002. Copies of originally submitted marked up and retyped pages are provided in Attachments 2 and 3. New marked up pages for the affected changes and the new retyped pages are provided in Attachments 4 and 5.

The changes to the original license amendment request, and the additional information and discussions provided in the attachments, do not impact the conclusions stated in the Safety Summary or Significant Hazards Consideration included in the August 14, 2002, submittal.

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(1) J. Alan Price to U.S. NRC, "Millstone Nuclear Power Station, Unit No. 3, License Basis Document Change Request (LBDCR) 3-6-02, Containment Isolation Valves," dated August 14, 2002.

(2) R. Ennis (NRC) Facsimile to R. Joshi, "Draft Request for Additional Information (RAI) in Upcoming Conference Call (TAC No. MB6212)," dated October 7, 2002.

A001

There are no regulatory commitments contained within this letter.

Should you have any questions regarding this submittal, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

J. Alan Price
Site Vice President - Millstone

Attachments (5)

Sworn to and subscribed before me

this 19th day of December, 2002

Lorrie A. Arzamarski
Notary Public

My Commission expires Feb. 28, 2006

Lorrie A. Arzamarski
Notary Public
Commission Expires
February 28, 2006

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
NRC Senior Resident Inspector

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Docket No. 50-423
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Attachment 1

Millstone Power Station, Unit No. 3

Response to a Request for Additional Information on
License Basis Document Change Request (LBDCR) 3-6-02,
Containment Isolation Valves

Response to a Request for Additional Information on
License Basis Document Change Request (LBDCR) 3-6-02,
Containment Isolation Valves

In a facsimile dated October 7, 2002,[1] the Nuclear Regulatory Commission (NRC) requested additional information (RAI) related to our license amendment request of August 14, 2002.[2] In a teleconference on October 31, 2002, the NRC and the Dominion Nuclear Connecticut, Inc. (DNC) staff discussed additional information related to this license amendment request.

DNC submitted the request to clarify and change requirements related to Containment Integrity and Containment Isolation Valves in the Millstone Unit No. 3 Technical Specifications (TS). The changes were specific to Section 1.7, "Definitions - Containment Integrity," 3.6.1.1, "Primary Containment - Containment Integrity," and 3.6.3, "Containment Isolation Valves," as well as selected portions of related Bases to the TS. Attachments 2 and 3 contain previously submitted proposed changes to the Technical Specifications and Bases, in marked up and retyped versions.

Based on discussion during the teleconference on October 31, 2002, DNC proposes new changes to the Proposed Technical Specifications (PTS) and its Bases, and has included responses to the seven questions from the RAI, with additional justifications, in the balance of this Attachment. The NRC questions have been italicized below and are followed by the DNC responses. Changes to the affected pages are shown in Attachment 4, by marked up pages, and Attachment 5 with the new retyped pages.

Question 1: [1.0-1]

*Current Technical Specification (CTS) 1.7.a.1 has been modified to Proposed Technical Specification (PTS) 1.7.a.1 by the deletion of the allowance to administratively open automatic containment isolation valves (CIV) and the addition of a footnote [designated by the " * "]. See RAI numbers 1.0-2, 3/4.6-1 3/4.6-3 and 3/4.6-4 for concerns with regard to allowance to open CIVs under administrative controls. The footnote to PTS 1.7.a.1 states the following: "In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons." The staff believes that this is not the appropriate location for this footnote and that it is not entirely correct. The statement describes one aspect of containment automatic isolation valve system OPERABILITY. CTS 1.7 defines what*

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(1) R. Ennis (NRC) Facsimile to R. Joshi, "Draft Request for Additional Information (RAI) in Upcoming Conference Call (TAC No. MB6212)," dated October 7, 2002.

(2) J. Alan Price to U.S. NRC, "Millstone Nuclear Power Station, Unit No. 3, License Basis Document Change Request (LBDCR) 3-6-02, Containment Isolation Valves," dated August 14, 2002.

constitutes containment integrity and does not discuss what constitutes the OPERABILITY characteristics of each component associated with containment integrity.

The staff believes that this OPERABILITY description is more appropriate to CTS 3/4.3.2 "Engineered Safety Features Actuation System Instrumentation" either as a footnote to Table 3.3-3 or in the associated Bases. In addition, the footnote gives an incomplete description of what needs to be OPERABLE in MODE 4. Based on the footnote only, the manual initiation portion of the system needs to be OPERABLE, whereas the automatic actuation logic and actuation relays also need to be OPERABLE in MODE 4 for the system to function properly. The footnote should be modified to reflect this characteristic. Words similar to those contained in the Improved Standard Technical Specification (ISTS) Bases to NUREG - 1431, "Standard Technical Specification - Westinghouse Plants" ISTS B3.3.2 "Applicable Safety Analyses, LCO, and Applicability" Item 3.a.(2) or 3.b.(2) should be used.

RAI [1.0-1]: Revise the submittal to reflect the above discussion, and provide the appropriate discussions and justifications for these changes.

Response to Question 1: [RAI 1.0-1]

In the submittal of August 14, 2002, DNC proposed a footnote for purposes of clarification to Containment Integrity to state that in MODE 4 the requirement for an OPERABLE containment isolation valve system is satisfied by use of containment isolation actuation pushbuttons. The footnote and its proposed placement, in to both the definition of Containment Integrity and the Surveillance Requirement (SR) for how Containment Integrity is demonstrated (SR 4.6.1.1.a), are consistent with changes approved May 26, 1998, for use in the Millstone Unit No. 2 Technical Specifications. Based on discussion with the NRC, DNC is also proposing to add an additional sentence to the BASES to emphasize that automatic actuation logic and actuation relays must also be OPERABLE in MODE 4 to support system level manual initiation. The proposed change is shown in the new marked up pages provided in Attachment 4.

The added sentence to the PTS Bases of Containment Integrity (PTS 3/4.6.1.1) will expand upon the original submittal's PTS Bases that discusses the operability of the containment isolation valves (CIVs) in MODE 4 by using the manual actuation pushbuttons portion of the containment isolation system for initiating closure of the CIVs, if needed. This discussion in the Bases is consistent with the Improved Standard Technical Specification (ISTS) Bases of NUREG-1431, "Standard Technical Specification - Westinghouse Plants".

As discussed in the conference call of October 31, 2002, DNC is not proposing changes to the CTS Table 3.3-3, "Engineered Safety Features Actuation System Instrumentation". The Table 3.3-3 will continue to show that CIV's automatic logic and actuation relays are required to be OPERABLE in MODES 1 through 4. Therefore, both the CTS and PTS continue to ensure that automatic actuation logic and actuation

relays must be OPERABLE in MODE 4 to support system level manual initiation. In consideration of the above, it is expected that the use of the footnote will provide the necessary clarification and that the change will not alter operability requirements that are associated with either Containment Integrity or the CIVs. Therefore, use of this footnote in the PTS to 1.7 and 4.6.1.1.a, and the related expanded discussion to the PTS Bases of 3/4.6.1.1, are considered to be acceptable.

Question 2: [1.0-2]

CTS 1.7.a has been modified to PTS 1.7.a by the deletion of the reference to operator action and the reference to CTS 4.6.1.1.a for administrative controls from CTS 1.7.a.1, and the addition of the allowance to open manual valves, blind flanges and deactivated automatic valves under administrative control to CTS 1.7.a.2. The justification for both of these changes in the August 14, 2002, submittal (Attachment 1 - technical specification change discussion (TSC) 2 and 3) states that these changes are administrative changes since there is no reduction in requirements. This is incorrect. The changes are Less Restrictive (L) changes. See RAI number 3/4.6-1, 3/4.6-3, and 3/4.6-4 for additional concerns and details with this overall change.

RAI [1.0-2]: Provide a discussion and justification for these Less Restrictive (L) changes. See RAI number 3/4.6-1.

Response to Question 2: [1.0-2]

The proposed changes delete a phrase that references operator action during periods when containment isolation valves are opened under administrative control. The proposed changes are in both the definition of Containment Integrity and the PTS 4.6.1.1.a surveillance requirement (SR) for the demonstration of Containment Integrity. In the PTS, the use of administrative control for CIVs is contingent upon the application of appropriate considerations, consistent with GL 91-08 guidance. This guidance includes consideration for necessary operator actions. The PTS 3/4.6.3 Bases for CIVs includes this expanded discussion that relates to these considerations. Therefore the phrase that references operator action was considered redundant to the proposed provisions for use of administrative controls to open CIVs. Refer to the responses to questions 5 and 6 [RAIs 3/4.6-3 and 3/4.6-4] for more discussion related to the proposed provisions for the use of administrative controls, and for additional justification.

