



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

BALTIMORE GAS AND ELECTRIC COMPANY  
DOCKET NO. 50-317  
CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 83  
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas & Electric Company (the licensee) dated February 24, 1983 as supplemented by letter dated March 22, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

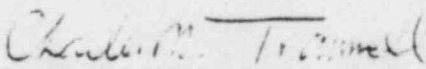
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-53 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 83, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*for*   
Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: May 5, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 83

FACILITY OPERATING LICENSE NO. DPR-53

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Replace the following pages of the Appendix A Technical Specifications with the enclosed pages as indicated. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

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B 2-7  
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TABLE 2.2-1 (Cont'd)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
4. Pressurizer Pressure - High	$\leq$ 2400 psia	$\leq$ 2400 psia
5. Containment Pressure - High	$\leq$ 4 psig	$\leq$ 4 psig
6. Steam Generator Pressure - Low (2)	$\geq$ 635 psia	$\geq$ 635 psia
7. Steam Generator Water Level - Low	$\geq$ 10 inches below top of feed ring.	$\geq$ 10 inches below top of feed ring.
8. Axial flux offset (3)	Trip setpoint adjusted to not exceed the limit lines of Figure 2.2-1.	Trip setpoint adjusted to not exceed the limit lines of Figure 2.2-1.
9. Thermal Margin/Low Pressure (1)		
a. Four Reactor Coolant Pumps Operating	Trip setpoint adjusted to not exceed the limit lines of Figures 2.2-2 and 2.2-3.	Trip setpoint adjusted to be not less than the larger of (1) the value calculated from Figures 2.2-2 and 2.2-3 and (2) 1875 psig.
b. Steam Generator Pressure Difference - High (1)	$\leq$ 135 psid	$\leq$ 135 psid
10. Loss of Load	N.A.	N.A.
11. Rate of Change of Power - High (4)	$\leq$ 2.6 decades per minute	$\leq$ 2.6 decades per minute

TABLE NOTATION

- (1) Trip may be bypassed below  $10^{-4}$ % of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is  $\geq 10^{-4}$ % of RATED THERMAL POWER.

TABLE 2.2-1 (Cont'd)TABLE NOTATIONS (Cont'd)

- (2) Trip may be manually bypassed below 710 psia; bypass shall be automatically removed at or above 710 psia. |
- (3) Trip may be bypassed below 15% of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is  $\geq$  15% of RATED THERMAL POWER.
- (4) Trip may be bypassed below  $10^{-4}$ % and above 12% of RATED THERMAL POWER.

## LIMITING SAFETY SYSTEM SETTINGS

### BASES

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The Thermal Margin/Low Pressure trip setpoints include allowances for equipment response time, measurement uncertainties, processing error and a further allowance of 40 psia to compensate for the time delay associated with providing effective termination of the occurrence that exhibits the most rapid decrease in margin to the safety limit.

#### Asymmetric Steam Generator Transient Protection Trip Function (ASGTPTF)

The ASGTPTF utilizes steam generator pressure inputs to the TM/LP calculator, which causes a reactor trip when the difference in pressure between the two steam generators exceeds the trip setpoint. The ASGTPTF is designed to provide a reactor trip for those Anticipated Operational Occurrences associated with secondary system malfunctions which result in asymmetric primary loop coolant temperatures. The most limiting event is the loss of load to one steam generator caused by a single Main Steam Isolation Valve closure.

The equipment trip setpoint and allowable values are calculated to account for instrument uncertainties, and will ensure a trip at or before reaching the analysis setpoint.

#### Loss of Load

A Loss of Load trip causes a direct reactor trip when operating above 15% of RATED THERMAL POWER. This trip provides turbine protection, reduces the severity of the ensuing transient and helps avoid the lifting of the main steam line safety valves during the ensuing transient, thus extending the service life of these valves. No credit was taken in the accident analyses for operation of this trip. Its functional capability is required to enhance overall plant equipment service life and reliability.

#### Rate of Change of Power-High

The Rate of Change of Power-High trip is provided to protect the core during startup operations and its use serves as a backup to the administratively enforced startup rate limit. Its trip setpoint does not correspond to a Safety Limit and no credit was taken in the accident analyses for operation of this trip. Its functional capability at the specified trip setting is required to enhance the overall reliability of the Reactor Protection System.

