BASES

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.195 during all normal operations and anticipated transients.

A single reactor coolant loop with its steam generator filled above the low level trip setpoint provides sufficient heat removal capability for core cooling while in MODES 2 and 3; however, single failure considerations require plant shutdown if component repairs and/or corrective actions cannot be made within the allowable out-of-service time.

In MODES 4 and 5, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires two shutdown cooling loops to be OPERABLE.

The operation of one Reactor Coolant Pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump during MODES 4 and 5 with one or more RCS cold legs $\leq 275^{\circ}F$ are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by either (1) restricting the water volume in the pressurizer and thereby providing a volume for the primary coolant to expand into or (2) by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than $46^{\circ}F$ ($34^{\circ}F$ when measured by a surface contact instrument) above the coolant temperature in the reactor vessel.

3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve ~~7.6 x 10^{6}~~ approximately 5×10^{6} lbs per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its safety limit of 2750 psia. The combined relief capacity of these valves is sufficient to

3/4.4 REACTOR COOLANT SYSTEM

BASES

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain **DNBR** above 1.195 during all normal operations and anticipated transients.

A single reactor coolant loop with its steam generator filled above the low level trip setpoint provides sufficient heat removal capability for core cooling while in **MODES** 2 and 3; however, single failure considerations require plant shutdown if component repairs and/or corrective actions cannot be made within the allowable out-of-service time.

In **MODES** 4 and 5, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be **OPERABLE.** Thus, if the reactor coolant loops are not **OPERABLE,** this specification requires two shutdown cooling loops to be **OPERABLE.**

The operation of one Reactor Coolant Pump or one shutdown cooling pump provides adequate flow to ensure mixing, preventing stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a Reactor Coolant Pump during **MODES** 4 and 5 with one or more RCS cold legs $\leq 275^{\circ}F$ are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by either (1) restricting the water volume for the primary coolant to expand into or (2) by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than $46^{\circ}F$ ($34^{\circ}F$ when measured by a surface contact instrument) above the coolant temperature in the reactor vessel.

3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limt of 2750 psia. Each safety valve is designed to relieve approximately 3×10^5 lbs per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are **OPERABLE,** an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

During operation, all pressurizer code safety valves must be **OPERABLE** to prevent the RCS from being pressurized above its safety limit of 2750 psia. The combined relief capacity of these valves is sufficient to

CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

3.6.5.1 Two independent containment hydrogen analyzers shall be OPERABLE*.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION.

*Until September 30, 1982, one hydrogen analyzer may be made inoperable, at any given time, for the purpose of performing modifications relating to TMI Action Plan Item II.F.1.6. During this time, Specification 3.0.4 is not applicable to this requirement.

CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

3.6.5.1 Two independent containment hydrogen analyzers shall be OPERABLE*.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION.

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3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

3.6.5.1 Two independent containment hydrogen analyzers shall be **OPERABLE***.

APPLICABILITY: **MODES** 1 and 2.

ACTION:

With one hydrogen analyzer inoperable, restore the inoperable analyzer to **OPERABLE** status within 30 days or be in at least **HOT STANDBY** within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 Each hydrogen analyzer shall be demonstrated **OPERABLE** at least once per 92 days on a **STAGGERED TEST BASIS** by performing a **CHANNEL CALIBRATION.**

*Until September 30, 1982, one hydrogen analyzer may be made inoperable, at any given time, for the purpose of performing modifications relating to TMI Action Plan Item II.F.1.6. During this time, Specification 3.0.4 is not applicable to this requirement.

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

3.6.5.1 Two independent containment hydrogen analyzers shall be **OPERABLE***.

APPLICABILITY: **MODES** 1 and 2.

ACTION:

With one hydrogen analyzer inoperable, restore the inoperable analyzer to **OPERABLE** status within 30 days or be in at least **HOT STANDBY** within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 Each hydrogen analyzer shall be demonstrated **OPERABLE** at least once per 92 days on a **STAGGERED TEST BASIS** by performing a **CHANNEL CALIBRATION.**

*Until September 30, 1982, one hydrogen analyzer may be made inoperable, at any given time, for the purpose of performing modifications relating to TMI Action Plan Item II.F.1.6. During this time, Specification 3.0.4 is not applicable to this requirement.

3/4.6.5 COMBUSTIBLE GAS CONTROL

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 is 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. The detection equipment has been upgraded to meet the requirements of NUREG 0737, which includes detection range of 0 to 10 percent hydrogen.

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

The OPERABILITY of the penetration room exhaust system ensures that radioactive materials leaking from the containment atmosphere through containment penetrations following a LOCA are filtered and adsorbed prior to reaching the environment. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the LOCA analyses.

3/4.6.5 COMBUSTIBLE GAS CONTROL

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 is 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. The detection equipment has been upgraded to meet the requirements of NUREG0737, which includes detection range of 0 to 10 percent hydrogen.

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

The OPERABILITY of the penetration room exhaust system ensures that radioactive materials leaking from the containment atmosphere through containment penetrations following a LOCA are filtered and adsorbed prior to reaching the environment. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the LOCA analyses.

3/4.6.5 COMBUSTIBLE GAS CONTROL

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 is 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. The detection equipment has been upgraded to meet the requirements of NUREG-0737, which includes detection range of 0 to 10 percent hydrogen.

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

The **OPERABILITY** of the penetration room exhaust system ensures that radioactive materials leaking from the containment atmosphere through containment penetrations following a **LOCA** are filtered and adsorbed prior to reaching the environment. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the **LOCA** analyses.

3/4.6.5 COMBUSTIBLE GAS CONTROL

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 is 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. The detection equipment has been upgraded to meet the requirements of NUREG-0737, which includes detection range of 0 to 10 percent hydrogen.

