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November 2, 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
Responses to Request for Additional Information for the Review of the Calvert
Cliffs Nuclear Power Plant, Units 1 & 2, Integrated Plant Assessment Report for
the Compressed Air System

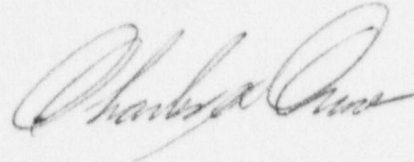
- REFERENCES:**
- (a) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated July 30, 1997, "Request for Review and Approval of System Reports for License Renewal"
 - (b) Letter from Mr. D. L. Solorio (NRC) to Mr. C. H. Cruse (BGE), dated August 21, 1998, "Request for Additional Information for the Review of the Calvert Cliffs Nuclear Power Plant, Units 1 & 2, Integrated Plant Assessment Report for the Compressed Air System"

Reference (a) forwarded two Baltimore Gas and Electric Company system reports for license renewal. Reference (b) forwarded questions from NRC staff on one of those two reports, the Integrated Plant Assessment Report for the Compressed Air System. Attachment (1) provides our responses to the questions contained in Reference (b).

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

Very truly yours,



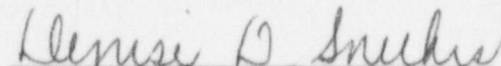
STATE OF MARYLAND :
: TO WIT:
COUNTY OF CALVERT :

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 2nd day of November 1998.

WITNESS my Hand and Notarial Seal:


Notary Public

My Commission Expires:

2/2/98
Date

CHC/DLS/dlm

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

cc: R. S. Fishman, 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

COMPRESSED AIR SYSTEM

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION; INTEGRATED PLANT ASSESSMENT REPORT FOR THE COMPRESSED AIR SYSTEM

NRC Question No. 5.4.1

A simplified diagram of the Compressed Air System (CAS), Section 5.4 of the Baltimore Gas and Electric Company (BGE) License Renewal Application (LRA), depicting the portions of the system that are within the scope of license renewal, as was included with other sections in the LRA that the staff has reviewed, was not provided. As a result, the staff is having difficulty gleaned from the CAS report exactly which portions of the CAS are or are not designated to be within the scope of license renewal. The information in the Updated Final Safety Analysis Report also did not help in this regard. Please provide a simplified diagram depicting the major portions of the system, consistent with the level of detail provided in other system diagrams provided in the LRA, and discuss in more detail exactly where there are any boundaries that separate license renewal non-scope and within-scope portions of the system. If a simplified diagram is not available, then another option would be to use the existing plant piping and instrument drawing or Updated Final Safety Analysis Report figures for the air systems, and supplement the drawings with a summary description of the boundaries of the CAS in sufficient detail such that the staff will be able to determine which components are within and outside of the scope of license renewal.

The next two Questions, Nos. 2 and 3, arose partly because a simplified diagram was not provided to aid the staff in its understanding of the license renewal boundaries of the CAS. In developing your response to Question No. 1, please consider the following questions, in part, as additional guidance related to the level of detail to include, in order to facilitate the staff's understanding of your responses to these questions.

BGE Response

The CAS has 10 intended functions as described on page 5.4-3 of the BGE LRA. Compressed Air System components that support those intended functions are within the scope of license renewal. All components that support these functions, with the exception of those non-safety-related (NSR) components supporting the fire protection function, are considered safety-related (SR) at Calvert Cliffs.

