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. ** (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.

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*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 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 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:

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 ±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 ± 10% during system operation when tested in accordance with ANSI N510-1980.

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* 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 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.

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. ** (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 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) (Unit 1) 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:

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% (Unit 1), 0.05% (Unit 2) and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d* of Regulation Guide 1.52, Revision 2, March 1978, and the system flow rate is 9000 cfm ± 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 ± 10% during system operation when tested in accordance with ANSI N510-1980.

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*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 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. * (FOOT NOTE 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.

SURVEILLANCE REQUIREMENTS

4.6.1.9.1 Each containment purge supply and/or exhaust isolation valves for the lower compartment and the upper containment, or instrument room, or Hydrogen Purge System shall be verified to be sealed closed at least once per 31 days.

4.6.1.9.2 The cumulative time that the Containment Air Release and Addition System has been open during a calendar year shall be determined at least once per 7 days.

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:

"For Catawba Unit 1, 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. 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:

"For Catawba Unit 1, 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.

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*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. 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 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. *

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:

*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. 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.

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 ±10%;

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*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.

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 ± 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 ± 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 ± 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 ± 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 ± 10%.

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

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.

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*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. 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.

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.

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*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.

**For Catawba Unit 1, 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. 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 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) (Unit 1) 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. *

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:

*For Catawba Unit 1, 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. 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.

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% (Unit 1), 0.05% (Unit 2) 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 ±10%;

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*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.

**For Catawba Unit 1, 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.

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 ± 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 ± 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 ± 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% (Unit 1), 0.05% (Unit 2) in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 9000 cfm ± 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% (Unit 1), 0.05% (Unit 2) in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 9000 cfm ± 10%.

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

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.

*For Catawba Unit 1, 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. 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.

SURVEILLANCE REQUIREMENTS

4.6.1.9.1 Each containment purge supply and/or exhaust isolation valves for the lower compartment and the upper containment, or instrument room, or Hydrogen Purge System shall be verified to be sealed closed at least once per 31 days.

4.6.1.9.2 The cumulative time that the Containment Air Release and Addition System has been open during a calendar year shall be determined at least once per 7 days.

4.6.1.9.3 At least once per 6 months on a STAGGERED TEST BASIS, the inboard and outboard valves with resilient material seals in each sealed closed containment purge supply and exhaust penetration for the lower compartment and the upper compartment, or instrument room, or Hydrogen Purge System shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than 0.05 L_a when pressurized to P_a.

4.6.1.9.4 At least once per 3 months the Containment Air Release and Addition System valves with resilient material seals shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than 0.01 L_a when pressurized to P_a.

Attachment 2

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:

"For Catawba Unit 1, 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. 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:

"For Catawba Unit 1, 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."

Background

The Catawba Nuclear Station, Unit 1 steam generators will be replaced during the outage which is currently scheduled to begin on June 6, 1996. Along with the replacement of the steam generators, there will be modifications to interfacing system piping and supports due to differences in the replacement steam generators.

During the initial heatup of the replacement steam generators and interfacing piping systems, thermal decomposition product (TDP) gases will be produced which could cause a respiratory hazard to personnel. It is expected that the concentration of respiratory hazardous gases inside containment will exceed personnel allowable exposure.

A major source of respiratory hazardous gas will be the approximately 13,000 square feet of new fiberglass thermal insulation. The fiberglass thermal insulation has had laboratory analysis performed to identify and quantify the TDP gases. One of the TDP gases which is difficult to remove and protect against is carbon monoxide (CO). This is compounded by the fact that Catawba is an ice condenser plant which has a smaller lower containment free air volume that is separated from upper containment. This lower containment compartment free air volume is 237,000 cubic feet compared to a non-ice condenser plant such as Calvert Cliffs which has a free air volume of 2,000,000 cubic feet. Because of this, it is projected that the thermal insulation source alone could result in a CO concentration of more than twice the personnel allowable exposure limit in lower containment. Typically respiratory protection measures would be initiated if the hazardous gas concentrations equate to above 50% of the exposure limit. The projected CO respiratory hazard would make it impossible for personnel to enter lower containment without respiratory protection. Respiratory protection for a CO gas hazard would normally require self contained breathing apparatus.

Several options were explored as safeguards to address potential respiratory hazards, some of these are:

1. Sending people into containment with respiratory equipment during this period of time,

2. Preheating of the insulation at a vendor facility to release the gases before installation, and

3. Operation of the Containment Purge (VP) System to exhaust gases.

During the heatup process, personnel routinely enter containment to perform surveillances. After the replacement outage this will be especially important due to additional surveillances which will be performed because of changes in the steam generator and associated piping. It is currently planned for personnel to verify support gaps for selected supports in the Reactor Coolant System. These locations will be checked at regular intervals to ensure that there is no equipment damage due to thermal expansion during the heatup. Personnel will also be required to perform leak checks on piping per ASME Code Case N 416-1.

