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

BGE

November 4, 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 Report for the Safety Injection System

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 3, 1998, "Request for Additional Information for the Review of the Calvert Cliffs Nuclear Power Plant, Units 1 & 2, Integrated Plant Assessment, Sections 4.1, 4.2, 5.2, 5.7, 5.15, and 5.16"

(c) Letter from Mr. 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 (LRA). Reference (b) forwarded questions from NRC staff on six sections of the BGE LRA. Reference (c) forwarded a numbering system for tracking BGE's response to all of the BGE LRA requests for additional information and the resolution of the responses. Attachment (1) provides our responses to the Safety Injection System questions contained in Reference (b). The questions are renumbered in accordance with Reference (c).

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 4 day of November, 1998.

WITNESS my Hand and Notarial Seal:

Michelle D. Hall
Notary Public

My Commission Expires:

February 1, 2002
Date

CHC/KRE/dlm

Attachment: (1) Response to Request for Additional Information; Integrated Plant Assessment Report for the Safety Injection System

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 REPORT FOR THE SAFETY INJECTION SYSTEM

Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
November 4, 1998

NRC Question No. 5.15.18

System walkdowns can identify some aging effects. Explain why Procedure PEG-7, "System Walkdowns," is not explicitly included as part of Baltimore Gas and Electric Company's (BGE's) aging management program to maintain the Safety Injection System (SIS) components.

BGE Response

Baltimore Gas and Electric Company has demonstrated, in the LRA, that all plausible aging effects are managed. CCNPP Administrative Procedure MN-1-319, "Structure and System Walkdowns," which replaced PEG-7, was not credited for most of the system because the programs described in the LRA provide the required aging management. Procedure MN-1-319 was credited for managing aging effects as summarized on page 5.15-41 of the BGE LRA.

NRC Question No. 5.15.19

A foreign material exclusion program limits the introduction of halogens, loose parts, etc., into the Reactor Coolant System. Explain why such a program is not explicitly included as part of BGE's aging management program to maintain the SIS components.

BGE Response

Baltimore Gas and Electric Company has a formal Foreign Material Exclusion Program and agrees that such a program limits the introduction of the items listed in the question. However, BGE has demonstrated, in the LRA, that all plausible aging effects are managed. Our Foreign Material Exclusion Program was not credited because the programs described in the LRA provide the required aging management. Introduction of foreign materials into a system is not an aging effect.

NRC Question No. 5.15.20

The application describes two instances of water hammer in the SIS that resulted in damage to piping supports. Discuss whether these water hammer events contribute to the aging effects of the SIS components. Also, discuss what corrective actions have been taken to preclude recurrence of water hammers.

BGE Response

Equipment damage in these events was limited to piping supports. Since no damage to piping or other SIS components was identified during these water hammer events, there is no contribution to aging effects. Completed and planned corrective actions include redesign and replacement of the damaged piping supports, revisions to plant operating practices to minimize water hammer caused by check valve slam, system venting, etc., and installation of new check valves that will minimize the potential for water hammer and greatly reduce its magnitude should it occur.

NRC Question No. 5.15.21

State precisely the scope of SIS components in the Boric Acid Corrosion Inspection (BACI) Program and describe how the scope encompasses or bounds all the susceptible SIS components.

BGE Response

As described in section 5.15.2 of the LRA, the BACI Program requires visual inspection of all piping containing boric acid, and as such all SIS components susceptible to external general corrosion resulting from boric acid leakage are encompassed by the program.

NRC Question No. 5.15.22

Describe how the inspection scope and frequency of the BACI Program would detect and correct boric acid corrosion of SIS components before there is a loss of the structure and component intended functions.

BGE Response

The BACI Program is described in detail in Section 5.15.2 of the LRA. The scope of the program includes all SIS components susceptible to external general corrosion resulting from boric acid leakage. The frequency of the inspections is at least every refueling outage, with some areas being inspected after every reactor shutdown. This frequency is in line with industry guidance presented in Electric Power Research Institute NP-5985, "Boric Acid Corrosion of Carbon and Low-Alloy Steel Pressure Boundary Components in PWRs." The BACI Program was established in response to Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants," and has been reviewed by the NRC. The NRC reported the results of its review of all utilities inspection programs in NUREG/CR-5576, "Survey of Boric Acid Corrosion of Carbon Steel Components in Nuclear Plants," and concluded that all the programs met the intent of Generic Letter 88-05. Program procedures and records are maintained in auditable form and may be examined onsite at Calvert Cliffs.

