

## CONTAINMENT SYSTEMS

### 3/4.6.5 CONTAINMENT ENCLOSURE BUILDING

#### CONTAINMENT ENCLOSURE EMERGENCY AIR CLEANUP SYSTEM

##### LIMITING CONDITION FOR OPERATION

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3.6.5.1 Two independent Containment Enclosure Emergency Air Cleanup Systems shall be OPERABLE.

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

##### ACTION:

With one Containment Enclosure Emergency Air Cleanup 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.

##### SURVEILLANCE REQUIREMENTS

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4.6.5.1 Each Containment Enclosure Emergency Air Cleanup System shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system 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 cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978\*, and the system flow rate is 2100 cfm  $\pm$  10%;
  - 2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, by showing a methyl iodide penetration of less than or

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\*ANSI N510-1980 shall be used in place of ANSI N510-1975 referenced in Regulatory Guide 1.52, Rev. 2, March 1978.

## CONTAINMENT SYSTEMS

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## SURVEILLANCE REQUIREMENTS

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### 4.6.5.1b.2 (Continued)

equal to 5% when tested at a temperature of 30°C, at a relative humidity of 95% and a face velocity of 46 fpm in accordance with ASTM-D3803-1989; and

- 3) Verifying a system flow rate of 2100 cfm  $\pm$  10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, by showing a methyl iodide penetration of less than or equal to 5% when tested at a temperature of 30°C, at a relative humidity of 95% and a face velocity of 46 fpm in accordance with ASTM-D3803-1989.
- d. 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 while operating the system at a flow rate of 2100 cfm  $\pm$  10%,
  - 2) Verifying that the system starts on a Safety Injection test signal,
  - 3) Verifying that the filter cross connect valves can be manually opened, and
  - 4) Verifying that each system produces a negative pressure of greater than or equal to 0.25 inch Water Gauge in the annulus within 4 minutes after a start signal.
- e. After each complete or partial replacement of a high efficiency particulate air (HEPA) filter bank, by verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a dioctyl phthalate (DOP) test aerosol while operating the system at a flow rate of 2100 cfm  $\pm$  10%; and

PLANT SYSTEMS

CONTROL ROOM SUBSYSTEMS

EMERGENCY MAKEUP AIR AND FILTRATION

SURVEILLANCE REQUIREMENTS (Continued)

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- 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 filtration system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than .05% and uses the test procedure guidance in Regulatory Position C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978\*, and the system flow rate is 1100 cfm  $\pm$  10%;
  - 2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, by showing a methyl iodide penetration of less than or equal to 2.5% when tested at a temperature of 30°C, at a relative humidity of 70% and a face velocity of 34.5 fpm (Train A) and 58.3 fpm (Train B) in accordance with ASTM-D-3803-1989;
  - 3) Verifying a system flow rate of 1100 cfm  $\pm$  10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, by showing a methyl iodide penetration of less than or equal to 2.5% when tested at a temperature of 30°C, at a relative humidity of 70% and a face velocity of 34.5 fpm (Train A) and 58.3 fpm (Train B) in accordance with ASTM-D-3803-1989;
- d. At least once per 18 months by:
- 1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks, for filter CBA-F-38, is less than 2.8 inches Water Gauge while operating the system at a flow rate of 1100 cfm  $\pm$  10%; and verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks, for filter CBA-F-8038, is less than 6.3 inches Water Gauge while operating the system at a flow rate of 1100 cfm  $\pm$  10%.

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## PLANT SYSTEMS

### CONTROL ROOM SUBSYSTEMS

#### EMERGENCY MAKEUP AIR AND FILTRATION

##### SURVEILLANCE REQUIREMENTS (Continued)

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- 2) Verifying that upon generation of an 'S' test signal, the following automatic system functions occur:
  - a. The normal makeup air fan(s) trip off and the normal makeup air isolation damper(s) close;
  - b. The control room exhaust subsystem isolation damper(s) close, and the exhaust fan trips off;
  - c. The control room emergency makeup air and filtration subsystem actuates with flows through the HEPA filters and charcoal adsorber banks;
- 3) Verifying that upon generation of Remote Intake High Radiation test signal, the following automatic system functions occur:
  - a. The normal makeup air fan(s) trip off and the normal makeup air isolation damper(s) close;
  - b. The control room exhaust subsystem isolation damper(s) close, and the exhaust fan trips off;
  - c. The control room emergency makeup air and filtration subsystem actuates with flows through the HEPA filters and charcoal adsorber banks;
- 4) Verifying that the Control Room Emergency Makeup Air and Filtration Subsystem maintains the control room at a positive pressure of greater than or equal to 1/8 inch Water Gauge at less than or equal to a pressurization flow of 600 cfm relative to adjacent areas during system operation; and
- 5) Verifying that the heaters dissipate at least 3.24 kW (based on design rated voltage of 460V) when tested in accordance with ANSI N510-1980.
  - e. After each complete or partial replacement of a HEPA filter bank, by verifying that the filtration system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than .05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 1100 cfm  $\pm$  10%; and
  - f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the filtration system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than .05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 1100 cfm  $\pm$  10%.