Use of respiratory equipment was examined as a possible alternative for solving the personnel access problem. This option was determined to be impractical because of access requirements and increasing the personnel hazard of heat stress. At primary and secondary system temperatures above 450° F, the thermal insulation will begin to produce TDP gases. At system temperatures exceeding 450° F, lower containment temperature will be approaching 100° F. Many of the areas where personnel will be required are very restricted and require a significant physical effort to reach. Access by personnel wearing self contained breathing apparatus may be unsafe due to adverse temperature and humidity conditions, and difficulty in maneuvering in the tight spaces in lower containment.

Preheating of the new thermal insulation by the vendor will be pursued in an effort to eliminate a major portion of the TDP gases. Preheating has not been previously attempted by the vendor and it is therefore not known if preheating will be effective in eliminating TDP gases. Other sources of respiratory hazardous gases identified as TDP contributors are residues of a) lubricants, b) cutting fluids, c) cleaning fluids, d) nondestructive examination gels, e) valve packings and f) hydraulic fluids. Another non TDP contributor is coatings applied to non-heated surfaces for which the curing time and securing of the Containment Purge System overlap. Because of the additional use of these TDP and non TDP contributors and the introduction of the previously unheated metal surfaces to lower containment, the steam generator replacement outage is expected to have a greater quantity of hazardous gases produced in Modes 3 and 4 as compared to normal refueling outages.

Purging the containment atmosphere and providing a supply of fresh air is considered to be the best option available. This option will allow purging of the containment atmosphere as necessary during Modes 3 and 4 to ensure air quality meets applicable standards for personnel safety. The normal means of purging the containment during operation (the Containment Air Release and Addition System) will not be sufficient to serve this purpose because system flow rates are too low. The Containment Air Release and Addition System is used primarily to keep containment pressure within applicable limits, and provides its interface with upper containment. The release of gases will occur primarily in lower containment, and will require the use of a larger capacity ventilation system to maintain acceptable air quality for personnel habitability.

The Containment Purge System is designed to provide an environment within containment suitable for personnel access during inspection, maintenance, and refueling operations. The Containment Purge System accomplishes these functions by exhausting air from the upper and lower compartments and incore instrumentation room through filters and replacing it with outside air. It was determined that this system could be used successfully to remove gases released during heatup after replacement of the steam generators.

In order to use the Containment Purge System for this purpose, it is necessary to obtain temporary relief from Technical Specification 3.6.1.9, which requires that the containment isolation valves for this system be sealed closed during Modes 1, 2, 3, and 4. Relief from Technical Specifications 3.6.1.1 and 3.6.1.2 are needed because of the delay in performing the local leak rate test on the containment purge valves. Relief from Technical Specification 3.6.1.8 is needed to allow expected maintenance on the containment purge valves following purging and prior to entry into Mode 2. Maintenance could be necessary in meeting the leakage criteria of Tech Spec 3.6.1.2. As discussed previously, containment habitability needs to be maintained during heatup. Hazardous gases will be produced through Mode 3, after the period of time where Containment Purge Operation is currently not allowed. The Unit could be heated up, and then shut down to Mode 5 to allow purging, but this would not allow personnel access to perform surveillances during the unit heatup. This course of action would also add to the number of heatup and cool down cycles for which the plant is designed (200 for Catawba). There is also the concern that it would be difficult to determine when off gassing is complete.

Technical Justification

Analyses have been performed to justify the operation of the Containment Purge System in Modes 3 and 4 following the steam generator replacement outage. The following initial conditions were assumed:

- Unit 1 is in Mode 3 following an 80 day outage;
- A new cycle is in the reactor core (Approximately 1/3 of the fuel assemblies are unirradiated), and
- The Containment Purge System is in operation.

