March 13, 1996

Mr. Charles H. Cruse
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M94500) AND UNIT NO. 2 (TAC NO. M94501)

Dear Mr. Cruse:

The Commission has issued the enclosed Amendment No. 212 to Facility Operating License No. DPR-53 and Amendment No. 189 to Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated January 16, 1996.

The amendments revise the TSs to reflect the approval for the use of 10 CFR Part 50, Appendix J, Option B, for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, containment leakage rate test program for Type A tests only.

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

Sincerely,

Original signed by:

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

Docket Nos. 50-317
and 50-318

Enclosures: 1. Amendment No. 212 to DPR-53
2. Amendment No. 189 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 13, 1996

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Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
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3. Safety Evaluation

cc w/encls: See next page

DATED: March 13, 1996

AMENDMENT NO. 212 TO FACILITY OPERATING LICENSE NO. DPR-53-CALVERT CLIFFS UNIT 1
AMENDMENT NO. 189 TO FACILITY OPERATING LICENSE NO. DPR-69-CALVERT CLIFFS UNIT 2

Docket File
PUBLIC
PDI-1 Reading
S. Varga, 14/E/4
J. Zwolinski, 14/H/3
L. Marsh
S. Little
D. McDonald
OGC
D. Hagan, T-4 A43
C. Liang, 8/E/23
G. Hill (4), T-5 C3
C. Grimes, 11/E/22
J. Pulsipher
ACRS
OPA
OC/LFDCB
PD plant-specific file
C. Cowgill, Region I

cc: Plant Service list

270082

DF01

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 212
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 January 16, 1996, 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. 212, 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

for Ledyard B. Marsh, 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: March 13, 1996

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 189
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 January 6, 1996, 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. 189, 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

for Ledyard B. Marsh, 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: March 13, 1996

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 212 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 189 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 6-2	3/4 6-2
3/4 6-3	3/4 6-3
3/4 6-4	---
3/4 6-5 through 3/4 6-10	3/4 6-4 through 3/4 6-9*
3/4 6-11	3/4 6-10
3/4 6-12 through 3/4 6-29	3/4 6-11 through 3/4 6-28*
6-31	6-31
---	6-32
B 3/4 6-1	B 3/4 6-1
B 3/4 6-2	B 3/4 6-2

Remove Pages	Insert Pages
3/4 6-2	3/4 6-2
3/4 6-3	3/4 6-3
3/4 6-4	---
3/4 6-5 through 3/4 6-9	3/4 6-4 through 3/4 6-8*
3/4 6-10	3/4 6-9
3/4 6-11 through 3/4 6-25	3/4 6-10 through 3/4 6-24*
---	6-32
B 3/4 6-1	B 3/4 6-1
B 3/4 6-2	B 3/4 6-2

*Indicates rollover pages.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.1 PRIMARY CONTAINMENT

Containment Leakage

LIMITING CONDITION FOR OPERATION

3.6.1.2 Containment leakage rates shall be limited to:

a. A maximum allowable containment leakage rate, L_a, as specified in Specification 6.19, "Containment Leakage Rate Testing Program."

b. A combined leakage rate of $\leq$ 0.50 L_a (173,000 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 the acceptance criteria specified in the Containment Leakage Rate Testing Program, or (b) with the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding 0.50 L_a, restore the overall integrated containment leakage rate to within the acceptance criteria specified in the Containment Leakage Rate Testing Program, and the combined leakage rate for all penetrations and valves subject to Type B and C tests to less than or equal to 0.50 L_a 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, methods and provisions specified in 10 CFR Part 50, Appendix J:

a. Perform required visual examinations and Type A testing in accordance with the Containment Leakage Rate Testing Program.

SURVEILLANCE REQUIREMENTS (Continued)

b. Type B and C tests shall be conducted with gas at P_a (50 psig) at intervals of 24 months except for tests involving air locks.*

c. Air locks shall be tested and demonstrated **OPERABLE** per Surveillance Requirement 4.6.1.3.

d. All Type B and C test leakage rates shall be calculated using observed data converted to absolute values.

e. Containment purge isolation valves shall be demonstrated **OPERABLE** any time upon entering **MODE** 5 from power operation modes, unless the last surveillance test has been performed within the past six months or any time after being opened and prior to entering **MODE** 4 from shutdown modes by verifying that when the measured leakage rate is added to the leakage rates determined pursuant to Technical Specification 4.6.1.2.b for all other Type B or C penetrations, the combined leakage rate is less than or equal to 0.50 L_a (173,000 SCCM). The leakage rate for the containment purge isolation valves shall also be compared to the previously measured leakage rate to detect excessive valve degradation.

f. The containment purge isolation valve seals shall be replaced with new seals at a frequency to ensure no individual seal remains in service greater than 2 consecutive fuel reload cycles.

* Exemption to 10 CFR Part 50, Appendix J.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Containment Air Locks

LIMITING CONDITION FOR OPERATION

3.6.1.3 Each containment air lock shall be **OPERABLE** with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and

b. An overall air lock leakage rate of $\leq$ 0.05 L_a (17,300 SCCM) at P_a, 50 psig.

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

ACTION:

a. With an air lock inoperable, except as a result of an inoperable door gasket, restore the air lock 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.

b. With an air lock inoperable due to an inoperable door gasket:

1. Maintain the remaining door of the affected air lock closed and sealed, and

2. Restore the air lock 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

4.6.1.3 Each containment air lock shall be demonstrated **OPERABLE**:

a.* After each opening, except when the air lock is being used for multiple entries, then at least once per 72 hours by verifying that the seal leakage is < 0.0002 L_a (69.2 SCCM) as determined by precision flow measurement when the volume between the door seals is pressurized to a constant pressure of 15 psig,

---

* Exemption to 10 CFR Part 50, Appendix J.

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 6 months by conducting an overall air lock leakage test at P_a (50 psig) and by verifying that the overall air lock leakage rate is within its limit, and

c. At least once per 6 months by verifying that only one door in each air lock can be opened at a time.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Internal Pressure

LIMITING CONDITION FOR OPERATION

3.6.1.4 Primary containment internal pressure shall be maintained between -1.0 and 1.8 psig.

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

ACTION: With the containment internal pressure outside of the limits above, restore the internal pressure to within the limits within 1 hour or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 The primary containment internal pressure shall be determined to be within the limits at least once per 12 hours.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Air Temperature

LIMITING CONDITION FOR OPERATION

3.6.1.5 Primary containment average air temperature shall not exceed 120°F.

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

ACTION: With the containment average air temperature > 120°F, reduce the average air temperature to within the limit within 8 hours, or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5 The primary containment average air temperature shall be the arithmetical average of the temperatures at the following locations and shall be determined at least once per 24 hours:

Location

a. Containment Dome

b. Containment Reactor Cavity

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Containment Structural Integrity

LIMITING CONDITION FOR OPERATION

3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.