There is a precedence for a similar change, dated November 19, 1997,[3] in Amendment 210 to the Millstone Unit No. 2 Operating License. In the Amendment 210, the definition and SR of Containment Integrity were both changed to include this same cross reference to provisions for administrative controls.

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[3] Amendment 210 to the Millstone Unit No. 2 Operating License No. DPR-65, dated November 19, 1997 (TAC NO. M94623).

Question 3: [3/4.6-1]

CTS 4.6.1.1.a has been modified to PTS 4.6.1.1.a by the deletion of the reference to operator action and modifying the reference to allow administrative control for opening CIVs to specifically refer to PTS 3/4.6.3. The justification for this change in Attachment 1 TSC 4 states that the change is an administrative change since there is no reduction in requirements. This is incorrect. The change is a Less Restrictive (L) change. See RAI numbers 1.0-2, 3/4.6-3 and 3/4.6-4 for additional details on this concern.

RAI [3/4.6-1]: Provide a discussion and justification for this Less Restrictive (L) change. See RAI number 1.0-2, 3/4.6-3 and 3/4.6-4 [NRC Questions 2, 5 and 6].

Response to Question 3: [3/4.6-1]

Refer to the question 2 [RAI 1.0-2] response. Also, refer to the response in both questions 5 and 6 [RAIs 3/4.6-3 and 3/4.6-4] for more discussion and additional justifications that relate to these provisions for the use of administrative controls to open CIVs.

Question 4: [3/4.6-2]

CTS 4.6.1.1.a is modified by the addition of PTS 4.6.1.1.a footnote 2. PTS 4.6.1.1.a footnote 2 is the same note that was added to CTS 1.7.a.1. No justification was provided for this change in Attachment 1 TSC 5. The discussion provided in RAI number 1.0-1 also applies here.

RAI [3/4.6-2]: See RAI 1.0-1 [NRC Question 1]

Response to NRC Question 4: [3/4.6-2]

See the response to question 1 [1.0-1].

Question 5: [3/4.6-3]

*The footnote [designated by the " ** "] and associated with CTS 4.6.1.1.a specifies which CIVs may be opened on an intermittent basis under administrative controls. PTS 4.6.1.1.a does not have this footnote. Attachment 1 TSC 5 states that "The content of the original footnote will be relocated to the Bases section for Technical Specification 3.6.3." The justification for this change is consistency with generic letter (GL) 91-08 and not a reduction in requirements. Consistency with a generic letter is not an adequate justification for relocating this item to this Bases. In addition, the change is a reduction in requirement and thus, is a Less Restrictive (L) change. See RAI numbers 1.0-2, 3/4.6-1, and 3/4.6-4 for additional concerns and details in this area.*

RAI [3/4.6-3]: Provide a discussion and justification for this relocation. See RAI numbers 1.0-2, 3/4.6-1, and 3/4.6-4 [NRC Questions 2, 3 and 6].

Response to Question 5: [3/4.6-3]

This CTS footnote to SR 4.6.1.1.a can be traced to a letter dated December 19, 1988,[4] in which the NRC approved a license amendment (No. 28) which relocated the valve list included in Table 3.6-2, "Containment Isolation Valves". With regard to Table 3.6-2, the table also contained certain manual valves which were permitted to be opened during operation as long as they were administratively controlled. Licensee control of these valves when opened in Modes 1 through 4 was required since closure would be necessary to isolate the containment during accident conditions. This specific list of valves remained in the Technical Specifications when the amendment was issued. Generic Letter 91-08 was issued on May 6, 1991, which allows relocation of the complete list of CIVs, along with the valves that may be opened on an intermittent basis under administrative control. (See page 3 and 4 of GL 91-08). The purpose of the CTS footnote to SR 4.6.1.1.a is to provide reasonable operational flexibility regarding containment penetrations by retaining the provision for the use of administrative controls.

In response to the discussions with the Staff on October 31, 2002, DNC has changed the PTS Bases section from the original proposal, as shown by the marked up pages in Attachment 4. The footnote is deleted from CTS SR 4.6.1.1.a, and its content is not relocated the PTS Bases. As described above, the purpose of the current footnote is to provide reasonable operational flexibility regarding containment penetrations. This can be achieved by the provision for administrative controls in the PTS 3/4.6.3, with the added footnote that states, "Containment Isolation Valves may be opened on an intermittent basis under administrative controls."

These proposed changes are acceptable because the LCO requirements continue to ensure that the structures, systems and components are maintained consistent with the safety analyses and licensing basis. The added footnote to PTS 3/4.6.3 allows any CIV (not just locked or sealed closed valves) to be opened on an intermittent basis under administrative control. The administrative controls that are used (see the PTS Bases) provide the same level of protection regardless of whether the flow paths include locked or sealed valves. Administrative controls are in procedures, and the appropriate considerations for administrative controls are stated in our PTS Bases. Therefore, administrative controls must include appropriate considerations that containment integrity will be established, when required. This provides assurance that these valves will be closed and that allowing them to be opened will not adversely impact the consequences of the analyzed Final Safety Analysis Report Chapter 15 events.

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[4] NRC letter, "Issuance of Amendment [No. 28] (TAC Nos. 69037 and 69348)," Docket 50-423, dated December 19, 1988.

Question 6: [3/4.6-4]

CTS 3.6.3 is modified by the addition of PTS 3.6.3 associated footnote 2 which states that "Containment Isolation Valves may be opened on an intermittent basis under administrative controls." The justification provided for this change in Attachment 1 TSC 7 states the following: "This is consistent with considerations in Generic Letter 91-08 that were applicable to the removal of the component listing of CIVs from the Technical Specifications. This change is also clarifying and not a reduction in requirements. This change will not create new or different administrative controls for containment isolation valves."

This justification is unacceptable. Consistency with a GL is not an acceptable justification for making a change. Furthermore, this change is not consistent with the guidelines of GL 91-08, it involves an expansion of the TS requirements and it creates new administrative controls for containment isolation valves.

*CTS 1.7.a.1 and the footnote [designated by " ** "] to CTS 4.6.1.1.a specifies and limits which CIVs may be opened on an intermittent basis under administrative control. Footnote 2 to PTS 3.6.3 would allow any closed CIV (manual, automatic, de-activated automatic, etc.) regardless of whether it is closed during normal operation or closed as a result of CTS / PTS 3.6.3 Actions to be opened intermittently under administrative controls. This change expands the number of CIVs allowed to be opened intermittently (expansion of TS requirements) and adds the administrative controls to these valves (new administrative control for CIVs) which were not allowed to be opened before. Thus this portion of the change is a Less Restrictive (L) change.*

GL 91-08 allows the list of CIVs to be removed from TS, but there are some restrictions. GL 91-08 states that "The list of containment isolation valves typically includes footnotes that modify the TS requirements for these valves. Such notes must be incorporated into the associated LCO so that they will remain in effect...". The GL gives examples of such footnotes and how they can be addressed in the TS, to maintain the scope and limits of the note. The proposed change greatly expands the scope and limits of the CTS without proper justification. In addition, the GL states that the "Component lists should not be included in the Bases Section because the Bases Section lacks an appropriate regulatory process for change control." The proposed change relocates the list of CIVs that can be opened to the Bases Section of CTS. Thus the proposed change is inconsistent with the guideline of GL 91-08.

*In order to maintain the current requirements, the ** Footnote to CTS 4.6.1.1.a must be retained in the TS either in CTS 4.6.1.1.a or CTS 3.6.3 or appropriate justifications need to be provided for the proposed change which expands the existing requirements.*

RAI [3/4.6-4]: Revise the submittal and provide the appropriate discussions and justification in accordance with the above discussion.

Response to Question 6: [3/4.6-4]

Consistent with discussion during the teleconference on October 31, 2002, DNC understands that this question is primarily an extension of question 5 [RAI 3/4.6-3]. This question requests additional justification for the expansion of existing requirements in the CTS with respect to the use of footnotes and provisions for the administrative control of CIVs. Refer to the response in question 5, above, for the additional justification related to the added footnote 2 to the PTS 3.6.3, and the proposed removal of the footnote in SR 4.6.1.1.a. The balance of this response relates to GL 91-08 guidance and the assurance of an adequate change control process.