An analysis was performed to determine bounding conditions in the core following a postulated design basis LOCA. The licensing basis analysis of LOCA in which the ECCS is assumed to be available consistent with the minimum safeguards assumptions remains valid; however, for added conservatism, the analysis included calculations in which no credit was taken either for the Emergency Core Cooling System (ECCS) or for convective heat transfer to steam in the reactor vessel. Calculations showed that the source term available for release upon fuel heatup and melting would be significantly reduced as a result of the extended shutdown and the presence of new fuel. Furthermore, it was demonstrated that for the same reasons decay heat would be a small fraction of the decay heat associated with full power operations. With this information, it was shown that without any cooling (unavailability of the ECCS and no credit taken for convective heat transfer to steam), there is a protracted period of time (at least 100 minutes) into this event sequence for the operators to initiate recovery before the source term appears in significant amounts or significant fuel damage occurs. The ECCS flow rate required to remove the decay heat generated in this event sequence is well within the capacity of any single ECCS pump. Finally, calculations were performed to show that with credit taken for convective heat transfer to steam, the fuel will not be heated to temperatures required to cause the release of significant amounts of source term from the fuel or a significant level of fuel damage. From this analysis, it is concluded that the likelihood of either significant level of fuel damage or release of significant amounts of activity from the fuel is reduced due to the extended shutdown and the presence of unirradiated fuel in the core.

Calculations were performed by both Duke Power Company and the manufacturer of the Containment Purge containment isolation valves to determine whether the valves would close under loads associated with a Chapter 15 design basis LOCA. The assumptions in these calculations are consistent with the minimum safeguards assumption in the analysis reported in the Catawba FSAR. Calculations based on the resultant pressure drops were performed by the manufacturer of the Containment Purge containment isolation valves to determine the responses of the valves. It was determined that the inboard valves will close from any initial position. It was found that the outboard valves will close from any position up to and including 80° open. From this analysis, it is apparent that for initial conditions up to and including 80° open, the flow through the containment penetration "assists" the valves to close. The additional condition on the outboard valves is attributed to a higher calculated value of pressure drop across them than for the inboard valves, given compressible flow through the penetrations.

The actuators for the outboard valves will be modified to limit the travel of these valves to 80° open. It was determined that the structural integrity of the valves would not be adversely affected as they closed under the loads associated with the DBLOCA. It also was demonstrated that the Reactor Building integrity would not be challenged as a result of transport of either air or a mixture of steam and air through the Containment Purge Ventilation System containment penetrations before the isolation valves are projected to close.

The Containment Purge Ventilation System containment isolation valves are "QA Condition 1", safety related, Seismic Category I. Their actuators are "non QA." The manufacturer determined that these actuators can perform the safety function to fail closed to isolate containment under all design basis loads, including those associated with the safe shutdown earthquake. The controls which cause the valves to fail closed are safety related, Class 1E, seismic. In years of experience in testing the valves and performing inspections and maintenance on them, the actuators have been proven to be highly reliable in causing the valves to fail closed on a safety injection signal. Finally, from the analysis (reported above) of the response of the VP containment valves to conditions associated with the blowdown phase of the LOCA, it was determined that the torque required to close these valves from any initial position up to and including 80° open is negative. The valves are "flow assisted" to close. Therefore, even in the postulated event of a failure of the actuators to perform their intended function, the valves would close in a LOCA.

Calculations were performed to determine the upper bounds to the doses to the Exclusion Area Boundary (EAB), the Low Population Zone (LPZ), and the Control Room for the above sequence. Minimum safeguards were assumed. In particular, one train apiece of the Containment Spray System, the Containment Air Return System, the Auxiliary Building Exhaust System, and the Control Room Ventilation System was assumed to be available. No credit was taken for scrubbing of the containment atmosphere in the ice condenser. In addition, no credit was taken for the response of the Annulus Ventilation (VE) System. From the analyses presented in the main text of the calculat[illegible] the VP containment isolation valves were assumed to close. However, l[illegible]age past the valves was assumed to occur for the entire period of time over which the radiation doses were calculated. Initial values of leakage as high as 100% of the containment volume per day were assumed arbitrarily. Limiting doses were calculated to be as follows:

Doses to the EAB		**Guideline Values (10 CFR 100)**
Whole Body Dose:	0.344 Rem	25 Rem
Thyroid Dose:	113 Rem	300 Rem
Doses to the LPZ		
Whole Body Dose:	0.0286 Rem	25 Rem
Thyroid Dose:	56.3 Rem	300 Rem
Doses to the Control Room		**Guideline Values (GDC 19, SRP 6.4)**
Whole Body Dose:	0.012 Rem	5 Rem
Skin Dose	14.6 Rem	75 Rem
Thyroid Dose	12.4 Rem	30 Rem

The doses reported above are comparable to the results of the licensing basis calculations. In addition, both the Offsite doses and the doses to the Control Room operators are within the corresponding guideline values by a significant margin, even with an arbitrarily high value taken for the containment leakage, and without credit taken for removal of radioactivity by the ice condenser, the VP system filter beds (HEPA, carbon), or the VE System. This may be attributed to the low magnitude of the source term for this event sequence compared to a DBA occurring with the reactor initially at full power.