## REFUELING OPERATIONS

### FUEL STORAGE BUILDING EMERGENCY AIR CLEANING SYSTEM

#### SURVEILLANCE REQUIREMENTS (Continued)

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#### 4.9.12b (Continued)

- 1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978,\* and the system flow rate is 16,450 cfm  $\pm$  10%;
  - 2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, by showing a methyl iodide penetration of less than or equal to 2.5% when tested at a temperature of 30°C, at a relative humidity of 70% and a face velocity of 44 fpm in accordance with ASTM-D-3803-1989; and
  - 3) Verifying a system flow rate of 16,450 cfm  $\pm$  10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, by showing a methyl iodide penetration of less than or equal to 2.5% when tested at a temperature of 30°C, at a relative humidity of 70% and a face velocity of 44 fpm in accordance with ASTM-D-3803-1989.
- d. 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 while operating the system at a flow rate of 16,450 cfm  $\pm$  10%,
  - 2) Verifying that the system maintains the spent fuel storage pool area at a negative-pressure of greater than or equal to 1/4 inch Water Gauge relative to the outside atmosphere during system operation,

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## REFUELING OPERATIONS

### FUEL STORAGE BUILDING EMERGENCY AIR CLEANING SYSTEM

#### SURVEILLANCE REQUIREMENTS

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#### 4.9.12d (Continued)

- 3) Verifying that the filter cross connect valve can be manually opened, and
  - 4) Verifying that the heaters dissipate at least 84 kW (based on design rated voltage of 480V) when tested in accordance with ANSI N510-1980.
- e. After each complete or partial replacement of a HEPA filter bank, by verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 16,450 cfm  $\pm$  10%.
- f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 16,450 cfm  $\pm$  10%.

## SEABROOK STATION - UNIT 1

TABLE 1 - CURRENT TS REQUIREMENTS											
System Description					Current TS Requirements						
TS Section	System	Bed Thickness (inches)	Actual Charcoal		Credited Efficiency (% organic iodine)	Test Penetration (% methyl iodide)	Safety Factor	Test Standard	Test Temp (° C)	Test RH %	Test Face Velocity (fpm)
			Res. Time (sec)	Face Velocity (fpm)							
3/4.6.5	Containment Enclosure Emergency Air Cleanup System (EAH)	4	0.432	46	90	<2.14	Not stated (4.67)	ASTM D3803 (1979 Method A)*	30	95	Not stated
3/4.7.6.1	Control Room Emergency Makeup Air and Filtration (CBA) Train A	2	0.288	34.5	95	<1.0	Not stated (5)	ASTM D3803 (1979 Method A)*	Not stated (30)**	Not stated	Not stated
3/4.7.6.1	Control Room Emergency Makeup Air and Filtration (CBA) Train B	4	0.342	58.3	95	<1.0	Not stated (5)	ASTM D3803 (1979 Method A)*	Not stated (30)**	Not stated	Not stated
3/4.9.12	Fuel Storage Building Emergency Air Cleaning System (FAH)	4	0.45	44	95	<1.0	Not stated (5)	ASTM D3803 (1979 Method A)*	30	95	Not stated

\* ASTM D3803 as referenced in the current TS is undated. The licensee states in the December 3, 1999 letter (NYN-99111) that ASTM D3803-1979 Method A is currently employed as the laboratory charcoal test standard.

\*\* The test temperature of 30°C for CBA Train A and Train B is stated in the letter dated December 3, 1999 (NYN-99110) as part of the response to GL 99-02.

## SEABROOK STATION - UNIT 1

TABLE 2 - PROPOSED TS REQUIREMENTS											
System Description						Proposed TS Requirements					
TS Section	System	Bed Thickness (inches)	Actual Charcoal		Credited Efficiency (% methyl iodide)	Test Penetration (% methyl iodide)	Safety Factor	Test Standard	Test Temp (° C)	Test RH (%)	Test Face Velocity (fpm)
			Res. Time (sec)	Face Velocity (fpm)							
3/4.6.5	Containment Enclosure Emergency Air Cleanup System (EAH)	4	0.432	46	90	≤5	2	ASTM D3803-1989	30	95	46
3/4.7.6.1	Control Room Emergency Makeup Air and Filtration (CBA) Train A	2	0.288	34.5	95	≤2.5	2	ASTM D3803-1989	30	70*	34.5 **
3/4.7.6.1	Control Room Emergency Makeup Air and Filtration (CBA) Train B	4	0.342	58.3	95	≤2.5	2	ASTM D3803-1989	30	70*	58.3
3/4.9.1.2	Fuel Storage Building Emergency Air Cleaning System (FAH)	4	0.45	44	95	≤2.5	2	ASTM D3803-1989	30	70*	44

\* (i) The current TS for the CBA do not specify the proposed relative humidity of 70% but heaters of  $3.6 \pm 0.36$  kW are under TS surveillance. The licensee proposes to test these heaters at least at 3.24 kW based on design rated voltage of 460V. (ii) For the FAH, the current RH value in the TS is 95%, but the licensee is now proposing to test at 70%. Heaters of  $95 \pm 11$  kW are under TS surveillance. The licensee proposes to test these heaters at least at 84 kW based on design rated voltage of 480V.

\*\* For CBA Train A, a test face velocity of 34.5 fpm for testing under ASTM D3803-1989 is included in the proposed TS, even though it is less than the 40 fpm specified in ASTM D3803-1989.