

April 27, 1990

Docket Nos. 50-317  
and 50-318

Mr. G. C. Creel  
Vice President - Nuclear Energy  
Baltimore Gas and Electric Company  
Calvert Cliffs Nuclear Power Plant  
MD Rtes. 2 & 4  
P. O. Box 1535  
Lusby, Maryland 20657

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GPA/PA	OC/LFMB
	CNichols

Dear Mr. Creel:

SUBJECT: ISSUANCE OF AMENDMENTS

Reference: TAC Numbers 75249 (Unit 1) and 75250 (Unit 2)

The Commission has issued the enclosed Amendment No. 142 to Facility Operating License No. DPR-53 and Amendment No. 125 to Facility Operating License No. DPR-69 for the Calvert Cliffs Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications in response to your application transmitted by letters dated August 30, 1989 and January 12, 1990.

These amendments provide surveillance requirements for the laboratory and in-place testing of the charcoal adsorbers and high efficiency particulate adsorber (HEPA) filters included in the following systems: (1) containment iodine removal system, (2) penetration room exhaust air filtration system, (3) control room emergency ventilation system, (4) emergency core cooling system (ECCS) pump room exhaust air filtration system, and (5) spent fuel pool ventilation system. The amendments also clarify the present requirement to verify that the control room emergency ventilation system isolation valves close on a high radiation test signal.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly Federal Register notice.

Sincerely,

/s/

Daniel G. McDonald, Senior Project Manager  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No.142 to DPR-53
2. Amendment No.125 to DPR-69
3. Safety Evaluation

cc: w/enclosures  
See next page

\* See previous concurrence

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NAME	: CVogan	: DMcDonald/Bah	: APH	: RCapra	:	:
DATE	: 4/26/90	: 4/27/90	: 4/4/90	: 4/27/90	:	:

OFFICIAL RECORD COPY  
Document Name: AMEND 75249 AND 75250  
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PDR ADOCK 05000317  
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and 50-318

Mr. G. C. Creel  
Vice President - Nuclear Energy  
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Daniel G. McDonald, Senior Project Manager  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

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2. Amendment No. to DPR-69
3. Safety Evaluation

cc: w/enclosures  
See next page

OFF	: PDI-1	: PDI-1	: OGC	: PDI-1	:	:
NAME	: CVogan	: DMcDonald/Bah	:	: RCapra	:	:
DATE	: 4/2/90	: 4/2	: 4/2/90	:	:	:

OFFICIAL RECORD COPY  
Document Name: AMEND 75249 AND 75250

Mr. G. C. Creel  
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant

cc:

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Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406



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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 142  
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated August 30, 1989 and January 12, 1990, 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:

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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.142 , 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 and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*Donald S. Brickman*

for Robert A. Capra, Director  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 27, 1990



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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 125  
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated August 30, 1989 and January 12, 1990, 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. 125, 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 and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*Donald S. Brinkman*  
for Robert A. Capra, Director  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 27, 1990

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 147 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 125 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages

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## 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

---

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 refueling interval 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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:
1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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.). 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)

---

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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .

- d. At least once per refueling interval 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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.

## CONTAINMENT SYSTEMS

### ELECTRIC HYDROGEN RECOMBINERS - W

#### LIMITING CONDITION FOR OPERATION

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3.6.5.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

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

#### SURVEILLANCE REQUIREMENTS

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4.6.5.2 Each hydrogen recombiner system shall be demonstrated OPERABLE:

- a. At least once per 6 months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to  $\geq 700^{\circ}\text{F}$  within 90 minutes and is maintained for at least 2 hours.
- b. At least once per refueling interval by:
  1. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits.
  2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiners (i.e., loose wiring or structural connections, deposits of foreign materials, etc.)
  3. Verifying during a recombiner system functional test that the heater sheath temperature increase to  $\geq 1200^{\circ}\text{F}$  within 5 hours is maintained for at least 4 hours.
  4. Verifying the integrity of the heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be  $\geq 10,000$  ohms.

## CONTAINMENT SYSTEMS

### 3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

#### LIMITING CONDITION FOR OPERATION

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

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

#### ACTION:

With one containment penetration room exhaust air filter train inoperable, restore the inoperable train to **OPERABLE** status within 7 days or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.6.1 Each containment penetration room exhaust air filter train shall be demonstrated **OPERABLE**:

- a. At least once per 31 days on **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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 2000 cfm  $\pm 10\%$ .

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 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 ( $30^{\circ}\text{C}$ , 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:
1. Verifying within 31 days after removal that a laboratory analysis of a carbon sample demonstrates a removal efficiency of  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 ( $30^{\circ}\text{C}$ , 95% R.H.). 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 verifying that the charcoal adsorbers remove  $\geq 99\%$  of the halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Containment Isolation Test Signal.

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 2000 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 2000 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.

