PLANT SYSTEMS

3/4.7.5 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.5.1 The control room emergency ventilation system shall be OPERABLE with:

a. Two independent heating and cooling systems,

b. Two independent pressurization fans,

c. One charcoal adsorber and HEPA filter train, and

d. The control room envelope pressure boundary.

APPLICABILITY: ALL MODES.

ACTION: MODES 1, 2, 3, and 4:

a. With one heating and cooling system inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one pressurization 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.

c. With the 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.

d. With the control room pressure boundary inoperable, restore the control room pressure boundary 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.

MODES 5 and 6:

e. With any of the following: (1) both heating and cooling systems; (2) both pressurization fans; (3) the filter train; (4) the control room pressure boundary; inoperable, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.7.5.1 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 less than or equal to 120°F.

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating flow through the HEPA filter and charcoal adsorber train and verifying that the system operates for at least one hour.

c. 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 greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

2. Verifying that the HEPA filter banks remove greater than or equal to 99.9% of the DOP when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 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 greater than or equal to 97% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1980 (ASTM D 3803-1979, 30°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.

Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the system shall be demonstrated OPERABLE by also verifying that the charcoal adsorbers remove greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

4. Verifying a system flow rate of 6000 cfm plus or minus 10% during system operation in the recirculation/cleanup mode, when tested in accordance with ANSI N510-1980.

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 greater than or equal to 97% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1980 (ASTM D 3803-1979, 30°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 greater than or equal to 97% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1980 (ASTM D 3803-1979, 30°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 shall be demonstrated OPERABLE by also verifying that the charcoal adsorbers remove greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

SURVEILLANCE REQUIREMENTS (Continued)

e. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge (W.G.) while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

2. a) Verifying that on a Safety Injection Signal from Unit 1, the system automatically initiates operation in the recirculation/cleanup mode.*

   b) Verifying that on a Safety Injection Signal from Unit 2, the system automatically initiates operation in the recirculation/cleanup mode.*

3. Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/16 inch W.G. relative to the outside atmosphere at a system flow rate of 6000 cfm plus or minus 10% while operating in the recirculation/cleanup mode.

4. Verifying that the system maintains the machine room and the computer room at a positive pressure of greater than or equal to 1/25 inch W.G. with respect to the outside atmosphere, in conjunction with testing required by Specification 4.7.5.1.e.3.

5. Verifying that the combination of filtered makeup and unfiltered inleakage is within limits, as defined in the Bases, which will maintain the control room habitable under radiological accident conditions, in conjunction with testing required by Specification 4.7.5.1.e.3.

6. Verifying that the flow through the normal intake damper is less than or equal to 200 cfm under normal operating conditions.+

*The provisions of Specification 4.0.6 are applicable.
+This surveillance is not required if a redundant isolation damper is installed.

f. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.9% of the DOP when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

PLANT SYSTEMS

BASES

3/4.7.5 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the control room emergency ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50.

The 1980 version of ANSI N510 is used as a testing guide. This standard, however, is intended to be rigorously applied only to systems which, unlike the control room ventilation systems, are designed to ANSI N509 standards. As such, the air-aerosol mixing uniformity test required by ANSI N510 as a prerequisite to in-place leak testing of charcoal and HEPA filters is not required.

In the event of a radiological accident, such as a LOCA, the control room ventilation system would be aligned automatically in the recirculation/cleanup mode of operation. This occurs automatically in both units in the event of a safety injection signal from either unit. Upon system actuation the normal air intake and toilet room exhaust are automatically closed via isolation dampers. Both of the redundant pressurization fans start, drawing outdoor makeup air for pressurization purposes through the emergency intake damper. This damper is preset to a position sufficient to allow the required pressurization, while limiting outdoor air intake to an amount which will ensure control room habitability. The operators are instructed to shut off one of the redundant fans after assuring they both started. This is to assure that iodine residence time requirements are met, so as to provide filter efficiencies consistent with those assumed in the accident analyses.

