

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. *X (FOOTNOTE ATTACHED)

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 and required to be closed during accident conditions are closed by valves, blind flanges; or deactivated automatic valves secured in their positions, except as provided in Table 3.6-2 of Specification 3.6.3;
- b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3; and
- c. After each closing of each penetration subject to Type B testing, except the containment air locks, if opened following a Type A or B test, by leak rate testing the seal with gas at a pressure not less than P_a , 14.68 psig, and verifying that when the measured leakage rate for these seals is added to the leakage rates determined pursuant to Specification 4.6.1.2d. for all other Type B and C penetrations, the combined leakage rate is less than to $0.60 L_a$.

*Except valves, blind flanges, and deactivated automatic valves which are located inside the annulus or 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.

CONTAINMENT SYSTEMS

CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

3.6.1.2 Containment leakage rates shall be limited to:

- a. An overall integrated leakage rate of:
 - 1) Less than or equal to L_a , 0.30% by weight of the containment air per 24 hours at P_a , 14.68 psig, or
 - 2) Less than or equal to L_t , 0.122% by weight of the containment air per 24 hours at a reduced pressure of P_t , 7.34 psig.
- b. A combined leakage rate of less than $0.60 L_a$ for all penetrations and valves subject to Type B and C tests, when pressurized to P_a , and
- c. A combined bypass leakage rate of less than $0.07 L_a$ for all penetrations identified in Table 3.6-1 as secondary containment bypass leakage paths when pressurized to P_a .

APPLICABILITY: MODES 1, 2, 3, and 4. * (FOOT NOTE ATTACHED)

ACTION:

With: (a) the measured overall integrated containment leakage rate exceeding $0.75 L_a$ or $0.75 L_t$, as applicable, or (b) the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding $0.60 L_a$, or (c) the combined bypass leakage rate exceeding $0.07 L_a$, restore the overall integrated leakage rate to less than $0.75 L_a$ or less than $0.75 L_t$, as applicable, and the combined leakage rate for all penetrations and valves subject to Type B and C tests to less than $0.60 L_a$, and the combined bypass leakage rate to less than $0.07 L_a$ prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.2 The containment leakage rates shall be demonstrated at the following test schedule and shall be determined in conformance with the criteria specified in Appendix J of 10 CFR Part 50 using the methods and provisions of ANSI N45.4-1972 or the mass-plot method:

CONTAINMENT SYSTEMS

ANNULUS VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 Two independent Annulus Ventilation Systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4. * (FOOTNOTE ATTACHED)

ACTION:

- a. With one Annulus Ventilation System inoperable for reasons other than the pre-heaters tested in 4.6.1.8.a and 4.6.1.8.d.5, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With the pre-heaters tested in 4.6.1.8.a and 4.6.1.8.d.5 inoperable, restore the inoperable pre-heaters to operable status within 7 days, or file a Special Report in accordance with Specification 6.9.2 within 30 days specifying the reason for inoperability and the planned actions to return the pre-heaters to operable status.

SURVEILLANCE REQUIREMENTS

4.6.1.8 Each Annulus Ventilation System shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and activated carbon adsorbers and verifying that the system operates for at least 10 continuous hours with the pre-heaters operating;
- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or activated carbon adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:
 - 1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d* of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 9000 cfm $\pm 10\%$;
 - 2) Verifying, within 31 days after removal, that a laboratory analysis** of a representative activated carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM D3803-89 has a methyl iodide penetration of less than 4%; and
 - 3) Verifying a system flow rate of 9000 cfm $\pm 10\%$ during system operation when tested in accordance with ANSI N510-1980.

* The requirement for reducing refrigerant concentration to 0.01 ppm may be satisfied by operating the system for 10 hours with heaters on and operating.

CONTAINMENT SYSTEMS

CONTAINMENT PURGE SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.1.9 Each containment purge supply and exhaust isolation valve shall be OPERABLE and:

- a. Each containment purge supply and/or exhaust isolation valve for the lower compartment and the upper compartment (24-inch), instrument room (12-inch), and the Hydrogen Purge System (4-inch) shall be sealed closed, and
- b. The Containment Air Release and Addition System (4-inch) isolation valve(s) may be open for up to 3000 hours during a calendar year for pressure control, for ALARA and respirable air quality considerations for personnel entry and for surveillance tests that require the valve(s) to be open.