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

ACTION:

a. With the containment structure exhibiting evidence of possible abnormal degradation per Specification 4.6.1.6.1, perform an engineering evaluation demonstrating the ability of the containment structure to continue to perform its design function. If continued containment integrity cannot be assured by engineering evaluation within 90 days of the surveillance test, be in **COLD SHUTDOWN** within 36 hours. The requirements of Specification 3.0.4 are not applicable.

b. With the structural integrity of the containment not conforming at a level consistent with the acceptance criteria of Specification 4.6.1.6.2 or 4.6.1.6.3, restore structural integrity or complete an engineering evaluation that assures structural integrity prior to increasing Reactor Coolant System Temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.6.1 Containment Tendons. The containment tendons' structural integrity shall be demonstrated at five year intervals. The tendons' structural integrity shall be demonstrated by:

a. Determining that for a representative sample of at least 9 tendons (3 dome, 3 vertical, and 3 hoop), each tendon has a normalized lift-off force equalling or exceeding its lower limit expected range for the time of the test (see Figures 3.6.1-1, 3.6.1-2, and 3.6.1-3). If the normalized lift-off force of any one tendon in a group lies between the lower limit expected range and the lower bound individual, an adjacent tendon on each side shall be checked for lift-off force. If both of these tendons are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. If either of the

SURVEILLANCE REQUIREMENTS (Continued)

adjacent tendons is found unacceptable, it shall be considered as evidence of possible abnormal degradation of the containment structure. In addition, more than one unacceptable tendon out of those selected for surveillance (from all three tendon groups) shall be considered as evidence of possible abnormal degradation of the containment structure.

If the normalized lift-off force of any single tendon lies below the lower bound individual, the occurrence should be considered as evidence of possible abnormal degradation of the containment structure.

In addition, determining that the average of the normalized lift-off forces for each sample population (hoop, vertical, dome) is equal to or greater than the required average prestress level; 536 kips for hoop tendons, 622 kips for vertical tendons, and 555 kips for dome tendons (reference Figures 3.6.1-1, 3.6.1-2, and 3.6.1-3). If the average is below the required average prestress force, it shall be considered as evidence of possible abnormal degradation of the containment structure.

b. Removing one wire from each of a dome, vertical and hoop tendon checked for lift-off force, and determining over the entire length of the wire:

   1. The extent of corrosion, cracks, or other damage. The presence of abnormal corrosion, cracks, or other damage shall be considered evidence of possible abnormal degradation of the containment structure.

   2. A minimum tensile strength value of 240 Ksi (guaranteed ultimate strength of the tendon material) for at least three wire samples (one from each end and one at mid-length) cut from each removed wire. Failure of any one of the wire samples to meet the minimum tensile strength test is evidence of possible abnormal degradation of the containment structure.

c. Perform a chemical analysis to detect changes in the chemical properties of the sheath filler grease. Any unusual changes in physical appearance or chemical properties that could adversely affect the ability of the filler grease to adhere to the tendon wires or otherwise inhibit corrosion shall be reported to the Commission pursuant to Specification 6.9.2 within the next 30 days.

SURVEILLANCE REQUIREMENTS (Continued)

4.6.1.6.2 End Anchorages and Adjacent Concrete Surfaces. The structural integrity of the end anchorages and adjacent concrete surfaces shall be demonstrated by determining through inspection of a representative sample of tendons (reference Specification 4.6.1.6.1) that no apparent changes have occurred in the visual appearance of the end anchorages or their adjacent concrete exterior surfaces. Also, inspections of the pre-selected concrete crack patterns adjacent to end anchorages shall be performed during the Type A containment leakage rate tests (reference Specification 4.6.1.2) while the containment is at its maximum test pressure.

4.6.1.6.3 Containment Surfaces. The exposed accessible interior and exterior surfaces of the containment, including the liner plate shall be visually inspected in accordance with the Containment Leakage Rate Testing Program (reference Specification 4.6.1.2).

4.6.1.6.4 Reports. Any abnormal degradation of the containment structure detected during the above required tests and inspections shall be reported to the Commission pursuant to Specification 6.9.2 within the next 30 days. This report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedures, the tolerances on cracking, and the corrective actions taken.