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

The **OPERABILITY** of the penetration room exhaust system ensures that radioactive materials leaking from the containment atmosphere through containment penetrations following a **LOCA** are filtered and adsorbed prior to reaching the environment. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the **LOCA** analyses.

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 one 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:

1. 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 3.6-1 of Specification 3.6.4.1, ~~and~~ ←

~~2. All equipment hatches are closed and sealed.~~

b. By verifying that each containment air lock is OPERABLE per Specification 3.6.1.3.

c. By verifying that all equipment hatches are closed and sealed prior to entering Mode 4 following a shutdown where the equipment hatch was opened.

*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.

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 one 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:

1. 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 3.6-1 of Specification 3.6.4.1, ~~and~~

~~2. All equipment hatches are closed and sealed.~~

b. By verifying that each containment air lock is OPERABLE per Specification 3.6.1.3.

c. By verifying that all equipment hatches are closed and sealed prior to entering Mode 4 following a shutdown where the equipment hatch was opened.

*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.

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 one 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:

1. 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 3.6-1 of Specification 3.6.4.1.

b. By verifying that each containment airlock is **OPERABLE** per Specification 3.6.1.3.

c. By verifying that all equipment hatches are closed and sealed prior to entering **MODE** 4 following a shutdown where the equipment hatch was opened.

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*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.

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 one 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:

1. 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 3.6-1 of Specification 3.6.4.1.

b. By verifying that each containment airlock is **OPERABLE** per Specification 3.6.1.3.

c. By verifying that all equipment hatches are closed and sealed prior to entering **MODE** 4 following a shutdown where the equipment hatch was opened.

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*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.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) ←

4. Verifying a filter train flow rate of 20,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

   1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

   2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 95% for radioactive elemental iodine when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

→ Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

a. Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) ←
Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%, and

b) ~~Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate 20,000 cfm ± 10%.~~ delete

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 20,000 cfm ± 10%.

2. Verifying that the filter train starts on a Containment Isolation test signal.

↳ Emptying a representative sample from an adsorber test tray section, mixing the adsorbant thoroughly, and obtaining samp at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 2000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

   c)

4. Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%, and

b) ~~Verifying that the HEPA filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%.~~ delete

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 2000 cfm $\pm$ 10%.

2. Verifying that the filter train starts on a Containment Isolation Test Signal.

? Emptying a representative sample ... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 3000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 2000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 3000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R. H.); or

Emptying a representative sample.....
(same as previous sections)

PLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

   a) Emptying one entire bed from a removed-adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

   c) Susequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ Filter train shall be demonstrated OPERABLE by also:

   ~~a~~) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant ~~test gas~~ when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 3000 cfm ± 10%, and

   b) ~~Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 3000 cfm ± 10%.~~ Delete

d. At least once per 18 months by verifying that the pressure drop across the combined HEPA filters and charcoa adsorber banks is < 4 incnes Water Gauge while operating the filter train at a flow rate of 3000 cfm ± 10%.

? Emptying a representative sample.... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) ←

4. Verifying a system flow rate of 32,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

Emptying a representative sample.... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) Subsequent to reistalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%, and

b) Verifying that the HEPA filter bank remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%. delete

SURVEILLANCE REQUIREMENTS

4.7.6.1 The control room emergency ventilation system shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is $\leq$ 120°F.

b. At least once per 31 days by initiating flow through each HEPA filter and charcoal adsorber train and verifying that each train operates for at least 15 minutes.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housing, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%.

2. Verifying that the HEPA filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) Emptying a representative sample.... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed,

c) Emptying a representative sample ... (same as previous section)

Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow of 2000 cfm ± 10%, and

b) Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate 2000 cfm ± 10%. delete

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

   c) ←

4. Verifying a filter train flow rate of 20,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

   1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

   2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 95% for radioactive elemental iodine when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

→ Emptying a representative sample from an adsorber test tray section, mixing the adsorbant thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

a. Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%, and

b) ~~Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate 20,000 cfm ± 10%.~~ delete

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 20,000 cfm ± 10%.

2. Verifying that the filter train starts on a Containment Isolation test signal.

→ Emptying a representative sample from an adsorber test tray section, mixing the adsorbant thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 2000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

   c) ←

4. Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%, and

b) ~~Verifying that the HEPA filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%.~~ delete

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 2000 cfm $\pm$ 10%.

2. Verifying that the filter train starts on a Containment Isolation Test Signal.

? Emptying a representative sample ... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 3000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 2000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

   c) ←

4. Verifying a system flow rate of 3000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R. H.); or

→ Emptying a representative sample.....
(same as previous sections)

PLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

   a) Emptying one entire bed from a removed ~~adsorber~~ tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

   c) ←

   Susequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ shall be demonstrated OPERABLE by also: Filter train

   ~~a)~~ Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant ~~test gas~~ when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 3000 cfm ± 10%, and

   b) ~~Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 3000 cfm ± 10%.~~ delete

d. At least once per 18 months by verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 4 inches Water Gauge while operating the filter train at a flow rate of 3000 cfm ± 10%.

? Emptying a representative sample.... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitu[illegible]le from an adsorber tray, mixing the a[illegible]horoughly, and obtaining samples at least tw[illegible] in diameter and with a length equal to the thickness of the bed.

c)

4. Verifying a system flow rate of 32,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%, and

b) Verifying that the HEPA filter bank remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 32,000 cfm ± 10%. delete

SURVEILLANCE REQUIREMENTS

4.7.6.1 The control room emergency ventilation system shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is $\leq$ 120°F.

b. At least once per 31 days by initiating flow through each HEPA filter and charcoal adsorber train and verifying that each train operates for at least 15 minutes.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housing, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%.