APPLICABILITY: MODES 1, 2, 3, and 4. * (FOOTNOTE ATTACHED)

ACTION:

- a. With any containment purge supply and/or exhaust isolation valve for the lower compartment and the upper compartment, or instrument room, or Hydrogen Purge System open or not sealed closed, close and/or seal closed that valve or isolate the penetrations(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With the Containment Air Release and Addition System isolation valve(s) open for more than 3000 hours during a calendar year or for reasons other than given in 3.6.1.9b. above, close the open valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.
- c. With a containment purge supply and/or exhaust isolation valve(s) having a measured leakage rate in excess of the limits of Specifications 4.6.1.9.3 and/or 4.6.1.9.4, restore the inoperable valve(s) to OPERABLE status within 24 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

**Proposed Revision to Technical Specifications 3.6.1.1,
3.6.1.2, and 3.6.1.9.**

Add the following footnote to the Applicability statement for the affected Technical Specifications:

"A one-time change is granted to have the containment purge supply and/or exhaust isolation valves for the upper and lower compartment open in Modes 3 and 4 following the steam generator replacement outage. The cumulative time for having the valves open in Modes 3 and 4 is limited to seven (7) days. All other provisions of this specification apply with the exception of those containment purge valves open in Modes 3 and 4. Each valve will be sealed closed prior to initial entry into Mode 2."

Proposed Revision to Technical Specification 3.6.1.8.

Add the following footnote to the Applicability statement for the affected Technical Specification:

"A one-time change is granted in Modes 3 and 4 to allow repair activities for the containment purge supply and/or exhaust isolation valves for the upper and lower compartment that were open in Modes 3 and 4 following the steam generator replacement outage."

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* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions, except as provided in Table 3.6-2 of Specification 3.6.3;
- b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3; and
- c. After each closing of each penetration subject to Type B testing, except the containment air locks, if opened following a Type A or B test, by leak rate testing the seal with gas at a pressure not less than P_a , 14.68 psig, and verifying that when the measured leakage rate for these seals is added to the leakage rates determined pursuant to Specification 4.6.1.2d. for all other Type B and C penetrations, the combined leakage rate is less than to $0.60 L_a$.

*Except valves, blind flanges, and deactivated automatic valves which are located inside the annulus or 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.

**A one-time change is granted to have the containment purge supply and/or exhaust isolation valves for the upper and lower compartment open in Modes 3 and 4 following the steam generator replacement outage. The cumulative time for having the valves open in Modes 3 and 4 is limited to seven (7) days. All other provisions of this specification apply with the exception of those containment purge valves open in Modes 3 and 4. Each valve will be sealed closed prior to initial entry into Mode 2.

CONTAINMENT SYSTEMS

CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

3.6.1.2 Containment leakage rates shall be limited to:

- a. An overall integrated leakage rate of less than or equal to L_a , 0.30% by weight of the containment air per 24 hours at P_a , 14.68 psig.
- b. A combined leakage rate of less than $0.60 L_a$ for all penetrations and valves subject to Type B and C tests, when pressurized to P_a , and
- c. A combined bypass leakage rate of less than $0.07 L_a$ for all penetrations identified in Table 3.6-1 as secondary containment bypass leakage paths when pressurized to P_a .

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

ACTION:

With: (a) the measured overall integrated containment leakage rate exceeding $0.75 L_a$, or (b) the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding $0.60 L_a$, or (c) the combined bypass leakage rate exceeding $0.07 L_a$, restore the overall integrated leakage rate to less than $0.75 L_a$ and the combined leakage rate for all penetrations and valves subject to Type B and C tests to less than $0.60 L_a$, and the combined bypass leakage rate to less than $0.07 L_a$ prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.2 Type A containment leakage rates shall be demonstrated as required by 10 CFR 50.54(o) and Appendix J of 10 CFR Part 50, Option B, as modified by approved exemptions, and in accordance with the guidelines of Regulatory Guide 1.163, September, 1995.

*A one-time change is granted to have the containment purge supply and/or exhaust isolation valves for the upper and lower compartment open in Modes 3 and 4 following the steam generator replacement outage. The cumulative time for having the valves open in Modes 3 and 4 is limited to seven (7) days. All other provisions of this specification apply with the exception of those containment purge valves open in Modes 3 and 4. Each valve will be sealed closed prior to initial entry into Mode 2.