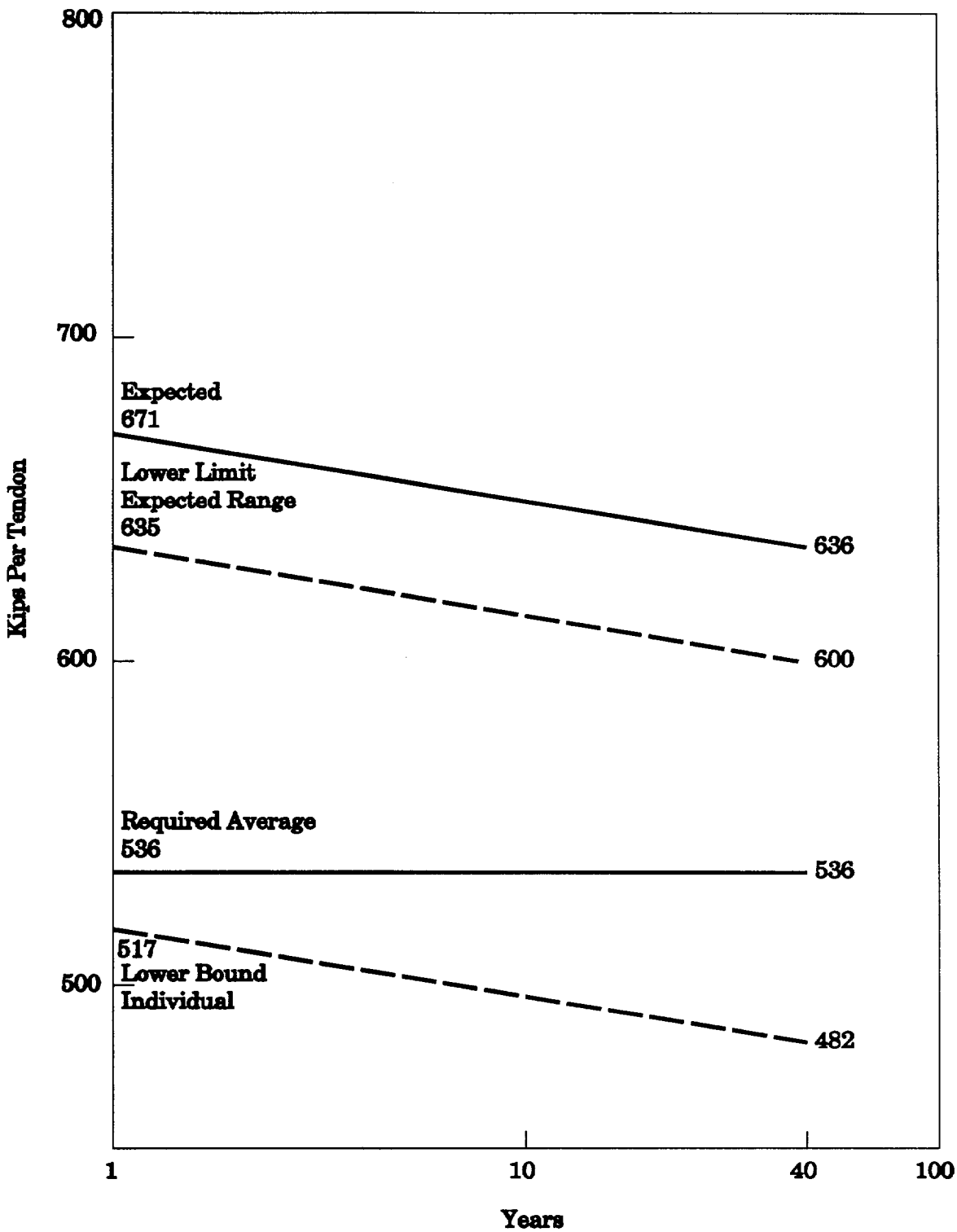

FIGURE 3.6.1-1

NORMALIZED PRESTRESS HOOP TENDONS

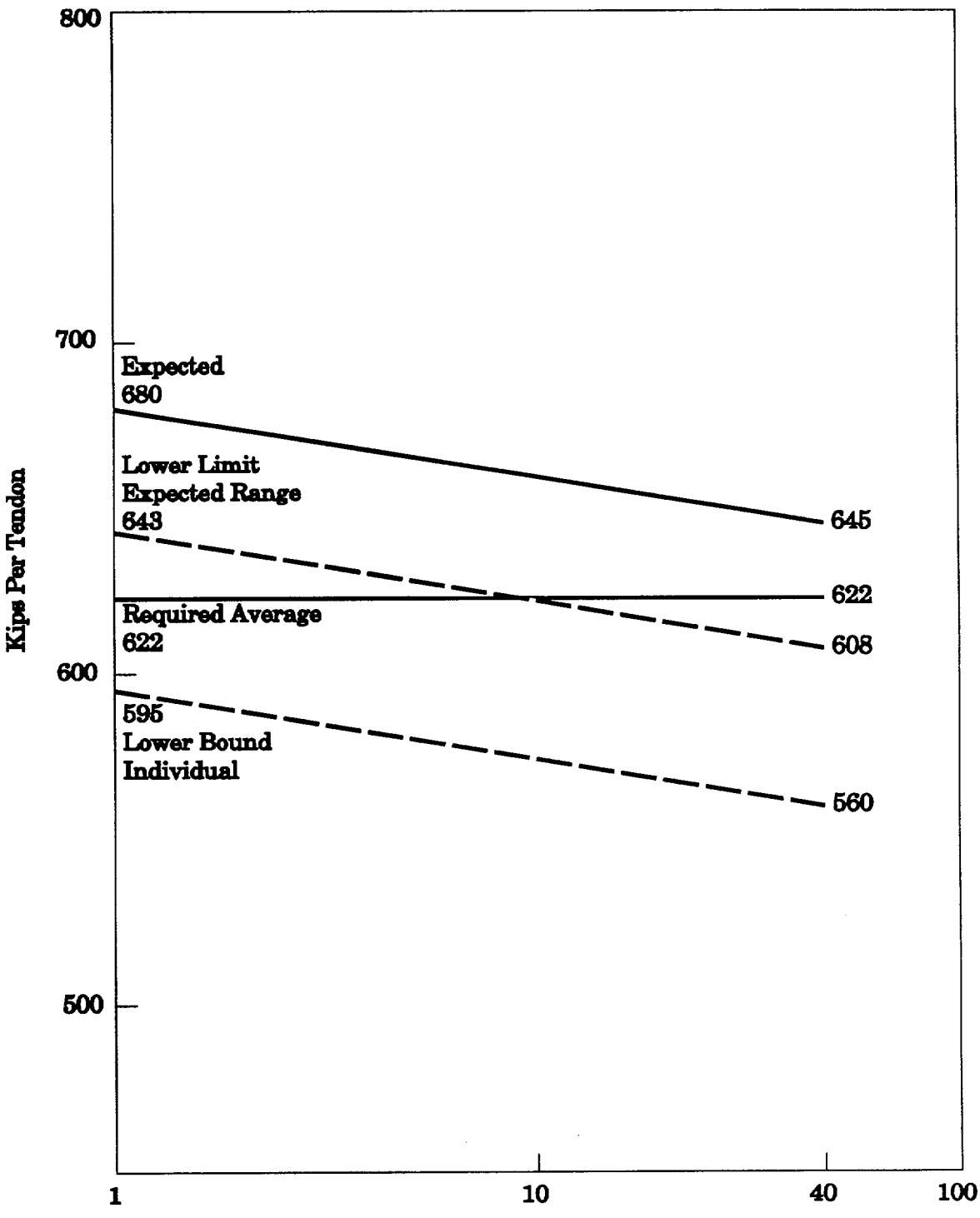

FIGURE 3.6.1-2

NORMALIZED PRESTRESS VERTICAL TENDONS

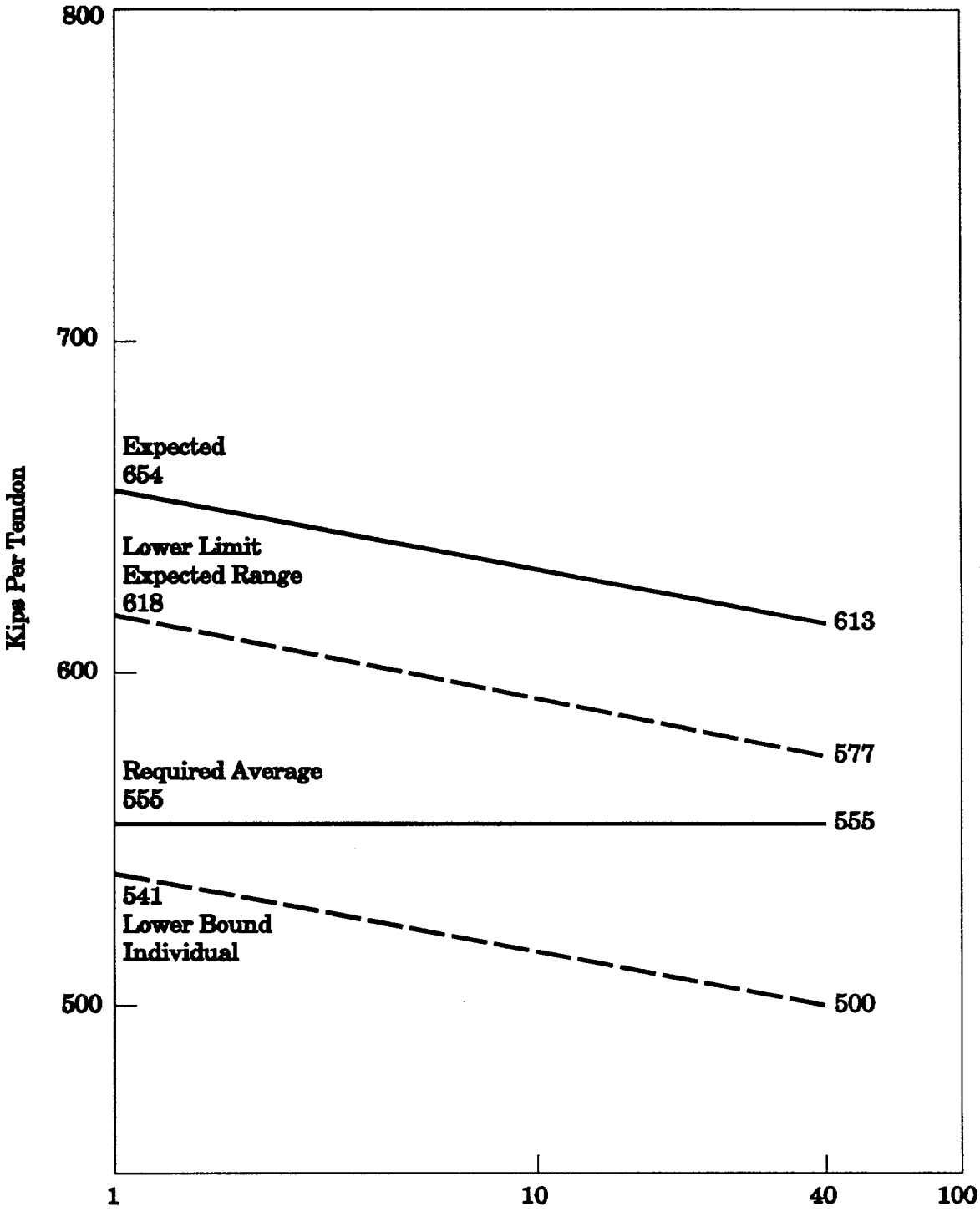

FIGURE 3.6.1-3

NORMALIZED PRESTRESS DOME TENDONS

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Containment Purge System

LIMITING CONDITION FOR OPERATION

3.6.1.7 The containment purge supply and exhaust isolation valves shall be closed by isolating air to the air operator and maintaining the solenoid air supply valve de-energized.