DNC considers that an appropriate regulatory process for change control does exist in the proposal. Based on discussion during the teleconference on October 31, 2002, DNC changed the proposal so that it does not relocate the list of administratively controlled CIVs in to the PTS Bases. Administrative controls for CIVs are included in procedures for both system and valve operation. Therefore, changes to administrative controls or to the valves considered to be CIVs are subject to the change control provisions for plant procedures in the Administrative Controls Section of the CTS. DNC considers this to be consistent with the intended use of GL 91-08 guidance. Additionally, the guidance from GL 91-08 on appropriate considerations for administrative controls has been incorporated into the PTS Bases for 3.6.3, by Amendment No. 154, dated December 18, 1997.[5] The CTS includes a TS Bases Control Program, and changes to the Bases of the TS are made under appropriate control and review, pursuant to 10 CFR 50.59 provisions for change control. Therefore, DNC considers that placement of this guidance into the PTS Bases is also acceptable.

Question 7: [3/4.6-5]

CTS 3.6.3 Action has been modified to PTS 3.6.3 Action by the deletion of the words "maintain at least one isolation valve OPERABLE in each affected penetration that is open and;" and replacing the words with the word "either..." The justification in Attachment 1 TSC 9 states that the change is a clarification, since the deleted text to maintain at least one isolation valve OPERABLE would not be applicable to affected penetrations with only one CIV and a closed system, or applications that conform to 10 CFR 50, Appendix A, General Design Criterion 57 [GDC 57] for closed system isolation valves. In addition, the justification states that there is no reduction in requirements. While the former statement is somewhat true, the later statement is incorrect. There is a reduction in requirements. Based on the current TS, if two CIVs in a penetration are inoperable (loss of containment integrity), one cannot maintain an OPERABLE isolation valve in the affected penetration, thus one would default to CTS 3.6.3 Action d, an immediate shutdown, or based on some licensee's interpretations, default to CTS 3.0.3 or CTS 3.6.1 Action which are basically the same actions. Under the proposed TS one would have 4 hours to restore a CIV to OPERABLE status or isolate the penetration.

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(5) NRC letter, "Issuance of Amendment [No. 154] (TAC No. M99747)," Docket 50-423, dated December 18, 1997.

This is a Less Restrictive (L) change which has not been justified and is not consistent with the CTS or with the requirements of the ISTS (NUREG-1431).

RAI [3/4.6-5]: Revise the submittal to maintain the current requirements with regard to two CIVs inoperable in a penetration and to be consistent with the CTS and STS. Provide any discussion and justifications as necessary.

Response to Question 7: [3/4.6-5]

Based on discussion during the conference call on October 31, 2002, DNC proposes to modify its PTS 3.6.3 Action, as shown in Attachments 4 and 5, to replace the word "valve" with the word "barrier" in the statement, and the words "each affected penetration that is open" with "the affected penetration(s)". The PTS 3.6.3 Action states, "With one or more of the isolation valve(s) inoperable, maintain at least one isolation *barrier* OPERABLE in *the affected penetration(s)* and:"

The term "barrier" that is used in this PTS 3.6.3 Action is described by PTS 3.6.3 Bases to be synonymous with either a CIV, or the closed system that is associated with containment penetrations that conform to GDC 57 applications for closed system isolation valves. As is required by the CTS, in the PTS 3.6.3 Action, an immediate shutdown will be required by entry to either CTS 3.0.3, or to the PTS 3.6.3.e, when two isolation valves in a penetration are not OPERABLE, or when at least one isolation valve is not OPERABLE and the OPERABLE isolation barrier in the affected penetration is not maintained. This change clarifies applicability of the Action to GDC 57 applications and will not modify requirements of the CTS 3.6.3 for CIVs. Similarly, the words "each affected penetration that is open" are synonymous with the proposed words that state "the affected penetration(s)". The changes are proposed to improve consistency in the format of this Action's text without modifying the Action's applicability or the CTS 3.6.3 operability requirements.

Attachment 2

Millstone Nuclear Power Station, Unit No. 3

License Basis Document Change Request 3-6-02
Containment Isolation Valves
Marked Up Pages Previously Submitted

License Basis Document Change Request 3-6-02
Containment Isolation Valves
Marked Up Pages Previously Submitted

The following Technical Specification and associated Bases pages have been proposed to be changed.

Technical Specification Section Number	Title(s) of Section(s)	Page and Revision Numbers
INDEX	Definitions	i, Amend. 188
INDEX	Bases	xiv, Amend. 204
1.7	Definitions - Containment Integrity	1-2, Amend. 186 1-3, Amend. 187
3/4.6.1.1	Containment Systems - Primary Containment - Containment Integrity	3/4 6-1, Amend. 186 B 3/4 6-1, Amend. 186
3/4.6.3	Containment Systems - Containment Isolation Valves	3/4 6-15, Amend. 206 B 3/4 6-3, NRC Letter dated June 3, 2002 B 3/4 6-3a, NRC Letter dated June 3, 2002 B 3/4 6-3b, NRC Letter dated June 16, 1998 B 3/4 6-3c, Amend. 142

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CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or operator action during periods when containment isolation valves may be opened under administrative control per Specification 4.6.1.1a.

2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions.

b. All equipment hatches are closed and sealed, (Replace with Insert A

c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,

d. The containment leakage rates are within the limits of the Containment Leakage Rate Testing Program, and

e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.

CORE ALTERATIONS

1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

DOSE EQUIVALENT I-131

1.10 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microCurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in NRC Regulatory Guide 1.109, Revision 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I."

$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY

1.11 $\bar{E}$ shall be the average (weighted in proportion to the concentration of each radionuclide in the sample) of the sum of the average beta and gamma energies per disintegration (MeV/d) for the radionuclides in the sample.

(*) Insert B

INSERT A - Technical Specifications 1.7 (page 1-2)

2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are opened under administrative control as permitted by specification 3.6.3.

INSERT B - Technical Specifications 1.7 (page 1-2)
add footnote to bottom of page

* In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons.

1.12 DELETED

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF Actuation Setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

1.14 Deleted

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

IDENTIFIED LEAKAGE

1.1 IDENTIFIED LEAKAGE shall be:

a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System.

MASTER RELAY TEST

1.17 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include continuity check of each associated slave relay.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

~~November 2, 2000~~

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

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

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. At least once per 31 days by verifying that all penetrations* not capable of being closed by OPERABLE containment automatic isolation valves ~~or operator action during periods when containment isolation valves are opened under administrative control,~~** and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions; ~~and~~, except for valves that are open under administrative control as permitted by Specification 3.6.3; and

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

c. Deleted

*(1) Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

**(2) The following valves may be opened on an intermittent basis under administrative control. Manual valves 3SSP*V13, 3SSP*V14, 3HCS*V2, 3HCS*V3, 3HCS*V9, 3HCS*V10, 3HCS*V6, 3HCS*V13, 3CHS*V371, 3MSS*V885, 3MSS*V886, 3MSS*V887. Remote manual valves 3RHS*MV8701A, 3RHS*MV8701B, 3RHS*MV8702A, 3RHS*MV8702B. — Replace with INSERT C

(3) INSERT D

INSERT C - Technical Specifications 3.6.1.1 (page 3/4 6-1)

(2) In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons.

INSERT D - Technical Specifications 3.6.1.1 (page 3/4 6-1)

(3) Isolation devices in high radiation areas may be verified by use of administrative means.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation, will limit the SITE BOUNDARY radiation doses to within the dose guidelines of 10 CFR Part 100 during accident conditions and the control room operators dose to within the guidelines of GDC 19.

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing an operator, who is in constant communication with control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

When the Residual Heat Removal (RHR) System is placed in service in the plant cooldown mode of operation, the RHR suction isolation remotely operated valves 3RHS*MV8701A and 3RHS*MV8701B, and/or 3RHS*MV8702A and 3RHS*MV8702B are opened. These valves are normally operated from the control room. They do not receive an automatic containment isolation closure signal, but are interlocked to prevent their opening if Reactor Coolant System (RCS) pressure is greater than approximately 412.5 psia. When any of these valves are opened, either one of the two required licensed (Reactor Operator) control room operators can be credited as the operator required for administrative control. It is not necessary to use a separate dedicated operator.

REPLACE WITH INSERT E

3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates, as specified in the Containment Leakage Rate Testing Program, ensure that the total containment leakage volume will not exceed the value assumed in the safety analyses at the peak accident pressure, P_a. As an added conservatism, the measured overall integrated leakage rate is further limited to less than 0.75 L_a during performance of the periodic test to account for possible degradation of the containment leakage barriers between leakage tests.