2. Verifying that the HEPA filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

c) Emptying a representative sample.... (same as previous sections)

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ 90% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (130°C, 95% R.H.) and the samples are prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed,

c) Emptying a representative sample..... (same as previous sections)

Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the ~~system~~ filter train shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow of 2000 cfm ± 10%, and

b) Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate 2000 cfm ± 10%. delete

3/4.6.3 IODINE REMOVAL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.3.1 Three independent containment iodine filter trains shall be **OPERABLE.**

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

ACTION:

With one iodine filter train inoperable, restore the inoperable train 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.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each iodine filter train 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** filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 20,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 95% for radioactive elemental iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

SURVEILLANCE REQUIREMENTS (Continued)

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 20,000 cfm ± 10%.

2. Verifying that the filter train starts on a Containment Isolation test signal.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove ≥ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N 510-1975.

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.6.1 Two independent containment penetration room exhaust air filter trains shall be **OPERABLE.**

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

ACTION:

With one containment penetration room exhaust air filter train inoperable, restore the inoperable train 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.

SURVEILLANCE REQUIREMENTS

4.6.6.1 Each containment penetration room exhaust air filter train 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** filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 2,000 cfm + 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of 90% for radioactive methyl iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

SURVEILLANCE REQUIREMENTS (Continued)

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is $<$ 6 inches Water Gauge while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that the filter train starts on a Containment Isolation test signal.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove $\geq$ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within $\pm$ 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Seciton 8 of ANSI N 510-1975.

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7.1 The ECCS pump room exhaust ventilation system shall be **OPERABLE** with one **HEPA** filter and charcoal adsorber train and two exhaust fans.

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

ACTION:

a. With one ECCS pump room exhaust fan inoperable, restore the inoperable fan 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 ECCS exhaust filter train inoperable, restore the filter train to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7.1 The ECCS pump room exhaust ventilation system shall be demonstrated **OPERABLE:**

a. At least once per 31 days by initiating, from the Control Room, flow through the **HEPA** filter and charcoal adsorber train and verifying that each exhaust fan operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

SURVEILLANCE REQUIREMENTS (Continued)

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 3,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130^{o} C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the samples are tested in accordance with ANSI N 510-1975 (130^{o} C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

d. At least once per 18 months by verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is < 4 inches Water Gauge while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove $\geq$ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within $\pm$ 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N 510-1975.

REFUELING OPERATIONS

SPENT FUEL POOL VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 The Spent Fuel Pool Ventilation System shall be **OPERABLE** with:

a. One **HEPA** filter bank,

b. Two charcoal adsorber banks, and

c. Two exhaust fans.

APPLICABILITY: Whenever irradiated fuel is in storage pool.

ACTION:

a. With one charcoal adsorber bank and/or one exhaust fan inoperable, fuel movement within the storage pool or crane operation with loads over the storage pool may proceed provided an **OPERABLE** exhaust fan is in operation and discharging through an **OPERABLE** train of **HEPA** filters and charcoal adsorbers.

b. With the **HEPA** filter bank inoperable, or with two charcoal adsorber banks inoperable, or with two exhaust fans inoperable, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one charcoal adsorber bank, at least one exhaust fan, and the **HEPA** filter bank are restored to **OPERABLE** status.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required spent fuel pool ventilation sytem shall be demonstrated **OPERABLE:**

a. At least once per 31 days by initiating flow through the **HEPA** filter bank and both charcoal absorber banks and verifying that each charcoal absorber bank and each exhaust fan operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housing, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm ± 10%.

2. Verifying that the **HEPA** filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 32,000 cfm ± 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is < 4 inches Water Gauge while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

2. Verifying that each exhaust fan maintains the spent fuel storage pool area at a negative pressure of $\geq$ 1/8 inches Water Gauge relative to the outside atmosphere during system operation.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove > 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

SURVEILLANCE REQUIREMENTS (Continued)

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N 510-1975.

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6.1 The Control Room Emergency Ventilation System shall be **OPERABLE** with:

a. Two filter trains,

b. Two air conditioning units,*

c. Two isolation valves in each Control Room outside air intake duct,

d. Two isolation valves in the common exhaust to atmosphere duct, and

e. One isolation valve in the toilet area exhaust duct.

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

ACTION:

a. With one filter train inoperable, restore the inoperable train 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 one air conditioning unit inoperable, restore the inoperable unit 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.

c. With one isolation valve per Control Room outside air intake duct inoperable, operation may continue provided the other isolation valve in the same duct is maintained closed; otherwise, be in at least **HOT STANDBY** within 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

d. With one common exhaust to atmosphere duct isolation valve inoperable, restore the inoperable valve 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.

e. With the toilet area exhaust duct isolation valve inoperable, restore the inoperable valve to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

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* For the duration of the October 1982 Unit 2 refueling outage with Unit 2 in **MODES** 5 or 6 and one air conditioning unit inoperable, restore the inoperable unit to operable status within 21 days or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.6.1 The Control Room Emergency Ventilation System shall be demonstrated **OPERABLE:**

a. At least once per 12 hours by verifying that the Control Room air temperature is $\leq$ 120° F.

b. At least once per 31 days by initiating flow through each **HEPA** filter and charcoal adsorber train and verifying that each train operates for at least 15 minutes.

c. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housing, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 2,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

d. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 90% for radioactive elemental iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is $<$ 4 inches Water Gauge while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that on a Control Room high radiaton test signal, the system automatically switches into a recirculation **MODE** of operation with flow through the **HEPA** filters and charcoal adsorber banks and that the isolation valves close.

SURVEILLANCE REQUIREMENTS (Continued)

f. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove > 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm ± 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm ± 10%.

3/4.6.3 IODINE REMOVAL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.3.1 Three independent containment iodine filter trains shall be **OPERABLE.**

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

ACTION:

With one iodine filter train inoperable, restore the inoperable train 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.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each iodine filter train 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** filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 20,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 95% for radioactive elemental iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 95% for radioactive elemental iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 20,000 cfm ± 10%.

