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VICE PRESIDENT  
NUCLEAR ENERGY

April 14, 1986

U. S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D. C. 20555

ATTENTION: Mr. Ashok C. Thadani, Director  
PWR Project Directorate #8  
Division of PWR Licensing-B

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318  
Request for Amendment

- REFERENCES:
- (a) Letter from Mr. A. E. Lundvall, Jr. (BG&E), to Mr. J. R. Miller (NRC), dated April 10, 1985
  - (b) Letter from Mr. A. E. Lundvall, Jr. (BG&E), to Mr. R. A. Clark (NRC), dated November 5, 1982
  - (c) Letter from Mr. A. E. Lundvall, Jr. (BG&E), to Mr. J. R. Miller (NRC), dated September 16, 1983
  - (d) Letter from Mr. D. H. Jaffe (NRC) to Mr. A. E. Lundvall, Jr. (BG&E), dated November 17, 1983
  - (e) Letter from Mr. A. E. Lundvall, Jr. (BG&E), to Mr. J. R. Miller (NRC), dated December 22, 1983
  - (f) Letter from Mr. D. H. Jaffe (NRC), to Mr. A. E. Lundvall, Jr., (BG&E), dated April 19 1984

Gentlemen:

The Baltimore Gas and Electric Company hereby requests an Amendment to its Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Unit Nos. 1 & 2, respectively, with the submittal of the proposed changes to the Technical Specifications.

CHANGE NO. 1 (BG&E FCR 86-28)

Change page 3/4 1-9 of the Unit No. 1 Technical Specifications as shown on the marked-up copies attached to this transmittal.

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## DISCUSSION

This proposal would change the surveillance which requires verifying the proper operation of components in the boron injection flow paths on a SIAS test signal every 18 months. Currently, the surveillance must be performed "during shutdown." This proposal would delete the restriction "during shutdown" and allow this test to be performed any time. Performance of this surveillance while operating would not adversely impact plant operation and, since at least two boron injection flow paths would remain operable, reactor safety would not be affected. This change was previously proposed for Unit 2 by Reference (a).

## DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

This proposal would allow testing of boron injection flow paths during reactor operation. At least two boron injection flow paths would remain operable to meet assumptions used in previous accident analyses. Therefore, the probability or consequences of previously evaluated accidents would not be significantly increased.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This proposal would not change system design or operation. Testing of the boron injection flow paths during reactor operation would not create the possibility of a new or different accident.

- (iii) involve a significant reduction in a margin of safety.

Since the minimum required boron injection capability would be maintained, this proposal would not involve a significant reduction in a margin of safety.

## CHANGE NO. 2 (FCR 82-06, Supplement 2)

Change pages 3/4 3-26, 3-28, and B 3/4 3-2 of the Unit 1 Technical Specifications, and pages 3/4 3-26, 3-27, 3-28, and B 3/4 3-2 of the Unit 2 Technical Specifications as shown on the marked-up copies attached to this transmittal.

## DISCUSSION

In November 1980, the NRC issued NUREG-0737, "Clarification of TMI Action Plan Requirements," identifying items for which Technical Specifications were required. Further guidance was provided by Generic Letter 83-37, "NUREG-0737 Technical Specifications." This proposed change to the Technical Specifications is being processed as requested by the above documents. This change incorporates the Main Steam Header Noble Gas Effluent Monitor into the Technical Specifications.

We have installed main steam line radiation monitoring instrumentation in accordance with NUREG-0737, Item II.F.1.1. The proposed Technical Specifications are consistent with the guidance provided in Generic Letter 83-37.

Several related administrative changes are also submitted with this proposed Technical Specification. A previous license amendment submittal transferred control of the iodine and particulate sampling program to Section 6.0 of the Technical Specifications. Therefore, the bases for Radiation Monitoring Instrumentation have been updated by removing reference to the iodine and particulate samplers. Additionally, references to the iodine and particulate samplers' channel check have been deleted. Finally, several administrative typographical errors have been corrected on Unit 2 Technical Specification page 3-27.

## DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

This new equipment does not directly interface with any equipment important to safety. The radiation monitors do not provide any information that is required by operators to safely shut down the plant. The purpose of the monitors is to provide meaningful release information for offsite emergency actions.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

The failure of this equipment would not result in any unanalyzed accident. This equipment is simply passive monitoring instrumentation and does not interface with any other safety related equipment. Therefore, no new or different kind of accidents from those previously evaluated are created by this proposed change.