### 3/4.3 INSTRUMENTATION

#### 3/4.3.1 REACTOR PROTECTIVE INSTRUMENTATION

##### LIMITING CONDITION FOR OPERATION

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3.3.1.1 As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

##### SURVEILLANCE REQUIREMENTS

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4.3.1.1.1 Each reactor protective instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The logic for the bypasses shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

TABLE 3.3-1

## REACTOR PROTECTIVE INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
1. Manual Reactor Trip	2	1	2	1, 2 and *	1
2. Power Level - High	4	2	3(f)	1, 2	2#
3. Reactor Coolant Flow - Low	4/SG	2(a)/SG	3/SG	1, 2 (e)	2#
4. Pressurizer Pressure - High	4	2	3	1, 2	2#
5. Containment Pressure - High	4	2	3	1, 2	2#
6. Steam Generator Pressure - Low	4/SG	2(b)/SG	3/SG	1, 2	2#
7. Steam Generator Water Level - Low	4/SG	2/SG	3/SG	1, 2	2#
8. Axial Flux Offset	4	2(c)	3	1	2#
9. a. Thermal Margin/Low Pressure	4	2(a)	3	1, 2 (e)	2#
b. Steam Generator Pressure Difference - High	4	2(a)	3	1, 2 (e)	2#
10. Loss of Load	4	2(c)	3	1	2#

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TABLE 3.3-1 (Continued)

ACTION STATEMENTS

- b. Within one hour, all functional units receiving an input from the inoperable channel are also placed in the same condition (either bypassed or tripped, as applicable) as that required by a. above for the inoperable channel.
- c. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 48 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing per Specification 4.3.1.1.

TABLE 3.3-2

REACTOR PROTECTIVE INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	Not Applicable
2. Power Level - High	$\leq 0.40$ seconds*# and $\leq 12.0$ seconds ##
3. Reactor Coolant Flow - Low	$\leq 0.50$ seconds
4. Pressurizer Pressure - High	$\leq 0.90$ seconds
5. Containment Pressure - High	$\leq 0.90$ seconds
6. Steam Generator Pressure - Low	$\leq 0.90$ seconds
7. Steam Generator Water Level - Low	$\leq 0.90$ seconds
8. Axial Flux Offset	$\leq 0.40$ seconds*# and $\leq 12.0$ seconds ##
9.a. Thermal Margin/Low Pressure	$\leq 0.90$ seconds*# and $\leq 12.0$ seconds ##
b. Steam Generator Pressure Difference - High	$\leq 0.90$ seconds
10. Loss of Load	Not Applicable
11. Wide Range Logarithmic Neutron Flux Monitor	Not Applicable

\*Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

#Response time does not include contribution of RTDs.

##RTD response time only. This value is equivalent to the time interval required for the RTDs output to achieve 63.2% of its total change when subjected to a step change in RTD temperature.

TABLE 4.3-1

REACTOR PROTECTIVE INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.
2. Power Level - High				
a. Nuclear Power	S	D(2),M(3),Q(5)	M	1, 2
b. $\Delta T$ Power	S	D(4),R	M	1
3. Reactor Coolant Flow - Low	S	R	M	1, 2
4. Pressurizer Pressure - High	S	R	M	1, 2
5. Containment Pressure - High	S	R	M	1, 2
6. Steam Generator Pressure - Low	S	R	M	1, 2
7. Steam Generator Water Level - Low	S	R	M	1, 2
8. Axial Flux Offset	S	R	M	1
9.a. Thermal Margin/Low Pressure	S	R	M	1, 2
b. Steam Generator Pressure Difference - High	S	R	M	1, 2
10. Loss of Load	N.A.	N.A.	S/U(1)	N.A.

TABLE 4.3-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
11. Wide Range Logarithmic Neutron Flux Monitor	S	R(5)	S/U(1)	1, 2, 3, 4, 5 and *
12. Reactor Protection System Logic Matrices	N.A.	N.A.	M and S/U(1)	1, 2
13. Reactor Protection System Logic Matrix Relays	N.A.	N.A.	M and S/U (1)	1, 2
14. Reactor Trip Breakers	N.A.	N.A.	M	1, 2 and *

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

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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

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4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

- a. At least once per 31 days by verifying that all penetrations\* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions, except as provided in Table 3.6-1 of Specification 3.6.4.1.
- b. By verifying that each containment air lock is OPERABLE per Specification 3.6.1.3.
- c. By verifying that the equipment hatch is closed and sealed, prior to entering Mode 4 following a shutdown where the equipment hatch was opened, by conducting a Type B test per Appendix J to 10 CFR Part 50.