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 provide 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 62 days, on a staggered test basis, by deenergizing the backup control room air conditioner and verifying that the emergency control room air conditioners maintain the air temperature  $\leq 104^{\circ}\text{F}$  for at least 12 hours when in the recirculation mode.
- b. At least once per 31 days by initiation 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 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 ( $30^{\circ}\text{C}$ , 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)

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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:

Verifying within 31 days after removal that a laboratory analysis of a carbon sample demonstrates a removal efficiency of  $\geq$  90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.). 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 both of the isolation valves in each inlet duct and common exhaust duct, and the isolation valve in the toilet area exhaust duct, 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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  $\geq$  99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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:

## 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of  $3000 \text{ cfm} \pm 10\%$ .
  2. Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of  $3000 \text{ cfm} \pm 10$ .
  3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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 ( $30^{\circ}\text{C}$ , 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  $3000 \text{ cfm} \pm 10\%$  during system operation when tested in accordance with ANSI N510-1975.
- c. After every 720 hours of charcoal adsorber operation by:
- Verifying within 31 days after removal that a laboratory analysis of a carbon sample demonstrates a removal efficiency of  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 ( $30^{\circ}\text{C}$ , 95% R.H.). 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.

PLANT 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
  2. Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
  3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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 (30°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 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:

Verifying within 31 days after removal that a laboratory analysis of carbon sample demonstrates a removal efficiency of  $\geq 90\%$  for radioactive methyl iodide when the samples are tested in accordance with ANSI N510-1975 (30°C, 95% R.H.). 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .

## REFUELING OPERATIONS

### SURVEILLANCE REQUIREMENTS (Continued)

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- d. At least once per 18 months by:
  - 1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is  $< 4$  inches Water Gauge while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
  - 2. Verifying that each exhaust fan maintains the spent fuel storage pool area at a measurable negative pressure relative to the outside atmosphere during system operation.
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove  $\geq 99\%$  of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 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.

REFUELING OPERATIONS

SPENT FUEL CASK HANDLING CRANE

LIMITING CONDITION FOR OPERATION

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3.9.13 Crane travel of the spent fuel shipping cask crane shall be restricted to prohibit a spent fuel shipping cask from travel over any area within one shipping cask length of any fuel assembly.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

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4.9.13 Crane interlocks and physical stops which restrict a spent fuel shipping cask from passing over any area within one shipping cask length of any fuel assembly shall be demonstrated OPERABLE within 7 days prior to crane use and at least once per 7 days thereafter during crane operation.

## 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 refueling interval 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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:
- Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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.). 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 20,000 cfm  $\pm 10\%$ .

- d. At least once per refueling interval 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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.

## CONTAINMENT SYSTEMS

### ELECTRIC HYDROGEN RECOMBINERS - W

#### LIMITING CONDITION FOR OPERATION

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3.6.5.2 Two independent containment hydrogen recombiner systems shall be **OPERABLE**.

APPLICABILITY: **MODES 1 and 2.**

ACTION:

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

#### SURVEILLANCE REQUIREMENTS

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4.6.5.2 Each hydrogen recombiner system shall be demonstrated **OPERABLE**:

- a. At least once per 6 months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to  $\geq 700^{\circ}\text{F}$  within 90 minutes and is maintained for at least 2 hours.
- b. At least once per refueling interval by:
  1. Performing a **CHANNEL CALIBRATION** of all recombiner instrumentation and control circuits.
  2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiners (i.e., loose wiring or structural connections, deposits of foreign materials, etc.)
  3. Verifying during a recombiner system functional test that the heater sheath temperature increase to  $\geq 1200^{\circ}\text{F}$  within 5 hours is maintained for at least 4 hours.
  4. Verifying the integrity of the heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be  $\geq 10,000$  ohms.

## CONTAINMENT SYSTEMS

### 3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

#### LIMITING CONDITION FOR OPERATION

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

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

#### ACTION:

With one containment penetration room exhaust air filter train inoperable, restore the inoperable train to **OPERABLE** status within 7 days or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.6.1 Each containment penetration room exhaust air filter train shall be demonstrated **OPERABLE**:

- a. At least once per 31 days on **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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 2000 cfm  $\pm 10\%$ .

## 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 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 (30°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:
- Verifying within 31 days after removal that a laboratory analysis of a carbon sample demonstrates a removal efficiency of  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.). 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 verifying that the charcoal adsorbers remove  $\geq 99\%$  of the halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 2000 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the filter train at a flow rate of 2000 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.

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 provide 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 62 days, on a staggered test basis, by deenergizing the backup control room air conditioner and verifying that the emergency control room air conditioners maintain the air temperature  $\leq 104^{\circ}\text{F}$  for at least 12 hours when in the recirculation mode.
- b. At least once per 31 days by initiation 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 with 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 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 ( $30^{\circ}\text{C}$ , 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)

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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:

Verifying within 31 days after removal that a laboratory analysis of a carbon sample demonstrates a removal efficiency of  $\geq$  90% for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.). 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 both of the isolation valves in each inlet duct and common exhaust duct, and the isolation valve in the toilet area exhaust duct, 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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  $\geq$  99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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:

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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 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 (30°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:
- Verifying within 31 days after removal that a laboratory analysis of a carbon sample demonstrates a removal efficiency of  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.). 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.