The Limiting Condition for Operation defines the limitations on containment leakage. The leakage rates are verified by surveillance testing, as specified in the Containment Leakage Rate Testing Program, in accordance with the requirements of Appendix J. Although the LCO specifies the leakage rates at accident pressure, P_a, it is not feasible to perform a test at such an exact value for pressure. Consequently, the surveillance testing is performed at a pressure greater than or equal to P_a to account for test instrument uncertainties and stabilization changes. This conservative test pressure ensures that the measured leakage rates

INSERT E - Technical Specifications 3.6.1.1 (page B 3/4 6-1)

Primary CONTAINMENT INTEGRITY is required in MODES 1 through 4. This requires an OPERABLE containment automatic isolation valve system. In MODES 1, 2 and 3 this is satisfied by the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure. In MODE 4 the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steam line pressure are not required to be OPERABLE. Automatic actuation of the containment isolation system in MODE 4 is not required because adequate time is available for plant operators to evaluate plant conditions and respond by manually operating engineered safety features components. Since the manual actuation pushbuttons portion of the containment isolation system is required to be OPERABLE in MODE 4, the plant operators can use the manual pushbuttons to rapidly position all automatic containment isolation valves to the required accident position. Therefore, the containment isolation actuation pushbuttons satisfy the requirement for an OPERABLE containment automatic isolation valve system in MODE 4.

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 The containment isolation valves shall be OPERABLE(1) ~~with isolation times less than or equal to the required isolation times.~~(2) add footnote

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

ACTION:

With one or more of the isolation valve(s) inoperable, either ~~maintain at least one isolation valve OPERABLE in each affected penetration that is open and:~~

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate ~~each~~ the affected penetration(s) within 4 hours by use of ~~at least one~~ deactivated automatic valve(s) secured in the isolation position, or

c. Isolate ~~each~~ the affected penetration(s) within 4 hours by use of ~~at least one~~ closed manual valve(s) or blind flange(s); or

INSERT 'F'

e f. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1 DELETED

4.6.3.2 Each isolation valve shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 24 months by: (1)e

a. Verifying that on a Phase "A" Isolation test signal, each Phase "A" isolation valve actuates to its isolation position,

b. Verifying that on a Phase "B" Isolation test signal, each Phase "B" isolation valve actuates to its isolation position, and

c. Verifying that on a Containment High Radiation test signal, each purge supply and exhaust isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each power-operated or automatic valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

(2) Containment Isolation Valves may be opened on an intermittent basis under administrative controls.

(1) The provisions of this Specification are not applicable for main steam line isolation valves. However, provisions of Specification 3.7.1.5 are applicable for main steam line isolation valves.

INSERT F - Technical Specifications 3.6.3 (page 3/4 6-15)

d. Isolate the affected penetration that has only one containment isolation valve and a closed system within 72 hours by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange; or

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of General Design Criteria 54 through 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for these isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA. FSAR Table 6.2-65 lists all containment isolation valves. The addition ~~of~~ or deletion of any containment isolation valve shall be made in accordance with Section 50.59 of 10CFR50 and approved by the committee(s) as described in the NDQAP Topical Report.

For the purposes of meeting this LCO, the safety function of the containment isolation valves is to shut within the time limits assumed in the accident analyses. As long as the valves can shut within the time limits assumed in the accident analyses, the valves are OPERABLE. Where the valve position indication does not affect the operation of the valve, the indication is not required for valve operability under this LCO. Position indication for containment isolation valves is covered by Technical Specification 6.8.4.e., Accident Monitoring Instrumentation. Failed position indication on these valves must be restored "as soon as practicable" as required by Technical Specification 6.8.4.e.3. Maintaining the valves OPERABLE, when position indication fails, facilitates troubleshooting and correction of the failure, allowing the indication to be restored "as soon as practicable." INSERT G

If the containment isolation valve on a closed system becomes inoperable, the remaining barrier is a closed system since a closed system is an acceptable alternative to an automatic valve. However, actions must still be taken to meet Technical Specification ACTION 3.6.3.c and the valve, not normally considered as a containment isolation valve, and closest to the containment wall should be put into the ~~locked~~ closed position. No leak testing of the alternate valve is necessary to satisfy the action statement. Placing the manual valve in the ~~locked~~ closed position sufficiently deactivates the penetration for Technical Specification compliance. INSERT H

For the purposes of meeting this LCO, neither the containment isolation valve, nor any alternate valve on a closed system have a leakage limit associated with valve operability. INSERT I

3/4.6.4 COMBUSTIBLE GAS CONTROL

Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. Containment hydrogen concentration is also important in verifying the adequacy of mitigating actions. The requirement to perform a hydrogen sensor calibration at least every 92 days is based upon vendor recommendations to maintain sensor calibration. This calibration consists of a two point calibration, utilizing gas containing approximately one percent hydrogen gas for one of the calibration points, and gas containing approximately four percent hydrogen gas for the other calibration point.

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit or the Mechanical Vacuum Pumps are capable of controlling the expected hydrogen generation associated with: (1) zirconium-water reactions, (2) radiolytic decomposition of water, and (3) corrosion of metals within containment. These Hydrogen

INSERT G - Technical Specifications 3.6.3 (page B 3/4 6-3)

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.

INSERT H - Technical Specifications 3.6.3 (page B 3/4 6-3)

Closed system isolation valves applicable to Technical Specification ACTION 3.6.3.d are included in FSAR Table 6.2-65, and are the isolation valves for those penetrations credited as General Design Criteria 57. The specified time (i.e., 72 hours) of Technical Specification ACTION 3.6.3.d 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 3.6.3.d, the affected penetration flow path must be verified to be isolated on a periodic basis, (Surveillance Requirement 4.6.1.1.a). This is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The frequency of once per 31 days in this surveillance 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.

INSERT I - Technical Specifications 3.6.3 (page B 3/4 6-3)

The opening of containment isolation valves on an intermittent basis under administrative controls includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The appropriate administrative controls, based on the above considerations, to allow containment isolation valves to be opened are contained in the procedures that will be used to operate the valves. Entries should be placed in the Shift Manager Log when these valves are opened or closed. However, it is not necessary to log into any Technical Specification Action Statement for these valves, provided the appropriate administrative controls have been established.

Opening a closed containment isolation valve bypasses a plant design feature that prevents the release of radioactivity outside the containment. Therefore, this should not be done frequently, and the time the valve is opened should be minimized. The determination of the appropriate administrative controls for containment isolation valves requires an evaluation of the expected environmental conditions. This evaluation must conclude environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

The following valves may be opened on an intermittent basis under administrative control. Manual valves 3SSP*V013, 3SSP*V014, 3HCS*V002, 3HCS*V003, 3HCS*V009, 3HCS*V010, 3HCS*V006, 3HCS*V013, 3CHS*V371, 3MSS*V885, 3MSS*V886, 3MSS*V887. Remote manual valves 3RHS*MV8701A, 3RHS*MV8701B, 3RHS*MV8702A, 3RHS*MV8702B.

When the Residual Heat Removal (RHR) System is placed in service in the plant cooldown mode of operation, the RHR suction isolation remotely operated valves 3RHS*MV8701A and 3RHS*MV8701B, and / or 3RHS*MV8702A and 3RHS*MV8702B are opened. These valves are normally operated from the control room. They do not receive an automatic containment isolation closure signal, but are interlocked to prevent their opening if Reactor Coolant System (RCS) pressure is greater than approximately 412.5 psia. When any of these valves are opened, either one of the two required licensed (Reactor Operator) control room operators can be credited as the operator required for administrative control. It is not necessary to use a separate dedicated operator.

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

Control Systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The Post-LOCA performance of the hydrogen recombiner blowers is based on a series of equations supplied by the blower manufacturer. These equations are also the basis of the acceptance criteria used in the surveillance procedure. The required performance was based on starting containment conditions before the LOCA of 10.59 psia (total pressure), 120°F and 100% relative humidiy.

The surveillance procedure shall use the following methods to verify acceptable blower flow rate:

1. Definitions and constants

   CFM = cubic feet per minute

   RPM = revolutions per minute

   Blower RPM = 3550

   Blower ft^3/revolution = .028 ft^3

   Standard CFM = gas volume converted to conditions of 68°F and 14.7 psia.

2. Measure and record the following information:

   Pcontainment--Average of 3LMS*P934, 935, 936, and 937 (psia)

   Pout--From 3HCS*PI1A or B (psia)

   Tc--Containment temperature (°F)

   Pin--Measure with a new inlet gauge or calculate from Equation 3a below (psia)

   scfm measured--See Procedure/Form 3613A.3-1

   ΔP_f--From Table 2 (psi)

   A--As found Slip Constant

   Accuracy--Instrument accuracy range from Table 1.