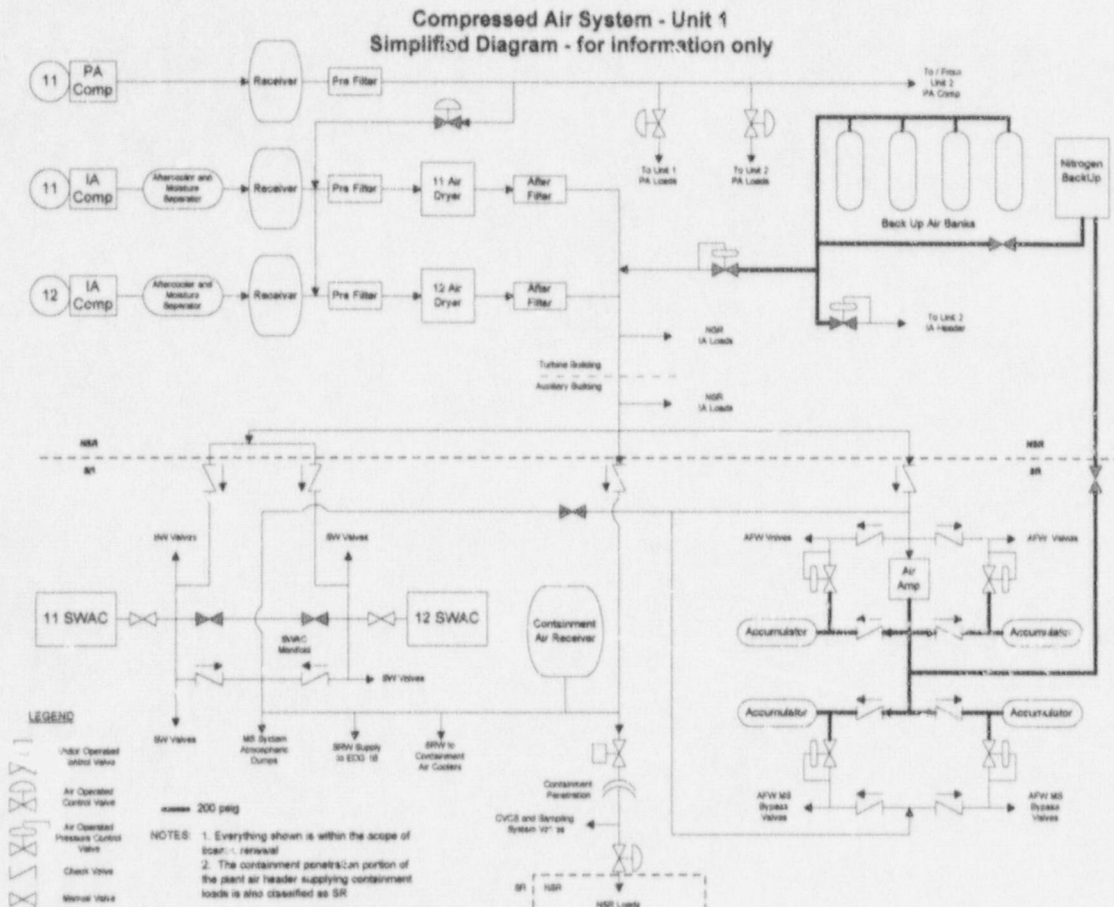
Section 5.4 addresses compressed air components. It should be noted that some SR compressed air components associated with specific loads are addressed in the section of the LRA for that subject system. For example, accumulators dedicated to a specific saltwater air-operated valve would be in Section 5.16, Saltwater Cooling System, of the BGE LRA. Furthermore, some of the components are addressed generically in the commodity evaluations, e.g., the tubing is addressed in Section 6.4, Instrument Lines, of the BGE LRA. Specifics on each component and load configuration are available onsite for further review.

The NSR components of the CAS that are normally aligned for use during operation in accordance with plant Operating Instructions are also considered within the scope of license renewal because they support the fire protection function. The NSR components are addressed in Section 5.10, Fire Protection, of the BGE LRA.

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION; INTEGRATED PLANT ASSESSMENT REPORT FOR THE COMPRESSED AIR SYSTEM

The following simplified diagram of the CAS is a presentation of the SR/NSR boundaries for Unit 1. Unit 2 is similar.



NRC Question No. 5.4.2

From your description of the CAS and its intended function, we concluded that all parts of the CAS that maintain the pressure boundary (main header, branch piping, tubing to instruments and actuators, etc.) are within the scope of license renewal, as described in the CAS report, or are to be included in other sections of the LRA. We also concluded that the instrument air, plant air, and saltwater air subsystems were within the scope of license renewal since they are all interconnected. In order to verify our conclusions, please identify if there are any pressure retaining components in the CAS whose failure would result in loss of system pressure, and are not considered to be within the scope of license renewal. If there are any such components, provide a summary justification as to why they do not fall within the scope of license renewal.

BGE Response

The SR portions of the CAS are included in the scope of license renewal because they have intended functions that meet criteria 10 CFR 54.4(a)(1) or 54.4(a)(2) in accordance with the BGE Integrated Plant Assessment. The Instrument Air Subsystem provides an NSR supply of air to the instrument

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION; INTEGRATED PLANT ASSESSMENT REPORT FOR THE COMPRESSED AIR SYSTEM

air loads throughout the plant during normal operation. A SR backup supply is provided by the Saltwater Air Subsystem from a set of redundant air compressors. As shown on the attached simplified drawing, the pressure boundary of the SR portions of the CAS is isolated from the pressure boundary of the NSR portions of the system by check valves, control valves, and manual valves.

The NSR components of the CAS that are normally aligned for use during operation in accordance with plant Operating Instructions are also considered within the scope of license renewal because they support the fire protection function. The NSR components are addressed in Section 5.10, Fire Protection, of the BGE LRA.

As noted above, components that meet criteria 10 CFR 54.4(a)(2) are SR and are included in the scope of license renewal. Therefore, there are no pressure-retaining components in the CAS whose failure would result in loss of system pressure that are not in the scope of license renewal.

NRC Question No. 5.4.3

The CAS report indicates that all components of the CAS that support the system functions, with the exception of the fire protection function, are SR and seismic Category I. Please provide clarification between the SR and NSR interfaces within the CAS to assist the staff with determining which interfaces within the CAS are within and outside the scope of license renewal.

