

CHARLES H. CRUSE
Vice President
Nuclear Energy

Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410 495-4455



November 19, 1998

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
Response to Request for Additional Information for the Review of the Calvert
Cliffs Nuclear Power Plant, Units 1 & 2, Integrated Plant Assessment on Generic
Safety Issues

REFERENCES: (a) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk,
dated April 8, 1998, "Application for License Renewal"
(b) Letter from Mr. D. L. Solorio (NRC) to Mr. C. H. Cruse (BGE),
September 4, 1998, "Request for Additional Information for the Review
of the Calvert Cliffs Nuclear Power Plant, Units 1 & 2, Integrated Plant
Assessment on Generic Safety Issues"
(c) Letter from Mr. D. L. Solorio (NRC) to Mr. C. H. Cruse (BGE),
September 24, 1998, "Renumbering of NRC Requests for Additional
Information on Calvert Cliffs Nuclear Power Plant License Renewal
Application Submitted by the Baltimore Gas and Electric Company"

Reference (a) forwarded the Baltimore Gas and Electric Company (BGE) license renewal application. Reference (b) forwarded questions from NRC staff on certain sections of the BGE License Renewal Application, regarding unresolved generic safety issues. Reference (c) forwarded a numbering system for tracking BGE's response to all of the BGE License Renewal Application requests for additional information and the resolution of the responses. Attachment (1) provides our responses to the questions contained in Reference (b). The questions are renumbered in accordance with Reference (c).

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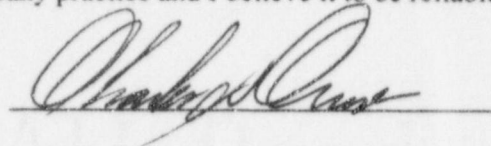
Should you have further questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,



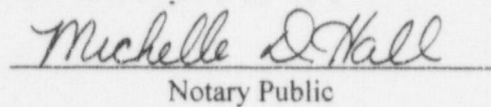
STATE OF MARYLAND :
: TO WIT:
COUNTY OF CALVERT :

I, Charles H. Cruse, being duly sworn, state that I am Vice President, Nuclear Energy Division, Baltimore Gas and Electric Company (BGE), and that I am duly authorized to execute and file this response on behalf of BGE. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other BGE employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.



Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of Calvert, this 19 day of November, 1998.

WITNESS my Hand and Notarial Seal:


Notary Public

My Commission Expires:

February 1, 2002
Date

CHC/KRE/dlm

Attachment: (1) Response to Request for Additional Information; Integrated Plant Assessment on Generic Safety Issues

cc: R. S. Fleishman, Esquire
J. E. Silberg, Esquire
S. S. Bajwa, NRC
A. W. Dromerick, NRC
H. J. Miller, NRC

C. I. Grimes, NRC
D. L. Solorio, NRC
Resident Inspector, NRC
R. I. McLean, DNR
J. H. Walter, PSC

ATTACHMENT (1)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION;
INTEGRATED PLANT ASSESSMENT ON GENERIC SAFETY ISSUES**

**Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
November 19, 1998**

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NRC Question No. 8.1

Describe the Baltimore Gas and Electric Company (BGE) processes and criteria for determining which unresolved generic safety issues (GSIs) listed in NUREG-0933, "A Prioritization of Generic Safety Issues," should be reviewed to identify any concerns that may be related to the effects of aging or time-limited aging analyses (TLAA) for systems, structures, or components within the scope of license renewal (for *BGE's License Renewal Application [LRA]*).

BGE Response

Based on the meanings of the high, medium, low, and drop categories discussed in NUREG-0933, BGE concluded those definitions appropriately prioritized the need for further action on the GSIs. Specifically, our criteria for selecting GSIs was as follows:

- Unresolved High, Medium, and "issue to be prioritized in the future" Priority Issues are applicable to License Renewal; and
- Low, Drop, Regulatory, Environmental, or Licensing Issues are NOT applicable to License Renewal.

Our criteria was developed independently and without the benefit of the guidance contained in Reference (1). We reviewed each item in NUREG-0933 (Revision 19, November 1995), Section 2, "Task Action Plan Items;" and Section 3, "New Generic Issues." The 20 items that met our potentially applicable criteria were subsequently reviewed. Using the NUREG-0933 description, no aging issues were identified that would require special consideration for the license renewal period.

Generic Safety Issue-166, "Adequacy of Fatigue Life of Metals Components," is discussed in the BGE LRA in Sections 2.1, 4.1, 4.2, 5.2, 5.9, 5.13, and 5.15 (Time-Limited Aging Analysis, Reactor Coolant System, Reactor Pressure Vessels and Control Element Drive Mechanisms/Electrical System, Chemical and Volume Control System, Feedwater System, Nuclear Steam Supply System Sampling, and Safety Injection System, respectively).