2. Verifying that the filter train starts on a Containment Isolation test signal.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove ≥ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 20,000 cfm ± 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N 510-1975.

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.6.1 Two independent containment penetration room exhaust air filter trains shall be **OPERABLE.**

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

ACTION:

With one containment penetration room exhaust air filter train inoperable, restore the inoperable train 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.

SURVEILLANCE REQUIREMENTS

4.6.6.1 Each containment penetration room exhaust air filter train 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** filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130^{o} C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 2,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

SURVEILLANCE REQUIREMENTS (Continued)

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm ± 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the filter train at a flow rate of 2,000 cfm ± 10%.

2. Verifying that the filter train starts on a Containment Isolation test signal.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove ≥ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm ± 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Seciton 8 of ANSI N 510-1975.

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7.1 The ECCS pump room exhaust ventilation system shall be **OPERABLE** with one **HEPA** filter and charcoal adsorber train and two exhaust fans.

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

ACTION:

a. With one ECCS pump room exhaust fan inoperable, restore the inoperable fan 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 ECCS exhaust filter train inoperable, restore the filter train to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7.1 The ECCS pump room exhaust ventilation system shall be demonstrated **OPERABLE:**

a. At least once per 31 days by initiating, from the Control Room, flow through the **HEPA** filter and charcoal adsorber train and verifying that each exhaust fan operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove > 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 3,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130^{o} C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the samples are tested in accordance with ANSI N 510-1975 (130^{o} C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

SURVEILLANCE REQUIREMENTS (Continued)

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

d. At least once per 18 months by verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is $<$ 4 inches Water Gauge while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove $\geq$ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within $\pm$ 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N 510-1975.

REFUELING OPERATIONS

SPENT FUEL POOL VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 The Spent Fuel Pool Ventilation System shall be **OPERABLE** with:

a. One **HEPA** filter bank,

b. Two charcoal adsorber banks, and

c. Two exhaust fans.

APPLICABILITY: Whenever irradiated fuel is in storage pool.

ACTION:

a. With one charcoal adsorber bank and/or one exhaust fan inoperable, fuel movement within the storage pool or crane operation with loads over the storage pool may proceed provided an **OPERABLE** exhaust fan is in operation and discharging through an **OPERABLE** train of **HEPA** filters and charcoal adsorbers.

b. With the **HEPA** filter bank inoperable, or with two charcoal adsorber banks inoperable, or with two exhaust fans inoperable, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one charcoal adsorber bank, at least one exhaust fan, and the **HEPA** filter bank are restored to **OPERABLE** status.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required spent fuel pool ventilation system shall be demonstrated **OPERABLE**:

a. At least once per 31 days by initiating flow through the **HEPA** filter bank and both charcoal absorber banks and verifying that each charcoal absorber bank and each exhaust fan operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housing, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 32,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

c. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is $<$ 4 inches Water Gauge while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

2. Verifying that each exhaust fan maintains the spent fuel storage pool area at a negative pressure of $\geq$ 1/8 inches Water Gauge relative to the outside atmosphere during system operation.

e. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove $\geq$ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 32,000 cfm $\pm$ 10%.

SURVEILLANCE REQUIREMENTS (Continued)

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N 510-1975.

PLANT SYSTEMS

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6.1 The Control Room Emergency Ventilation System shall be **OPERABLE** with:

a. Two filter trains,

b. Two air conditioning units,*

c. Two isolation valves in each Control Room outside air intake duct,

d. Two isolation valves in the common exhaust to atmosphere duct, and

e. One isolation valve in the toilet area exhaust duct.

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

ACTION:

a. With one filter train inoperable, restore the inoperable train 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 one air conditioning unit inoperable, restore the inoperable unit 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.

c. With one isolation valve per Control Room outside air intake duct inoperable, operation may continue provided the other isolation valve in the same duct is maintained closed; otherwise, be in at least **HOT STANDBY** within 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

d. With one common exhaust to atmosphere duct isolation valve inoperable, restore the inoperable valve 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.

e. With the toilet area exhaust duct isolation valve inoperable, restore the inoperable valve to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.6.1 The Control Room Emergency Ventilation System shall be demonstrated **OPERABLE:**

a. At least once per 12 hours by verifying that the Control Room air temperature is $\leq$ 120° F.

b. At least once per 31 days by initiating flow through each **HEPA** filter and charcoal adsorber train and verifying that each train operates for at least 15 minutes.

c. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housing, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

4. Verifying a system flow rate of 2,000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N 510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

d. After every 720 hours of charcoal adsorber operation by any one of the following:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.); or

2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrates a removal efficiency of $\geq$ 90% for radioactive elemental iodine when the samples are tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.) and the samples are prepared by any one of the following:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

c) Emptying a representative sample from an adsorber test tray section, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed. Successive samples will be removed from different test tray sections.

Subsequent to reinstalling the adsorber tray or test tray used for obtaining the carbon sample, the filter train shall be demonstrated **OPERABLE** by also:

a) Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined **HEPA** filters and charcoal adsorber banks is < 4 inches Water Gauge while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

2. Verifying that on a Control Room high radiaton test signal, the system automatically switches into a recirculation **MODE** of operation with flow through the **HEPA** filters and charcoal adsorber banks and that the isolation valves close.

SURVEILLANCE REQUIREMENTS (Continued)

f. After each complete or partial replacement of a **HEPA** filter bank by verifying that the **HEPA** filter banks remove $\geq$ 99% of the **DOP** when they are tested in place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 2,000 cfm $\pm$ 10%.

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 3000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of ~~2000~~ 3000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 3000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R. H.); or

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of 3000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of ~~2000~~ 3000 cfm ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 3000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by either:

1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R. H.); or

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7.1 The ECCS pump room exhaust ventilation system shall be **OPERABLE** with one **HEPA** filter and charcoal adsorber train and two exhaust fans.