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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.

## CONTAINMENT SYSTEMS

### CONTAINMENT LEAKAGE

#### LIMITING CONDITION FOR OPERATION

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3.6.1.2 Containment leakage rates shall be limited to:

- a. An overall integrated leakage rate of:
  1.  $\leq L_{air^a}$  (346,000 SCCM), 0.20 percent by weight of the containment air per 24 hours at  $P_a$ , 50 psig, or
  2.  $\leq L_{air^t}$  (61,600 SCCM), 0.058 percent by weight of the containment air per 24 hours at a reduced pressure of  $P_t$ , 25 psig.
- b. A combined leakage rate of  $\leq 0.60 L_a$  (207,600 SCCM), for all penetrations and valves subject to Type B and C tests when pressurized to  $P_a$ .

APPLICABILITY: MODES 1, 2, 3 and 4.

#### ACTION:

With either (a) the measured overall integrated containment leakage rate exceeding  $0.75 L_a$  (259,500 SCCM) or  $0.75 L_t$  (46,200 SCCM), as applicable, or (b) with the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding  $0.60 L_a$ , restore the leakage rate(s) to within the limit(s) prior to increasing the Reactor Coolant System temperature above 200°F.

#### SURVEILLANCE REQUIREMENTS

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

- a. Three Type A tests (Overall Integrated Containment Leakage Rate) shall be conducted at 40 + 10 month intervals during shutdown at either  $P_a$  (50 psig) or at  $P_t$  (25 psig) during each 10-year service period. The third test of each set shall be conducted during the shutdown for the 10-year plant inservice inspection.

## CONTAINMENT SYSTEMS

### 3/4.6.3 IODINE REMOVAL SYSTEM

#### LIMITING CONDITION FOR OPERATION

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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

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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 N510-1975 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 N510-1975 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .

CONTAINMENT SYSTEMS

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  $\geq 95\%$  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 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 filter train flow rate of 20,000 cfm  $\pm 10\%$  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  $\geq 95\%$  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  $\geq 95\%$  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 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.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 filter train at a flow rate of 20,000 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 20,000 cfm  $\pm 10\%$ .
  2. Verifying that the filter train starts on a Containment Isolation test signal.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- 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 N510-1975 while operating the filter train at a flow rate of 20,000 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 N510-1975 while operating the filter train at a flow rate of 20,000 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 N510-1975.

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
61	NA	76Y-1	Refueling Pool Outlet	NA
	NA	293M-1		NA
	NA	293M-1		NA
	NA	293M-1		NA
62	SIAS A	MOV-6579	Containment Heating Outlet	<13
64	NA	238-1	Containment Heating Inlet	NA

(1) Manual or remote manual valve which is closed during plant operation.

(2) May be opened below 300°F to establish shutdown cooling flow.

(3) Containment purge isolation valves will be shut in MODES 1, 2, 3 and 4 per TS 3/4 6.1.7.

\* May be open on an intermittent basis under administrative control.

\*\* Containment purge isolation valves isolation times will only apply for MODES 5 and 6 during which time these valves may be opened. Isolation time is NA for MODES 1, 2, 3 and 4 per TS 3/4 6.1.7 during which time these valves must remain closed.

CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

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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

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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 using sample gases in accordance with manufacturers' recommendations.

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\*During the period from May 15 to July 15, 1983, one hydrogen analyzer may be made inoperable, at any given time, for the purpose of replacing system solenoid valves with environmentally qualified valves. During this time, Specification 3.0.4 is not applicable to this requirement.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DUP when they are tested in-place in accordance with ANSI N510-1975 while operating the filter train at a flow rate of  $2000 \text{ cfm} \pm 10\%$ .
  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 ( $130^\circ\text{C}$ ,  $95\%$  R.H.). The carbon samples not obtained from test canisters shall be prepared by 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  $2000 \text{ cfm} \pm 10\%$  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  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 ( $130^\circ\text{C}$ ,  $95\%$  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  $\geq 90\%$  for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 ( $130^\circ\text{C}$ ,  $95\%$  R.H.) and the samples are prepared

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

by 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE 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 N510-1975 while operating the ventilation system at a flow rate of 2000 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 2000 cfm  $\pm 10\%$ .
  2. Verifying that the filter train starts on a Containment Isolation Test Signal.