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

ACTION:

a. With one containment purge supply and/or one exhaust isolation valve open, close the open valve(s) within one hour or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

b. With one containment purge supply and/or one exhaust isolation valve inoperable due to high leakage, repair the valve(s) within 24 hours or be in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.7 The 48-inch containment purge supply and exhaust isolation valves shall be determined closed at least once per 31 days, by verifying that power to the solenoid valve is removed.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

Containment Spray System

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Spray Systems shall be **OPERABLE** with each spray system capable of taking suction from the RWT on a Containment Spray Actuation Signal and Safety Injection Actuation Signal and automatically transferring suction to the containment sump on a Recirculation Actuation Signal. Each spray system flow path from the containment sump shall be via an **OPERABLE** shutdown cooling heat exchanger.

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

ACTION: With one Containment Spray System inoperable, restore the inoperable spray system to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Spray System shall be demonstrated **OPERABLE**:

a. At least once per 31 days by:

1. Verifying that upon a Recirculation Actuation Test Signal, the containment sump isolation valves open and that a recirculation mode flow path via an **OPERABLE** shutdown cooling heat exchanger is established.

2. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed or otherwise secured in position is positioned to take suction from the RWT on a Containment Pressure-High test signal.

b. At least once per **REFUELING INTERVAL**, during shutdown, by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on the appropriate ESFAS test signal.

2. Verifying that each spray pump starts automatically on the appropriate ESFAS test signal.

---

* With pressurizer pressure $\geq$ 1750 psia.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

Containment Cooling System

LIMITING CONDITION FOR OPERATION

3.6.2.2 Two independent groups of containment air recirculation and cooling units shall be **OPERABLE** with two units to each group.

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

ACTION:

a. With one group of required containment air recirculation and cooling units inoperable and both Containment Spray Systems **OPERABLE**, restore the inoperable group of air recirculation and cooling units to **OPERABLE** status within 7 days or be in at least **HOT SHUTDOWN** within 12 hours.

b. With three required containment air recirculation and cooling units inoperable and both Containment Spray Systems **OPERABLE**, restore at least one required air recirculation and cooling unit to **OPERABLE** status within 8 hours or be in at least **HOT SHUTDOWN** within 12 hours. Restore both above required groups of containment air recirculation and cooling units to **OPERABLE** status within 7 days or be in at least **HOT SHUTDOWN** within 12 hours.

c. With one group of required containment air recirculation and cooling units inoperable and one Containment Spray System inoperable, restore the inoperable Containment Spray System to **OPERABLE** status within 72 hours or be in at least **HOT SHUTDOWN** within 12 hours. Restore the inoperable group of containment air recirculation and cooling units to **OPERABLE** status within 7 days of initial loss or be in at least **HOT SHUTDOWN** within 12 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.2 Each containment air recirculation and cooling unit shall be demonstrated **OPERABLE**:

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

1. Starting each unit from the control room.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that each unit operates for at least 15 minutes.

3. Verifying a cooling water flow rate of $\geq$ 2000 gpm to each cooling unit when the full flow service water outlet valves are fully open.

b. At least once per **REFUELING INTERVAL** by verifying that each unit starts automatically on the appropriate ESFAS test signal.

3/4.6 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 **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%.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, 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.).

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

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

Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, 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.).

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 ≥ 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 ± 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 ± 10%.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the filter train starts on the appropriate ESFAS test signal.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove $\geq$ 99% of the DOP when they are tested in place in accordance with 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.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.4 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.4.1 Each containment isolation valve shall be **OPERABLE.*** #

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

ACTION: With one or more of the isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to **OPERABLE** status within 4 hours, or

b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate the affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or

d. Be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

e. The provisions of Specification 3.0.4 are not applicable provided that the affected penetration is isolated.

SURVEILLANCE REQUIREMENTS

4.6.4.1.1 Each containment isolation valve shall be demonstrated **OPERABLE**# prior to returning the valve to service after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit by performance of a cycling test and verification of isolation time.

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* Valves that are normally closed may be opened on an intermittent basis under administrative control.

\# Containment purge isolation valves isolation times will only apply in **MODE** 6 when the valves are required to be **OPERABLE** and they are open. Isolation times for containment purge isolation valves is NA for **MODES** 1, 2, 3 and 4 per Technical Specification 3/4 6.1.7, during which time these valves must remain closed.

SURVEILLANCE REQUIREMENTS (Continued)

4.6.4.1.2 Each containment isolation valve shall be demonstrated **OPERABLE** during the **COLD SHUTDOWN** or **REFUELING MODE** at least once per **REFUELING INTERVAL** by:

a. Verifying that on each containment isolation Channel A or Channel B test signal, each required isolation valve actuates to its isolation position.

b. Verifying that on each Containment Radiation-High Test Channel A or Channel B test signal, both required containment purge valves actuate to their isolation position.

c. Verifying that on each Safety Injection Actuation Channel A or Channel B test signal, each required isolation valve actuates to its isolation position.

4.6.4.1.3 The isolation time of each power-operated or automatic containment isolation valve shall be determined to be within its limit when tested pursuant to Technical Specification 4.0.5.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

Hydrogen Analyzers

LIMITING CONDITION FOR OPERATION

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

APPLICABILITY: **MODES** 1 and 2.

ACTION:

a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to **OPERABLE** status within 30 days or:

   1. Verify containment atmosphere grab sampling capability and prepare and submit a special report to the Commission pursuant to Specification 6.9.2 within the following 30 days, outlining the **ACTION** taken, the cause for the inoperability, and the plans and schedule for restoring the system to **OPERABLE** status, or

   2. Be in at least **HOT STANDBY** within the next 6 hours.

b. With both hydrogen analyzers inoperable, restore at least one inoperable analyzer to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours.

c. Specification 3.0.4 is not applicable to this requirement.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 Each hydrogen analyzer shall be demonstrated **OPERABLE** at least bi-weekly on a **STAGGERED TEST BASIS** by drawing a sample from the Waste Gas System through the hydrogen analyzer.

4.6.5.1.2 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.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

Electric Hydrogen Recombiners - W

LIMITING CONDITION FOR OPERATION

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

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°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°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.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

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

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

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

SURVEILLANCE REQUIREMENTS

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

a. At least once per 31 days on **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%.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the HEPA filter banks remove ≥ 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 ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.).