3. Calculate as found slip constant (A)

   a. Pin = Pcontainment - ΔP_f

   b.

$$A = \frac{3550 - \left(\left[\frac{\text{scfm}_{\text{measured}} - \text{Accuracy}}{0.028 * 0.95}\right] * \left[\frac{14.7}{\text{Pin}} * \frac{\text{Tc} + 460}{528}\right]\right)}{\left(\left[\frac{\text{Pout}}{\text{Pin}} * 14.7\right] - 14.7\right)^{\frac{1}{2}} * \left(\frac{14.7}{\text{Pin}} * \frac{\text{Tc} + 460}{528}\right)^{\frac{1}{2}}}$$

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

4. Calculate expected postaccident flow rate using A calculated in Step 3.

a. Slip RPM

$= A * (4.937)^{\frac{1}{2}} * 1.218$

b. Actual Inlet CFM

ACFM = .028 (3550 - Slip RPM)

c. Standard CFM

scfm = ACFM 0.725

d. Postaccident scfm Minimum = scfm * 0.95

e. Acceptance Flow Rate

Postaccident scfm minimum $\geq$ 41.52 scfm.

Table 1 Accuracy Range (Ref. 2)

scfm (measured)	Accuracy Range
30 to < 40	9.13 scfm
40 to < 50	6.98 scfm
50 to < 60	5.81 scfm
60 to < 90	5.17 scfm

Table 2 Inlet Piping Loss (Ref. 1)

scfm Measured (Unadjusted)	ΔP_i (psi)
30	.21
40	.31
50	.52
60	.73
70	.98
80	1.28

References: 1. Calculation 90-RPS-722GM, "Flow Acceptance Criteria for 3HCS*RBNR 1A/B Blowers 3HCS*C1A/B."

2. Calculation PA 90-LOE-0132GE, "Hydrogen Recombiner Flow Error Analysis."

The acceptance flow rate is the required flow rate at the worst case containment conditions 24 hours after the LOCA. The analysis assumes the recombiners are started no later than 24 hours after the accident. The 18-month surveillance shall verify the gas temperature and blower flow rate concurrently.

~~Revised by NRC Letter dated June 16, 1998~~

3/4.6.5 SUBATMOSPHERIC PRESSURE CONTROL SYSTEM

3/4.6.5.1 STEAM JET AIR EJECTOR

The closure of the isolation valves in the suction of the steam jet air ejector ensures that: (1) the containment internal pressure may be maintained within its operation limits by the mechanical vacuum pumps, and (2) the containment atmosphere is isolated from the outside environment in the event of a LOCA. These valves are required to be closed for containment isolation.

Docket No. 50-423
B18800

Attachment 3

Millstone Nuclear Power Station, Unit No. 3

License Basis Document Change Request 3-6-02
Containment Isolation Valves
Retyped Pages Previously Submitted

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CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

1) Capable of being closed by an OPERABLE containment automatic isolation valve system*, or

2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are opened under administrative control as permitted by Specification 3.6.3.

b. All equipment hatches are closed and sealed,

c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,

d. The containment leakage rates are within the limits of the Containment Leakage Rate Testing Program, and

e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.

CORE ALTERATIONS

1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

DOSE EQUIVALENT I-131

1.10 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microCurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in NRC Regulatory Guide 1.109, Revision 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I."

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* In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons.

$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY

1.11 $\bar{E}$ shall be the average (weighted in proportion to the concentration of each radionuclide in the sample) of the sum of the average beta and gamma energies per disintegration (MeV/d) for the radionuclides in the sample.

1.12 DELETED

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF Actuation Setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

1.14 Deleted

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

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1.1 IDENTIFIED LEAKAGE shall be:

a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System.

MASTER RELAY TEST

1.17 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include continuity check of each associated slave relay.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

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

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. At least once per 31 days by verifying that all penetrations[1] not capable of being closed by OPERABLE containment automatic isolation valves,[2] and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions,[3] except for valves that are open under administrative control as permitted by Specification 3.6.3; and

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

c. Deleted

---

(1) Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

(2) In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons.

(3) Isolation devices in high radiation areas may be verified by use of administrative means.

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 The containment isolation valves shall be OPERABLE.[1] [2]

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

ACTION:

With one or more of the isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate the affected penetration(s) within 4 hours by use of deactivated automatic valve(s) secured in the isolation position(s), or

c. Isolate the affected penetration(s) within 4 hours by use of closed manual valve(s) or blind flange(s); or

d. Isolate the affected penetration that has only one containment isolation valve and a closed system within 72 hours by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange; or

e. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1 DELETED

4.6.3.2 Each isolation valve shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 24 months by:

a. Verifying that on a Phase "A" Isolation test signal, each Phase "A" isolation valve actuates to its isolation position,

b. Verifying that on a Phase "B" Isolation test signal, each Phase "B" isolation valve actuates to its isolation position, and

c. Verifying that on a Containment High Radiation test signal, each purge supply and exhaust isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each power-operated or automatic valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

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(1) The provisions of this Specification are not applicable for main steam line isolation valves. However, provisions of Specification 3.7.1.5 are applicable for main steam line isolation valves.

(2) Containment isolation valves may be opened on an intermittent basis under administrative controls.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation, will limit the SITE BOUNDARY radiation doses to within the dose guidelines of 10 CFR Part 100 during accident conditions and the control room operators dose to within the guidelines of GDC 19.

Primary CONTAINMENT INTEGRITY is required in MODES 1 through 4. This requires an OPERABLE containment automatic isolation valve system. In MODES 1, 2 and 3 this is satisfied by the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure. In MODE 4 the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure are not required to be OPERABLE. Automatic actuation of the containment isolation system in MODE 4 is not required because adequate time is available for plant operators to evaluate plant conditions and respond by manually operating engineered safety features components. Since the manual actuation pushbuttons portion of the containment isolation system is required to be OPERABLE in MODE 4, the plant operators can use the manual pushbuttons to rapidly position all automatic containment isolation valves to the required accident position. Therefore, the containment isolation actuation pushbuttons satisfy the requirement for an OPERABLE containment automatic isolation valve system in MODE 4.

3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates, as specified in the Containment Leakage Rate Testing Program, ensure that the total containment leakage volume will not exceed the value assumed in the safety analyses at the peak accident pressure, P_a. As an added conservatism, the measured overall integrated leakage rate is further limited to less than 0.75 L_a during performance of the periodic test to account for possible degradation of the containment leakage barriers between leakage tests.

The Limiting Condition for Operation defines the limitations on containment leakage. The leakage rates are verified by surveillance testing, as specified in the Containment Leakage Rate Testing Program, in accordance with the requirements of Appendix J. Although the LCO specifies the leakage rates at accident pressure, P_a, it is not feasible to perform a test at such an exact value for pressure. Consequently, the surveillance testing is performed at a pressure greater than or equal to P_a to account for test instrument uncertainties and stabilization changes. This conservative test pressure ensures that the measured leakage rates

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of General Design Criteria 54 through 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for these isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA. FSAR Table 6.2-65 lists all containment isolation valves. The addition or deletion of any containment isolation valve shall be made in accordance with Section 50.59 of 10CFR50 and approved by the committee(s) as described in the QAP Topical Report.

For the purposes of meeting this LCO, the safety function of the containment isolation valves is to shut within the time limits assumed in the accident analyses. As long as the valves can shut within the time limits assumed in the accident analyses, the valves are OPERABLE. Where the valve position indication does not affect the operation of the valve, the indication is not required for valve operability under this LCO. Position indication for containment isolation valves is covered by Technical Specification 6.8.4.e., Accident Monitoring Instrumentation. Failed position indication on these valves must be restored "as soon as practicable" as required by Technical Specification 6.8.4.e.3. Maintaining the valves OPERABLE, when position indication fails, facilitates troubleshooting and correction of the failure, allowing the indication to be restored "as soon as practicable."

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.

If the containment isolation valve on a closed system becomes inoperable, the remaining barrier is a closed system since a closed system is an acceptable alternative to an automatic valve. However, actions must still be taken to meet Technical Specification ACTION 3.6.3.d and the valve, not normally considered as a containment isolation valve, and closest to the containment wall should be put into the closed position. No leak testing of the alternate valve is necessary to satisfy the action statement. Placing the manual valve in the closed position sufficiently deactivates the penetration for Technical Specification compliance.