NRC Question No. 5.15.23

Page 5.15-36 indicates that BGE will perform an engineering assessment of stress corrosion cracking for the refueling water tank (RWT) penetrations. Describe the scope of the assessment, and provide the completion schedule.

BGE Response

The configuration of the RWT penetrations susceptible to stress corrosion cracking due to their joint design and welding procedures are described in Section 5.15.2 (page 5.15-34) of the LRA. Refueling Water Tank No. 11 has 6 such penetrations ranging in size from 4" to 18"; RWT No. 21 has 7 such penetrations ranging in size from 4" to 20". The current schedule for completing this assessment is June 30, 2001. This schedule is based on current workload and priorities and is, therefore, subject to change.

NRC Question No. 5.15.24

Plant walkdown procedures have been described by both PEG-7 and MN-1-319. As discussed at the meeting on June 26, 1998, clarify the status of the two procedures and describe any significant differences.

BGE Response

Calvert Cliffs Procedure PEG-7 was canceled and superseded by MN-1-319. As discussed in the Updated Final Safety Analysis Report Supplement to the LRA (Appendix B page B-12), the current structure and systems walkdown program (i.e., MN-1-319) replaced the previous CCNPP Plant Engineering Guideline for system walkdowns (i.e., PEG-7). As stated on page B-12, this program (i.e., MN-1-319) meets the requirements for evaluating structure and system material condition in accordance with the Maintenance Rule at CCNPP. As discussed in the LRA sections on Structures (e.g. page 3.3A-23), PEG-7 was improved by MN-1-319 through incorporation of significant additional guidance on specific activities to be included in the scope of the structures' walkdowns.

NRC Question No. 5.15.25

Table 5.15-1 of the application lists SIS piping with designated "Device Codes" of "-CC," "-DC," "-GC," and "-HC" are subject to aging management review. Please explain these device codes, and describe the piping components in terms of the piping size, piping material, and corrosion allowances.

BGE Response

Device Type	-CC	-DC	-GC	-HC
Description	Stainless Steel Piping	Stainless Steel Piping	Stainless Steel Piping	Stainless Steel Piping
Size - inch	3/4-14	3/4-6	3/4-14	3/4-24
Material	ASTM A-376 Type 316	ASTM A-376 Type 304	ASTM A-358 Class 1 Type 304 or ASTM A-312 Type 304	ASTM A-358 Class 1 Type 304 or ASTM A-312 Type 304
Corrosion Allowance	None	None	None	None

NRC Question No. 5.15.26

Are there any parts of the systems, structures, and components within the SIS that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to, such inaccessible areas. If different aging effects or aging management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (a) Preventive actions that will mitigate or prevent aging degradation; (b) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (c) Detection of aging effects before loss of structure and component intended functions; (d) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (e) Acceptance criteria to ensure structure and component intended functions; and (f) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

BGE Response

Baltimore Gas and Electric Company can access all SIS components if required.

NRC Question No. 5.15.27

In the report, several plant surveillance test procedures and administrative procedures were mentioned, such as STP M-571G-1(2), STP M-571L-1(2), and CP-204 for managing aging of SIS (Groups 2 and 4) for license renewal. Please provide a summary description of the procedures regarding how their implementation will address the following elements for their related aging management program(s): (a) The scope of structures and components managed by the program; (b) Preventive actions designed to mitigate or prevent aging degradation; (c) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (d) Detection of aging effects before loss of structure and component intended functions; (e) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (f) Acceptance criteria to ensure structure and component intended functions; and (g) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

BGE Response

The Calvert Cliffs procedures credited for managing aging of SIS components are identified in Table 5.15-3 of the LRA, on page 5.15-40. The identified programs direct periodic activities that will discover degradation as described in the body of the LRA. Once discovery occurs, the procedures would invoke the site Corrective Actions Program. Detailed information concerning credited aging management programs is readily available onsite for review.