BGE Response

Please refer to the response provided for Question No. 1.

NRC Question No. 5.4.4

In the description of intended functions of the CAS the auxiliary feedwater air subsystem and a containment air subsystem are identified. Briefly describe these subsystems and identify if they are included within the scope of the CAS report. If these subsystems are addressed in other sections of the LRA provide a cross reference to where they are addressed to facilitate the staff's review.

BGE Response

The auxiliary feedwater air subsystem and the containment air subsystems are both addressed in the scope of the CAS. It should be noted that some of the components with specific loads are addressed in the Section of the LRA for that subject system. For example, Auxiliary Feedwater System control valve operators are addressed in Group 8 of Section 5.1, Auxiliary Feedwater System, of the BGE LRA. Furthermore, some of the components are addressed generically in the commodity evaluations, e.g., the tubing is addressed in Section 6.4 of the BGE LRA. Specifics on each component and load configuration are available onsite for further review.

The auxiliary feedwater air subsystem is a grouping of SR components dedicated to providing air to certain SR valves required for the operation of the Auxiliary Feedwater System.

The containment air supply subsystem is a grouping of SR components dedicated to providing air to certain SR valves inside Containment.

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION; INTEGRATED PLANT ASSESSMENT REPORT FOR THE COMPRESSED AIR SYSTEM

NRC Question No. 5.4.5

Provide the CAS piping size, piping material, and corrosion allowances.

BGE Response

Compressed Air System piping is 6", 4", 3", and 2¹/₂" Schedule 40, and 2" and under Schedule 80 American Society for Testing and Materials A-106 Grade B carbon steel. No specific corrosion allowance was included in the original design.

NRC Question No. 5.4.6

Provide a description of the CAS external environment(s) and include a discussion of any potential aging effects applicable to the external surfaces of the components requiring an aging management review.

BGE Response

The external surfaces of CAS components are exposed to climate-controlled air inside the Containments, the Auxiliary Building, and the Turbine Building. Corrosion of external carbon steel surfaces in general is insignificant for uninsulated components located inside plant structures. General corrosion is considered potential on the carbon steel external surfaces, but all such surfaces are provided a protective coating that virtually eliminates corrosion. Thus, general corrosion on the external surfaces of CAS components is not plausible.

NRC Question No. 5.4.7

Describe the extent to which Section XI leak tests and inspections apply to the CAS if at all. If so, provide a brief summary of the results and discuss how the results were considered in identifying plausible aging mechanisms.

BGE Response

The extent to which the American Society of Mechanical Engineers Section XI Inservice Inspection Program applies to the CAS is described in Section 5.4.1.1 of BGE's LRA, at the bottom of page 5.4-3. The program to inspect Class MC piping, such as the in-scope CAS containment penetration piping, is in the development stage and has not yet been implemented. Therefore, there are no inspection results, and the program is not credited with managing aging.

The extent to which the American Society of Mechanical Engineers Section XI Inservice Testing Program applies to the CAS is described in Section 5.4.2 of BGE's LRA, on page 5.4-12, under the heading "CCNPP Pump and Valve IST Program." The most recent test results for the in-scope check valves determined the as-found leakage of some valves to be in excess of administrative limits. The valves were subsequently replaced, and the new valves tested satisfactory. The valves have been graded (a)(1) under the Maintenance Rule for unacceptable performance due to repeat failures. The results of the tests were not directly used in the determination of plausibility; however, they do support the conclusions for seating surface wear. Historical records of past tests are available for review onsite.

A description of significant operating experience considered during review of the CAS is provided in Section 5.4.1.1 of BGE's LRA, on page 5.4-4, under the heading "Operating Experience."

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION; INTEGRATED PLANT ASSESSMENT REPORT FOR THE COMPRESSED AIR SYSTEM

NRC Question No. 5.4.8

Pages 5.4-11, 5.4-12 and References 27 through 36 mention several Calvert Cliffs Nuclear Power Plant surveillance test procedures and administrative procedures, such as STP M-571F-1, STP M-571F-2, STP M-583-1, STP M-583-2, EN-4-102, EN-4-104 and MN-1-102, for managing aging of the Group 1 and 2 components for license renewal. Please provide a summary description of the procedures regarding how their implementation addresses the following elements for their related aging management program(s): (a) The scope of structures and components managed by the program; (b) 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 function; (e) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (f) Acceptance criteria to ensure 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 Groups 1 and 2 components are identified in Table 5.4-3 of BGE's LRA on page 5.4-19. The identified programs direct periodic activities that will discover degradation and invoke the site Corrective Action Program when degradation is discovered. Descriptions of the credited programs are provided in the applicable group discussions in Section 5.4.2 of the LRA; summary descriptions of credited aging management programs are included in the Updated Final Safety Analysis Report Supplement provided in Attachment (1), Appendix B, of the LRA. Detailed information concerning credited aging management programs is readily available onsite for review.

NRC Question No. 5.4.9

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