Closed system isolation valves applicable to Technical Specification ACTION 3.6.3.d are included in FSAR Table 6.2-65, and are the isolation valves for those penetrations credited as General Design Criteria 57. The specified time (i.e., 72 hours) of Technical Specification ACTION 3.6.3.d 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 3.6.3.d, the affected penetration flow path must be verified to be isolated on a periodic basis, (Surveillance Requirement 4.6.1.1.a). This is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The frequency of once per 31 days in this surveillance 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.

3/4.6.3 CONTAINMENT ISOLATION VALVES (Continued)

For the purposes of meeting this LCO, neither the containment isolation valve, nor any alternate valve on a closed system have a leakage limit associated with valve operability.

The opening of containment isolation valves on an intermittent basis under administrative controls includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The appropriate administrative controls, based on the above considerations, to allow containment isolation valves to be opened are contained in the procedures that will be used to operate the valves. Entries should be placed in the Shift Manager Log when these valves are opened or closed. However, it is not necessary to log into any Technical Specification Action Statement for these valves, provided the appropriate administrative controls have been established.

Opening a closed containment isolation valve bypasses a plant design feature that prevents the release of radioactivity outside the containment. Therefore, this should not be done frequently, and the time the valve is opened should be minimized. The determination of the appropriate administrative controls for containment isolation valves requires an evaluation of the expected environmental conditions. This evaluation must conclude environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

The following valves may be opened on an intermittent basis under administrative control. Manual valves 3SSP*V013, 3SSP*V014, 3HCS*V002, 3HCS*V003, 3HCS*V009, 3HCS*V010, 3HCS*V006, 3HCS*V013, 3CHS*V371, 3MSS*V885, 3MSS*V886, 3MSS*V887. Remote manual valves 3RHS*MV8701A, 3RHS*MV8701B, 3RHS*MV8702A, 3RHS*MV8702B.

When the Residual Heat Removal (RHR) System is placed in service in the plant cooldown mode of operation, the RHR suction isolation remotely operated valves 3RHS*MV8701A and 3RHS*MV8701B, and/or 3RHS*MV8702A and 3RHS*MV8702B are opened. These valves are normally operated from the control room. They do not receive an automatic containment isolation closure signal, but are interlocked to prevent their opening if Reactor Coolant System (RCS) pressure is greater than approximately 412.5 psia. When any of these valves are opened, either one of the two required licensed (Reactor Opeator) control room operators can be credited as the operator required for administrative control. It is not necessary to use a separate dedicated operator.

3/4.6.4 COMBUSTIBLE GAS CONTROL

Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. Containment hydrogen concentration is also important in verifying the adequacy of mitigating actions. The requirement to perform a hydrogen sensor calibration at least every 92 days is based upon vendor recommendations to maintain sensor calibration. This calibration consists of a two point calibration, utilizing gas containing approximately one percent hydrogen gas for one of the calibration points, and gas containing approximately four percent hydrogen gas for the other calibration point.

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit or the Mechanical Vacuum Pumps are capable of controlling the expected hydrogen generation associated with: (1) zirconium-water reactions, (2) radiolytic decomposition of water, and (3) corrosion of metals within containment. These Hydrogen Control Systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The Post-LOCA performance of the hydrogen recombiner blowers is based on a series of equations supplied by the blower manufacturer. These equations are also the basis of the acceptance criteria used in the surveillance procedure. The required performance was based on starting containment conditions before the LOCA of 10.59 psia (total pressure), 120°F and 100% relative humidiy.

The surveillance procedure shall use the following methods to verify acceptable blower flow rate:

1. Definitions and constants

   CFM = cubic feet per minute

   RPM = revolutions per minute

   Blower RPM = 3550

   Blower ft^3/revolution = .028 ft^3

   Standard CFM = gas volume converted to conditions of 68°F and 14.7 psia.

2. Measure and record the following information:

   Pcontainment--Average of 3LMS*P934, 935, 936, and 937 (psia)

   Pout--From 3HCS*PI1A or B (psia)

   Tc--Containment temperature (°F)

   Pin--Measure with a new inlet gauge or calculate from Equation 3a below (psia)

   scfm measured--See Procedure/Form 3613A.3-1

   ΔP_f--From Table 2 (psi)

   A--As found Slip Constant

   Accuracy--Instrument accuracy range from Table 1.

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

3. Calculate as found slip constant (A)

   a. Pin = Pcontainment - ΔP_f

   b.

$$A = \frac{3550 - \left(\left[\frac{\text{scfm}_{\text{measured}} - \text{Accuracy}}{0.028 * 0.95}\right] * \left[\frac{14.7}{\text{Pin}} * \frac{\text{Tc} + 460}{528}\right]\right)}{\left(\left[\frac{\text{Pout}}{\text{Pin}} * 14.7\right] - 14.7\right)^{\frac{1}{2}} * \left(\frac{14.7}{\text{Pin}} * \frac{\text{Tc} + 460}{528}\right)^{\frac{1}{2}}}$$

4. Calculate expected postaccident flow rate using A calculated in Step 3.

   a. Slip RPM

      $= A * (4.937)^{\frac{1}{2}} * 1.218$

   b. Actual Inlet CFM

      ACFM = .028 (3550 - Slip RPM)

   c. Standard CFM

      scfm = ACFM 0.725

   d. Postaccident scfm Minimum = scfm * 0.95

   e. Acceptance Flow Rate

      Postaccident scfm minimum $\geq$ 41.52 scfm.

Table 1 Accuracy Range (Ref. 2)

scfm (measured)	Accuracy Range
30 to < 40	9.13 scfm
40 to < 50	6.98 scfm
50 to < 60	5.81 scfm
60 to < 90	5.17 scfm

Table 2 Inlet Piping Loss (Ref. 1)

scfm Measured (Unadjusted)	ΔP_f (psi)
30	.21
40	.31
50	.52
60	.73
70	.98
80	1.28

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

References: 1. Calculation 90-RPS-722GM, "Flow Acceptance Criteria for 3HCS*RBNR 1A/B Blowers 3HCS*C1A/B."

2. Calculation PA 90-LOE-0132GE, "Hydrogen Recombiner Flow Error Analysis."

The acceptance flow rate is the required flow rate at the worst case containment conditions 24 hours after the LOCA. The analysis assumes the recombiners are started no later than 24 hours after the accident. The 18-month surveillance shall verify the gas temperature and blower flow rate concurrently.

3/4.6.5 SUBATMOSPHERIC PRESSURE CONTROL SYSTEM

3/4.6.5.1 STEAM JET AIR EJECTOR

The closure of the isolation valves in the suction of the steam jet air ejector ensures that: (1) the containment internal pressure may be maintained within its operation limits by the mechanical vacuum pumps, and (2) the containment atmosphere is isolated from the outside environment in the event of a LOCA. These valves are required to be closed for containment isolation.

Docket No. 50-423
B18800

Attachment 4

Millstone Nuclear Power Station, Unit No. 3

License Basis Document Change Request 3-6-02
Containment Isolation Valves
New Marked Up Pages

License Basis Document Change Request 3-6-02
Containment Isolation Valves
New Marked Up Pages

The following Technical Specification and associated Bases pages have been proposed to be changed.

Technical Specification Section Number	Title(s) of Section(s)	Page and Revision Numbers
3/4.6.1.1	Containment Systems - Primary Containment - Containment Integrity	B 3/4 6-1, Amend. 186
3/4.6.3	Containment Systems - Containment Isolation Valves	3/4 6-15, Amend. 206 B 3/4 6-3, NRC Letter dated June 3, 2002

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation, will limit the SITE BOUNDARY radiation doses to within the dose guidelines of 10 CFR Part 100 during accident conditions and the control room operators dose to within the guidelines of GDC 19.

Primary CONTAINMENT INTEGRITY is required in MODES 1 through 4. This requires an OPERABLE containment automatic isolation valve system. In MODES 1, 2 and 3 this is satisfied by the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure. In MODE 4 the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure are not required to be OPERABLE. Automatic actuation of the containment isolation system in MODE 4 is not required because adequate time is available for plant operators to evaluate plant conditions and respond by manually operating engineered safety features components. Since the manual actuation pushbuttons portion of the containment isolation system is required to be OPERABLE in MODE 4, the plant operators can use the manual pushbuttons to rapidly position all automatic containment isolation valves to the required accident position. Therefore, the containment isolation actuation pushbuttons satisfy the requirement for an OPERABLE containment automatic isolation valve system in MODE 4.

Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation.

3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates, as specified in the Containment Leakage Rate Testing Program, ensure that the total containment leakage volume will not exceed the value assumed in the safety analyses at the peak accident pressure, P_a. As an added conservatism, the measured overall integrated leakage rate is further limited to less than 0.75 L_a during performance of the periodic test to account for possible degradation of the containment leakage barriers between leakage tests.

The Limiting Condition for Operation defines the limitations on containment leakage. The leakage rates are verified by surveillance testing, as specified in the Containment Leakage Rate Testing Program, in accordance with the requirements of Appendix J. Although the LCO specifies the leakage rates at accident pressure, P_a, it is not feasible to perform a test at such an exact value for pressure. Consequently, the surveillance testing is performed at a pressure greater than or equal to P_a to account for test instrument uncertainties and stabilization changes. This conservative test pressure ensures that the measured leakage rates

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 The containment isolation valves shall be OPERABLE.[1] [2]

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

ACTION:

With one or more of the isolation valve(s) inoperable, ~~either:~~ maintain at least one isolation barrier OPERABLE in the affected penetration(s) and:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate the affected penetration(s) within 4 hours by use of deactivated automatic valve(s) secured in the isolation position(s), or

c. Isolate the affected penetration(s) within 4 hours by use of closed manual valve(s) or blind flange(s); or

d. Isolate the affected penetration that has only one containment isolation valve and a closed system within 72 hours by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange; or

e. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1 DELETED

4.6.3.2 Each isolation valve shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 24 months by:

a. Verifying that on a Phase "A" Isolation test signal, each Phase "A" isolation valve actuates to its isolation position,

b. Verifying that on a Phase "B" Isolation test signal, each Phase "B" isolation valve actuates to its isolation position, and

c. Verifying that on a Containment High Radiation test signal, each purge supply and exhaust isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each power-operated or automatic valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

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[1] The provisions of this Specification are not applicable for main steam line isolation valves. However, provisions of Specification 3.7.1.5 are applicable for main steam line isolation valves.

[2] Containment isolation valves may be opened on an intermittent basis under administrative controls.

3/4.6.3 CONTAINMENT ISOLATION VALVES (Continued)

For the purposes of meeting this LCO, neither the containment isolation valve, nor any alternate valve on a closed system have a leakage limit associated with valve operability.

The opening of containment isolation valves on an intermittent basis under administrative controls includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The appropriate administrative controls, based on the above considerations, to allow containment isolation valves to be opened are contained in the procedures that will be used to operate the valves. Entries should be placed in the Shift Manager Log when these valves are opened or closed. However, it is not necessary to log into any Technical Specification Action Statement for these valves, provided the appropriate administrative controls have been established.

Opening a closed containment isolation valve bypasses a plant design feature that prevents the release of radioactivity outside the containment. Therefore, this should not be done frequently, and the time the valve is opened should be minimized. The determination of the appropriate administrative controls for containment isolation valves requires an evaluation of the expected environmental conditions. This evaluation must conclude environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

The following valves may be opened on an intermittent basis under administrative control. Manual valves 3SSP*V013, 3SSP*V014, 3HCS*V002, 3HCS*V003, 3HCS*V009, 3HCS*V010, 3HCS*V006, 3HCS*V013, 3CHS*V371, 3MSS*V885, 3MSS*V886, 3MSS*V887. Remote manual valves 3RHS*MV8701A, 3RHS*MV8701B, 3RHS*MV8702A, 3RHS*MV8702B.

When the Residual Heat Removal (RHR) System is placed in service in the plant cooldown mode of operation, the RHR suction isolation remotely operated valves 3RHS*MV8701A and 3RHS*MV8701B, and/or 3RHS*MV8702A and 3RHS*MV8702B are opened. These valves are normally operated from the control room. They do not receive an automatic containment isolation closure signal, but are interlocked to prevent their opening if Reactor Coolant System (RCS) pressure is greater than approximately 412.5 psia. When any of these valves are opened, either one of the two required licensed (Reactor Opeator) control room operators can be credited as the operator required for administrative control. It is not necessary to use a separate dedicated operator.

3/4.6.4 COMBUSTIBLE GAS CONTROL

Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. Containment hydrogen concentration is also important in verifying the adequacy of mitigating actions. The requirement to perform a hydrogen sensor calibration at least every 92 days is based upon vendor recommendations to maintain sensor calibration. This calibration consists of a two point calibration, utilizing gas containing approximately one percent hydrogen gas for one of the calibration points, and gas containing approximately four percent hydrogen gas for the other calibration point.

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Attachment 5

Millstone Nuclear Power Station, Unit No. 3

License Basis Document Change Request 3-6-02
Containment Isolation Valves
Retyped Pages

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DEFINITIONS

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CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

1) Capable of being closed by an OPERABLE containment automatic isolation valve system*, or

2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are opened under administrative control as permitted by Specification 3.6.3.

b. All equipment hatches are closed and sealed,

c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,

d. The containment leakage rates are within the limits of the Containment Leakage Rate Testing Program, and

e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.

CORE ALTERATIONS

1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

DOSE EQUIVALENT I-131

1.10 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microCurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in NRC Regulatory Guide 1.109, Revision 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I."

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* In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons.

$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY

1.11 $\bar{E}$ shall be the average (weighted in proportion to the concentration of each radionuclide in the sample) of the sum of the average beta and gamma energies per disintegration (MeV/d) for the radionuclides in the sample.

1.12 DELETED

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF Actuation Setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

1.14 Deleted

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

IDENTIFIED LEAKAGE

1.1 IDENTIFIED LEAKAGE shall be:

a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System.

MASTER RELAY TEST

1.17 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include continuity check of each associated slave relay.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

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

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. At least once per 31 days by verifying that all penetrations[1] not capable of being closed by OPERABLE containment automatic isolation valves,[2] and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions,[3] except for valves that are open under administrative control as permitted by Specification 3.6.3; and

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

c. Deleted

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(1) Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

(2) In MODE 4, the requirement for an OPERABLE containment isolation valve system is satisfied by use of the containment isolation actuation pushbuttons.

(3) Isolation devices in high radiation areas may be verified by use of administrative means.

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 The containment isolation valves shall be OPERABLE.[1] [2]

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

ACTION:

With one or more of the isolation valve(s) inoperable, maintain at least one isolation barrier OPERABLE in the affected penetration(s), and:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate the affected penetration(s) within 4 hours by use of deactivated automatic valve(s) secured in the isolation position(s), or

c. Isolate the affected penetration(s) within 4 hours by use of closed manual valve(s) or blind flange(s); or

d. Isolate the affected penetration that has only one containment isolation valve and a closed system within 72 hours by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange; or

e. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1 DELETED

4.6.3.2 Each isolation valve shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 24 months by:

a. Verifying that on a Phase "A" Isolation test signal, each Phase "A" isolation valve actuates to its isolation position,

b. Verifying that on a Phase "B" Isolation test signal, each Phase "B" isolation valve actuates to its isolation position, and

c. Verifying that on a Containment High Radiation test signal, each purge supply and exhaust isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each power-operated or automatic valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

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[1] The provisions of this Specification are not applicable for main steam line isolation valves. However, provisions of Specification 3.7.1.5 are applicable for main steam line isolation valves.

[2] Containment isolation valves may be opened on an intermittent basis under administrative controls.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation, will limit the SITE BOUNDARY radiation doses to within the dose guidelines of 10 CFR Part 100 during accident conditions and the control room operators dose to within the guidelines of GDC 19.

Primary CONTAINMENT INTEGRITY is required in MODES 1 through 4. This requires an OPERABLE containment automatic isolation valve system. In MODES 1, 2 and 3 this is satisfied by the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure. In MODE 4 the automatic containment isolation signals generated by high containment pressure, low pressurizer pressure and low steamline pressure are not required to be OPERABLE. Automatic actuation of the containment isolation system in MODE 4 is not required because adequate time is available for plant operators to evaluate plant conditions and respond by manually operating engineered safety features components. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. Since the manual actuation pushbuttons portion of the containment isolation system is required to be OPERABLE in MODE 4, the plant operators can use the manual pushbuttons to rapidly position all automatic containment isolation valves to the required accident position. Therefore, the containment isolation actuation pushbuttons satisfy the requirement for an OPERABLE containment automatic isolation valve system in MODE 4.

