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410 495-4455

BGE

November 26, 1996

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
License Amendment Request; Adoption of 10 CFR Part 50, Appendix J, Option B for Types B and C Testing

Pursuant to 10 CFR 50.90, the Baltimore Gas and Electric Company (BGE) hereby requests an amendment to Operating License Nos. DPR-53 and DPR-69 by incorporating the changes described below into the Technical Specifications for Calvert Cliffs Units 1 and 2, respectively. These proposed changes will adopt Option B of 10 CFR Part 50, Appendix J, to require Type B and Type C containment leakage rate testing to be performed on a performance-based testing schedule.

Containment leakage rate testing is currently performed in accordance with 10 CFR Part 50, Appendix J, Option A, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." Appendix J specifies containment leakage testing requirements, including the types of tests required, frequency of testing, and reporting requirements. Containment leakage test requirements include performance of Integrated Leakage Rate Tests, also known as Type A tests, which measure overall leakage rate of the containment; and Local Leakage Rate Tests, also known as Types B and C tests, which measure the leakage through containment penetrations and valves. The Nuclear Regulatory Commission has amended the regulations to provide an alternate performance-based option, Option B, to the existing Appendix J. In Reference (a), BGE received approval to adopt Option B for Type A testing only. At this time, BGE plans to adopt Option B for Types B and C testing, as well.

Baltimore Gas and Electric Company is revising the Containment Leakage Rate Testing Program for Type A testing to implement Types B and C testing of the containment as required by 10 CFR 50.54 (o) and 10 CFR Part 50, Appendix J, Option B. The revised program will be developed in accordance with the guidelines contained in Reference (b). The program, which will specify the Types B and C test methodology, administrative limits for leakage, and the means of establishing the test intervals, will be approved by BGE prior to implementation of this License Amendment.

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Adoption of Option B necessitates a change to the Technical Specifications for Calvert Cliffs Units 1 and 2. Following the guidance provided in Reference (c), the procedural details, acceptance criteria, and required test frequencies currently specified in Technical Specification 3/4.6.1 will be relocated into the Containment Leakage Rate Testing Program. The programmatic controls for Types B and C testing will be incorporated in Technical Specification 6.5.6, "Containment Leakage Rate Testing Program." The Technical Specification changes proposed by this License Amendment Request are consistent with the Improved Technical Specifications. Attachment (1) provides a description and justification of the proposed Technical Specification changes.

Adoption of Option B will also require the revocation of an exemption to 10 CFR Part 50, Appendix J, which was granted in Reference (d), pursuant to guidance provided in Generic Letter 91-04. The exemption extended the Types B and C testing interval to accommodate a 24-month fuel cycle, and included a proportional reduction in the allowable leakage rate limits for Types B and C containment penetrations. With the adoption of Option B, we will no longer require the exemption granted in Reference (d), as it is our intention to return to full compliance with 10 CFR Part 50, Appendix J.

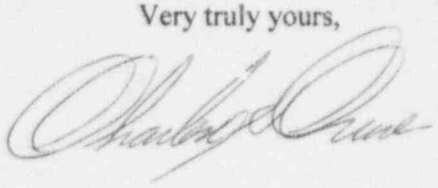
We have evaluated significant hazards considerations associated with this change and have determined that there are none (see Attachment 2 for a complete discussion). We have also determined that operation with the proposed amendment would not result in any significant change in the types, or significant increases in the amounts, of any effluents that may be released offsite, nor would it result in any significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed amendment.

The Plant Operations and Safety Review Committee and the Offsite Safety Review Committee have reviewed the proposed changes to the Technical Specifications and concurred that operation with the proposed changes will not result in an undue risk to the health and safety of the public.

Local leakage rate testing is required to be performed during each refueling outage. The next refueling outage for Unit 2 is currently scheduled to begin on March 14, 1997. We plan to evaluate the appropriate valves prior to the outage to determine if they meet the Option B criteria and, therefore, can be excluded from testing. If so, we prefer not to test these valves during this outage to save both personnel dose and additional expense. Therefore, in order to adequately plan the required testing for the outage, and to avoid potential conflicts with other license amendment requests currently under review, we request that this change be issued between February 19, 1997 and March 1, 1997. As an example of potential conflicts between license amendments, this license amendment will change Technical Specifications which will be deleted by our license amendment request to allow the use of blind flanges in place of the containment purge valves during operation (Reference e). To enable the implementation of these two license amendments without any additional clarification, this license amendment must be issued prior to the license amendment requested in Reference (e).

Should you have questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,



STATE OF MARYLAND :
: **TO WIT:**
COUNTY OF CALVERT :

I hereby certify that on the 26th day of November, 1996, before me, the subscriber, a Notary Public of the State of Maryland in and for Calvert County, personally appeared Charles H. Cruse, being duly sworn, and states that he is Vice President of the Baltimore Gas and Electric Company, a corporation of the State of Maryland; that he provides the foregoing response for the purposes therein set forth; that the statements made are true and correct to the best of his knowledge, information, and belief; and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal:

Denise D. Snukis
Notary Public

My Commission Expires:

2/2/98
Date

CHC/NH/dlm

Attachments:
(1) Description and Justification of Proposed Change
(2) Determination of Significant Hazards
(3) Unit 1 Marked-up Technical Specification Pages
(4) Unit 2 Marked-up Technical Specification Pages

cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
A. W. Dromerick, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR
J. H. Walter, PSC