In the recirculation/cleanup mode, the ventilation system is sized to provide pressurization of greater than or equal to 1/16 inches W.G. relative to the outside atmosphere. The machine room and computer room are intended to be at pressures which are positive with respect to the outside atmosphere, but which may be less positive than the control room. The lower pressure requirement for these areas (1/25 inches W.G.) is acceptable because these rooms would not be expected to be entered or exited as often as the control room during an accident. Pressure in the computer room would always be slightly higher than the machine room because of the small pressure drop associated with air passage through the transfer openings. Therefore, a positive pressure measurement in the machine room will ensure a positive pressure in the computer room.

BASES (Cont.)

Periodic measurement of filtered and unfiltered inleakage provide assurance that these flow rates are within the values which the control room dose analyses have demonstrated provide acceptable dose consequences. (Acceptable dose limits are 5 rem whole body, 50 rem skin, and 50 rem thyroid.) Periodic measurement of the flow through the normal intake damper (when open), provides assurance that the effects of single failures are appropriately accounted for in the dose analysis. (If the normal intake damper is made redundant, its failure to isolate need not be considered and verification of flow through the open damper need not be performed.)

The control room habitability analyses assumed 95% efficiency for the charcoal filters. Technical Specifications require demonstration of 97% efficiency for methyl iodide. The 2% margin is intended to allow for degradation of the charcoal with time. For purposes of evaluating reportability, the charcoal will not be considered in violation of T/S requirements so long as the efficiency is greater than or equal to 95%.

3/4.7.6 ESF VENTILATION SYSTEM

The OPERABILITY of the ESF ventilation system ensures that adequate cooling is provided for ECCS equipment and that radioactive materials leaking from the ECCS equipment within the pump rooms following a LOCA are filtered prior to reaching the environment. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the accident analyses.

The 1980 version of ANSI N510 is used as a testing guide. This standard, however, is intended to be rigorously applied only to systems which, unlike the ESF ventilation system, are designed to ANSI N509 standards. For the specific case of the air-aerosol mixing uniformity test required by ANSI N510 as a prerequisite to in-place leak testing of charcoal and HEPA filters, the air-aerosol uniform mixing test acceptance criteria were not rigorously met. For this reason, a statistical correction factor will be applied to applicable surveillance test resutls where required.

3/4.7.7 SEALED SOURCE CONTAMINATION

The limitations on sealed source removable contamination ensure that the total body or individual organ irradiation does not exceed allowable limits in the event of ingestion or inhalation of the probable leakage from the source material. The limitations on removable contamination for sources requiring leak testing, including alpha emitters, are based on 10 CFR 70.39(c) limits for plutonium. Quantities of interest to this specification which are exempt from

BASES (Cont.)

the leakage testing are consistent with the criteria of 10 CFR Parts 30.11-20 and 70.19. Leakage from sources excluded from the requirements of this specification is not likely to represent more than one maximum permissible body burden for total body irradiation if the source material is inhaled or ingested.

3/4.7.8 HYDRAULIC SNUBBERS

All snubbers are required OPERABLE to ensure that the structural integrity of the reactor coolant system and all other safety related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

PLANT SYSTEMS

3/4.7.5 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.5.1 The control room emergency ventilation system shall be OPERABLE with:

a. Two independent heating and cooling systems,

b. Two independent pressurization fans,

c. One charcoal adsorber and HEPA filter train, and

d. The control room envelope pressure boundary.

APPLICABILITY: ALL MODES.

ACTION: MODES 1, 2, 3, and 4:

a. With one heating and cooling system inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one pressurization 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.

c. With the 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.

d. With the control room pressure boundary inoperable, restore the control room pressure boundary 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.

MODES 5 and 6:

e. With any of the following: (1) both heating and cooling systems; (2) both pressurization fans; (3) the filter train; (4) the control room pressure boundary; inoperable, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.7.5.1 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 less than or equal to 120°F.

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating flow through the HEPA filter and charcoal adsorber train and verifying that the system operates for at least one hour.

c. 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 greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

2. Verifying that the HEPA filter banks remove greater than or equal to 99.9% of the DOP when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 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 greater than or equal to 97% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1980 (ASTM D 3803-1979, 30°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.

Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the system shall be demonstrated OPERABLE by also verifying that the charcoal adsorbers remove greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

4. Verifying a system flow rate of 6000 cfm plus or minus 10% during system operation in the recirculation/cleanup mode, when tested in accordance with ANSI N510-1980.