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

ACTION:

a. With one ECCS pump room exhaust fan inoperable, restore the inoperable fan 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 ECCS exhaust filter train inoperable, restore the filter train to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7.1 The ECCS pump room exhaust ventilation system shall be demonstrated **OPERABLE:**

a. At least once per 31 days by initiating, from the Control Room, flow through the **HEPA** filter and charcoal adsorber train and verifying that each exhaust fan operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove > 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7.1 The ECCS pump room exhaust ventilation system shall be **OPERABLE** with one **HEPA** filter and charcoal adsorber train and two exhaust fans.

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

ACTION:

a. With one ECCS pump room exhaust fan inoperable, restore the inoperable fan 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 ECCS exhaust filter train inoperable, restore the filter train to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7.1 The ECCS pump room exhaust ventilation system shall be demonstrated **OPERABLE:**

a. At least once per 31 days by initiating, from the Control Room, flow through the **HEPA** filter and charcoal adsorber train and verifying that each exhaust fan operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the **HEPA** filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove $\geq$ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

2. Verifying that the **HEPA** filter banks remove $\geq$ 99% of the DOP when they are tested in-place in accordance with ANSI N 510-1975 while operating the filter train at a flow rate of 3,000 cfm $\pm$ 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of $\geq$ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N 510-1975 (130° C, 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by any one of the following:

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PLANT SYSTEMS

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be > 70°F (80°F) when the pressure of either coolant in the steam generator is > 200 psig.

APPLICABILITY: At all times.

ACTION:

With the requirements of the above specification not satisfied:

a. Reduce the steam generator pressure of the applicable side to ≤ 200 psig within 30 minutes, and

b. Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation prior to increasing its temperatures above 200°F.

SURVEILLANCE REQUIREMENTS

4.7.2.1 The pressure in each side of the steam generators shall be determined to be < 200 psig at least once per hour when the temperature of either the primary or secondary coolant < 70°F (80°F)

PLANT SYSTEMS

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be > 90°F when the pressure of either coolant in the steam generator is > 200 psig.

APPLICABILITY: At all times.

ACTION:

With the requirements of the above specification not satisfied:

a. Reduce the steam generator pressure of the applicable side to ≤ 200 psig within 30 minutes, and

b. Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation prior to increasing its temperatures above 200°F.

SURVEILLANCE REQUIREMENTS

4.7.2.1 The pressure in each side of the steam generators shall be determined to be < 200 psig at least once per hour when the temperature of either the primary or secondary coolant < 70°F 90°F

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 GPM primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to 1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and 2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the surveillance requirements are consistent with the assumptions used in the accident analyses.

3/4.7.1.6 SECONDARY WATER CHEMISTRY

The secondary water chemistry program is designed to provide maximum protection to both the steam generator and secondary system internals. The most damaging chemical reactants enter the system via condenser cooling water ingress. Accumulation of these impurities in the steam generators may lead to loss of metallurgical integrity and/or eventual component failure. The limits presented in Table 3.7-3 are those prescribed by the NSSS supplier as "limited-operation" chemistry parameters and are consistent with the most recent industry standards. By routine monitoring of these parameters, plant personnel are able to rapidly detect and limit the duration of ingress of chemically detrimental species and thereby maintain steam generator tube integrity.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator ~~RT~~ NDT of 50°F and are sufficient to prevent brittle fracture. (secondary side limitations) 80°F

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 GPM primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to 1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and 2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the surveillance requirements are consistent with the assumptions used in the accident analyses.

3/4.7.1.6 SECONDARY WATER CHEMISTRY

The secondary water chemistry program is designed to provide maximum protection to both the steam generator and secondary system internals. The most damaging chemical reactants enter the system via condenser cooling water ingress. Accumulation of these impurities in the steam generators may lead to loss of metallurgical integrity and/or eventual component failure. The limits presented in Table 3.7-3 are those prescribed by the NSSS supplier as "limited-operation" chemistry parameters and are consistent with the most recent industry standards. By routine monitoring of these parameters, plant personnel are able to rapidly detect and limit the duration of ingress of chemically detrimental species and thereby maintain steam generator tube integrity.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on ~~a~~ steam generator ~~RT_{NDT} of 50°F~~ and are sufficient to prevent brittle fracture.

90°F

secondary side limitations

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be $> 80^{\circ}F$ when the presssure of either coolant in the steam generator is > 200 psig.

APPLICABILITY: At all times.

ACTION:

With the requirements of the above specification not satisfied:

a. Reduce the steam generator pressure of the applicable side to ≤ 200 psig within 30 minutes, and

b. Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation prior to increasing its temperatures above $200^{\circ}F$.

SURVEILLANCE REQUIREMENTS

4.7.2.1 The pressure in each side of the steam generators shall be determined to be < 200 psig at least once per hour when the temperature of either the primary or secondary coolant $< 80^{\circ}F$.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be $> 90^{\circ}F$ when the presssure of either coolant in the steam generator is >200 psig.

APPLICABILITY: At all times.

ACTION:

With the requirements of the above specification not satisfied:

a. Reduce the steam generator pressure of the applicable side to $\leq$ 200 psig within 30 minutes, and

b. Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation prior to increasing its temperatures above $200^{\circ}F$.

SURVEILLANCE REQUIREMENTS

4.7.2.1 The pressure in each side of the steam generators shall be determined to be < 200 psig at least once per hour when the temperature of either the primary or secondary coolant $< 90^{\circ}F$.

