BALTIMORE
GAS AND
ELECTRIC

1650 CALVERT CLIFFS PARKWAY • LUSBY, MARYLAND 20657-4702

GEORGE C. CREEL
SENIOR VICE PRESIDENT
(410) 260-3690

September 3, 1992

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Director, Office of Enforcement

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Notice of Violation - Electrical Distribution System Functional Inspection (EDSFI) [Inspection Report Nos. 50-317(318)/92-80]

REFERENCES:

(a) Letter from Mr. T. T. Martin (NRC) to Mr. G. C. Creel (BG&E), Notice of Violation and Proposed Imposition of Civil Penalty - $50,000, dated August 7, 1992

(b) Letter from Mr. J. P. Durr (NRC) to Mr. G. C. Creel (BG&E), Enforcement Conference Summary - June 17, 1992, dated July 30, 1992

(c) Letter from Mr. M. W. Hodges (NRC) to Mr. G. C. Creel (BG&E), NRC Inspection Report Nos. 50-317/92-80; 50-318/92-80, dated June 5, 1992

Gentlemen:

Baltimore Gas and Electric Company's reply to the Notice of Violation contained in Reference (a) is attached. Also attached is a check in the full amount of the civil penalty imposed by the Nuclear Regulatory Commission.

Cert No P 098603408
Check # 191058
$ 50,000
IE14
1/1

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

Very truly yours,

GCC

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

I hereby certify that on the 3rd day of September, 1992, before me, the subscriber, a Notary Public of the State of Maryland in and for Calvert County, personally appeared George C. Creel, being duly sworn, and states that he is Senior Vice President of the Baltimore Gas and Electric Company, a corporation of the State of Maryland; that he provides the foregoing response for the purposes therein set forth; that the statements made are true and correct to the best of his knowledge, information and belief; and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal:

Michelle D. Hall
Notary Public

My Commission Expires:

February 2, 1994
Date

GCC/MDM/bjd

Attachment

cc: Document Control Desk, NRC
D. A. Brune, Esquire
J. E. Silberg, Esquire
R. A. Capra, NRC
D. G. McDonald, Jr., NRC
T. T. Martin, NRC
P. R. Wilson, NRC
R. I. McLean, DNR
J. H. Walter, PSC

ATTACHMENT (1)

REPLY TO NOTICE OF VIOLATION
INSPECTION REPORT NO. 92-80/80

I. VIOLATION OF 10 CFR 50.46 (a)(1)(i) (EMERGENCY CORE COOLING SYSTEM [ECCS] COOLING PERFORMANCE).

The Notice of Violation described in Reference (a) indicates Baltimore Gas and Electric Company (BG&E) failed to assure ECCS cooling performance in accordance with 10 CFR 50.46 (a)(1)(i). Specifically, BG&E failed to assure cooling performance for a range of small break loss of coolant accidents (LOCAs) coincident with a loss of offsite power (LOOP). In this scenario the potential existed for two major loads to sequence on an Emergency Diesel Generator (EDG) simultaneously, due to EDG sequencer process-controlled loading design, thus potentially degrading the emergency bus voltage below levels required to ensure the proper operation of safety equipment.

A. Admission or Denial of the Alleged Violation

The violation occurred as stated.

B. Reasons for the Violation.

This violation occurred due to a failure to ensure a component designed to mitigate serious safety events, was able to perform under all required scenarios. Analysts did not recognize prior to 1987 that break size would indirectly affect the sequence of loads and could thereby challenge the diesel's ability to sustain emergency power. Because this effort was unrecognized, a potentially critical range of break sizes was not analyzed. Prior to 1987, we did not recognize the potential for sequencing major loads concurrently onto the EDGs. In 1987, a calculation was performed that indicated a problem existed, but due to a low probability of occurrence this scenario was considered to have a very low safety significance. Thus a proposed modification to the sequencer, based on the results of the calculation, was not implemented.

C. Corrective Steps that Have Been Taken and Results Achieved.

In response to an NRC EDSFI question BG&E concluded in March, 1992 that a degraded voltage condition on safety equipment buses could occur during certain low probability accident scenarios. After reaching this conclusion all three EDGs were declared inoperable on March 19, 1992. With the EDGs inoperable, an Unusual Event was declared for Calvert Cliffs Unit 1 & 2 and both Units were shutdown from 100% power. During the shutdown period for each Unit, modifications were made to the Loss of Coolant Accident (LOCI) sequencer to prevent out of sequence EDG loading. Subsequent calculations were performed which indicated that required safety functions would have successfully operated in the as-found condition, thus confirming the low safety significance associated with this concern.

D. Corrective Steps That Will Be Taken to Avoid Further Violations.

As stated above, modifications were made to the LOCI sequencer to correct the EDG loading concern. Other load sequence scenarios were also considered and modifications were made where necessary. All corrective actions that will prevent further violations have been taken.