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

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

Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.).

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 ≥ 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 ± 10%.

SURVEILLANCE REQUIREMENTS (Continued)

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 ± 10%.

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

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with 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 ± 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 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 ± 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N510 1975.

6.17.2 Licensee initiated changes to the **ODCM**:

a. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made effective. This submittal shall contain:

1. Sufficient information to support the rationale for the change. Information submitted should consist of a package of those pages of the **ODCM** to be changed with each page numbered and provided with a change number and/or change date together with appropriate analyses or evaluations justifying the change(s);

2. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations; and

3. Documentation of the fact that the change has been reviewed and found acceptable by the POSRC.

b. Shall become effective upon review by the POSRC and approval of the Plant General Manager.

6.18 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS

6.18.1 Licensee initiated major changes to the Radioactive Waste Systems (liquid, gaseous and solid) shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the modification to the waste system is completed. The discussion of each change shall contain:

a. A description of the equipment, components and processes involved.

b. Documentation of the fact that the change including the safety analysis was reviewed and found acceptable by the POSRC.

6.19 CONTAINMENT LEAKAGE RATE TESTING PROGRAM

A program shall be established to implement the leakage testing of the containment as required by 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, as modified by approved exceptions.

The peak calculated containment internal pressure for the design basis loss-of-coolant accident, P_a, is 49.4 psig. The containment design pressure is 50 psig.

The maximum allowable containment leakage rate, L_a, shall be 0.20 percent of containment air weight per day at P_a.

Containment leakage rate acceptance criterion is $\leq$ 1.0 L_a. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria is $\leq$ 0.75 L_a for Type A tests.

The provisions of Specification 4.0.2 do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program.

The provisions of Specification 4.0.3 are applicable to the Containment Leakage Rate Testing Program.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 **CONTAINMENT INTEGRITY**

In **MODES** 1, 2, 3, and 4, primary **CONTAINMENT INTEGRITY** ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the **SITE BOUNDARY** radiation doses to within the limits of 10 CFR Part 100 during accident conditions. In **MODES** 5 and 6, the probability and consequences of these events are reduced because of the Reactor Coolant System (RCS) pressure and temperature limitations of these modes, by preventing operations which could lead to a need for containment isolation, and by providing containment isolation through penetration closure.

3/4.6.1.2 Containment Leakage

Maintaining the containment **OPERABLE** requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program for Type A tests, and 10 CFR Part 50, Appendix J, Option A for Type B and C tests. As-left leakage prior to the first startup after performing a required leakage test is required to be $\leq 0.75\ L_a$ for overall Type A leakage. At all other times between required leakage rate tests, the acceptance criteria is based on an overall Type A leakage limit of $\leq 1.0\ L_a$. At $\leq 1.0\ L_a$ the offsite dose consequences are bounded by the assumptions of the safety analysis. The frequency of Type A testing is specified in the Containment Leakage Rate Testing Program.

The surveillance testing for measuring leakage rates are consistent with the requirements of 10 CFR Part 50, Appendix J, Option B for Type A tests. For Type B and C testing, the allowable leakage rate has been proportionately reduced, as recommended in Generic Letter 91-04, to account for an extended surveillance schedule of 24 months + 25% (per Specification 4.0.2). This is an exception from 10 CFR Part 50, Appendix J.

3/4.6.1.3 Containment Air Locks

The limitations on closure and leak rate for the containment air locks are required to meet the restrictions on **CONTAINMENT INTEGRITY** and containment leak rate. Surveillance testing of the air lock seals provides assurance that the overall air lock leakage will not become excessive due to seal damage during the intervals between air lock leakage tests.

3/4.6.1.4 Internal Pressure

The limitations on containment internal pressure ensure that 1) the containment structure is prevented from exceeding it design negative pressure differential with respect to the outside atmosphere of 3.0 psig and 2) the containment peak pressure does not exceed the design pressure of 50 psig during LOCA or steam line break conditions.

The maximum peak pressure expected to be obtained from a LOCA event is 47.6 psig assuming an initial containment pressure of 14.7 psia. The limit of 1.8 psig for initial positive containment pressure will limit the total pressure to 49.4 psig which is less than the design pressure and is consistent with the accident analyses. The maximum peak pressure expected to be obtained from a steam line break event is 49.2 psig assuming an initial containment pressure of 16.5 psia (1.8 psig).

3/4.6.1.5 Air Temperature

The limitation on containment average air temperature ensures that the containment peak air temperature does not exceed the design temperature of 276°F during LOCA conditions. The containment temperature limit is consistent with the accident analyses.

3/4.6.1.6 Containment Structural Integrity

The limitation ensures that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to ensure that the containment will withstand the maximum pressure of 47.6 psig in the event of a LOCA. The measurement of containment tendon lift off force, the visual and metallurgical examination of tendons, anchorages and liner and the Type A leakage tests are sufficient to demonstrate this capability.

The surveillance requirements for demonstrating the containment's structural integrity are consistent with the intent of the recommendations of Regulatory Guide 1.35 "Inservice Surveillance of Ungrouted Tendons in Prestressed Concrete Containment Structures", January 1976.

The end anchorage concrete exterior surfaces are checked visually for indications of abnormal material behavior during tendon surveillance. Inspections of pre-selected concrete crack patterns are performed during the Type A containment leakage rate tests, consistent with the Structural Integrity Test.

Visual inspections of the accessible interior and exterior surfaces of the containment are performed to allow for early uncovering of evidence of structural deterioration. The frequency of these inspections is in agreement with Regulatory Guide 1.163, dated September 1995.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.1 PRIMARY CONTAINMENT

Containment Leakage

LIMITING CONDITION FOR OPERATION

3.6.1.2 Containment leakage rates shall be limited to:

a. A maximum allowable containment leakage rate, L_a, as specified in Specification 6.19, "Containment Leakage Rate Testing Program."

b. A combined leakage rate of $\leq$ 0.50 L_a (173,000 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 the acceptance criteria specified in the Containment Leakage Rate Testing Program, or (b) with the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding 0.50 L_a, restore the overall integrated containment leakage rate to within the acceptance criteria specified in the Containment Leakage Rate Testing Program, and the combined leakage rate for all penetrations and valves subject to Type B and C tests to less than or equal to 0.50 L_a 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, methods and provisions specified in 10 CFR Part 50, Appendix J:

a. Perform required visual examinations and Type A testing in accordance with the Containment Leakage Rate Testing Program.

SURVEILLANCE REQUIREMENTS (Continued)

b. Type B and C tests shall be conducted with gas at P_a (50 psig) at intervals of 24 months except for tests involving air locks.*

c. Air locks shall be tested and demonstrated **OPERABLE** per Surveillance Requirement 4.6.1.3.

d. All Type B and C test leakage rates shall be calculated using observed data converted to absolute values.

e. Containment purge isolation valves shall be demonstrated **OPERABLE** any time upon entering **MODE** 5 from **POWER OPERATION MODES**, unless the last surveillance test has been performed within the past 6 months or any time after being opened and prior to entering **MODE** 4 from shutdown modes by verifying that when the measured leakage rate is added to the leakage rates determined pursuant to Technical Specification 4.6.1.2.b for all other Type B or C penetrations, the combined leakage rate is less than or equal to 0.50 L_a (173,000 SCCM). The leakage rate for the containment purge isolation valves shall also be compared to the previously measured leakage rate to detect excessive valve degradation.

f. The containment purge isolation valve seals shall be replaced with new seals at a frequency to ensure no individual seal remains in service greater than 2 consecutive fuel reload cycles.