REFERENCES:

(a) Letter from Mr. D. G. McDonald, Jr. (NRC) to Mr. C. H. Cruse (BGE), dated March 13, 1996, Issuance of Amendments for Calvert Cliffs Nuclear Power Plant, Unit No. 1 (TAC No. M94500) and Unit No. 2 (TAC No. M94501)

(b) Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program, dated September 1995, including errata

(c) Letter from Mr. C. I. Grimes (NRC) to Mr. D. J. Modeen (NEI), dated November 2, 1995, Model Technical Specifications for Implementing Option B

(d) Letter from Mr. D. G. McDonald, Jr. (NRC) to Mr. G. C. Creel (BGE), dated February 3, 1992, Issuance of an Exemption from the Requirements of 10 CFR Part 50, Appendix J, Paragraphs III.D.2 and III.D.3, for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 (TAC Nos. M82212 and M82214)

(e) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated August 1, 1996, "License Amendment Request; Use of Blind Flanges in Place of the Containment Purge Valves During Operation"

ATTACHMENT (1)

DESCRIPTION AND JUSTIFICATION

OF PROPOSED CHANGE

ATTACHMENT (1)

DESCRIPTION AND JUSTIFICATION OF PROPOSED CHANGE

DESCRIPTION OF CONTAINMENT STRUCTURES AND PENETRATIONS

The Calvert Cliffs Units 1 and 2 Containment Structures are 130-foot diameter reinforced concrete cylinders with shallow domed roofs. The inside height of each structure, including the dome, is 181 feet - 8 inches. The containment free volume is $2x10^6$ cubic feet. The thickness of the reinforced concrete base is 10 feet, and the minimum thickness of the cylindrical side wall and dome are 3 feet - 9 inches and 3 feet - 3 inches, respectively. The inside of the structural concrete is lined with 1/4-inch thick steel plate attached to the concrete by means of an angle grid system stitch-welded to the liner plate and embedded in the concrete. The location of the anchoring system prevents significant distortion of the liner plate during accident conditions, and ensures that the liner maintains its leak-tight integrity. The bottom horizontal liner plate is covered with approximately 1 foot - 6 inches of concrete, the top of which forms the floor of the containment. The containment is designed for a maximum of 0.20 % per day leakage by weight of the original content of air, at a design pressure of 50 psig, and a concrete surface temperature of 276°F.

All Containment Structure penetrations are pressure-resistant, leak-tight, welded assemblies designed, fabricated, and tested in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Nuclear Vessel Code. All penetrations made in the structure have been considered as potential sources of leakage, and, as such, are designed to withstand full containment accident pressure. The four categories of penetrations in use at Calvert Cliffs are: (1) electrical penetrations; (2) piping penetrations; (3) large penetrations (equipment and personnel access hatches); and (4) special penetrations.

Two types of electrical penetration assemblies are used - canister and unitized header. The canister type is inserted in a nozzle of suitable diameter integral with the Containment Structure and field-welded on the inside end. The unitized header type is welded to the nozzle on the outside end. All penetration assemblies are provided with a means to be pressurized to provide an inert atmosphere. A leaking electrical penetration assembly may be identified during operation by the increased volume of nitrogen required to pressurize the penetration. Any abnormal depressurization of an assembly is annunciated locally and in the Control Room. Electrical penetrations are tested as Type B penetrations.

Single barrier piping penetrations are provided for all piping passing through the containment walls. Type C leakage rate testing is typically performed on pipe penetrations.

For each unit, three large penetrations are provided for moving equipment into and out of the containment. These include the 19-foot diameter equipment hatch, and the two, smaller personnel locks (one of which is for emergency access). The equipment hatch is a dished door, fabricated from welded steel, furnished with a double-gasketed flange and bolted. The personnel and emergency air locks are double door, welded-steel assemblies with quick-acting equalizing valves connecting the air locks with the interior and exterior of the Containment Structure for the purposes of equalizing pressure in the two systems when entering or leaving. The two doors in each air lock are interlocked to prevent both from being opened simultaneously during operation and to ensure that one door is completely closed before the opposite door can be opened. Type B tests are performed on these three large penetrations.

The refueling tube, containment purge supply and exhaust, and hydrogen purge penetrations are considered "special penetrations." The refueling tube penetration is provided for fuel movement between the refueling pool in the Containment Structure and the spent fuel pool in the Auxiliary Building. The penetration consists of a 36-inch stainless steel pipe installed inside a 42-inch pipe sleeve. The inner pipe acts as the refueling tube and is fitted with a gate valve in the spent fuel pool and an encapsulating pipe sleeve, which is welded to the refueling pool liner and sealed off from the containment with a testable double O-ring blind flange, in the refueling pool. The two 48-inch diameter containment purge penetrations, and the 4-inch diameter containment vent/hydrogen purge penetrations, are each equipped with two valves to be used for isolation purposes. The four purge penetrations are Type C tested, whereas the refueling tube penetration is Type B tested.

Additional details of containment penetration design can be found in Chapter 5 of the Calvert Cliffs Updated Final Safety Analysis Report.

10 CFR PART 50, APPENDIX J, TYPE B AND C TESTING

Containment leakage rate testing is performed in accordance with 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." Appendix J specifies containment leakage testing requirements, including the types of tests required. Containment leakage rate testing includes performance of Integrated Leakage Rate Tests, also known as Type A tests; and Local Leakage Rate Tests, also known as Type B and Type C tests. The Type A test measures overall leakage rate of the containment. Type B tests are intended to detect leakage paths and measure leakage for certain containment penetrations (e.g., airlocks, flanges, and electrical penetrations). Type C tests are intended to measure containment isolation valve leakage rates.