E. **Date When Full Compliance Will be Achieved.**

Full compliance was achieved after modifications and testing were completed on both Units. After both Units were shutdown, Unit 1 entered a refueling outage and testing on the Unit 1 sequencer was completed on June 6, 1992. Testing on Unit 2 was completed on April 1, 1992.

II. VIOLATION OF 10 CFR PART 50, APPENDIX B, CRITERION XVI (CORRECTIVE ACTION).

10 CFR Part 50, Appendix B, Criterion XVI (Corrective Action), requires, in part, that measures be established to assure that conditions adverse to quality, such as failures, deficiencies, and deviations, are promptly identified and corrected. Contrary to the above, from January 1987 until March 19, 1992, BG&E identified a condition adverse to quality but did not properly correct it. Specifically, BG&E identified in January 1987, through a calculation (E-87-1), the potential for degrading emergency bus voltages below levels required to ensure the proper operation of safety equipment but did not correct the condition until it was identified by the NRC in March 1992.

A. **Admission or Denial of the Alleged Violation.**

The violation occurred as stated.

B. **Reasons for the Violation.**

BG&E dispositioned this issue in 1987 based on a probabalistic safety approach without considering the deterministic requirements of 10 CFR 50.46. As a result we did not modify the plant or obtain NRC concurrence for the condition to restore us to compliance. This was caused by weaknesses in our corrective action processes and a limited regulatory awareness.

This issue was first identified at Calvert Cliffs in 1987 after internal review of an INPO Operations and Maintenance Reminder (O&MR). The specific concern detailed in the O&MR was not applicable to Calvert Cliffs. An evaluation of the generic issue revealed the potential for safety system actuation signals to occur after the expected time interval and cause a vulnerability to EDG transient overloading.

Once identified, a significant amount of effort was put forth to analyze the issue. An electrical calculation was completed to determine the effects on EDG voltage, and a proposed modification to the sequencers was developed. At the same time a complete Probabilistic Risk Assessment (PRA) was performed to calculate the risk associated with this postulated accident scenario. The Plant Operations and Safety Review Committee (POSRC) recommended to the Plant Manager that the modification not be implemented based on the accident scenario's low probability of occurrence. After making this decision, BG&E failed to seek NRC concurrence, resulting in a noncompliance with 10 CFR 50.46.

The decision to not make modifications to the sequencers was a result of process weaknesses and deficient regulatory perspective. Our 1987 processes contributed to the failure to recognize the regulatory aspects of this issue. Our corrective action

processes at the time were fragmented, and issues were not uniformly evaluated for operability, reportability, and design impact. The primary focus of the Plant Operating Experience Assessment Committee (POEAC) was to evaluate potential safety concerns for applicability to Calvert Cliffs. Regulatory compliance was not systematically considered by the committee.

Additionally our awareness of regulatory requirements was incomplete. This was particularly true regarding regulatory acceptability of PRA in evaluating plant design. PRA was a relatively new technique in 1987, and little guidance on its use had been written. The application of PRA to this issue was one of the first at Calvert Cliffs.

C. **Corrective Steps that Have Been Taken and Results Achieved**.

The current Calvert Cliffs processes used to handle issues of this type are sound and responsive. As part of our Performance Improvement Plan (PIP), an Industry Operating Experience Group was created which evaluates issues for applicability to Calvert Cliffs. It documents pertinent issues in Issue Reports - a comprehensive corrective action system which systematically causes each issue to be screened for operability effect, reportability, and design impact.

Major steps have also been taken to improve the regulatory awareness and perspective of the plant staff. Special training was conducted on 10 CFR 50.59 design review requirements in 1989 and 1990 for most of the engineering staff. The NRC's issuance of Generic Letter (GL) 91-18 was also noteworthy in upgrading our regulatory awareness. Operability assessment training incorporating the guidance of GL 91-18 was conducted in late 1991 and early this year. All of the above actions were completed between 1987 and discovery of the EDG issue in March 1992.

D. **Corrective Steps That Will Be Taken to Avoid Further Violations**.

To ensure issues continue to be appropriately screened for operability concerns, an Operability Task Force is developing additional guidance in this area. The Task Force, comprised of representatives from several groups, is using the guidance provided in GL 91-18 as its basis. Continuing staff training in the areas of 10 CFR 50.59 reviews will also continue to strengthen the staff's ability to identify and resolve issues involving licensing basis impact and regulatory significance.

A review of all PRA analyses conducted by BG&E was conducted to look for similar instances where design issues were dispositioned probabistically. None were found.

E. **Date When Full Compliance Will be Achieved**.

Full compliance was achieved after modifications and testing for the EDG sequencers were completed for both Units.