COMPENSATORY ACTIONS

The Containment Purge Ventilation System is described in Section 9.4.5 of the Catawba FSAR. Containment Purge is automatically isolated on a containment isolation, safety injection, or high radiation signal. These functions are required operable per Technical Specifications 3.3.2 and 3.3.3.1.

Operation of the Containment Purge and Ventilation System will be conducted under administrative controls. A procedure will be specifically written to control and monitor purging operations. It will include control of the supply and exhaust fans and dampers and monitoring of Containment pressure, Ice Condenser temperature and Ice Condenser door position. It will also include contingency measures in the event of system leaks inside containment, ice condenser door openings or other events that would potentially necessitate manually securing Containment purge prior to automatic isolation on high radiation, safety injection or containment isolation signals

Prior to entry into Mode 4, the containment purge supply and exhaust isolation valves that will be open for Containment purge will be stroke time tested.

Prior to entry into Mode 4, the containment purge supply and exhaust isolation valves that were open for Containment purge will be local leak rate tested. The local leak rate test will be repeated prior to entry into Mode 2.

The refueling Boron concentration (>2000 ppm) will be maintained until satisfactory local leak rate testing of all purge valves.

NO SIGNIFICANT HAZARDS EVALUATION

The operation of the VP System associated with the proposed change has been evaluated against the standards of 10 CFR 50.92. The results of the evaluation of this activity are as follows:

1) *The activity does not involve a significant increase in the probability or consequences of an accident previously evaluated.*

The VP System has no interfaces with any primary system, secondary system, or power transmission system. It has no interfaces with any reservoir of radioactive gases or liquids. None of the systems listed above are modified by the activity. In summary, no "accident initiator" is affected with the proposed operation of the VP System in Mode 3 and 4. For this reason, the activity does not involve an increase in the probability of an accident previously evaluated.

Analyses have been performed to determine upper bounds to the source term, the offsite doses, and the Control Room dose. The results of that analyses are reported above. Both the source term and the doses were found to be significantly lower than the results of the corresponding design basis analyses. No credit was taken for operation of the annulus ventilation system (VE) in the dose analysis. In addition, it has been determined that with no credit taken for any heat transfer from the fuel and cladding to the moderator channels, that sufficient time would exist for the operators to initiate recovery of flow from the ECCS to the reactor core. The flow required from the ECCS to maintain the core in a coolable geometry was found to be well within the capacity of any one ECCS pump. Furthermore, it was determined that convective heat transfer to steam would be sufficient to prevent release of significant source term or a significant degree of fuel damage.

For the above reasons, it is determined that operation of the VP System in Mode 3 or 4 immediately following the steam generator replacement outage does not involve a significant increase in either the probability or the consequences of an accident previously evaluated.

2) *The activity does not create the possibility of a new or different type of accident from any accident previously evaluated.*

As discussed above, no "accident initiators" are affected by the proposed activity. Operation of the VP System proposed for Modes 3 and 4 will be the same as that routinely carried in other modes of operation. For these reasons, the activity will not create the possibility of a new or different type of accident from any previously evaluated.

3) *The activity does not involve a significant reduction in the margin of safety.*

Margin of safety is associated with confidence in the ability of the fission product barriers (the fuel and fuel cladding, the Reactor Coolant System pressure boundary, and the containment) to limit the level of radiation doses to the public. The proposed operation of the VP System will occur at the end of an extended outage. The level of decay heat and activity in the reactor is very low compared to the level of decay heat and activity associated with full power operations. For this reason, the likelihood of damage to the fuel following a DBLOCA occurring during the proposed purging is reduced, as determined above. Both offsite doses and doses to the Control Room were found to be small compared to the limits of 10 CFR 100 and GDC 19. For these reasons, the activity does not involve a significant reduction in the margin of safety.

Environmental Impact Assessment

This change to the Technical Specifications will allow the Containment Purge System to be operated during startup from the steam generator replacement outage. The Unit 1 Containment Purge and Annulus Ventilation Systems exhaust air from the containment and annulus, respectively, through high efficiency filters and radiation monitoring devices before exhausting it through the Unit 1 ventilation stack. It has been determined that this amendment will not involve a significant hazards consideration, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and that there is no significant increase in the individual or cumulative occupational radiation exposure. This amendment request therefore meets the criteria of 10 CFR 51.22.(c)(9) for categorical exclusion from an environmental impact statement.

Committee Reviews

This proposed change to the Technical Specifications has been reviewed and approved by the Catawba Plant Operating Review Committee and the Nuclear Safety Review Board.