May 2, 1997

Mr. Charles H. Cruse
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657 - 4702

SUBJECT: NRC INSPECTION REPORT NOS. 50-317/96-09 AND 50-318/96-09
AND NOTICE OF VIOLATION

Dear Mr. Cruse:

This letter refers to your December 12, 1996, correspondence in response to our November 1, 1996, letter.

Thank you for informing us of the corrective and preventive actions documented in your letter. These actions will be examined during a future inspection of your licensed program.

Sincerely,

Original Signed by:

Lawrence T. Doerflein, Chief
Projects Branch 1
Division of Reactor Projects

Docket Nos. 50-317
50-318

cc:
T. Pritchett, Director, Nuclear Regulatory Matters (CCNPP)
R. McLean, Administrator, Nuclear Evaluations
J. Walter, Engineering Division, Public Service Commission of Maryland

cc **w/copy of Licensee's Response Letter**:
K. Burger, Esquire, Maryland People's Counsel
R. Ochs, Maryland Safe Energy Coalition
State of Maryland (2)

Distribution **w/copy of Licensee's Response Letter**:
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W. Dean, OEDO (WMD)
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S. Bajwa, NRR
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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

December 12, 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
Reply to Notice of Violation -- Combined NRC Region I Inspection Report Nos. 50-317(318)/96-09

REFERENCE: (a) Letter from Mr. M. C. Modes (NRC) to Mr. C. H. Cruse (BGE), dated November 1, 1996, Combined NRC Region I Inspection Report Nos. 50-317/96-09 and 50-318/96-09 and Notice of Violation

In response to Reference (a), Attachment (1) details our response to a cited violation concerning an unauthorized modification to the auxiliary feedwater pump base guide blocks.

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

Very truly yours,

CHC/DWM/bjd

Attachment

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

ATTACHMENT (1)

REPLY TO NOTICE OF VIOLATION NOS. 50-317/96-09-01 AND 50-318/96-09-01

Notice of Violation Nos. 50-317/96-09-01 and 50-318/96-09-01 describes a non-conformance concerning an unauthorized modification to the auxiliary feedwater (AFW) pump turbine base guide blocks. The Notice of Violation states, in part, that:

> *On or about June 21, 1996, a design change was made that was not subject to design control measures commensurate with the original design when the System Engineer for the Auxiliary Feedwater (AFW) system implemented a "Defacto" modification (as defined in ES-1-100, RW5) in the AFW system. The defacto modification involved not welding the guide blocks used to ensure the seismic qualification of the AFW pump. This design change/modification was not evaluated by the responsible design organization for validity and compatibility with the original design; and the maintenance personnel disregarded the configuration indicated on the approved drawing showing welded blocks on the basis of an informal instruction from a System Engineer.*

I. REASON FOR THE VIOLATION

During the 1996 Unit 1 refueling outage, AFW Pump Turbines 11 and 12 were overhauled. To facilitate the overhaul, the welded guide blocks, which provide seismic support and stabilize the AFW pump turbines when they thermally expand during operation, were removed from the AFW pump turbine support base. In mid-June, during turbine reassembly, a question was raised as to whether the guide blocks, which are normally bolted and welded in place, needed to be welded prior to the unit entering MODE 3. The gap between the guide block and the AFW pump turbine housing is sufficiently small (twelve thousandths of an inch) that thermal expansion of the guide block material during welding has, in the past, resulted in the gap being out of tolerance. Based on personal observations in the field, the System Engineer believed that the guide blocks served no function in support of pump operability and, therefore, issued an informal memorandum stating that the guide blocks did not have to be welded prior to entering MODE 3. The turbines were reassembled with the weld blocks bolted in place, but not welded. Unit 1 initially entered MODE 3 on June 21, 1996.

On August 8, 1996, Maintenance and Quality Verification discussed the configuration and brought it to the attention of another System Engineer, who was under the impression that the design change had been approved. Upon finding, on August 9, 1996, that the design change had not been approved, Plant Engineering personnel contacted Operations, who declared the Unit 1 steam driven AFW pumps inoperable and effected repairs. The guide blocks were welded as required in about six hours and the AFW pumps were returned to service. During the time that this condition existed, Unit 1 was brought up above MODE 3, shut down, and brought back above MODE 3, resulting in approximately 17 days of operation in MODE 3 or greater with this condition before the guide blocks were welded to return the system to its design configuration.

Subsequent engineering review found that the AFW pumps are seismically qualified with the guide blocks bolted but unwelded. This condition did not, therefore, compromise plant safety.

The root cause of this event was personnel error. The System Engineer made an incorrect interpretation of the design function of the guide blocks and failed to properly process the plant configuration change through the existing engineering procedures. The System Engineer believed that the guide blocks did not need to be welded, but did not verify that this was the case.

He issued informal, unreviewed guidance to the Maintenance personnel to this effect despite reference to the guide blocks in the Technical Manual and a plant drawing showing that the guide blocks must be welded. As a result, through a lack of research and questioning attitude, improper technical guidance was issued in a fashion contrary to established procedures.

A review of the modification process found that, had it been followed, this non-conformance would not have resulted. The process for making design changes of this sort normally requires the System Engineer to submit an Engineering Services Request or a Temporary Alteration to Design Engineering to revise the configuration of the AFW pump turbine guide blocks. He failed to recognize this as a technical manual revision, so he didn't use the configuration change process. In this case, this would have entailed a review of the information in the Vendor Technical Manual, which was sufficient to lead either the System Engineer or Design Engineering to the correct conclusion regarding the need for welding the guide blocks.

Maintenance personnel are expected to function as a barrier to implementation of unapproved design changes. In this case, Maintenance personnel twice questioned guidance on not welding the blocks and escalated the matter to the General Supervisor-Mechanical Maintenance, who accepted the change as part of his pre-startup review. While Operations' procedures caused them to raise the question about the incomplete Maintenance Order before startup, they relied upon the report from Maintenance that the condition had Engineering approval. An independent evaluation by Operations in greater detail is not expected.

II. CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The blocks were welded on August 9, 1995, approximately six hours after the condition was determined to be non-conforming. The Unit 2 AFW pump guide blocks were verified to be welded.

The System Engineer was provided appropriate counseling to emphasize the need to obtain proper design review prior to making plant configuration changes. Lessons learned training has been conducted with all Plant Engineering personnel to reiterate that System Engineers cannot authorize plant configuration changes without formal approval. Additionally, guidance that contradicts the design configuration cannot be issued from Plant Engineering without formal approval from Design Engineering. While guidance that provides an interpretation or resolution of ambiguity can be made by System Engineers, they cannot contradict or waive design configuration requirements.

Awareness training was conducted within the Maintenance organization regarding this event to heighten awareness of craft personnel to the possibility of unapproved plant modifications being implemented without proper or prior approval.

Design-related guidance issued by Plant Engineering to the field during the 1996 Unit 1 outage was reviewed to determine if other similar events had occurred. No similar instances where the correct engineering processes were not followed to implement configuration changes were found.

III. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

Although review indicates that the present processes for design change and operability determination have not resulted in significant similar events, we believe that vulnerabilities exist in the Engineering interfaces required by these processes. We will revise the appropriate procedures to clarify when it is appropriate to justify operability of plant equipment and when a design change is needed.

IV. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on August 9, 1996 when the guide blocks were welded in place.