CONTAINMENT SYSTEMS

ANNULUS VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 Two independent Annulus Ventilation Systems shall be OPERABLE.

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

ACTION:

- a. With one Annulus Ventilation System inoperable for reasons other than the pre-heaters tested in 4.6.1.8.a and 4.6.1.8.d.5, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With the pre-heaters tested in 4.6.1.8.a and 4.6.1.8.d.5 inoperable, restore the inoperable pre-heaters to operable status within 7 days, or file a Special Report in accordance with Specification 6.9.2 within 30 days specifying the reason for inoperability and the planned actions to return the pre-heaters to operable status.

SURVEILLANCE REQUIREMENTS

4.6.1.8 Each Annulus Ventilation System shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and activated carbon adsorbers and verifying that the system operates for at least 10 continuous hours with the pre-heaters operating;
- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or activated carbon adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:
 - 1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d* of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 9000 cfm $\pm 10\%$;

*The requirement for reducing refrigerant concentration to 0.01 ppm may be satisfied by operating the system for 10 hours with heaters on and operating.

**A one-time change is granted in Modes 3 and 4 to allow repair activities for the containment purge supply and/or exhaust isolation valves for the upper and lower compartment that were open in Modes 3 and 4 following the steam generator replacement outage.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- 2) Verifying, within 31 days after removal, that a laboratory analysis** of a representative activated carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM D3803-89 has a methyl iodide penetration of less than 4%; and
 - 3) Verifying a system flow rate of 9000 cfm \pm 10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of activated carbon adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis** of a representative activated carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM-D3803-89 has a methyl iodide penetration of less than 4%;
- d. At least once per 18 months by:
- 1) Verifying that the pressure drop across the combined HEPA filters, activated carbon adsorber banks, and moisture separators is less than 8 inches Water Gauge while operating the system at a flow rate of 9000 cfm \pm 10%;
 - 2) Verifying that the system starts automatically on any safety injection test signal,
 - 3) Verifying that the filter cooling electric motor-operated bypass valves can be manually opened,
 - 4) Verifying that each system produces a negative pressure of greater than or equal to 0.5 inch Water Gauge in the annulus within 1 minute after a start signal, and
 - 5) Verifying that the pre-heaters dissipate 45 \pm 6.7 kW at a nominal voltage of 600 vac.
- e. After each complete or partial replacement of a HEPA filter bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 9000 cfm \pm 10%; and
- f. After each complete or partial replacement of an activated carbon adsorber bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 9000 cfm \pm 10%.

**Activated carbon adsorber samples are tested at 30 degrees C and 95% RH.

CONTAINMENT SYSTEMS

CONTAINMENT PURGE SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.1.9 Each containment purge supply and exhaust isolation valve shall be OPERABLE and:

- a. Each containment purge supply and/or exhaust isolation valve for the lower compartment and the upper compartment (24-inch), instrument room (12-inch), and the Hydrogen Purge System (4-inch) shall be sealed closed, and
- b. The Containment Air Release and Addition System (4-inch) isolation valve(s) may be open for up to 3000 hours during a calendar year for pressure control, for ALARA and respirable air quality considerations for personnel entry and for surveillance tests that require the valve(s) to be open.

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

ACTION:

- a. With any containment purge supply and/or exhaust isolation valve for the lower compartment and the upper compartment, or instrument room, or Hydrogen Purge System open or not sealed closed, close and/or seal closed that valve or isolate the penetrations(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With the Containment Air Release and Addition System isolation valve(s) open for more than 3000 hours during a calendar year or for reasons other than given in 3.6.1.9b. above, close the open valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.
- c. With a containment purge supply and/or exhaust isolation valve(s) having a measured leakage rate in excess of the limits of Specifications 4.6.1.9.3 and/or 4.6.1.9.4, restore the inoperable valve(s) to OPERABLE status within 24 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

*A one-time change is granted to have the containment purge supply and/or exhaust isolation valves for the upper and lower compartment open in Modes 3 and 4 following the steam generator replacement outage. The cumulative time for having the valves open in Modes 3 and 4 is limited to seven (7) days. All other provisions of this specification apply with the exception of those containment purge valves open in Modes 3 and 4. Each valve will be sealed closed prior to initial entry into Mode 2.