- (iii) involve a significant reduction in a margin of safety.

The main steam header noble gas effluent monitor does not serve a safety-related function. This monitor provides effluent release information that could be alternately provided by portable instrumentation, used in conjunction with other plant effluent and process radiation monitors. This change does not involve a significant reduction in the margin of safety; rather, it constitutes an additional limitation, restriction, or control not presently included in the Technical Specifications.

### CHANGE NO. 3 (FCR 86-29)

Change page 3/4 3-38 of the Unit 2 Technical Specifications as shown on the marked-up copy attached to this transmittal.

### DISCUSSION

This proposed change corrects an administrative error currently existing in Technical Specification Table 3.3-9, "Remote Shutdown Monitoring Instrumentation." The Pressurizer Pressure instrument on each unit's remote shutdown panel has a measurement range of 0-4000 psia. However, Unit 2's Technical Specifications still contain the previous, smaller range of 0-1600 psia. This change proposes to correct this administrative error, thereby recognizing the "as-is" plant design.

### BACKGROUND

In order to accommodate the third-train Auxiliary Feedwater (AFW) modification, several changes to plant instrumentation were required. Reference (b) requested numerous changes in support of the AFW modification, one of which concerned the measurement range for pressurizer pressure. This submittal requested a new pressurizer pressure measurement range of 0-4000 psia. The NRC approved the AFW modification; however, there was no specific mention of the pressurizer pressure measurement range. The Technical Specification page was, therefore, not updated.

Unit 1's Pressurizer Pressure instrument range was correctly updated. BG&E requested the change per Reference (c). The NRC granted the request in Reference (d), stating that "... since the proposed changes to the instrumentation ranges provide equivalent or improved information, the usefulness of this instrumentation to provide post-accident information has not been degraded."

### DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in the operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

The remote shutdown instrumentation is provided for monitoring purposes only. The instrumentation does not provide inputs for automatically actuated equipment. This change simply recognizes the expanded instrument range installed during the third-train AFW modifications.

- (ii) create the possibility of a new or different type of accident from any previously evaluated; or

This equipment is simply passive monitoring instrumentation. No new or different kind of accidents from those previously evaluated are created by this proposed change.

- (iii) involve a significant reduction in a margin of safety.

This change corrects an administrative error currently existing in the Technical Specifications. A single instrument range, pressurizer pressure, was not updated following the installation of an expanded measurement range. This change does not involve a reduction in the margin of safety; rather, it corrects an apparent Technical Specification discrepancy.

### CHANGE NO. 4 (BG&E FCR 86-30)

Change pages 3/4 8-1 and 8-2 of the Unit 1 and 2 Technical Specifications as shown on the marked-up copies attached to this transmittal.

### DISCUSSION

This change proposes to add an action statement for an inoperable Diesel Fuel Oil Storage Tank (DFOST) to Technical Specification 3/4 8.1, "A.C. Sources." Technical Specification 3.8.1.1 requires the operability of two separate and independent diesel generators with " . . . a common fuel storage system consisting of two independent

storage tanks each containing a minimum volume of 18,250 gallons of fuel . . . ." Therefore, with only one fuel oil storage tank available, all diesels are considered inoperable. The Technical Specifications require either returning the diesels to operable status within one hour, or being in HOT STANDBY within the next six hours. This clearly makes any repair, which requires the tank to be drained, impossible without first shutting down both units. Incorporation of the proposed 72-hour action statement will allow necessary tank repairs to be performed during unit operation. This change also proposes a minor rewording of Limiting Condition for Operation 3.8.1.1.b. This administrative rewording is for clarification purposes only.

Recent experience with a minor leak on #11 DFOST's fill valve prompted a review of the applicable diesel generator Technical Specifications. Combustion Engineering Standard Technical Specifications state that each diesel must have a separate fuel storage system with a stated minimum volume of fuel. This design permits taking a DFOST out of service, since the action statement for a single inoperable diesel generator allows for a 72-hour repair period. At Calvert Cliffs, a single DFOST cannot be removed from service for any time period due to the restrictive nature of our Technical Specifications.