Generic Safety Issue-168, "Environmental Qualification of Electrical Equipment," is discussed in the BGE LRA in Section 6.3, "Environmentally Qualified Equipment."

NRC Question No. 8.2

Discuss whether BGE specifically evaluated GSI-23, "Reactor Coolant Pump Seal Failures," and GSI-173.A, "Spent Fuel Storage Pool: Operating Facilities," as relating to the license renewal aging management review or time-limited aging evaluation, as described in an Nuclear Regulatory Commission (NRC) staff letter to the Nuclear Energy Institute, dated January 29, 1998 (Reference 1). If yes, identify where these GSIs are evaluated in the application or describe the BGE evaluation results. If not, provide the justification that such an evaluation is not warranted.

BGE Response

Response for New Generic Issue (NGI)-23: This issue was reviewed as described in Reference (1). This issue was not evaluated in the application. Our justification includes the following:

- For the purposes of license renewal, our review of NGI-23 was dependent on the description of the issue contained in NUREG-0933, as well as the related studies performed by NRC in support of proposed rulemaking.

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- The seals in our reactor coolant pumps are significantly different from those that instigated NGI-23 in 1980. The RCP seals in use at Calvert Cliffs are newly-designed Sulzer Bingham seals comprised of three pressure breakdown stages and a fourth vapor seal stage. All four seal stages are capable of withstanding full RCS pressure if called upon. These seals do not require seal injection. In addition, extensive testing has been performed on this seal design to demonstrate that a loss of component cooling water will not cause a loss of the seal function. These seals have proven to be highly reliable and rugged in use. As a result, our current maximum seal replacement frequency is once per seven years. Our appreciation of nuclear safety issues regarding seal failures was documented in Reference (2). The report states "Engineering personnel were actively involved in oversight and trending of the 11B reactor coolant pump seal performance. The daily evaluation of the reactor coolant pump seal degradation and communications with the operations department were considered very good."

Also as described in NRC Information Notice 95-42, "Commission Decision On the Resolution of Generic Issue 23, Reactor Coolant Pump Seal Failure:"

... On March 31, 1995, the Commission voted against the publication of the proposed rule on the resolution of GI-23, "Reactor Coolant Pump Seal Failure." The Commission concluded that the proposed rule did not provide sufficient gain in safety to justify its issuance. The Commission was also concerned that inaccuracies in the NRC seal leakage evaluation model may exist. Further, the wide range of plant-specific considerations with regard to pressurized-water reactor (PWR) RCP [*reactor coolant pump*] seals would result in the spending of excessive resources by some licensees without commensurate safety benefits; also some licensees are addressing the issue by using the IPE [*Integrated Plant Evaluation*] program and accident management strategies. Therefore, the NRC will not proceed with the rulemaking effort described in SECY-94-225 [*Issuance of Proposed Rulemaking Package on GI-23, "Reactor Coolant Pump Seal Failure"*]. The staff is currently exploring options to determine what, if any, further action will be taken regarding the final disposition of GI-23 . . .

During our review of NGI-23, we noted that regardless of NRC staff action on the issue, our activities to monitor seal performance and replace seals on a frequency based on operating experience appropriately addresses all aging aspects of NGI-23.

Response for NGI-173.A: This issue was reviewed as described in Reference (1). This issue was not evaluated in the application. In Reference (3), the NRC noted the following

"The Nuclear Regulatory Commission staff recently completed a detailed review of spent fuel storage pool safety issues. The results of the staff's review are documented in a report to the Commission which is enclosed for your information. In the report, the staff concludes that existing structures, systems, and components related to the storage of irradiated fuel provide adequate protection of public health and safety."

During preparation of Reference (3) and AEOD/S96-02, "Assessment of Spent Fuel Cooling, September 1996," an NRC review was conducted at Calvert Cliffs Nuclear Power Plant (CCNPP). On November 14, 1996 (Reference 4), we responded to three generic concerns described in Reference (3), noted how these issues were not applicable to CCNPP, and requested that CCNPP be removed from the list of plants with decay heat removal reliability issues. In March 1997, the NRC summarized the results of their review of spent fuel pool issues in NRC Information Notice 97-14,

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“Assessment of Spent Fuel Pool Cooling.” Based on our participation in the NRC’s assessment of spent fuel cooling, we concluded that we appropriately addressed all aging aspects of NGI-173.A.