3/4.7.1.3 CONDENSATE STORAGE TANK

The **OPERABILITY** of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the **RCS** in **HOT STANDBY** conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 **GPM** primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The **OPERABILITY** of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event of the steam line rupture occurs within containment. The **OPERABILITY** of the main steam line isolation valves within the closure times of the surveillance requirements are consistent with the assumptions used in the accident analyses.

3/4.7.1.6 SECONDARY WATER CHEMISTRY

The secondary water chemistry program is designed to provide maximum protection to both steam generator and secondary system internals. The most damaging chemical reactants enter the system via condenser cooling water ingress. Accumlation of these impurities in the steam generators may lead to loss of metallurgial integrity and/or eventual component failure. The limits presented in Table 3.7-3 are those prescribed by the NSSS supplier as "limited-operation" chemistry parameters and are consistent with the most recent industry standards. By routine monitoring of these parameters, plant personnel are able to rapidly detect and limit the duration of ingress of chemically detrimental species and thereby maintain steam generator tube integrity.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 80^{o}F and 200 psig are based on steam generator secondary side limitations and are sufficient to prevent brittle fracture.

3/4.7.1.3 CONDENSATE STORAGE TANK

The **OPERABILITY** of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the **RCS** in **HOT STANDBY** conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 **GPM** primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

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3/4.7.1.6 SECONDARY WATER CHEMISTRY

The secondary water chemistry program is designed to provide maximum protection to both steam generator and secondary system internals. The most damaging chemical reactants enter the system via condenser cooling water ingress. Accumlation of these impurities in the steam generators may lead to loss of metallurgial integrity and/or eventual component failure. The limits presented in Table 3.7-3 are those prescribed by the NSSS supplier as "limited-operation" chemistry parameters and are consistent with the most recent industry standards. By routine monitoring of these parameters, plant personnel are able to rapidly detect and limit the duration of ingress of chemically detrimental species and thereby maintain steam generator tube integrity.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 90^{o}F and 200 psig are based on steam generator secondary side limitations and are sufficient to prevent brittle fracture.

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SECTION 1
GENERAL DATA

1-1 SAFETY NOTICES

1-1-1 Radiation

The steam generators will become radioactive from activity of the reactor coolant. Observe caution when approaching or contacting this equipment subsequent to critical operation and make a radiation survey as required by the Health Physicist.

1-1-2 Welding, Grinding, and Other

No welding, burning, chipping, grinding, or arc strikes shall be allowed on the steam generator except as specifically covered in this or other authorized manuals. The use of mercury or mercury containing instruments is prohibited during the operation or test of these units.

1-1-3 Minimum Pressurization Temperature (See Paragraphs 4-5-5, 4-5-6, 4-5-7 and 4-5-8)

The minimum pressurization temperatures of the steam generators have been established as follows:

UNIT	S.G.	MINIMUM PRESSURIZATION TEMP.
I	No. 1	Secondary Side - 80°F. Primary Side - 70°F.
I	No. 2	Secondary Side - 80°F. Primary Side - 70°F.
II	No. 1	Secondary Side - 90°F. Primary Side - 70°F.
II	No. 2	Secondary Side - 70°F. Primary Side - 70°F.

Note

Other components in the plant system may have a higher minimum pressurization temperature. When the entire plant system is pressurized, the highest minimum pressurization temperature of any component will be the governing temperature.

6.7 SAFETY LIMIT VIOLATION

6.7.1 The following actions shall be taken in the event a Safety Limit is violated:

a. The facility shall be placed in at least HOT STANDBY within one hour.

b. The NRC Operations Center shall be notified by telephone as soon as possible and in all cases within one hour. The Manager - Nuclear Power Department and the OSSRC shall be notified within 24 hours.

c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the POSRC. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

d. The Safety Limit Violation Report shall be submitted to the Commission, the OSSRC and the Manager - Nuclear Power Department, within 14 days of the violation.

6.8 PROCEDURES

6.8.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978.

b. Refueling operations.

c. Surveillance and test activities of safety related equipment.

d. Security Plan implementation.

e. Emergency Plan implementation.

f. Fire Protection Program implementation.

g. The requirements for limiting overtime of staff personnel while performing safety related functions promulgated by NRC Generic Letter 82-12.

6.8.2 Each procedure and administrative policy of 6.8.1 above, and changes thereto, shall be reviewed by the POSRC and approved by the Plant Superintendent prior to implementation and reviewed periodically as set forth in administrative procedures.

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TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT		MINIMUM CHANNELS OPERABLE
1.	Power Range Nuclear Flux	2
2.	Containment Pressure	2
3.	Wide Range Logarithmic Neutron Flux Monitor	2
4.	Reactor Coolant Outlet Temperature	2
5.	Reactor Coolant Total Flow	2
6.	Pressurizer Pressure	2
7.	Pressurizer Level	2
8.	Steam Generator Pressure	2/steam generator
9.	Steam Generator Level	2/steam generator
10.	Feedwater Flow	2
11.	Auxiliary Feedwater Flow Rate	1/steam generator
12.	RCS Subcooled Margin Monitor	1
13.	PORV/Safety Valve Acoustic Flow Monitoring	1/valve *
14.	PORV Solenoid Power Indication	1/valve
15.	Containment Water Level (Wide Range)	1

~~*Until June 1, 1981, the Unit 1 inoperable acoustic flow monitor for pressurizer safety valve RV-201 may be replaced by observation of quench tank temperature, level and pressure and the safety valve tail pipe temperatures once per shift.~~

~~CALVERT CLIFFS - UNIT 2~~
CALVERT CLIFFS - UNIT 1

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~~Amendment No. 36~~
Amendment No. 52, 56

TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

INSTURMENT		MINIMUM CHANNELS OPERABLE
1.	Containment Pressure	2
2.	Wide Range Logarithmic Neutron Flux Monitor	2
3.	Reactor Coolant Outlet Temperature	2
4.	Pressurizer Pressure	2
5.	Pressurizer Level	2
6.	Steam Generator Pressure	2/steam generator
7.	Steam Generator Level (Wide Range)	2/steam generator
8.	Auxiliary Feedwater Flow Rate	2/steam generator
9.	RCS Subcooled Margin Monitor	1
10.	PORV/Safety Valve Acoustic Flow Monitoring	1/valve
11.	PORV Solenoid Power Indication	1/valve
12.	Feedwater Flow	2
13.	Containment Water Level (Wide Range)	1

TABLE 4.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT		CHANNEL CHECK	CHANNEL CALIBRATION
1.	Power Range Nuclear Flux	M	Q
2.	Containment Pressure	M	R
3.	Wide Range Logarithmic Neutron Flux Monitor	M	N.A.
4.	Reactor Coolant Outlet Temperature	M	R
5.	Reactor Coolant Total Flow	M	R
6.	Pressurizer Pressure	M	R
7.	Pressurizer Level	M	R
8.	Steam Generator Pressure	M	R
9.	Steam Generator Level	M	R
10.	Feedwater Flow	M	R
11.	Auxiliary Feedwater Flow Rate	M	R
12.	RCS Subcooled Margin Monitor	M	R
13.	PORV/Safety Valve Acoustic Monitor	N.A.	R
14.	PORV Solenoid Power Indication	N.A.	N.A.
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5.	Pressurizer Level	M	R
6.	Steam Generator Pressure	M	R
7.	Steam Generator Level (Wide Range)	M	R
8.	Auxiliary Feedwater Flow Rate	M	R
9.	RCS Subcooled Margin Monitor	M	R
10.	PORV/Safety Valve Acoustic Monitor	N.A.	R
11.	PORV Solenoid Power Indication	N.A.	N.A.
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5.	Reactor Coolant Total Flow	M	R
6.	Pressurizer Pressure	M	R
7.	Pressurizer Level	M	R
8.	Steam Generator Pressure	M	R
9.	Steam Generator Level	M	R
10.	Feedwater Flow	M	R
11.	Auxiliary Feedwater Flow Rate	M	R
12.	RCS Subcooled Margin Monitor	M	R
13.	PORV/Safety Valve Acoustic Monitor	N.A.	R
14.	PORV Solenoid Power Indication	N.A.	N.A.
15.	Containment Water Level (Wide Range)	M	R

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5.	Pressurizer Level	M	R
6.	Steam Generator Pressure	M	R
7.	Steam Generator Level (Wide Range)	M	R
8.	Auxiliary Feedwater Flow Rate	M	R
9.	RCS Subcooled Margin Monitor	M	R
10.	PORV/Safety Valve Acoustic Monitor	N.A.	R
11.	PORV Solenoid Power Indication	N.A.	N.A.
12.	Feedwater Flow	M	R
13.	Containment Water Level (Wide Range)	M	R

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A. C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) each with:

1. Separate day fuel tanks containing a minimum volume of 375 gallons of fuel,

2. A common fuel oil storage system consisting of: ~~two independent storage tanks each containing a minimum volume of 10,000 gallons of fuel; and~~

a. Two independent storage tanks each containing a minimum volume of 18,250 gallons of fuel, or

b. One fuel oil storage tank containing a minimum volume of 8,000 gallons of fuel with the alternate diesel fuel oil storage tank out of service for the expressed purpose of performing tank bottom inspections or repairs. These inspections or repairs must be made between December 1 and April 1 and during no more than 6 years per tank

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one 500 Kv offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits* and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one 500 Kv offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources* to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*The 69 Kv SMECo offsite power circuit described in the January 14, 1977 Safety Evaluation may be substituted for one 500 Kv offsite power circuit.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A. C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) each with:

1. Separate day fuel tanks containing a minimum volume of 375 gallons of fuel,

2. A common fuel oil storage system consisting of: ~~two independent storage tanks each containing a minimum volume of 18,250 gallons of fuel, and~~

a. Two independent storage tanks each containing a minimum volume of 18,250 gallons of fuel, or

b. One fuel oil storage tank containing a minimum volume of 8,000 gallons of fuel with the alternate diesel fuel oil storage tank out of service for the expressed purpose of performing tank bottom inspections or repairs. These inspections or repairs must be made between December 1 and April 1 and cannot exceed 60 days per tank per 5 years and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one 500 Kv offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits* and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one 500 Kv offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources* to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*The 69 Kv SMECo offsite power circuit described in the January 14, 1977 Safety Evaluation may be substituted for one 500 Kv offsite power circuit.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 AC SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following AC electrical power sources shall be **OPERABLE:**

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) each with:

1. Separate day fuel tanks containing a minimum volume of 375 gallons of fuel,

2. A common fuel oil storage system consisting of:

a. Two independent storage tanks each containing a minimum volume of 18,250 gallons of fuel, or

b. One fuel oil storage tank containing a minimum volume of 36,500 gallons of fuel and an alternate fuel supply containing a minimum volume of 8,000 gallons of fuel with the alternate diesel fuel oil storage tank out of service for the expressed purpose of performing tank bottom inspections or repairs. These inspections or repairs must be made between December 1 and April 1 and cannot exceed 60 days per tank per 5 years, and

3. A separate fuel transfer pump.

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

ACTION:

a. With one 500 KV offsite circuit or diesel generator of the above required AC electrical power sources inoperable, demonstrate the **OPERABILITY** of the remaining AC sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits* and two diesel generators to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

*The 69 KV SMECO offsite power circuit described in the January 14, 1977, Safety Evaluation may be substituted for one (1) 500 KV offsite power circuit.