In 1973, Appendix J became effective as a prescriptive set of requirements intended to ensure licensees maintain an essentially leak-tight reactor containment. The NRC has amended its regulations (60FR49495) to provide an alternative option, Option B, for containment leakage rate testing. The original, prescriptive requirements were retained as Option A. Option B allows licensees to implement performance-based testing, potentially reducing the frequency of performing Type A, B and C tests. In Reference (1), the NRC approved Baltimore Gas and Electric Company's (BGE) request to adopt Option B for Type A testing only. At this time, we plan to adopt Option B for Types B and C leakage rate testing. For Types B and C tests, Option B allows a reduction in the testing frequency for each penetration based on experience history of each component, and establishes controls to ensure continued performance during the extended testing interval.

EXEMPTIONS TO 10 CFR PART 50, APPENDIX J, OPTION A

Option B recognizes that, in many cases, Technical Specifications were approved that incorporated exemptions to provisions of Appendix J. Additionally, some licensees have requested and received exemptions after their Technical Specifications were issued. Option B states that specific exemptions to Option A of Appendix J that have been formally approved by the Atomic Energy Commission or NRC, according to 10 CFR 50.12, are still applicable to Option B if necessary, unless specifically revoked by the NRC.

In Reference (2), BGE requested a license amendment and exemption from Appendix J to allow an increase in the surveillance interval for leakage rate testing to accommodate a 24-month operating cycle.

We also requested a proportionate decrease in the allowable leakage rate limits for Types B and C containment penetrations (from 0.60 L_a to 0.50 L_a). Both the license amendment request and exemption request were made in accordance with the guidance provided in Generic Letter 91-04. Generic Letter 91-04 indicated that the NRC staff was developing changes to Appendix J to resolve a number of problems, including those associated with revising the surveillance interval for performing Types B and C leakage testing in order to accommodate a longer fuel cycle. As noted in the Generic Letter and Reference (2), these changes were only considered necessary until the regulation is revised to accommodate a 24-month fuel cycle. Option B to Appendix J provides the regulation necessary to accommodate an extended fuel cycle, and in fact, allows an interval of up to 60 months between acceptable leakage rate tests, while maintaining the original combined Types B and C leakage rate testing limit of 0.60 L_a. By adopting Option B for Types B and C testing, we will no longer require the exemption granted in Reference (3), and we will implement the original combined Types B and C leakage rate testing limit of 0.60 L_a. We therefore request revocation of the exemption to 10 CFR Part 50, Appendix J, which was granted in Reference (3).

ADOPTION OF OPTION B AT CALVERT CLIFFS

This License Amendment Request is to adopt Option B for Types B and C testing only. Option B was implemented for Type A testing during the Unit 1 refueling outage earlier this year. Our proposed method for complying with Option B is in accordance with the guidance provided in Reference (4). By letter dated November 2, 1995, the Commission transmitted to NEI a set of model Technical Specifications for implementing Option B (Reference 5). These Technical Specifications served as a model for our proposed Technical Specifications for Option B, with changes as necessary to conform to the current format of Calvert Cliffs' Technical Specifications. The proposed changes are consistent with the Improved Technical Specifications.

The following table provides a description and justification of each of the changes indicated on the marked-up Technical Specification pages (Attachments 3 and 4). The changes are in agreement with the changes suggested in Reference (5).

Technical Specification Number	Description and Justification of Proposed Change
4.6.1.1.c	**DESCRIPTION OF CHANGE:** Revised the reference for performing a Type B test on the equipment hatch from 10 CFR Part 50, Appendix J, to the Containment Leakage Rate Testing Program. **JUSTIFICATION:** The Containment Leakage Rate Testing Program will contain the procedural details necessary to implement these tests. Changing the reference to the Containment Leakage Rate Testing Program does not affect the testing methodology or acceptance criteria for this test, it provides a more direct reference to the document containing the actual testing information. As Option B does not specify either methodology or acceptance criteria for leakage testing, it should not be referenced in this context. As neither the testing methodology nor the acceptance criteria are changed, this change is justified.

ATTACHMENT (1)