* Exemption to 10 CFR Part 50, Appendix J.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.1 PRIMARY CONTAINMENT

Containment Air Locks

LIMITING CONDITION FOR OPERATION

3.6.1.3 Each containment air lock shall be **OPERABLE** with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and

b. An overall air lock leakage rate of $\leq$ 0.05 L_a (17,300 SCCM) at P_a, 50 psig.

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

ACTION:

a. With an air lock inoperable, except as a result of an inoperable door gasket, restore the air lock 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.

b. With an air lock inoperable due to an inoperable door gasket:

1. Maintain the remaining door of the affected air lock closed and sealed, and

2. Restore the air lock 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

4.6.1.3 Each containment air lock shall be demonstrated **OPERABLE**:

a.* After each opening, except when the air lock is being used for multiple entries, then at least once per 72 hours by verifying that the seal leakage is < 0.0002 L_a (69.2 SCCM) as determined by precision flow measurement when the volume between the door seals is pressurized to a constant pressure of 15 psig.

* Exemption to 10 CFR Part 50, Appendix J.

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 6 months by conducting an overall air lock leakage test at P_a (50 psig) and by verifying that the overall air lock leakage rate is within its limit, and

c. At least once per 6 months by verifying that only one door in each air lock can be opened at a time.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Internal Pressure

LIMITING CONDITION FOR OPERATION

3.6.1.4 Primary containment internal pressure shall be maintained between -1.0 and 1.8 psig.

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

ACTION: With the containment internal pressure outside of the limits above, restore the internal pressure to within the limits within 1 hour or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 The primary containment internal pressure shall be determined to be within the limits at least once per 12 hours.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Air Temperature

LIMITING CONDITION FOR OPERATION

3.6.1.5 Primary containment average air temperature shall not exceed 120°F.

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

ACTION: With the containment average air temperature > 120°F, reduce the average air temperature to within the limit within 8 hours, or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5 The primary containment average air temperature shall be the arithmetical average of the temperatures at the following locations and shall be determined at least once per 24 hours:

Location

a. Containment Dome

b. Containment Reactor Cavity

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

Containment Structural Integrity

LIMITING CONDITION FOR OPERATION

3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.

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

ACTION: With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.6.1 Containment Tendons. The containment tendons' structural integrity shall be demonstrated at the end of one, three and five years following the initial containment structural integrity test and at five year intervals thereafter. The tendons' structural integrity shall be demonstrated by a visual examination (to the extent practical and without dismantling load bearing components of the anchorage) of a representative sample of at least 21 tendons (6 dome, 5 vertical, and 10 hoop) and verifying no abnormal degradation. Unless there is evidence of abnormal degradation of the containment structure during the first three tests of the tendons, the number of tendons examined during subsequent tests may be reduced to a representative sample of at least 9 tendons (3 dome, 3 vertical and 3 hoop).

4.6.1.6.2 End Anchorages and Adjacent Concrete Surfaces. The structural integrity of the end anchorages and adjacent concrete surfaces shall be demonstrated by determining through inspection of a representative sample of tendons (reference Specification 4.6.1.6.1) that no apparent changes have occurred in the visual appearance of the end anchorages or their adjacent concrete exterior surfaces. Also, inspections of the pre-selected concrete crack patterns adjacent to end anchorages shall be performed during the Type A containment leakage rate tests (reference Specification 4.6.1.2) while the containment is at its maximum test pressure.

SURVEILLANCE REQUIREMENTS (Continued)

4.6.1.6.3 Containment Surfaces. The exposed accessible interior and exterior surfaces of the containment, including the liner plate shall be visually inspected in accordance with the Containment Leakage Rate Testing Program (reference Specification 4.6.1.2).

4.6.1.6.4 Reports. Any abnormal degradation of the containment structure detected during the above required tests and inspections shall be reported to the Commission pursuant to Specification 6.9.2 within the next 30 days. This report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedures, the tolerances on cracking, and the corrective actions taken.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.1 PRIMARY CONTAINMENT

Containment Purge System

LIMITING CONDITION FOR OPERATION

3.6.1.7 The containment purge supply and exhaust isolation valves shall be closed by isolating air to the air operator and maintaining the solenoid air supply valve deenergized.

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

ACTION:

a. With one containment purge supply and/or one exhaust isolation valve open, close the open valve(s) within one hour or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

b. With one containment purge supply and/or exhaust isolation valve inoperable due to high leakage, repair the valve(s) within 24 hours or be in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.7 The 48-inch containment purge supply and exhaust isolation valves shall be determined closed at least once per 31 days, by verifying that power to the solenoid valve is removed.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

Containment Spray System

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Spray Systems shall be **OPERABLE** with each spray system capable of taking suction from the RWT on a Containment Spray Actuation Signal and Safety Injection Actuation Signal and automatically transferring suction to the containment sump on a Recirculation Actuation Signal. Each spray system flow path from the containment sump shall be via an **OPERABLE** shutdown cooling heat exchanger.

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

ACTION: With one Containment Spray System inoperable, restore the inoperable spray system to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Spray System shall be demonstrated **OPERABLE**:

a. At least once per 31 days by:

1. Verifying that upon a Recirculation Actuation Test Signal, the containment sump isolation valves open and that a recirculation mode flow path via an **OPERABLE** shutdown cooling heat exchanger is established.

2. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed or otherwise secured in position is positioned to take suction from the RWT on a Containment Pressure-High test signal.

b. At least once per **REFUELING INTERVAL**, during shutdown, by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on the appropriate ESFAS test signal.

2. Verifying that each spray pump starts automatically on the appropriate ESFAS test signal.

* With pressurizer pressure $\geq$ 1750 psia.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

Containment Cooling System

LIMITING CONDITION FOR OPERATION

3.6.2.2 Two independent groups of containment air recirculation and cooling units shall be **OPERABLE** with two units to each group.

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

ACTION:

a. With one group of required containment air recirculation and cooling units inoperable and both Containment Spray Systems **OPERABLE**, restore the inoperable group of air recirculation and cooling units to **OPERABLE** status within 7 days or be in at least **HOT SHUTDOWN** within 12 hours.

b. With three required containment air recirculation and cooling units inoperable and both Containment Spray Systems **OPERABLE**, restore at least one required air recirculation and cooling unit to **OPERABLE** status within 8 hours or be in at least **HOT SHUTDOWN** within 12 hours. Restore both above required groups of containment air recirculation and cooling units to **OPERABLE** status within 7 days or be in at least **HOT SHUTDOWN** within 12 hours.

c. With one group of required containment air recirculation and cooling units inoperable and one Containment Spray System inoperable, restore the inoperable Containment Spray System to **OPERABLE** status within 72 hours or be in at least **HOT SHUTDOWN** within 12 hours. Restore the inoperable group of containment air recirculation and cooling units to **OPERABLE** status within 7 days of initial loss or be in at least **HOT SHUTDOWN** within 12 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.2 Each containment air recirculation and cooling unit shall be demonstrated **OPERABLE**:

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

1. Starting each unit from the control room.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that each unit operates for at least 15 minutes.