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 greater than or equal to 97% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1980 (ASTM D 3803-1979, 30°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 greater than or equal to 97% for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1980 (ASTM D-3803 30°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 shall be demonstrated OPERABLE by also verifying that the charcoal adsorbers remove greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

e. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge (W.G.) while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

2. a) Verifying that on a Safety Injection Signal from Unit 1, the system automatically initiates operation in the recirculation/cleanup mode.*

   b) Verifying that on a Safety Injection Signal from Unit 2, the system automatically initiates operation in the recirculation/cleanup mode.*

3. Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/16 inch W.G. relative to the outside atmosphere at a system flow rate of 6000 cfm plus or minus 10% while operating in the recirculation/cleanup mode.

4. Verifying that the system maintains the machine room and the computer room at a positive pressure of greater than or equal to 1/25 inch W.G. with respect to the outside atmosphere, in conjunction with testing required by Specification 4.7.5.1.e.3.

5. Verifying that the combination of filtered makeup and unfiltered inleakage is within limits, as defined in the Bases, which will maintain the control room habitable under radiological accident conditions, in conjunction with testing required by Specification 4.7.5.1.e.3.

6. Verifying that the flow through the normal intake damper is less than or equal to 200 cfm under normal operating conditions.+

*The provisions of Specification 4.0.7 are applicable.
+This surveillance is not required if a redundant isolation damper is installed.

f. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.9% of the DOP when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.8% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 6000 cfm plus or minus 10%.

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 average steam generator impact values taken at +10°F and are sufficient to prevent brittle fracture.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM

The OPERABILITY of the essential service water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident conditions within acceptable limits.

3/4.7.5 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the control room emergency ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50.

The 1980 version of ANSI N510 is used as a testing guide. This standard, however, is intended to be rigorously applied only to systems which, unlike the control room ventilation systems, are designed to ANSI N509 standards. As such, the air-aerosol mixing uniformity test required by ANSI N510 as a prerequisite to in-place leak testing of charcoal and HEPA filters is not required.

In the event of a radiological accident, such as a LOCA, the control room ventilation system would be aligned automatically in the recirculation/cleanup

BASES (Cont.)

mode of operation. This occurs automatically in both units in the event of a safety injection signal from either unit. Upon system actuation the normal air intake and toilet room exhaust are automatically closed via isolation dampers. Both of the redundant pressurization fans start, drawing outdoor makeup air for pressurization purposes through the emergency intake damper. This damper is preset to a position sufficient to allow the required pressurization, while limiting outdoor air intake to an amount which will ensure control room habitability. The operators are instructed to shut off one of the redundant fans after assuring they both started. This is to assure that iodine residence time requirements are met, so as to provide filter efficiencies consistent with those assumed in the accident analyses.

In the recirculation/cleanup mode, the ventilation system is sized to provide pressurization of greater than or equal to 1/16 inches W.G. relative to the outside atmosphere. The machine room and computer room are intended to be at pressures which are positive with respect to the outside atmosphere, but which may be less positive than the control room. The lower pressure requirement for these areas (1/25 inches W.G.) is acceptable because these rooms would not be expected to be entered or exited as often as the control room during an accident. Pressure in the computer room would always be slightly higher than the machine room because of the small pressure drop associated with air passage through the transfer openings. Therefore, a positive pressure measurement in the machine room will ensure a positive pressure in the computer room.

Periodic measurement of filtered and unfiltered inleakage provide assurance that these flow rates are within the values which the control room dose analyses have demonstrated provide acceptable dose consequences. (Acceptable dose limits are 5 rem whole body, 50 rem skin, and 50 rem thyroid.) Periodic measurement of the flow through the normal intake damper (when open), provides assurance that the effects of single failures are appropriately accounted for in the dose analysis. (If the normal intake damper is made redundant, its failure to isolate need not be considered and verification of flow through the open damper need not be performed.)

The control room habitability analyses assumed 95% efficiency for the charcoal filters. Technical Specifications require demonstration of 97% efficiency for methyl iodide. The 2% margin is intended to allow for degradation of the charcoal with time. For purposes of evaluating reportability, the charcoal will not be considered in violation of T/S requirements so long as the efficiency is greater than or equal to 95%.