The diesel generator fuel oil storage system consists of two outdoor storage tanks. The redundant and independent tanks each have a usable capacity of 109,500 gallons. Redundant diesel supply headers interconnect the two tanks and manual valves are positioned such that each tank normally supplies a different header. Each diesel generator has the capability to obtain fuel from either of the tanks through the redundant headers. The storage tanks and associated piping are designed for seismic Category I. In addition, #21 DFOST is protected against tornado winds and tornado generated missiles. The concrete structure surrounding the tank also acts as a dike in the event of tank failure (suction for the diesels can also be taken from the concrete structure itself). Each diesel generator is also equipped with a 485 gallon day tank. Transfer of fuel oil from the storage tanks to the day tanks is accomplished by 10 gpm rated fuel transfer pumps, one each per diesel. At full load, the day tanks allow approximately two and one-half hours of operation before the transfer of fuel oil is necessary.

The proposed change allows either DFOST to be inoperable for up to a 72 hour period. The operability of the remaining tank will be demonstrated by:

- 1) verifying a tank level of at least 36,500 gallons within one hour and at least once per eight hours thereafter, and
- 2) verifying the flowpath from the OPERABLE fuel oil storage tank to the diesel generators within one hour.

If two DFOSTs are not restored to OPERABLE status within 72 hours, both units are required to be in at least HOT STANDBY within the next six hours and in COLD SHUTDOWN within the following 30 hours.

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An assessment of the incremental change in plant risk, should there be a relaxation of the allowable diesel generator fuel oil storage tank outage times, was conducted. This study approached the problem by qualitatively examining the plant risk resulting from a one-time removal from service of #11 DFOST (to support required repairs of the tank fill valve). The results of this part of the study were then assessed to determine whether a permanent 72-hour action statement for either tank was justifiable. Phase I of the study examined a determination of plant risk, following a loss of offsite power and assuming total unavailability of the DFOSTs. This phase also incorporated the probability of failure to recover one of the sources of offsite power during an initial five-hour time period. Phase II examined, in detail, one segment of the Phase I conditional probability. This phase examined the likelihood of a total loss of fuel oil supply from both DFOSTs to the diesel generator day tanks. Results were calculated from plant specific probabilities (References: Interim Reliability Evaluation Program, Updated Final Safety Analysis Report and a Science Applications, Inc., Study).

### PHASE I

Phase I examined the risk of core damage given an emergency AC onsite demand following a loss of offsite power. The objective was to assess the likelihood that, given total failure of all diesel generator fuel oil supply, the plant will suffer a core damage event. Initial assumptions were:

1. Loss of offsite power does not result from a seismic event or severe meteorological conditions, and
2. Loss of offsite power is not coincident with a LOCA.

As stated previously, the diesel generator day tanks contain sufficient fuel to allow operation of each diesel generator for approximately two and one-half hours at full load (3000 Kw). Calculations show that during a normal loss of offsite power, each day tank could provide adequate fuel for over three and one-half hours of diesel run time. This duration could be further extended by serial utilization of the diesel generators (taking advantage of the third day tank). This technique could extend the capability of the plant to survive on the diesel day tanks for over five hours. The significance of this time interval is that over five hours are available for plant operators to re-establish supply oil flow to the diesel generator day tanks from either of the redundant fuel oil supply headers. The probability of failure to recover this fuel oil supply during this time frame is extremely small. Additionally, one must consider the likelihood that within this period offsite power will be restored; either by restoration of 500 Kv, or alignment of the 69 Kv SMECO tie-line. When the probability of occurrence of a loss of offsite power during a specific 72-hour interval is combined with the probability of failure to recover, the probability of an event which could lead to core damage is very small ( $\sim 1 \times 10^{-5}$ ).

## PHASE II

Phase II examined the likelihood that the plant will be placed in a situation where, with a single DFOST removed from service, the second tank will become unavailable. A fuel oil supply system event tree was constructed to examine probable event sequences. When the likelihood of loss of fuel oil from a single DFOST is combined with the Phase I probability, the total probability of such an event is considered negligible.

Phase II was expanded to address the question of how the above conclusions change if external events (seismic and meteorological) are considered in the evaluation. The unlikely probability of either occurring during a 72-hour period ( $3 \times 10^{-5}$  and  $3 \times 10^{-6}$ , respectively) contributes a negligible increment to plant risk.

Additionally, the probabilities associated with the following two cases were considered:

1. A loss of offsite power coincident with a LOCA, and
2. A LOCA occurring as a result of a loss of offsite power.

Both initiators resulted in a negligible increase in plant risk.