LIMITING CONDITIONS FOR OPERATION (Continued)

b. With one 500 KV offsite circuit and one diesel generator of the above required AC electrical power sources inoperable, demonstrate the **OPERABILITY** of the remaining AC sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources* to **OPERABLE** status within 12 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore at least two offsite circuits and two diesel generators to **OPERABLE** status within 72 hours from the time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

c. With two of the 500 KV above required offsite AC circuits inoperable, demonstrate the **OPERABILITY** of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; unless the diesel generators are already operating, restore at least one of the inoperable offsite sources to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits* to **OPERABLE** status within 72 hours from time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

d. With two of the above required diesel generators inoperable, demonstrate the **OPERABILITY** of two offsite AC circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore at least two diesel generators to **OPERABLE** status within 72 hours from time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each independent circuit between the offsite transmission network and the onsite Class 1E distribution* system shall be:

*The 69 KV SMECO offsite power circuits described in the January 14, 1977, Safety Evaluation may be substitued for one (1) 500 KV offsite power circuit.

SURVEILLANCE REQUIREMENTS (Continued)

a. Determined **OPERABLE** at least once per 7 days by verifying correct breaker alignments, indicated power availability, and

b. Demonstrated **OPERABLE** at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated **OPERABLE:**

a. At least once per 31 days on a **STAGGERED TEST BASIS** by:

1. Verifying the fuel level in the day fuel tank.

2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in $\leq$ 10 seconds.

5. Verifying the generator is synchronized, loaded to $\geq$ 1250 kw, and operates for $\geq$ 60 minutes.

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

7. Verifying that the automatic load sequence timer is **OPERABLE** with the interval between each load block within $\pm$ 10% of its design interval.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits, specified in Table 1 of ASTM D975-68 when checked for viscosity, water, and sediment.

c. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject of load of $\geq$ 450 hp without tripping.

3. Simulating a loss of offsite power in conjunction with a safety injection actuation test signal, and:

a. Verifying deenergization of the emergency busses and load shedding from the emergency busses.

b. Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer and operates for $\geq$ 5 minutes while its generator is loaded with the emergency loads.

c. Verifying that all diesel generator trips, except engine overspeed, crankcase pressure high, lube oil pressure low, generator ground overcurrent, and generator differential, are automatically bypassed on a Safety Injection Actuation Signal.

4. Verifying the diesel generator operates for $\geq$ 60 minutes while loaded to $\geq$ 2500 kw.

5. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2700 kw.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 AC SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following AC electrical power sources shall be **OPERABLE:**

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) each with:

1. Separate day fuel tanks containing a minimum volume of 375 gallons of fuel,

2. A common fuel oil storage system consisting of:

a. Two independent storage tanks each containing a minimum volume of 18,250 gallons of fuel, or

b. One fuel oil storage tank containing a minimum volume of 36,500 gallons of fuel and an alternate fuel supply containing a minimum volume of 8,000 gallons of fuel with the alternate diesel fuel oil storage tank out of service for the expressed purpose of performing tank bottom inspections or repairs. These inspections or repairs must be made between December 1 and April 1 and cannot exceed 60 days per tank per 5 years, and

3. A separate fuel transfer pump.

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

ACTION:

a. With one 500 KV offsite circuit or diesel generator of the above required AC electrical power sources inoperable, demonstrate the **OPERABILITY** of the remaining AC sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits* and two diesel generators to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

*The 69 KV SMECO offsite power circuit described in the January 14, 1977, Safety Evaluation may be substituted for one (1) 500 KV offsite power circuit.

LIMITING CONDITIONS FOR OPERATION (Continued)

b. With one 500 KV offsite circuit and one diesel generator of the above required AC electrical power sources inoperable, demonstrate the **OPERABILITY** of the remaining AC sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources* to **OPERABLE** status within 12 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore at least two offsite circuits and two diesel generators to **OPERABLE** status within 72 hours from the time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

c. With two of the 500 KV above required offsite AC circuits inoperable, demonstrate the **OPERABILITY** of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; unless the diesel generators are already operating, restore at least one of the inoperable offsite sources to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits* to **OPERABLE** status within 72 hours from time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

d. With two of the above required diesel generators inoperable, demonstrate the **OPERABILITY** of two offsite AC circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore at least two diesel generators to **OPERABLE** status within 72 hours from time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each independent circuit between the offsite transmission network and the onsite Class 1E distribution* system shall be:

*The 69 KV SMECO offsite power circuits described in the January 14, 1977, Safety Evaluation may be substitued for one (1) 500 KV offsite power circuit.

SURVEILLANCE REQUIREMENTS (Continued)

a. Determined **OPERABLE** at least once per 7 days by verifying correct breaker alignments, indicated power availability, and

b. Demonstrated **OPERABLE** at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated **OPERABLE:**

a. At least once per 31 days on a **STAGGERED TEST BASIS** by:

1. Verifying the fuel level in the day fuel tank.

2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in $\leq$ 10 seconds.

5. Verifying the generator is synchronized, loaded to $\geq$ 1250 kw, and operates for $\geq$ 60 minutes.

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

7. Verifying that the automatic load sequence timer is **OPERABLE** with the interval between each load block within $\pm$ 10% of its design interval.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits, specified in Table 1 of ASTM D975-68 when checked for viscosity, water, and sediment.

c. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject of load of $\geq$ 450 hp without tripping.

3. Simulating a loss of offsite power in conjunctior with a safety injection actuation test signal, and:

a. Verifying deenergization of the emergency busses and load shedding from the emergency busses.

b. Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer and operates for $\geq$ 5 minutes while its generator is loaded with the emergency loads.

c. Verifying that all diesel generator trips, except engine overspeed, crankcase pressure high, lube oil pressure low, generator ground overcurrent, and generator differential, are automatically bypassed on a Safety Injection Actuation Signal.

4. Verifying the diesel generator operates for $\geq$ 60 minutes while loaded to $\geq$ 2500 kw.

5. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2700 kw.