DESCRIPTION AND JUSTIFICATION OF PROPOSED CHANGE

Technical Specification Number	Description and Justification of Proposed Change
3.6.1.2	**DESCRIPTION OF CHANGE**: (1) In Limiting Condition for Operation (LCO) 3.6.1.2.b, and the LCO Action Statement, changed the combined leakage rate acceptance criteria from 0.50 L_a to 0.60 L_a; (2) Relocated combined leakage rate value in Standard Cubic Centimeters per Minute (SCCM) to the Technical Specification Bases; (3) Replaced phrase, "when pressurized to P_a" with a reference to the Containment Leakage Rate Testing Program; and (4) Reworded the LCO Action Statement to indicate that the combined leakage rate for Types B and C testing shall be restored to within the acceptance criteria specified in the Containment Leakage Rate Testing Program. **JUSTIFICATION**: (1) As discussed in the above "Exemptions to 10 CFR Part 50, Appendix J, Option A" section of this letter, the combined leakage rate was reduced to 0.50 L_a when the test interval was extended to 24 months to allow for our 24-month operating cycle. Those changes were made in accordance with the guidance in Generic Letter 91-04, based upon the assumption that they would only be necessary until the regulations were changed to accommodate 24-month cycles. The promulgation of Option B constitutes such a change. As the total allowable containment leakage rate remains unchanged at 1.0 L_a, which is consistent with the value assumed in the safety analyses, this change is considered to have a negligible impact on overall containment leakage. (2) For the Technical Specifications, it is sufficient to specify leakage rates in terms of the maximum allowable containment leakage rate, L_a, which is defined in Specification 6.5.6. Relocating the SCCM conversion values to the Bases provides a point of reference for this information, if required during the performance of leakage rate testing. (3) and (4) The Containment Leakage Rate Testing Program will contain the procedural details necessary to implement these tests. Including these details in the Containment Systems Specifications is not necessary to assure safe operation of Calvert Cliffs, since the testing methodology, frequency, and acceptance criteria are controlled by the Containment Leakage Rate Testing Program, which implements 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. Per Specification 6.5.6, the Containment Leakage Rate Testing Program is in accordance with the guidelines contained in Reference (4). Changes to this Program are controlled by 10 CFR 50.59. Therefore, the proposed relocations would result in an appropriate level of regulatory authority, while also providing for a more appropriate change control process. Since an appropriate level of regulatory authority and control are maintained, the proposed references to the Containment Leakage Rate Testing Program are justified.
4.6.1.2	**DESCRIPTION OF CHANGE:** (1) Reworded the Surveillance Requirement (SR) to indicate the criteria, methods and provisions of performing containment leakage rate testing are specified in the Containment Leakage Rate Testing Program, rather than referring to 10 CFR Part 50, Appendix J; (2) Added an exception for containment air lock testing to SR 4.6.1.2.a; (3) Indicated that the testing schedule is specified in the Containment Leakage Rate Testing Program; (4) Deleted SRs 4.6.1.2.b, c and d, and

Technical Specification Number	Description and Justification of Proposed Change
	revised SR 4.6.1.2.a to include all leakage rate testing in the Containment Leakage Rate Testing Program; (5) Relocated combined leakage rate conversion to SCCM value from SR 4.6.1.2.e to the Technical Specification Bases; (6) Deleted the footnote indicating that a 24-month testing interval for Types B and C testing is an exemption to 10 CFR Part 50, Appendix J; (7) Changed reference from 4.6.1.2.b to 4.6.1.2.a in SR 4.6.1.2.e; and (8) Changed combined leakage rate acceptance criteria from 0.50 L_a to 0.60 L_a. **JUSTIFICATION:** (1) When implemented in accordance with a plan approved by the NRC, the performance-based Option B is an acceptable means of ensuring containment leakage is within pre-approved acceptance limits. Technical Specification 6.5.6 requires the Containment Leakage Rate Testing Program to be in accordance with Reference (4). As Reference (4) is an acceptable means of meeting the requirements of 10 CFR Part 50, Appendix J, Option B, it is not necessary to refer to the regulatory requirements in this Technical Specification. (2) It was necessary to provide the exception to Specification 4.6.1.2.a for containment air lock testing, as surveillance for these components is performed by SR 4.6.1.3. Including an exception for containment air lock testing is necessary since SR 4.6.1.2.c, which currently references SR 4.6.1.3 for air lock testing, will be deleted. (3), (4) and (5) Based upon the endorsement in Reference (4), the leakage rate test scheduling methodology delineated in NEI 94-01, including errata, is an acceptable means of meeting the performance-based scheduling requirement of Option B. For the Technical Specifications, it is sufficient to specify leakage rates in terms of the maximum allowable containment leakage rate, L_a, which is defined in Specification 6.5.6. Relocating SCCM conversion values to the Bases provides a point of reference for this information, if required during the performance of leakage rate testing. Additionally, relocating procedural details for leakage rate testing to the Containment Leakage Rate Testing Program, and eliminating requirements which duplicate regulatory requirements, provide Technical Specifications which are easier to use. Because existing requirements are relocated to an established program where changes are controlled by regulatory requirements, there is no reduction in commitment and adequate control is still maintained. (6) The footnote was added when BGE extended the testing interval to 24 months to coincide with the 24-month operating cycle. As a refueling cycle is the minimum testing interval specified in the performance-based test schedule endorsed by Reference (4), this exemption is no longer necessary. The elimination of this exemption is discussed in greater detail in the Exemptions to 10 CFR Part 50, Appendix J, Option A section, above. (7) As discussed in Item (3), above, the procedural details for Types B and C testing are relocated to the Containment Leakage Rate Testing Program, which is now referenced in SR 4.6.1.2.a. Therefore, changing the reference from 4.6.1.2.b to 4.6.1.2.a is consistent with this relocation. (8) The change to revise the combined leakage rate from 0.50 L_a to 0.60 L_a was justified for Technical Specification 3.6.1.2, Item (1), and in the Exemptions to 10 CFR Part 50, Appendix J, Option A section