PLANT SYSTEMS

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

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- 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.

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS

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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  $\leq 120^{\circ}\text{F}$ .
- 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  $2000 \text{ cfm} \pm 10\%$ .
  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  $2000 \text{ cfm} \pm 10\%$ .
  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 ( $730^{\circ}\text{C}$ , 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by 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.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying a system flow rate of 2000 cfm  $\pm$  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  $\geq$  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  $\geq$  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 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 of 2000 cfm  $\pm$  10%.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- e. 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 ventilation system at a flow rate of  $2000 \text{ cfm} \pm 10\%$ .
  2. Verifying that on a control room high radiation test signal, the system automatically switches into a recirculation mode of operation with flow through the HEPA filter, and charcoal adsorber banks and that the isolation valves close.
- 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 N510-1975 while operating the filter system at a flow rate of  $2000 \text{ cfm} \pm 10\%$ .
- 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 N510-1975 while operating the filter system at a flow rate of  $2000 \text{ cfm} \pm 10\%$ .

## PLANT SYSTEMS

### 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

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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:

PLANT SYSTEMS

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 N510-1975 while operating the filter train at a flow rate of 3000 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 filter train at a flow rate of 3000 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 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 3000 cfm  $\pm 10\%$  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  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R. H.); or

PLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

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2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of  $\geq 90\%$  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 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 3000 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 3000 cfm  $\pm 10\%$ .

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- 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 N510-1975 while operating the filter train at a flow rate of 3000 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 N510-1975 while operating the filter train at a flow rate of 3000 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 N510-1975.

REFUELING OPERATIONS

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  $\geq 99\%$  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  $32,000 \text{ cfm} \pm 10\%$ .
  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  $32,000 \text{ cfm} \pm 10\%$ .
  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  $> 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 ( $130^\circ\text{C}$ ,  $95\%$  R.H.). The carbon samples not obtained from test canisters shall be prepared by 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  $32,000 \text{ cfm} \pm 10\%$  during system operation when tested in accordance with ANSI N510-1975.

REFUELING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

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- 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  $\geq 90\%$  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  $\geq 90\%$  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 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 32,000 cfm  $\pm 10\%$ .



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 66  
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas & Electric Company (the licensee) dated February 24, 1983 as supplemented by letter dated March 22, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2 of Facility Operating License No. DPR-69 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 66, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*for Charles M. Trammell*  
Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: May 5, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 66

FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NO. 50-318

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages as indicated. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

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B 2-7  
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TABLE 2.2-1 (Cont'd)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
4. Pressurizer Pressure - High	$\leq$ 2400 psia	$\leq$ 2400 psia
5. Containment Pressure - High	$\leq$ 4 psig	$\leq$ 4 psig
6. Steam Generator Pressure - Low (2)	$\geq$ 685 psia	$\geq$ 685 psia
7. Steam Generator Water Level - Low	$\geq$ 10 inches below top of feed ring.	$\geq$ 10 inches below top of feed ring.
8. Axial flux offset (3)	Trip setpoint adjusted to not exceed the limit lines of Figure 2.2-1.	Trip setpoint adjusted to not exceed the limit lines of Figure 2.2-1.
9. Thermal Margin/Low Pressure (1.)		
a. Four Reactor Coolant Pumps Operating	Trip setpoint adjusted to not exceed the limit lines of Figures 2.2-2 and 2.2-3.	Trip setpoint adjusted to be not less than the larger of (1) the value calculated from Figures 2.2-2 and 2.2-3 and (2) 1875 psig.
b. Steam Generator Pressure Difference - High (1)	$\leq$ 135 psid	$\leq$ 135 psid
10. Loss of Load	N.A.	N.A.
11. Rate of Change of Power - High (4)	$\leq$ 2.6 decades per minute	$\leq$ 2.6 decades per minute

TABLE NOTATION

- (1) Trip may be bypassed below  $10^{-4}$ % of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is  $\geq 10^{-4}$ % of RATED THERMAL POWER.