In summary, the incremental increase in risk resulting from the removal of a DFOST from service for a period up to 72 hours is considered negligible. As a result, it appears clearly justifiable to allow either tank to be removed from service in accordance with the proposed statement.

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Relief was previously requested, per reference (e), concerning the restrictive wording of this Technical Specification. Indications of leaks in fuel oil tank bottoms at other non-BG&E fossil facilities pointed out the necessity of periodic inspection of fuel oil storage tanks. Therefore, we developed a plan to inspect these tanks by visual and statistical metallurgical ultrasonic bottom inspections. The NRC approved this request in Reference (f), allowing the one-time tank inspections to be performed during a period lasting approximately two months, coinciding with a refueling outage. In their justification, the NRC recognized use of an 8,000 gallon alternate fuel source (one fuel tank truck). Although not safety-grade, the alternate source provides reasonable assurance of an independent oil supply. Anytime a DFOST is drained for repairs this second source would be available. This source would be parked onsite; far enough away to preclude any environment-related rupture from affecting safety-grade equipment, yet close enough to provide adequate time to tie into either redundant fuel header.

## DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:



- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

This change, allowing a 72-hour action statement for an inoperable emergency diesel generator fuel storage tank, does not significantly increase the probability or consequences of an accident previously evaluated. Due to our fuel supply system design (two redundant, common headers), all three emergency diesel generators are still OPERABLE when one storage tank is removed from service. An independent fuel supply will still be available to tie into one of the redundant main fuel headers.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

No new or different type of accident will be created by this proposed change. If a storage tank was to be drained during the time frame allowed by this new action statement, the alternate fuel source would be stored onsite, at a sufficient distance to preclude any environment related rupture from affecting safety-grade equipment. Also, if needed, the alternate fuel source will be connected in such a manner as not to degrade system integrity in the event of a rupture of the alternate fuel source or its connecting piping.

- (iii) involve a significant reduction in a margin of safety.

This change does involve an incremental reduction in the margin of safety in that one safety-grade tank is proposed to be removed from service for up to a 72-hour period. However, this reduction is not considered significant in that: 1) The minimum level of fuel oil administratively controlled in the OPERABLE tank would be doubled, 2) An alternate fuel source would be available onsite, and 3) A qualitative probabilistic assessment performed reveals any reduction in the margin of safety to be negligible.

By strict application of the criteria contained in 10 CFR 50.92, however, the proposed change to Technical Specification 3.8.1.1 must be treated as a significant hazards consideration in that it represents a relaxation in the action statements. Therefore, in accordance with 10 CFR 50.59, we are submitting this proposal for NRC review.

**CHANGE NO. 5** (BG&E FCR 86-7)

Remove pages 3/4 8-8, 3/4 8-9, and 3/4 8-10 of the Unit Nos. 1 and 2 Technical Specifications and replace with the pages attached to this transmittal. Add page 3/4 8-10a, which is also attached to this transmittal, to the Unit Nos. 1 and 2 Technical Specifications.

## DISCUSSION

This proposal would change the surveillance program for the 125-volt DC Station Batteries and the Reserve Battery. This proposal would provide relief in certain areas and would be more restrictive in others, but in general would make the battery surveillance program more consistent with the current industry standard, IEEE Standard 450-1980, "Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations." The guidance in this standard has been incorporated in the Westinghouse Standard Technical Specifications and in the Technical Specifications for recently licensed Combustion Engineering plants.

The following is a listing of the areas in which this proposal would be more restrictive than our current Technical Specifications:

- o The minimum individual cell voltage long-term (more than seven days) limit for all connected cells would be 2.13 volts vice the current 2.10 volts limit.
- o A specification that would require the average electrolyte temperature of a representative number of cells to be above 60°F would be added.
- o The minimum average electrolyte specific gravity long-term (more than seven days) limit for all connected cells would be 1.205 vice the current 1.200 limit.
- o A specification that would require resistance measurements between connected cells would be added.
- o A specification that would require annual performance discharge tests for any battery that shows signs of degradation, or that has reached 85% of its expected service life would be added.
- o The option to perform the battery service test using actual emergency loads would be deleted.

The following is a listing of the areas in which this proposal would provide relief, and appropriate justification for each:

- o The limits for cell electrolyte level would be "Above top of plates, and not overflowing" for the short-term (less than seven days) and "> Minimum level indication mark, and  $\leq 1/4$ " above maximum level indication mark" for the long-term. Current Technical Specification limits are "between the minimum and maximum level indication marks."