3. Verifying a cooling water flow rate of $\geq$ 2000 gpm to each cooling unit when the full flow service water outlet valves are fully open.

b. At least once per **REFUELING INTERVAL** by verifying that each unit starts automatically on the appropriate ESFAS test signal.

3/4.6 **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 **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%.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, 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.).

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

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

Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, 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.).

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 ≥ 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 ± 10%.

SURVEILLANCE REQUIREMENTS (Continued)

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 ± 10%.

2. Verifying that the filter train starts on the appropriate ESFAS test signal.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in place in accordance with 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 ± 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 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 ± 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N510-1975.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.4 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.4.1 Each containment isolation valve shall be **OPERABLE.*** #

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

ACTION: With one or more of the isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to **OPERABLE** status within 4 hours, or

b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate the affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or

d. Be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

e. The provisions of Specification 3.0.4 are not applicable provided that the affected penetration is isolated.

SURVEILLANCE REQUIREMENTS

4.6.4.1.1 Each containment isolation valve shall be demonstrated **OPERABLE**# prior to returning the valve to service after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit by performance of a cycling test and verification of isolation time.

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* Valves that are normally closed may be opened on an intermittent basis under administrative control.

\# Containment purge isolation valves isolation times will only apply in **MODE** 6 when the valves are required to be **OPERABLE** and they are open. Isolation times for containment purge isolation valves is NA for **MODES** 1, 2, 3 and 4 per Technical Specification 3/4 6.1.7, during which time these valves must remain closed.

SURVEILLANCE REQUIREMENTS (Continued)

4.6.4.1.2 Each containment isolation valve shall be demonstrated **OPERABLE** during the **COLD SHUTDOWN** or **REFUELING MODE** at least once per **REFUELING INTERVAL** by:

a. Verifying that on each containment isolation Channel A or Channel B test signal, each required isolation valve actuates to its isolation position.

b. Verifying that on each Containment Radiation-High Test Channel A or Channel B test signal, both required containment purge valves actuate to their isolation position.

c. Verifying that on each Safety Injection Actuation Channel A or Channel B test signal, each required isolation valve actuates to its isolation position.

4.6.4.1.3 The isolation time of each power-operated or automatic containment isolation valve shall be determined to be within its limit when tested pursuant to Technical Specification 4.0.5.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

Hydrogen Analyzers

LIMITING CONDITION FOR OPERATION

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

APPLICABILITY: **MODES** 1 and 2.

ACTION:

a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to **OPERABLE** status within 30 days or:

   1. Verify containment atmosphere grab sampling capability and prepare and submit a special report to the Commission pursuant to Specification 6.9.2 within the following 30 days, outlining the action taken, the cause for the inoperability, and the plans and schedule for restoring the system to **OPERABLE** status, or

   2. Be in at least **HOT STANDBY** within the next 6 hours.

b. With both hydrogen analyzers inoperable, restore at least one inoperable analyzer to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours.

c. Specification 3.0.4 is not applicable to this requirement.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 Each hydrogen analyzer shall be demonstrated **OPERABLE** at least bi-weekly on a **STAGGERED TEST BASIS** by drawing a sample from the Waste Gas System through the hydrogen analyzer.

4.6.5.1.2 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.

3/4.6 **CONTAINMENT SYSTEMS**

3/4.6.5 COMBUSTIBLE GAS CONTROL

Electric Hydrogen Recombiners - W

LIMITING CONDITION FOR OPERATION

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

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°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°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.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.6 PENETRATION ROOM EXHAUST AIR FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

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

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

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

SURVEILLANCE REQUIREMENTS

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

a. At least once per 31 days on **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%.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the HEPA filter banks remove ≥ 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 ± 10%.

3. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.).

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

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

Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained from an adsorber tray or from an adsorber test tray in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodine when the sample is tested in accordance with ANSI N510-1975 (30°C, 95% R.H.).

SURVEILLANCE REQUIREMENTS (Continued)

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 ≥ 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 ± 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 ± 10%.

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

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with 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 ± 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 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 ± 10%.

g. After maintenance affecting the air flow distribution by testing in-place and verifying that the air flow distribution is uniform within ± 20% of the average flow per unit when tested in accordance with the provisions of Section 9 of "Industrial Ventilation" and Section 8 of ANSI N510 1975.

6.19 CONTAINMENT LEAKAGE RATE TESTING PROGRAM

A program shall be established to implement the leakage testing of the containment as required by 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995.

The peak calculated containment internal pressure for the design basis loss-of-coolant accident, P_a, is 49.4 psig. The containment design pressure is 50 psig.

The maximum allowable containment leakage rate, L_a, shall be 0.20 percent of containment air weight per day at P_a.

Containment leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria is $\leq 0.75\ L_a$ for Type A tests.

The provisions of Specification 4.0.2 do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program.

The provisions of Specification 4.0.3 are applicable to the Containment Leakage Rate Testing Program.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 **CONTAINMENT INTEGRITY**

In **MODES** 1, 2, 3, and 4, primary **CONTAINMENT INTEGRITY** ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the **SITE BOUNDARY** radiation doses to within the limits of 10 CFR Part 100 during accident conditions. In **MODES** 5 and 6, the probability and consequences of these events are reduced because of the Reactor Coolant System (RCS) pressure and temperature limitations of these modes, by preventing operations which could lead to a need for containment isolation, and by providing containment isolation through penetration closure.

3/4.6.1.2 Containment Leakage

Maintaining the containment **OPERABLE** requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program for Type A tests, and 10 CFR Part 50, Appendix J, Option A for Type B and C tests. As-left leakage prior to the first startup after performing a required leakage test is required to be $\leq 0.75\ L_a$ for overall Type A leakage. At all other times between required leakage rate tests, the acceptance criteria is based on an overall Type A leakage limit of $\leq 1.0\ L_a$. At $\leq 1.0\ L_a$ the offsite dose consequences are bounded by the assumptions of the safety analysis. The frequency of Type A testing is specified in the Containment Leakage Rate Testing Program.

The surveillance testing for measuring leakage rates are consistent with the requirements of 10 CFR Part 50, Appendix J, Option B for Type A tests. For Type B and C testing, the allowable leakage rate has been proportionately reduced, as recommended in Generic Letter 91-04, to account for an extended surveillance schedule of 24 months + 25% (per Specification 4.0.2). This is an exception from 10 CFR Part 50, Appendix J.

3/4.6.1.3 Containment Air Locks

The limitations on closure and leak rate for the containment air locks are required to meet the restrictions on **CONTAINMENT INTEGRITY** and containment leak rate. Surveillance testing of the air lock seals provides assurance that the overall air lock leakage will not become excessive due to seal damage during the intervals between air lock leakage tests.

3/4.6.1.4 Internal Pressure

The limitations on containment internal pressure ensure that 1) the containment structure is prevented from exceeding it design negative pressure differential with respect to the outside atmosphere of 3.0 psig and 2) the containment peak pressure does not exceed the design pressure of 50 psig during LOCA or steam line break conditions.

The maximum peak pressure expected to be obtained from a LOCA event is 47.6 psig assuming an initial containment pressure of 14.7 psia. The limit of 1.8 psig for initial positive containment pressure will limit the total pressure to 49.4 psig which is less than the design pressure and is consistent with the accident analyses. The maximum peak pressure expected to be obtained from a steam line break event is 49.2 psig assuming an initial containment pressure of 16.5 psia (1.8 psig).