TABLE 2.2-1 (Cont'd)

TABLE NOTATIONS (Cont'd)

- (2) Trip may be manually bypassed below 785 psia; bypass shall be automatically removed at or above 785 psia.
- (3) Trip may be bypassed below 15% of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is  $> 15\%$  of RATED THERMAL POWER.
- (4) Trip may be bypassed below  $10^{-4}$  and above 12% of RATED THERMAL POWER.

## LIMITING SAFETY SYSTEM SETTINGS

### BASES

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The Thermal Margin/Low Pressure trip setpoints include allowances for equipment response time, measurement uncertainties, processing error and a further allowance of 40 psia to compensate for the time delay associated with providing effective termination of the occurrence that exhibits the most rapid decrease in margin to the safety limit.

#### Asymmetric Steam Generator Transient Protection Trip Function (ASGTPTF)

The ASGTPTF utilizes steam generator pressure inputs to the TM/LP calculator, which causes a reactor trip when the difference in pressure between the two steam generators exceeds the trip setpoint. The ASGTPTF is designed to provide a reactor trip for those Anticipated Operational Occurrences associated with secondary system malfunctions which result in asymmetric primary loop coolant temperatures. The most limiting event is the loss of load to one steam generator caused by a single Main Steam Isolation Valve closure.

The equipment trip setpoint and allowable values are calculated to account for instrument uncertainties, and will ensure a trip at or before reaching the analysis setpoint.

#### Loss of Load

A Loss of Load trip causes a direct reactor trip when operating above 15% of RATED THERMAL POWER. This trip provides turbine protection, reduces the severity of the ensuing transient and helps avoid the lifting of the main steam line safety valves during the ensuing transient, thus extending the service life of these valves. No credit was taken in the accident analyses for operation of this trip. Its functional capability is required to enhance overall plant equipment service life and reliability.

#### Rate of Change of Power-High

The Rate of Change of Power-High trip is provided to protect the core during startup operations and its use serves as a backup to the administratively enforced startup rate limit. Its trip setpoint does not correspond to a Safety Limit and no credit was taken in the accident analyses for operation of this trip. Its functional capability at the specified trip setting is required to enhance the overall reliability of the Reactor Protection System.

### 3/4.3 INSTRUMENTATION

#### 3/4.3.1 REACTOR PROTECTIVE INSTRUMENTATION

##### LIMITING CONDITION FOR OPERATION

---

3.3.1.1 As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

##### SURVEILLANCE REQUIREMENTS

---

4.3.1.1.1 Each reactor protective instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The logic for the bypasses shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

TABLE 3.3-1

REACTOR PROTECTIVE INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
1. Manual Reactor Trip	2	1	2	1, 2 and *	1
2. Power Level - High	4	2	3(f)	1, 2	2#
3. Reactor Coolant Flow - Low	4/SG	2(a)/SG	3/SG	1, 2 (e)	2#
4. Pressurizer Pressure - High	4	2	3	1, 2	2#
5. Containment Pressure - High	4	2	3	1, 2	2#
6. Steam Generator Pressure - Low	4/SG	2(b)/SG	3/SG	1, 2	2#
7. Steam Generator Water Level - Low	4/SG	2/SG	3/SG	1, 2	2#
8. Axial Flux Offset	4	2(c)	3	1	2#
9. a. Thermal Margin/Low Pressure	4	2(a)	3	1, 2 (e)	2#
b. Steam Generator Pressure Difference - High	4	2(a)	3	1, 2 (e)	2#
10. Loss of Load	4	2(c)	3	1	2#

CALVERT CLIFFS - UNIT 2

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TABLE 3.3-1 (Continued)

ACTION STATEMENTS

- b. Within one hour, all functional units receiving an input from the inoperable channel are also placed in the same condition (either bypassed or tripped, as applicable) as that required by a. above for the inoperable channel.
- c. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 48 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing per Specification 4.3.1.1.

