**CHARLES H. CRUSE**
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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 Chemical and Volume Control System, and Errata

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. 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 information and the resolution of the responses. Attachment (1) provides our response to the Chemical and Volume Control System questions contained in Reference (b). The questions are renumbered in accordance with Reference (c). Attachment (2) provides errata to Section 5.2 of the BGE LRA, "Chemical and Volume Control System."

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

Attachments: (1) Response to Request for Additional Information; Integrated Plant Assessment Report for the Chemical and Volume Control System

(2) Errata to Section 4.1, Chemical and Volume Control System; License Renewal Application

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)

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## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION;

## INTEGRATED PLANT ASSESSMENT REPORT FOR THE

## CHEMICAL AND VOLUME CONTROL SYSTEM

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

## ATTACHMENT (1)

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION; INTEGRATED PLANT ASSESSMENT REPORT FOR THE CHEMICAL AND VOLUME CONTROL SYSTEM

**NRC Question No. 5.2.1**

Based on the description found on page 5.2-23 of the application (*Baltimore Gas and Electric Company's [BGE's] License Renewal Application [LRA]*), the scope of the Boric Acid Corrosion Inspection (BACI) Program appears to be limited to components located inside the containment building. Baltimore Gas and Electric Company also stated on the same page that the "program also requires examination of specific components for discovery of leakage during each refueling outage." State precisely the scope of Chemical and Volume Control System (CVCS) components in the BACI Program and describe how the scope encompasses or bounds all the susceptible CVCS components.

**BGE Response**

In addition to specified locations inside the Containment, the BACI Program requires inspections of the Auxiliary Building areas containing piping with borated water/boric acid. This inspection program encompasses all areas containing CVCS piping and components.

**NRC Question No. 5.2.2**

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

**BGE Response**

Baltimore Gas and Electric Company described the BACI Program in Section 5.2.2 (Chemical and Volume Control System), Group 2, of the BGE LRA. This description included mitigation of aging effects and discovery of effects.

**NRC Question No. 5.2.3**

Provide the results of BGE's most recent internal audit of the BACI Program; including areas of strengths and weaknesses, safety implication of findings, and corrective action plans and schedule for implementation.

**BGE Response**

Baltimore Gas and Electric Company has requested clarification from NRC on this item and has agreed to work toward clarification through forthcoming interaction, most likely in the form of a public meeting. Baltimore Gas and Electric Company may supplement this response, based on the outcome of that interaction.

**NRC Question No. 5.2.4**

System walkdowns can identify some aging effects. Explain why Procedure PEG-7, "System Walkdowns," is not explicitly included as part of BGE's aging management program to maintain the CVCS components.

**BGE Response**

Baltimore Gas and Electric Company has demonstrated that all plausible aging effects are managed in the LRA. CCNPP Administrative Procedure MN-1-319, "Structure and System Walkdowns," which

replaced PEG-7, was not credited because the programs described in the LRA provide the required aging management.

**NRC Question No. 5.2.5**

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 CVCS components.

**BGE Response**

Baltimore Gas and Electric Company has demonstrated that all plausible aging effects are managed in the LRA. 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. 5.2.6**

Flashing erosion of let down system orifices has been identified at other facilities (Surry and Diablo Canyon). Erosion also occurred downstream of the orifices and compromised welds in the pipe. The BGE application does not address this aging mechanism for the CVCS. Are there similar components at Calvert Cliffs units, and, if so, are there plans for inspection? If so, provide a summary of the inspection plan and schedule.

**BGE Response**

As shown in Figure 5.2-1 of the LRA, Calvert Cliffs uses letdown flow control valves and does not use letdown flow orifices. Flashing of the hot liquid between the letdown flow control valves and the letdown heat exchanger is prevented by controlling back pressure with a back pressure control valve downstream of the letdown heat exchanger. This provides a minimum margin to flashing of about 30 psi. Cavitation erosion is, therefore, not plausible in CVCS components within the scope of license renewal at Calvert Cliffs. Cavitation erosion was considered in the aging management review but found to be not plausible as shown in Table 5.2-3.

**NRC Question No. 5.2.7**

Are there any parts of the systems, structures, and components within the CVCS 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 CVCS components if required.

**NRC Question No. 5.2.8**

Page 9.1-31 (Rev. 21) of the Calvert Cliffs Updated Final Safety Analysis Report indicates that boric acid solution is stored in heated and insulated tanks and is piped in heat-traced and insulated lines to preclude precipitation of the boric acid. If the storage tank and pipe insulation material within the CVCS were subject to an aging management review, identify where they are evaluated in the BGE application. If not, justify why these components have been excluded from the renewal scope.

**BGE Response**

Insulation performs none of the intended functions listed in section 5.2.1.1, and as such is not within the scope of license renewal.

ATTACHMENT (2)

# ERRATA TO SECTION 4.1, CHEMICAL AND VOLUME CONTROL SYSTEM;

# LICENSE RENEWAL APPLICATION

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

## ATTACHMENT (2)

### ERRATA TO SECTION 4.1, CHEMICAL AND VOLUME CONTROL SYSTEM; LICENSE RENEWAL APPLICATION

The following changes apply to Section 5.2 of the Baltimore Gas and Electric Company License Renewal Application:

- On page 5.2-26, the first paragraph under "**Group 3 (Device types with air internal environments subject to general corrosion) - Aging Management Program(s)"** should begin with "Mitigation:" and end with "This program is credited for the mitigation of general corrosion for the Group 3 components."
- On page 5.2-38, Table 5.2-4, for existing program "CCNPP Administrative Procedure MN-3-301, "Boric Acid Corrosion Inspection Program," the "Credited As" block should read, in part, ". . . general corrosion . . ." vice ". . . crevice corrosion, general corrosion, and pitting . . ."