Technical Specification Number	Description and Justification of Proposed Change
	above. Therefore, these changes are justified.
3.6.1.3	**DESCRIPTION OF CHANGE:** In LCO 3.6.1.3.b: (1) Relocated overall air lock leakage rate value in SCCM to the Technical Specification Bases; (2) Eliminated procedural detail specifying that containment air lock testing be performed "at P_a, 50 psig;" and (3) Added reference to the Containment Leakage Rate Testing Program for air lock leakage testing requirements. **JUSTIFICATION:** (1) For the Technical Specifications, it is sufficient to specify leakage rates in terms of the maximum allowable containment leakage rate, L_a, which is defined in Specification 6.5.6. Relocating SCCM conversion values to the Bases provides a point of reference for this information, if required during the performance of leakage rate testing. (2) and (3) The Containment Leakage Rate Testing Program will contain the procedural details necessary to implement these tests. Additionally, the specific value for P_a is defined in Specification 6.5.6; therefore, it is not necessary to repeat this information throughout the Containment Systems Technical Specifications. Including these details in the Technical Specifications is not necessary to assure safe operation of Calvert Cliffs, since the testing methodology and frequency are controlled by the Containment Leakage Rate Testing Program, which implements 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. Per Specification 6.5.6, the Containment Leakage Rate Testing Program is in accordance with the guidelines contained in Reference (4). Changes to this Program are controlled by 10 CFR 50.59. Therefore, referencing the Program for the procedural details associated with containment air lock testing would result in an appropriate level of regulatory authority, while also providing for a more appropriate change control process. Since an appropriate level of regulatory authority and control is maintained, the proposed references to the Containment Leakage Rate Testing Program are justified.
4.6.1.3	**DESCRIPTION OF CHANGE:** (1) Replaced SR 4.6.1.3.a and b with a general statement requiring air lock testing to be performed in accordance with the Containment Leakage Rate Testing Program. This change also involved including a brief summary of the air lock testing requirements, including the SCCM conversion values, in the Technical Specification Bases. (2) Deleted the footnote indicating that SR 4.6.1.3.a constitutes an exemption to 10 CFR Part 50, Appendix J. **JUSTIFICATION**: (1) The Containment Leakage Rate Testing Program will contain the procedural details necessary to implement containment air lock testing. Including these details in the Containment Systems Specifications is not necessary to assure safe operation of Calvert Cliffs, since the testing methodology and frequency are controlled by the Containment Leakage Rate Testing Program, which implements 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. Per Specification 6.5.6,

Technical Specification Number	Description and Justification of Proposed Change
	the Containment Leakage Rate Testing Program is in accordance with the guidelines contained in Reference (4). Changes to this Program are controlled by 10 CFR 50.59. Therefore, the proposed relocations would result in an appropriate level of regulatory authority, while providing for a more appropriate change control process. Since an appropriate level of regulatory authority and control is maintained, the proposed references to the Containment Leakage Rate Testing Program are justified. Relocating SCCM conversion values to the Bases provides a point of reference for this information, if required during the performance of leakage rate testing. However, the acceptance criteria will be specified in Technical Specification 6.5.6 and controlled in accordance with 10 CFR 50.90. (2) Additionally, the footnote indicating that the existing air lock seal surveillance is an exemption to 10 CFR Part 50, Appendix J, may be deleted, since the existing test methodology and acceptance criteria are in accordance with Option B, and Reference (4).
3.9.8.1	**DESCRIPTION OF CHANGE:** In Action 3.9.8.1.a, revised reference to Specification 4.6.1.2.d to Specification 4.6.1.2.a. **JUSTIFICATION:** The individual SRs for Type A, B and C testing, except for testing of the containment purge isolation valves and containment air locks, have been consolidated to SR 4.6.1.2.a, which references the Containment Leakage Rate Testing Program. Therefore, the correct reference for local leakage rate testing of containment penetration number 41 becomes SR 4.6.1.2.a. This change has been evaluated under Technical Specification 4.6.1.2.
6.5.6	**DESCRIPTION OF CHANGE:** (1) For Unit 1 ONLY, deleted the phrases, "as modified by approved exceptions" and "as modified by approved exemptions" from the discussion of our commitment to Regulatory Guide 1.163; and (2) Reworded the fourth paragraph to specify the acceptable combined Types B and C leakage rate, overall air lock leakage rate, and individual door leakage rate. **JUSTIFICATION:** (1) Baltimore Gas and Electric Company intends to adopt the guidance in Reference (4), with no exceptions. Additionally, our adoption of Option B will involve no exceptions to 10 CFR Part 50, Appendix J, Option B. Therefore, the phrases addressing exceptions to Reference (4) and exemptions to the Code of Federal Regulations are unnecessary. These phrases are not in the corresponding Technical Specification for Unit 2. (2) The procedural details of containment leakage rate testing for Types B and C penetrations have been relocated to the Containment Leakage Rate Testing Program, and the programmatic controls for this program are relocated to Specification 6.5.6. The testing methodology and frequency are controlled by the Containment Leakage Rate Testing Program, which implements 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. Per Specification 6.5.6, the Containment Leakage Rate Testing Program is in accordance

Technical Specification Number	Description and Justification of Proposed Change
	with the guidelines contained in Reference (4). Changes to this Program are controlled by 10 CFR 50.59. Therefore, relocating the procedural details for these tests would result in an appropriate level of regulatory authority, while providing for a more appropriate change control process. Since an appropriate level of regulatory authority and control is maintained, the proposed references to the Containment Leakage Rate Testing Program are justified.

The Bases for Specifications 3/4.6.1.2 and 3/4.6.1.3 will be revised to reflect relocation of the procedural details of Types B and C testing to the Containment Leakage Rate Testing Program.