PLANT 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 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 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
  2. Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
  3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample 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 (30°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 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:

Verifying within 31 days after removal that a laboratory analysis of carbon sample demonstrates a removal efficiency of  $\geq 90\%$  for radioactive methyl iodide when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.). 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 Regulatory Positions C.5.a and C.5.d of Regulatory Guide Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .

## REFUELING OPERATIONS

### SURVEILLANCE REQUIREMENTS (Continued)

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- d. At least once per 18 months by:
  - 1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is  $< 4$  inches Water Gauge while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
  - 2. Verifying that each exhaust fan maintains the spent fuel storage pool area at a measurable negative pressure relative to the outside atmosphere during system operation.
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 cfm  $\pm 10\%$ .
- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove  $\geq 99\%$  of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52 Revision 2 March 1978 while operating the ventilation system at a flow rate of 32,000 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.

## REFUELING OPERATIONS

### SPENT FUEL CASK HANDLING CRANE

#### LIMITING CONDITION FOR OPERATION

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3.9.13 Crane travel of the spent fuel shipping cask crane shall be restricted to prohibit a spent fuel shipping cask from travel over any area within one shipping cask length of any fuel assembly.

APPLICABILITY: With fuel assemblies in the storage pool.

#### ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.9.13 Crane interlocks and physical stops which restrict a spent fuel shipping cask from passing over any area within one shipping cask length of any fuel assembly shall be demonstrated **OPERABLE** within 7 days prior to crane use and at least once per 7 days thereafter during crane operation.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 142 TO FACILITY OPERATING LICENSE NO. DPR-53  
AND AMENDMENT NO. 125 TO FACILITY OPERATING LICENSE NO. DPR-69  
BALTIMORE GAS AND ELECTRIC COMPANY  
CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated August 30, 1989, supplemented by letter dated January 12, 1990, the Baltimore Gas and Electric Company requested amendments to the Technical Specifications for Calvert Cliffs Unit Nos. 1 and 2. The proposal would change the technical specifications for the following systems:

- (1) containment iodine removal
- (2) penetration room exhaust air filtration
- (3) control room emergency ventilation
- (4) ECCS pump room exhaust air filtration, and
- (5) spent fuel pool ventilation

The proposed changes concern obtaining and analyzing charcoal adsorbent samples, in-place testing of the HEPA filters and charcoal adsorbers, and verification of control room isolation on a high radiation signal.

2.0 EVALUATION

Four changes were proposed as described and evaluated below.

The proposal would change, from 130°C to 30°C, the temperature at which the laboratory analysis of charcoal adsorbent samples is conducted. This applies to each of the systems listed above, except for the containment iodine removal system. The licensee stated that the 30°C test temperature is more indicative of the accident conditions to which these adsorbers would be subjected and, therefore, will yield more realistic test results. The change also will cause the test results to be more conservative than the present test results. As described in Information Notice 86-76, testing of carbon adsorbent samples at 30°C yields lower iodine removal efficiencies than testing at 130°C, thereby increasing the likelihood of the used charcoal in the adsorber (tested charcoal) having to be replaced by unused charcoal because of the test results.

The proposal would change, from two to one, the number of required samples to be obtained for laboratory analysis of charcoal adsorbent. This change applies to all five systems. The licensee stated that the intent was to remove two samples in case one became unstable, but to test only one. Taking one sample will still give a representative sample. Current regulatory guidance and industry practice do not indicate a need for more than one sample.

The proposal would change, for all five systems, the wording of the requirement for in-place testing of the HEPA filters and charcoal adsorbers so that testing is in accordance with Regulatory Guide 1.52, Revision 2, March 1978, Regulatory Positions C.5.a, C.5.c, and C.5.d (as appropriate) rather than, as currently, ANSI N510-1975. Regulatory Positions C.5.a, C.5.c, and C.5.d refer to ANSI N510-1975. The licensee stated that this change is administrative.

The proposal would clarify the present requirement to verify that the control room emergency ventilation system isolation valves close on a high radiation test signal. The clarification would change the wording to require that both of the isolation valves in each inlet duct and common exhaust duct, and the isolation valve in the toilet area exhaust duct, close.

The staff has reviewed the licensee's evaluation and concurs with the licensee's conclusions. The staff has further determined that the proposed changes are consistent with the intent of 10 CFR Part 50, Appendix A, General Design Criteria 19, 41, 42, and 61; NUREG-0800, Standard Review Plan Sections 6.4 and 6.5.1; and the Standard Technical Specifications. Therefore, the staff finds the proposed changes acceptable

### 3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in a requirement with respect to the installation or use of the facilities' components located within the restricted areas as defined in 10 CFR 20. The staff has determined that these amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR Sec 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

4.0 CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

PRINCIPAL CONTRIBUTOR:

C. Nichols

Dated: April 27, 1990