3/4.6.1.5 Air Temperature

The limitation on containment average air temperature ensures that the containment peak air temperature does not exceed the design temperature of 276°F during LOCA conditions. The containment temperature limit is consistent with the accident analyses.

3/4.6.1.6 Containment Structural Integrity

The limitation ensures that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to ensure that the containment will withstand the maximum pressure of 47.6 psig in the event of a LOCA. The measurement of containment tendon lift off force, the visual and metallurgical examination of tendons, anchorages and liner and the Type A leakage tests are sufficient to demonstrate this capability.

The surveillance requirements for demonstrating the containment's structural integrity are consistent with the intent of the recommendations of Regulatory Guide 1.35 "Inservice Surveillance of Ungrouted Tendons in Prestressed Concrete Containment Structures", January 1976.

The end anchorage concrete exterior surfaces are checked visually for indications of abnormal material behavior during tendon surveillance. Inspections of pre-selected concrete crack patterns are performed during the Type A containment leakage rate tests, consistent with the Structural Integrity Test.

Visual inspections of the accessible interior and exterior surfaces of the containment are performed to allow for early uncovering of evidence of structural deterioration. The frequency of these inspections is in agreement with Regulatory Guide 1.163, dated September 1995.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 212 TO FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 189 TO FACILITY OPERATING LICENSE NO. DPR-69

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

On September 12, 1995, the U.S. Nuclear Regulatory Commission (NRC) approved issuance of a revision to 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" which was subsequently published in the Federal Register on September 26, 1995, and became effective on October 26, 1995. The NRC added Option B, "Performance-Based Requirements," to allow licensees to voluntarily replace the prescriptive testing requirements of 10 CFR Part 50, Appendix J, with testing requirements based on both overall performance and the performance of individual components. Option B permits a licensee to choose Type A; or Type B and C; or Type A, B and C testing on a performance basis.

By letter dated January 16, 1996, Baltimore Gas and Electric Company (BGE), the licensee for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, applied for amendments to Facility Licenses DPR-53 and DRP-69. The proposed changes would permit implementation of 10 CFR Part 50, Appendix J, Option B, for Type A testing only. BGE has established a "Primary Containment Leakage Rate Testing Program" and proposed adding this program to the Technical Specifications (TSs). The program references Regulatory Guide 1.163 "Performance-Based Containment Leak Test Program" which specifies a method acceptable to the NRC for complying with Option B.

2.0 BACKGROUND

Compliance with Appendix J provides assurance that the primary containment, including those systems and components which penetrate the primary containment, do not exceed the allowable leakage rate specified in the TSs and the TS Bases. The allowable leakage rate is determined so that the leakage assumed in the safety analyses is not exceeded.

On February 4, 1992, the NRC published a notice in the Federal Register (57 FR 4166) discussing a planned initiative to begin eliminating requirements marginal to safety which impose a significant regulatory burden. Part 50 of 10 CFR, Appendix J, "Primary Containment Leakage Testing for Water-Cooled Power Reactors," was considered for this initiative and the staff undertook a

study of possible changes to this regulation. The study examined the previous performance history of domestic containments and examined the effect on risk of a revision to the requirements of Appendix J. The results of this study are reported in NUREG-1493, "Performance-Based Leak-Test Program."

Based on the results of this study, the staff developed a performance-based approach to containment leakage rate testing. On September 12, 1995, the NRC approved issuance of this revision to 10 CFR Part 50, Appendix J, which was subsequently published in the Federal Register on September 26, 1995, and became effective on October 26, 1995. The revision added Option B, "Performance-Based Requirements," to Appendix J to allow licensees to voluntarily replace the prescriptive testing requirements of Appendix J with testing requirements based on both overall and individual component leakage rate performance.

Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Test Program," was developed as a method acceptable to the NRC staff for implementing Option B. This regulatory guide states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, Rev. 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," provides methods acceptable to the NRC staff for complying with Option B with four exceptions which are described therein.

Option B requires that RG 1.163 or another implementation document used by a licensee to develop a performance-based leakage testing program must be included, by general reference, in the plant TSs. BGE has referenced RG 1.163 in the Calvert Cliffs, Unit Nos. 1 and 2, TSs.

RG 1.163 specifies an extension in Type A test frequency to at least one test in 10 years based upon two consecutive successful tests. Type B tests may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests and Type C tests may be extended up to 5 years based on two consecutive successful tests.

By letter dated October 20, 1995, NEI proposed TSs to implement Option B. After some discussion, the staff and NEI agreed on final TSs which were transmitted to NEI in a letter dated November 2, 1995. These TSs are to serve as a model for licensees to develop plant-specific TSs in preparing amendment requests to implement Option B.

In order for a licensee to determine the performance of each component, factors that are indicative of or affect performance, such as an administrative leakage limit, must be established. The administrative limit is selected to be indicative of the potential onset of component degradation. Although these limits are subject to NRC inspection to assure that they are selected in a reasonable manner, they are not TSs requirements. Failure to meet an administrative limit requires the licensee to return to the minimum value of the test interval.

Option B requires that the licensee maintain records to show that the criteria for Types A, B and C tests have been met. In addition, the licensee must maintain comparisons of the performance of the overall containment system and the individual components to show that the test intervals are adequate. These records are subject to NRC inspection. As previously noted, BGE is requesting Option B for Type A testing only.

3.0 EVALUATION

BGE's January 16, 1996, letter to the NRC proposes to establish a "Primary Containment Leakage Rate Testing Program" for Type A testing only and proposes to add this program to the Calvert Cliffs, Unit 1 and 2, TSs. The program will reference RG 1.163, "Performance-Based Containment Leak Test Program," which specifies methods acceptable to the NRC for complying with Option B. This requires a change to existing TSs 3.6.1.2, 4.6.1.2, 4.6.1.6.3 and the addition of the "Primary Containment Leakage Rate Testing Program" as TS 6.19. The corresponding TS Bases were also modified to reflect the proposed changes.

Option B permits a licensee to choose Type A; or Types B and C; or Types A, B and C; testing to be done on a performance basis. BGE has elected to perform only Type A testing on a performance basis; therefore, Types B and C leakage testing and reporting will continue to be performed as required by Option A and the current TSs. In addition, BGE reviewed its records for approved exemptions to Appendix J for the Calvert Cliffs units and did not identify any current exemptions which would effect the adoption of Option B for Type A testing.

BGE is developing its "Containment Leakage Rate Testing Program" in accordance with RG 1.163 and NEI 94-01. The performance-based program will be in place prior to implementing the proposed TSs. The program and records will be maintained at the site and available for NRC audit.

The TS changes proposed by BGE are in compliance with the requirements of Option B and consistent with the guidance of RG 1.163. The generic TSs included in the November 2, 1995, letter were used as the model for the proposed TSs with changes as necessary to implement Option B for Type A testing only and formatting changes to be consistent with the Calvert Cliffs TSs.

Therefore, based on the above, the NRC staff has determined that the proposed TSs and supporting TS Bases are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves 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 the amendment involves no significant hazards consideration, and there has been no public comment on such finding (61 FR 5810). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 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 the amendment.

6.0 CONCLUSION

The Commission has 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: March 13, 1996