NRC Question No. 8.3

In a letter dated June 2, 1998 [Reference 5], the staff concluded that license renewal applicants can address GSI-168 by providing a technical rationale demonstrating that the current licensing basis for environmental qualification (EQ) pursuant to 10 CFR 50.49 will be maintained in the period of extended operation. The NRC staff has not completed guidance on the information necessary to demonstrate adequate aging management for the EQ TLAAs. Until that matter is resolved, please provide the EQ Master List of electrical equipment and indicate which of the TLAAs categories in 10 CFR 54.21(c)(1) apply to each of the electrical equipment groups. In addition, summarize the procedures that are used to maintain compliance with the requirements of 10 CFR 50.49, and justify that those procedures will adequately manage the EQ analyses for the period of extended operation.

BGE Response

Baltimore Gas and Electric Company has summarized the procedures used to maintain compliance with 10 CFR 50.49 and has provided justification that these procedures will adequately manage the EQ Program for the period of extended operation, in Section 6.3 of the BGE LRA.

Environmental qualification evaluations (EQ File [EQFs]) fall under 10 CFR 54.21(c)(1)(iii).

The CCNPP EQ electric equipment list, maintained pursuant to 10 CFR 50.49(d), is available; however, based on Reference (6), the NRC appears to require a list of EQ Device Type (electrical equipment groups) TLAAs. In lieu of submitting the entire EQ electric equipment list, the following is provided:

Section 6.3 of the LRA contains a list of EQF numbers with 40-year life evaluations for Passive Long-Lived EQ Device Types. The following EQF numbers contain 40-year life evaluations for Active Long-Lived EQ Device Types:

- Motors
MTR001, MTR002, MTR003, MTR006, MTR008, MTR024, MTR049, MTR053, MTR054
- Valve Motor Operators
MOV001, MOV002
- Hydrogen Recombiner
HR0001
- Transmitter
FT0001
- Radiation Monitor
HRRMS1

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- Thermocouple
TC0001
- Resistance Temperature Detector
RTD002
- Pressure Switch
PS0008, PS0011, PS0012
- Pressurizer Flow Monitoring
VFM501
- Limit Switch
ZS0007, ZS0020, ZS0021

The above list of EQFs, along with those identified in Section 6.3 of the LRA, comprise the complete list of EQ Device Type TLAA's within the 10 CFR 50.49 (EQ) Program.

It is important to note that changes, additions, and deletions to this EQ Device Type list will occur at various times due to plant changes, modifications, and re-analyses without notification to the NRC. Such changes are internally administered as part of the EQ Program/Design Change Processes in accordance with procedural controls described in Section 6.3 of the LRA.

It is also important to note that not all components associated with an EQ Device Type, identified as a TLAA, were qualified for 40 years. Many of the individual EQ components have qualified lives significantly less than 40 years and are replaced accordingly, prior to the expiration of their specific qualified life. An EQ Device Type (Passive or Active) was identified as a TLAA if at least one of the EQ components associated with that EQ Device Type was qualified for 40 years.

Finally, it is equally important to note that qualified life is EQ Component and/or EQ Device Type specific and is typically not correlated to the overall facility licensed life of 40 years. Many of these components/device types were installed long after the beginning of plant's licensed life. These components/device types will be replaced within their qualified life, not the facility's licensed life. These components/device types may continue to be installed, in the facility, into the renewal period, without a re-evaluation, solely because their present qualified life (40 years) correlates to a specific facility life beyond the current 40-year license. This subject was discussed in the LRA in Section 6.3, page 6.3-17.

References

1. Letter from Mr. C. I. Grimes (NRC) to Mr. D. J. Walters (Nuclear Energy Institute), dated January 29, 1998, Generic Safety Issues Related to License Renewal
2. Letter from Mr. L. T. Doerflein (NRC) to Mr. C. H. Cruse (BGE), dated October 9, 1997, "NRC Region I Integrated Inspection Report Nos. 50-317/97-05 and 50-318/97-05 and Notice of Violation"

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3. Letter from Mr. A. W. Dromerick (NRC) to Mr. C. H. Cruse (BGE), dated September 18, 1996, "Resolution of Spent Fuel Storage Pool Safety Issues: Issuance of Final Staff Report and Notification of Staff Plans to Perform Plant-Specific, Safety Enhancement Backfit Analyses, Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 (TAC Nos. M96516 And M96517)"
4. Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated November 14, 1996, "Comments on Resolution of Spent Fuel Pool Safety Issues"
5. Letter from Mr. C. I. Grimes (NRC) to Mr. D. J. Walters (NEI), dated June 2, 1998, "Guidance on Addressing GSI-168 for License Renewal"
6. Letter from Mr. D. L. Solorio (NRC) to Mr. C. H. Cruse (BGE), September 4, 1998, "Request for Additional Information for the Review of the Calvert Cliffs Nuclear Power Plant, Units 1 & 2, Integrated Plant Assessment on Generic Safety Issues"