Baltimore Gas and Electric Company has developed a Containment Leakage Rate Testing Program for Type A testing and containment visual inspections. We are currently developing a revision to the Containment Leakage Rate Testing Program to include Types B and C testing. This program will include leakage rate testing methods, procedures, and analyses that must be used to comply with Option B. This performance-based program will be approved by BGE prior to implementing the requested license amendment, and will be available at Calvert Cliffs for NRC inspection. We will also maintain records at the site showing that the criteria for Types B and C tests have been met, and that the test intervals established for the tested components are adequate.

Section XI of the ASME Code provides the requirements for Inservice Testing of safety-related components. Paragraph IWV-3422, of ASME Section XI, 1983 Edition, requires that Category A valves (i.e., containment isolation valves) shall be leak tested at a frequency of at least once every two years. However, BGE requested, and received approval for, relief from this requirement for the second 10-year Inservice Test Program. The relief, as approved in Reference (6), specifies that all containment isolation valves will be tested in accordance with the leak rate testing requirements of 10 CFR Part 50, Appendix J. Therefore, adoption of Option B for Type C testing does not conflict with BGE's Inservice Test Program.

RISK ASSESSMENT

The risk of containment penetration leakage is that a pathway for radionuclides could be created if the containment is challenged, such as in a loss-of-coolant accident. Such leakage does not create any new accident scenarios, nor does it contribute to the initiation of any accident.

From a risk standpoint, the purpose of Appendix J leakage testing is to detect any containment leakage resulting from failures in the containment isolation boundary before the occurrence of an accident. Such leakage could be the result of leakage through containment penetrations, through airlocks, or through containment structural faults. The Appendix J Type A tests, which are unaffected by this proposed change, will continue to periodically test for leakage through the containment liner. The potential containment failures that could be detected by Types B and C testing are mechanical failures of the containment penetrations, valves, and airlocks. Thus, the only potential effect of the proposed change to

the Types B and C test frequency is the possibility that containment penetration leakage would go undetected between tests.

Past studies show that overall reactor accident risks are not sensitive to variations in containment leakage rate (Reference 7). This is because reactor accident risks are dominated by accident scenarios in which the containment fails or is bypassed. Such scenarios, even though they are of very low probability, dominate the predicted accident risks due to their high consequences. Postulated containment failure under severe accident conditions is primarily due to the effects associated with severe accidents. Such effects were considered as part of the Calvert Cliffs Individual Plant Examination (IPE). Baltimore Gas and Electric Company has determined that adopting the performance-based Option B for Types B and C components will not significantly affect the containment failure probabilities calculated for the IPE.

In support of the NRC initiative to implement the performance-based containment testing rule, the performance history of Types B and C tested components was studied. The NRC published the findings from these studies in Reference (7). The detailed analysis of Type C component performance history found that, while variations in the random failure rates of these components cannot be predicted without prior examination or analysis based on system and component physical data (e.g., differences in size, type, environment, or design services), the components did exhibit a high probability of failure within the next two operating cycles following a previous failure. Although the analysis also indicated a higher failure rate immediately after component repair or replacement during the "burn-in" period of the component, it did not show any increases in component failure rates with time. This, and the fact that a majority of Type C components have never failed to meet the administrative leakage limits, indicate that the wear-out portion of the component life has not been reached, and may not be reached provided good maintenance practices continue to be followed.

For Type B components, the evaluation in Reference (7) found that approximately 2.5% of the 5000 Type B tests reviewed exceeded administrative limits. Most of the tests exceeding administrative limits were on electrical penetrations; however, in all of these cases, the leakage appeared to be small and well below levels that could be considered potentially risk significant. On the other hand, the less frequent occurrences of air lock leakage, typically associated with seal degradation, can be larger and may warrant more attention. For this reason, Reference (4) endorses a more frequent test schedule for containment air locks than that required for other Type B containment penetrations (30 months vice 60 months). Additionally, since air lock leakage is more likely to occur when the air lock is being used for multiple entries, Reference (4) endorses testing the air lock door seals within 30 days during periods of multiple containment entries, and within 7 days after each containment access when containment integrity is required. This change does not affect acceptance criteria for containment air lock testing.

Based on the analyses in Reference (7), it was concluded that performance-based testing alternatives that are predicated on components passing two successive tests before extending the testing interval, will minimize testing of good performers, and will thus focus on those components that suffer some kind of deficiency or reach wear-out. Therefore, BGE's program for testing Types B and C components (except containment air locks) will require two acceptable tests, performed at a frequency of at least once per 30 months, prior to allowing extended testing intervals. Containment air lock leakage rate testing will only be extended to a maximum once-per-30-month frequency, with a once-per-30-day frequency during frequent use periods, when the potential for failure is highest. The proposed testing intervals, which are

in accordance with Regulatory Guide 1.163 (Reference 7), will have a minimal impact on overall accident risk.

Calvert Cliffs Nuclear Power Plant's testing history is typical of that evaluated in the analysis. The adoption of Option B will not significantly affect the containment failure probability calculated in the Calvert Cliffs IPE. As such, BGE believes that there is sufficient information in Reference (7) and the Calvert Cliffs IPE to conclude that the requested change will not present an undue risk to the public health and safety.

IMPLEMENTATION PLAN

Under Option A, BGE is scheduled to perform Types B and C tests at intervals of 24 months. Types B and C leakage rate testing is typically performed during refueling outages, prior to entry into Mode 4. Our next Unit 2 refueling outage is scheduled for spring 1997. We plan to evaluate the appropriate valves prior to the outage to determine if they meet the Option B criteria and, therefore, can be excluded from testing. If so, we prefer not to test these valves during this outage to save both personnel dose and additional expense. Therefore, in order to adequately plan the required testing for the outage, and to avoid potential conflicts with other license amendment requests currently under review, we request that this change be issued between February 19, 1997 and March 1, 1997. Our Containment Leakage Rate Testing Program will be in accordance with the guidance presented in Reference (4) for Types B and C testing.