Justification: If the electrolyte level is at or near the maximum level indication mark at float voltage, it may rise above that mark on charge. This condition will not affect safety or capacity unless the cell reaches an electrolyte overflow condition.

- o The short-term limit for individual cell voltage would be 2.07 volts vice the current 2.10 volts limit.

Justification: Internal cell problems are not indicated until cell voltage decreases to 2.07 volts. Hence, overall battery capability would be adequate in the short-term as long as all individual cell voltages are above this level. In addition, since prolonged operation of cells below 2.13 volts can reduce the life expectancy of cells, the long-term limit is proposed to be raised to 2.13 volts from 2.10 volts.

- o The specifications which now limit the amount that individual cell voltage has decreased since the latest performance discharge test, and the amount that individual cell specific gravity has decreased since the previous quarterly measurement would be deleted.

Justification: A decrease in individual cell voltage or specific gravity during the time period since a previous test is not indicative of overall battery capability. A better indication of overall battery capability, using specific gravity, is the individual cell deviation from the average of all connected cells, and the deviation of the average of all connected cells from the nominal average (1.215). Limits on these deviations are incorporated in this proposal.

- o The limit on individual cell specific gravity would be changed from 1.200 to 1.195.

Justification: The guidance in IEEE Standard 450-1980 allows individual cell specific gravity to be less than the average for all connected cells by .01, and allows the average specific gravity for all connected cells to decrease by .01 from the nominal average (1.215), before an equalizing charge is required. Hence, the appropriate limit for individual cell specific gravity is 1.195. In addition, the long-term limit on the average specific gravity for all connected cells is proposed to be raised to 1.205 from 1.200.

- o The dummy load profile, used to simulate the design duty cycle during battery service tests, would be deleted from the Technical Specifications.

Justification: The dummy load profile is controlled administratively in the Updated Final Safety Analysis Report. If the profile were not in the Technical Specifications, changes to the Technical Specifications would not be necessary when the emergency loads on the battery are modified.

- o Performance of the battery service test would not be required at 60-month intervals when a performance discharge test is also required.

Justification: Currently, the Technical Specifications require a performance discharge test to be done subsequent to the battery service test every 60 months. The performance discharge test is a more stringent test and is sufficient, by itself, to demonstrate that the battery meets design requirements. Elimination of the battery service test, when the performance discharge test is performed, reduces unnecessary testing and would contribute to battery life expectancy.

#### DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

The proposed surveillance program would continue to assure the capability of the 125-volt DC Batteries to provide emergency power during the design load cycle. All appropriate battery parameters would be controlled within proper limits and monitored at adequate frequencies. In addition, elimination of the battery service test at 60-month intervals would not decrease the effectiveness of requirements to demonstrate battery capability since a more stringent test is performed at that time.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This proposal does not involve a modification to plant equipment or a change in system configuration. The procedural changes involved do not create the possibility of new or different accidents.

- (iii) involve a significant reduction in a margin of safety.

Since this proposal would continue to assure the capability of the 125-volt DC Batteries to provide emergency power during the design load cycle, no margin of safety would be significantly reduced.

**SAFETY COMMITTEE REVIEW**

These proposed changes to the Technical Specifications and our determination of significant hazards have been reviewed by our Plant Operations and Off-Site Safety Review Committees, and they have concluded that implementation of these changes will not result in an undue risk to the health and safety of the public.

**FEE DETERMINATION**

Pursuant to 10 CFR 170.21, we are including BG&E Check No. (1043947) in the amount of \$150.00 to the NRC to cover the application fee for this request.

Very truly yours,

*J A Tiernan*

STATE OF MARYLAND :  
                                      :      **TO WIT:**  
CITY OF BALTIMORE :  
                                      :

Joseph A. Tiernan, being duly sworn states that he is 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:

*Dwight Kullmann*  
\_\_\_\_\_  
Notary Public

My Commission Expires: *2/1/86*

*April 11, 1986*  
\_\_\_\_\_  
Date

JAT/BEH/MTF/dlm  
Attachments

- cc: D. A. Brune, Esquire
- J. E. Silberg, Esquire
- D. H. Jaffe, NRC
- T. Foley, NRC
- T. Magette, DNR