TABLE 3.3-2

REACTOR PROTECTIVE INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	Not Applicable
2. Power Level - High	$\leq 0.40$ seconds*# and $\leq 12.0$ seconds ##
3. Reactor Coolant Flow - Low	$\leq 0.50$ seconds
4. Pressurizer Pressure - High	$\leq 0.90$ seconds
5. Containment Pressure - High	$\leq 0.90$ seconds
6. Steam Generator Pressure - Low	$\leq 0.90$ seconds
7. Steam Generator Water Level - Low	$\leq 0.90$ seconds
8. Axial Flux Offset	$\leq 0.40$ seconds*# and $\leq 12.0$ seconds ##
9.a. Thermal Margin/Low Pressure	$\leq 0.90$ seconds*# and $\leq 12.0$ seconds ##
b. Steam Generator Pressure Difference - High	$\leq 0.90$ seconds
10. Loss of Load	Not Applicable
11. Wide Range Logarithmic Neutron Flux Monitor	Not Applicable

\*Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

#Response time does not include contribution of RTDs.

##RTD response time only. This value is equivalent to the time interval required for the RTDs output to achieve 63.2% of its total change when subjected to a step change in RTD temperature.

TABLE 4.3-1

## REACTOR PROTECTIVE INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.
2. Power Level - High				
a. Nuclear Power	S	D(2),M(3),Q(5)	M	1, 2
b. $\Delta T$ Power	S	D(4),R	M	1
3. Reactor Coolant Flow - Low	S	R	M	1, 2
4. Pressurizer Pressure - High	S	R	M	1, 2
5. Containment Pressure - High	S	R	M	1, 2
6. Steam Generator Pressure - Low	S	R	M	1, 2
7. Steam Generator Water Level - Low	S	R	M	1, 2
8. Axial Flux Offset	S	R	M	1
9.a. Thermal Margin/Low Pressure	S	R	M	1, 2
b. Steam Generator Pressure Difference - High	S	R	M	1, 2
10. Loss of Load	N.A.	N.A.	S/U(1)	N.A.

CALVERT CLIFFS - UNIT 2

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Amendment No. 21, 00

TABLE 4.3-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION SURVEILLANCE REQUIREMENTS.

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
11. Wide Range Logarithmic Neutron Flux Monitor	S	R(5)	S/U(1)	1, 2, 3, 4, 5 and *
12. Reactor Protection System Logic Matrices	N.A.	N.A.	M and S/U(1)	1, 2
13. Reactor Protection System Logic Matrix Relays	N.A.	N.A.	M and S/U (1)	1, 2
14. Reactor Trip Breakers	N.A.	N.A.	M	1, 2 and *

### 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 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 air lock is OPERABLE per Specification 3.6.1.3.
- c. By verifying that the equipment hatch is closed and sealed, prior to entering Mode 4 following a shutdown where the equipment hatch was opened, by conducting a Type B test per Appendix J to 10 CFR Part 50.

---

\*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.

## CONTAINMENT SYSTEMS

### CONTAINMENT LEAKAGE

#### LIMITING CONDITION FOR OPERATION

---

3.6.1.2 Containment leakage rates shall be limited to:

- a. An overall integrated leakage rate of:
  1.  $\leq L_a$  (346,000 SCCM), 0.20 percent by weight of the containment air<sup>a</sup> per 24 hours at  $P_a$ , 50 psig, or
  2.  $\leq L_t$  (44,600 SCCM), 0.042 percent by weight of the containment air<sup>t</sup> per 24 hours at a reduced pressure of  $P_t$ , 25 psig.
- b. A combined leakage rate of  $\leq 0.60 L_a$  (207,600 SCCM) for all penetrations and valves subject to Type B and C tests when pressurized to  $P_a$ .

APPLICABILITY: MODES 1, 2, 3 and 4.

#### ACTION:

With either (a) the measured overall integrated containment leakage rate exceeding  $0.75 L_a$  (259,500 SCCM), or  $0.75 L_t$  (33,400 SCCM), as applicable, or (b) with the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding  $0.60 L_a$ , restore the leakage rate(s) to within the limit(s) prior to increasing the Reactor Coolant System temperature above 200°F.

#### SURVEILLANCE REQUIREMENTS

---

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

- a. Three Type A tests (Overall Integrated Containment Leakage Rate) shall be conducted at 40 ± 10 month intervals during shutdown at either  $P_a$  (50 psig) or at  $P_t$  (25 psig) during each 10-year service period. <sup>a</sup>The third test of each set shall be conducted during the shutdown for the 10-year plant inservice inspection.

## CONTAINMENT SYSTEMS

### 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 N510-1975 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 N510-1975 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .

## CONTAINMENT SYSTEMS

### 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 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 filter train flow rate of 20,000 cfm  $\pm 10\%$  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  $\geq 95\%$  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 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.

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 filter train at a flow rate of 20,000 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 20,000 cfm  $\pm 10\%$ .
  2. Verifying that the filter train starts on a Containment Isolation test signal.

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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- 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 N510-1975 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .
- 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 N510-1975 while operating the filter train at a flow rate of 20,000 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 N510-1975.

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

PENETRATION NO.	ISOLATION CHANNEL	ISOLATION VALVE IDENTIFICATION NO.	FUNCTION	ISOLATION TIME (SECONDS)
61	NA	76Y-1	Refueling Pool Outlet	NA
	NA	293M-1		NA
	NA	293M-1		NA
	NA	293M-1		NA
62	SIAS A	MOV-6579	Containment Heating Outlet	<13
64	NA	238-1	Containment Heating Inlet	NA

(1) Manual or remote manual valve which is closed during plant operation.

(2) May be opened below 300°F to establish shutdown cooling flow.

(3) Containment purge isolation valves will be shut in MODES 1, 2, 3 and 4 per TS 3/4 6.1.7.

\* May be open on an intermittent basis under administrative control.

\*\* Containment purge isolation valves isolation times will only apply for MODES 5 and 6 during which time these valves may be opened. Isolation time is NA for MODES 1, 2, 3 and 4 per IS 3/4 6.1.7 during which time these valves must remain closed.

CONTAINMENT SYSTEMS-

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

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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

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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 using sample gases in accordance with manufacturers' recommendations.

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\*During the period from May 15 to July 15, 1983, one hydrogen analyzer may be made inoperable, at any given time, for the purpose of replacing system solenoid valves with environmentally qualified valves. During this time, Specification 3.0.4 is not applicable to this requirement.

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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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 filter train 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 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 2000 cfm  $\pm 10\%$  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  $\geq 90\%$  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  $\geq 90\%$  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

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

by 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE 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 N510-1975 while operating the ventilation system at a flow rate of 2000 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 2000 cfm  $\pm 10\%$ .
  2. Verifying that the filter train starts on a Containment Isolation Test Signal.

PLANT SYSTEMS

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

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- 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.

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS

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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  $\leq 120^{\circ}\text{F}$ .
- 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  $2000 \text{ cfm} \pm 10\%$ .
  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  $2000 \text{ cfm} \pm 10\%$ .
  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 ( $130^{\circ}\text{C}$ , 95% R.H.). The carbon samples not obtained from test canisters shall be prepared by 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.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying a system flow rate of 2000 cfm  $\pm$  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  $\geq$  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  $\geq$  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 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 of 2000 cfm  $\pm$  10%.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- e. 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 ventilation system at a flow rate of 2000 cfm  $\pm$  10%.
  - 2. Verifying that on a control room high radiation 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.
- 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 N510-1975 while operating the filter system at a flow rate of 2000 cfm  $\pm$  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 N510-1975 while operating the filter system at a flow rate of 2000 cfm  $\pm$  10%.

PLANT SYSTEMS

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

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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

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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:

## 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 N510-1975 while operating the filter train at a flow rate of 3000 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 filter train at a flow rate of 3000 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 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 3000 cfm  $\pm 10\%$  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  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (130°C, 95% R. H.); or

PLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

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2. Verifying within 31 days after removal that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of  $\geq 90\%$  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 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 3000 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 3000 cfm  $\pm 10\%$ .

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- 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 N510-1975 while operating the filter train at a flow rate of 3000 cfm  $\pm 10\%$ .
- 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 N510-1975 while operating the filter train at a flow rate of 3000 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 N510-1975.

## REFUELING OPERATIONS

### 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 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  $32,000 \text{ cfm} \pm 10\%$ .
  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  $32,000 \text{ cfm} \pm 10\%$ .
  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 ( $130^\circ\text{C}$ ,  $95\%$  R.H.). The carbon samples not obtained from test canisters shall be prepared by 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  $32,000 \text{ cfm} \pm 10\%$  during system operation when tested in accordance with ANSI N510-1975.

REFUELING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

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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  $\geq 90\%$  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  $\geq 90\%$  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 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 used for obtaining the carbon sample, the filter train shall be demonstrated OPERABLE by also 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 32,000 cfm  $\pm 10\%$ .