REFERENCES

(1) Letter from Mr. D. G. McDonald, Jr. (NRC) to Mr. C. H. Cruse (BGE), dated March 13, 1996, Issuance of Amendments for Calvert Cliffs Nuclear Power Plant, Unit No. 1 (TAC No. M94500) and Unit No. 2 (TAC No. M94501)

(2) Letter from Mr. G. C. Creel (BGE) to NRC Document Control Desk, dated November 27, 1991, Request for License Amendment and Exemption from 10 CFR Part 50, Appendix J

(3) Letter from Mr. D. G. McDonald, Jr. (NRC) to Mr. G. C. Creel (BGE), dated February 3, 1992, Issuance of an Exemption from the Requirements of 10 CFR Part 50, Appendix J, Paragraphs III.D.2 and III.D.3, for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 (TAC Nos. M82212 and M82214)

(4) Regulatory Guide 1.163, Performance-Based Containment Leak-Test Program, dated September 1995, including errata

(5) Letter from Mr. C. I. Grimes (NRC) to Mr. D. J. Modeen (NEI), dated November 2, 1995, Model Technical Specifications for Implementing Option B

(6) Letter from Mr. R. A. Capra (NRC) to Mr. G. C. Creel (BGE), dated September 20, 1990, "Second Ten-Year Interval Inservice Testing Program - Calvert Cliffs Nuclear Power Plant, Units 1 and 2, TAC No. 64976 (Unit 1) and 64977 (Unit 2)"

(7) NUREG-1493, Performance-Based Containment Leak-Test Program, dated September 1995

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

Baltimore Gas and Electric Company (BGE) is proposing a change to the Technical Specifications for Calvert Cliffs Units 1 and 2 to adopt the performance-based leakage rate testing option (Option B) of 10 CFR Part 50, Appendix J, for Types B and C containment leakage rate testing. Calvert Cliffs adopted Option B for Type A testing earlier this year; therefore, upon implementation of this requested license amendment, all containment leakage rate testing will be performed in accordance with Option B.

Coincident with this license amendment, BGE also requests revocation of an exemption to 10 CFR Part 50, Appendix J, which allowed Types B and C testing to be performed at intervals of up to 30 months, with a proportionate reduction in the combined leakage rate acceptance criteria. The exemption was necessary to accommodate 24-month operating cycles, and was based on guidance provided in NRC Generic Letter 91-04, which indicated that these changes were only considered necessary until the regulation was revised to accommodate a 24-month fuel cycle. Option B to Appendix J provides the regulation necessary to accommodate an extended fuel cycle, and in fact, allows an interval of up to 60 months between acceptable leakage rate tests, while maintaining the original combined Types B and C leakage rate testing limit. Therefore, the special circumstances which prompted the exemption will no longer exist after Option B is adopted. As a result, BGE intends to return to full compliance with 10 CFR Part 50, Appendix J, by reinstituting the original combined Types B and C leakage rate testing limit of 0.6 L_a. Revocation of this exemption will require deleting the footnotes for Surveillance Requirements 4.6.1.2.b and 4.6.1.3.a, which indicate that the Surveillance Requirements constituted an exemption to 10 CFR Part 50, Appendix J, and revising the combined Types B and C test acceptance criteria from 0.50 L_a to 0.60 L_a.

In order to adopt Option B, the following Technical Specification changes are proposed:

1. Relocate the leakage rate testing procedural details from the Technical Specifications to either the Containment Leakage Rate Testing Program or the Technical Specification Bases.

   - Combine Surveillance Requirements (SRs) 4.6.1.2.b, c and d into SR 4.6.1.2.a, which requires that containment leakage rate testing be performed in accordance with the Containment Leakage Rate Testing Program. The test frequency, performance and data conversion methodology will be specified in the Containment Leakage Rate Testing Program.

   - Combine SRs 4.6.1.3.a and b into a new SR 4.6.1.3.a, which requires that containment air lock leakage rate testing be performed in accordance with the Containment Leakage Rate Testing Program. The test frequency and performance methodology will be specified in the Containment Leakage Rate Testing Program.

   - Remove the Types B and C test schedules, which stipulated specific test intervals, from the Technical Specifications. The methodology for determining the test frequencies will be specified in the Containment Leakage Rate Testing Program.

   - Relocate the allowable leakage criteria (in Standard Cubic Centimeters per Minute) from the individual Specifications to the Technical Specification Bases.

2. Relocate programmatic controls for Types B and C leakage rate testing from the Technical Specifications Limiting Conditions for Operation and Surveillance Requirements to the Containment Leakage Rate Testing Program, as described in the Technical Specifications Administrative Controls Section.

   - Specification 6.5.6, Containment Leakage Rate Testing Program, will be revised to specify the leakage rate acceptance rate criteria for Type A, B and C tests, including that for the containment air locks.

The proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to not involve a significant hazards consideration, in that operation of the facility in accordance with the proposed amendments:

1. *Would not involve a significant increase in the probability or consequences of an accident previously evaluated.*

   Containment leakage rate testing is performed in accordance with 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." The Appendix J containment leakage test requirements include performance of Type A tests, which measure the overall leakage rate of the containment, and Types B and C tests, which measure the leakage through containment penetrations and valves. The Nuclear Regulatory Commission has amended the regulations to provide a performance-based alternative, Option B, to the existing Appendix J. Baltimore Gas and Electric Company adopted Option B for Type A testing during the Unit 1 refueling outage earlier this year. At this time, BGE plans to adopt Option B for Types B and C testing.

   Implementation of Option B involves no physical or operational changes to the plant structures, systems, or components. Furthermore, leakage rate does not contribute to the initiation of any postulated accidents; therefore, this proposed change does not involve an increase in the probability of any previously evaluated accidents.

   Types B and C testing is necessary to demonstrate that leakage through the containment penetrations is within the limits assumed in the accident analyses. The only potential effect of the proposed change to the Types B and C test frequency is the possibility that containment penetration leakage would go undetected between tests. To provide assurance that containment penetration leakage remains within the limits of the Technical Specifications, BGE plans to implement the performance-based leakage testing program in accordance with NRC Regulatory Guide 1.163, dated September 1995 (including errata), with no exceptions.

   By adopting Option B, BGE will no longer require an exemption from 10 CFR Part 50, Appendix J, which was granted to accommodate 24-month operating cycles. The exemption increased the surveillance interval to a maximum of 30 months, while proportionately decreasing the combined Types B and C leakage rate acceptance criteria. Option B to Appendix J provides the regulation necessary to accommodate an extended fuel cycle, while maintaining the original combined Types B and C leakage rate testing limit. Therefore, BGE has requested revocation of the exemption to 10 CFR Part 50, Appendix J, as adoption of Option B for Types B and C testing

will enable a return to full compliance with Appendix J. As the facility will be in full compliance with the regulations, this change does not increase the consequences of any previously evaluated accidents.

Implementation of Option B does not change the total allowable containment leakage rate acceptance criteria, nor does it change the total leakage assumed in the accident analyses. Option B only allows the implementation of a performance-based testing program to ensure that resources are concentrated on the components most likely to exceed administrative limits. Similarly, the changes to relocate the procedural details, including test frequency, performance and data conversion methodology, for containment leakage rate testing from the Technical Specifications to the Containment Leakage Rate Testing Program will have no effect on the total containment leakage allowed by the Technical Specifications, or assumed in the accident analyses. Relocating the allowable leakage rate conversions (Standard Cubic Centimeters per Minute) to the Technical Specification Bases does not change the allowable leakage rates (as a percentage of the containment air volume) specified in the Technical Specifications. Furthermore, relocation of the programmatic controls for Types B and C testing, including the allowable leakage rates, to the Administrative Controls section of the Technical Specifications ensures an adequate level of regulatory control of these criteria is retained.

Additionally, the Calvert Cliffs Individual Plant Examination considered the effects associated with severe accidents which could lead to containment failure. It was concluded that adopting a performance-based testing interval will not significantly affect the containment failure probabilities calculated for the Individual Plant Examination. Altogether, adoption of a performance-based testing frequency, as specified in 10 CFR Part 50, Appendix J, Option B, will not significantly decrease the confidence in the leak-tightness of the containment, including containment penetrations. Therefore, this change will not result in a significant increase in the probability of undetected containment penetration leakage in excess of that allowed by the Containment Leakage Rate Testing Program, or assumed in the accident analyses, or in the consequences of an accident previously evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Would not create the possibility of a new or different type of accident from any accident previously evaluated.*

The proposed Technical Specification change adopts a performance-based approach to containment penetration leakage rate testing. This change does not add any new equipment, modify any interfaces with any existing equipment, or change the equipment's function, or the method of operating the equipment. The proposed change does not affect normal plant operations or configuration, nor does it affect leakage rate test methods. As the proposed change would not change the design, configuration or operation of the plant, it could not cause containment penetration leakage rate testing to become an accident initiator.

Therefore, the proposed change does not create the possibility of a new or different type of accident from any accident previously evaluated.

3. *Would not involve a significant reduction in a margin of safety.*

The purpose of the existing schedule for Types B and C tests is to provide assurance, on a regular basis, that the release of radioactive material will be restricted to those leak paths and leakage rates assumed in the accident analyses. The margin of safety associated with containment penetration leakage rates is not reduced if containment leakage does not exceed the maximum allowable leakage rate defined in the Technical Specifications. Implementation of Option B does not change the total allowable containment leakage rate acceptance criteria, nor does it change the total leakage assumed in the accident analyses. Option B only allows the implementation of a performance-based testing program to ensure that resources are concentrated on the components most likely to exceed administrative limits. Similarly, the changes to relocate the procedural details for containment leakage rate testing from the Technical Specifications to either the Containment Leakage Rate Testing Program or the Technical Specification Bases will have no effect on the total containment leakage allowed by the Technical Specifications, or assumed in the accident analyses. Furthermore, relocation of the programmatic controls for Types B and C testing, including the allowable leakage rates, to the Administrative Controls section of the Technical Specifications ensures that the same regulatory control of these criteria is retained.

Elimination of the exemption to Appendix J which reduced the amount of combined Types B and C testing allowable leakage redistributes that portion of the total containment leakage which may be attributed to local leakage rate testing, but does not affect the maximum allowable containment leakage rate, L_a. The proposed change does not affect a safety limit, a Limiting Condition for Operation, or the way in which the plant is operated.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.