3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates, as specified in the Containment Leakage Rate Testing Program, ensure that the total containment leakage volume will not exceed the value assumed in the safety analyses at the peak accident pressure, P_a. As an added conservatism, the measured overall integrated leakage rate is further limited to less than 0.75 L_a during performance of the periodic test to account for possible degradation of the containment leakage barriers between leakage tests.

The Limiting Condition for Operation defines the limitations on containment leakage. The leakage rates are verified by surveillance testing, as specified in the Containment Leakage Rate Testing Program, in accordance with the requirements of Appendix J. Although the LCO specifies the leakage rates at accident pressure, P_a, it is not feasible to perform a test at such an exact value for pressure. Consequently, the surveillance testing is performed at a pressure greater than or equal to P_a to account for test instrument uncertainties and stabilization changes. This conservative test pressure ensures that the measured leakage rates

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of General Design Criteria 54 through 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for these isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA. FSAR Table 6.2-65 lists all containment isolation valves. The addition or deletion of any containment isolation valve shall be made in accordance with Section 50.59 of 10CFR50 and approved by the committee(s) as described in the QAP Topical Report.

For the purposes of meeting this LCO, the safety function of the containment isolation valves is to shut within the time limits assumed in the accident analyses. As long as the valves can shut within the time limits assumed in the accident analyses, the valves are OPERABLE. Where the valve position indication does not affect the operation of the valve, the indication is not required for valve operability under this LCO. Position indication for containment isolation valves is covered by Technical Specification 6.8.4.e., Accident Monitoring Instrumentation. Failed position indication on these valves must be restored "as soon as practicable" as required by Technical Specification 6.8.4.e.3. Maintaining the valves OPERABLE, when position indication fails, facilitates troubleshooting and correction of the failure, allowing the indication to be restored "as soon as practicable."

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.

If the containment isolation valve on a closed system becomes inoperable, the remaining barrier is a closed system since a closed system is an acceptable alternative to an automatic valve. However, actions must still be taken to meet Technical Specification ACTION 3.6.3.d and the valve, not normally considered as a containment isolation valve, and closest to the containment wall should be put into the closed position. No leak testing of the alternate valve is necessary to satisfy the action statement. Placing the manual valve in the closed position sufficiently deactivates the penetration for Technical Specification compliance.

Closed system isolation valves applicable to Technical Specification ACTION 3.6.3.d are included in FSAR Table 6.2-65, and are the isolation valves for those penetrations credited as General Design Criteria 57. The specified time (i.e., 72 hours) of Technical Specification ACTION 3.6.3.d 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 3.6.3.d, the affected penetration flow path must be verified to be isolated on a periodic basis, (Surveillance Requirement 4.6.1.1.a). This is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The frequency of once per 31 days in this surveillance 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.

3/4.6.3 CONTAINMENT ISOLATION VALVES (Continued)

For the purposes of meeting this LCO, neither the containment isolation valve, nor any alternate valve on a closed system have a leakage limit associated with valve operability.

The opening of containment isolation valves on an intermittent basis under administrative controls includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The appropriate administrative controls, based on the above considerations, to allow containment isolation valves to be opened are contained in the procedures that will be used to operate the valves. Entries should be placed in the Shift Manager Log when these valves are opened or closed. However, it is not necessary to log into any Technical Specification Action Statement for these valves, provided the appropriate administrative controls have been established.

Opening a closed containment isolation valve bypasses a plant design feature that prevents the release of radioactivity outside the containment. Therefore, this should not be done frequently, and the time the valve is opened should be minimized. The determination of the appropriate administrative controls for containment isolation valves requires an evaluation of the expected environmental conditions. This evaluation must conclude environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

When the Residual Heat Removal (RHR) System is placed in service in the plant cooldown mode of operation, the RHR suction isolation remotely operated valves 3RHS*MV8701A and 3RHS*MV8701B, and/or 3RHS*MV8702A and 3RHS*MV8702B are opened. These valves are normally operated from the control room. They do not receive an automatic containment isolation closure signal, but are interlocked to prevent their opening if Reactor Coolant System (RCS) pressure is greater than approximately 412.5 psia. When any of these valves are opened, either one of the two required licensed (Reactor Opeator) control room operators can be credited as the operator required for administrative control. It is not necessary to use a separate dedicated operator.

3/4.6.4 COMBUSTIBLE GAS CONTROL

Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. Containment hydrogen concentration is also important in verifying the adequacy of mitigating actions. The requirement to perform a hydrogen sensor calibration at least every 92 days is based upon vendor recommendations to maintain sensor calibration. This calibration consists of a two point calibration, utilizing gas containing approximately one percent hydrogen gas for one of the calibration points, and gas containing approximately four percent hydrogen gas for the other calibration point.

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit or the Mechanical Vacuum Pumps are capable of controlling the expected hydrogen generation associated with: (1) zirconium-water reactions, (2) radiolytic decomposition of water, and (3) corrosion of metals within containment. These Hydrogen Control Systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The Post-LOCA performance of the hydrogen recombiner blowers is based on a series of equations supplied by the blower manufacturer. These equations are also the basis of the acceptance criteria used in the surveillance procedure. The required performance was based on starting containment conditions before the LOCA of 10.59 psia (total pressure), 120°F and 100% relative humidiy.

The surveillance procedure shall use the following methods to verify acceptable blower flow rate:

1. Definitions and constants

   CFM = cubic feet per minute

   RPM = revolutions per minute

   Blower RPM = 3550

   Blower ft^3/revolution = .028 ft^3

   Standard CFM = gas volume converted to conditions of 68°F and 14.7 psia.

2. Measure and record the following information:

   Pcontainment--Average of 3LMS*P934, 935, 936, and 937 (psia)

   Pout--From 3HCS*PI1A or B (psia)

   Tc--Containment temperature (°F)

   Pin--Measure with a new inlet gauge or calculate from Equation 3a below (psia)

   scfm measured--See Procedure/Form 3613A.3-1

   ΔP_f--From Table 2 (psi)

   A--As found Slip Constant

   Accuracy--Instrument accuracy range from Table 1.

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

3. Calculate as found slip constant (A)

   a. Pin = Pcontainment - ΔP_f

   b.

$$A = \frac{3550 - \left(\left[\frac{\text{scfm}_{\text{measured}} - \text{Accuracy}}{0.028 * 0.95}\right] * \left[\frac{14.7}{\text{Pin}} * \frac{\text{Tc} + 460}{528}\right]\right)}{\left(\left[\frac{\text{Pout}}{\text{Pin}} * 14.7\right] - 14.7\right)^{\frac{1}{2}} * \left(\frac{14.7}{\text{Pin}} * \frac{\text{Tc} + 460}{528}\right)^{\frac{1}{2}}}$$

4. Calculate expected postaccident flow rate using A calculated in Step 3.

   a. Slip RPM

      $= A * (4.937)^{\frac{1}{2}} * 1.218$

   b. Actual Inlet CFM

      ACFM = .028 (3550 - Slip RPM)

   c. Standard CFM

      scfm = ACFM 0.725

   d. Postaccident scfm Minimum = scfm * 0.95

   e. Acceptance Flow Rate

      Postaccident scfm minimum $\geq$ 41.52 scfm.

Table 1 Accuracy Range (Ref. 2)

scfm (measured)	Accuracy Range
30 to < 40	9.13 scfm
40 to < 50	6.98 scfm
50 to < 60	5.81 scfm
60 to < 90	5.17 scfm

Table 2 Inlet Piping Loss (Ref. 1)

scfm Measured (Unadjusted)	ΔP_f (psi)
30	.21
40	.31
50	.52
60	.73
70	.98
80	1.28

3/4.6.4 COMBUSTIBLE GAS CONTROL (Continued)

References: 1. Calculation 90-RPS-722GM, "Flow Acceptance Criteria for 3HCS*RBNR 1A/B Blowers 3HCS*C1A/B."

2. Calculation PA 90-LOE-0132GE, "Hydrogen Recombiner Flow Error Analysis."

The acceptance flow rate is the required flow rate at the worst case containment conditions 24 hours after the LOCA. The analysis assumes the recombiners are started no later than 24 hours after the accident. The 18-month surveillance shall verify the gas temperature and blower flow rate concurrently.

3/4.6.5 SUBATMOSPHERIC PRESSURE CONTROL SYSTEM

3/4.6.5.1 STEAM JET AIR EJECTOR

The closure of the isolation valves in the suction of the steam jet air ejector ensures that: (1) the containment internal pressure may be maintained within its operation limits by the mechanical vacuum pumps, and (2) the containment atmosphere is isolated from the outside environment in the event of a LOCA. These valves are required to be closed for containment isolation.