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June 29, 1990

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
Request for Exemption - 10 CFR 50 Appendix R Emergency Lighting

REFERENCES:

(a) LER 50-317/89-09 Revision 2, dated July 7, 1989, Inadequate Procedure for Providing Alternate Safe Shutdown

(b) Letter from Mr. G. C. Creel (BG&E) to Document Control Desk (NRC), dated May 23, 1989, Restart Commitments

(c) Letter from Mr. G. C. Creel (BG&E) to Document Control Desk (NRC), dated October 27, 1989, Closeout of Restart Commitment

(d) Letter from Mr. G. C. Creel (BG&E) to Document Control Desk (NRC), dated January 24, 1990, Request for Exemption - 10 CFR 50 Appendix R

Gentlemen:

Baltimore Gas & Electric Company (BG&E), pursuant to 10 CFR 50.12(a), requests an exemption from the requirements of 10 CFR 50 Appendix R, Section III.J, "Emergency Lighting". Specifically, exemption is requested from the requirement to install fixed 8-hour emergency lighting in both the Unit 1 and Unit 2 containment structures. Entry into each unit's containment to perform several functions is now required as a result of extensive changes to the Calvert Cliffs Nuclear Power Plant (CCNPP) post-fire Alternate Safe Shutdown Procedures.

I. BACKGROUND

A. Requirement.

In LER 50-317/89-09, Reference (a), BG&E documented several deficiencies in the existing post-fire Alternative Safe Shutdown Procedure (AOP-9). In Reference (b) and (c), BG&E committed to revise AOP-9. The resulting extensive changes to AOP-9 included a number of procedural steps that were not in its previous revisions. The Unit 1 and 2 Containment Buildings are now among those areas where operator access and equipment manipulations are required. Therefore, additional emergency lighting is required per Section III.J, "Emergency Lighting," which states that

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"emergency lighting units [fixtures] with at least an 8-hour battery supply shall be provided in all areas for operation of safe shutdown equipment and in access and egress routes thereto."

B. Plant Operation Contemplated.

The operator actions required inside containment by the AOP-9 revision include manipulation of the following:

- The auxiliary spray valve (1-CVC-517-CV).
- The 12B and 11A loop charging isolation valves (1-CVC-395, 1-CVC-392).
- The safety injection tank isolation valves (1-SI-614-MOV, 1-SI-624-MOV, 1-SI-634-MOV, 1-SI-644-MOV).
- The shutdown cooling return isolation valve (1-SI-652-MOV).

Similar revisions to the Unit-2 AOP-9 procedure address comparable valves. These actions occur at various times during a post-fire shutdown scenario with the first containment entry occurring at approximately four hours after the initiation of the event. In order to comply with the Section III.J requirement, emergency lighting would need to be installed to illuminate both the valves and the access paths to them. Reference (d) was submitted to request relief for a period of six months after each respective unit's startup in order to install the additional fixed emergency lighting required by the AOP-9 revision.

For the areas inside containment, BG&E has reevaluated the earlier request and proposes to provide portable handlights for use in containment but staged outside containment. Specifically, the portable handlights will be of the rechargeable type with an 8-hour duration. The portable handlights will be kept in the recharging unit and kept under a constant charge. Access to them will be physically and administratively limited to operations personnel for emergency use. The portable handlights will be tested on the same frequency as the other emergency lights at CCNPP.

Justifications for this request follow:

- Radiation Exposure Concerns. Installation of the emergency lights and associated conduit inside containment would result in considerable exposure to the workers. However, testing of the lights would result in the greatest exposure. If the emergency lights are installed inside the containment, the quarterly inspections would either require at-power entries or a policy of not testing the lights except during unit outages. In a location outside the containment, portable handlights would be tested at the same frequency as the other plant emergency lights with a minimal exposure rate to workers.
- Duration. The fixed emergency lighting, per Section III.J. of Appendix R, must have an 8-hour duration. Assuming that a loss of offsite power occurs at the onset of the event, the 8-hour duration would not be adequate for all the containment entries needed and portable handlights would be needed in any

event. The portable handlights to be used have a rated duration of 8-hours. During the loss of off-site power, only the charger would be deenergized; the portable handlights will have a full 8-hour charge when initially used. It has been estimated that for all containment entries during the worst-case scenario, the total time in containment would be approximately four hours. Therefore, the handlights would provide an ample duration of illumination.

- Illumination. The type of portable handlight to be used is similar to those used by fire departments. It will provide greater illumination levels where the operator is actually walking and working since fixed emergency lighting is subject to shadows caused by both obstructions (which are nearly impossible to avoid in containment) and the operator himself. These shadows are avoided by the use of the portable handlights. The wide base design of the portable light is stable when placed on most surfaces and the beam is adjustable. Since containment entries will be performed by two people, both of whom will be provided with the portable lights, improved illumination will be available.

- Reliability. The environment inside containment can be challenging to fixed battery powered emergency lights due to the high heat and humidity conditions. The potential for their failure will increase the longer they are exposed to these conditions. This potential decrease in reliability would increase the need for periodic testing, and as stated in the discussion above, this is not practical while the reactor is at power. Inspections of the fixed lighting units only during outages would not be sufficient to assure their operability. The portable handlights can be physically checked for operability prior to use, as well as on a normal test frequency. Therefore, the portable handlights will provide a greater level of reliability.

- Other considerations. Any fixed emergency lighting unit at some point will have to be replaced. This will create an additional amount of contaminated waste. In addition, the waste generated by installation of the lights inside containment as well as inspection tours must also be considered.

The above reasons provide ample justification for use of rechargeable portable handlights stored outside of containment in lieu of fixed emergency lighting installed inside containment.

C. Length of Exemption.

The exemption is requested for the life of the plant. The schedule for the installation of the portable handlights for Unit-2 is six months after its next startup. For Unit 1, the portable handlights will be installed by December 1, 1990.

II. CRITERIA OF 10 CFR 50.12

10 CFR 50.12 states that the Commission may grant exemptions from the requirements of regulations contained in 10 CFR 50 provided that the following are satisfied:

A. The Requested Exemption is authorized by Law.

No law exists which would preclude the activities covered by this exemption request. Thus, the Commission is authorized to grant this exemption.

B. The Requested Exemption Does Not Present An Undue Risk To The Public Health and Safety.

The use of portable handlights in lieu of fixed emergency lighting provides at least equivalent levels of illumination and will permit performance of the post-fire safe shutdown functions inside containment. Therefore, the requested exemption does not present an undue risk to public health and safety.

C. The Requested Exemption Will Not Endanger the Common Defense and Security.

The common defense and security are not at issue in this exemption request.

III. SPECIAL CIRCUMSTANCES.

The following special circumstances from 10 CFR 50.12(a)(2) are present:

Application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. As described above, the use of the portable handlights inside containment provides for a more reliable lighting source which can be directed, as needed, for better illumination of the access paths and equipment being operated.

Compliance would result in undue hardships that are significantly in excess of those contemplated when the regulation was developed. Installation of fixed emergency lighting in the containment is not consistent with the goals of reducing radiation exposure to "As Low As Reasonable Achievable" both in terms of installation, surveillance, and maintenance. The increased level of exposure and generated waste is not justified when a more reliable option clearly exists.

IV. INTERIM COMPENSATORY MEASURES.

Until the portable rechargeable handlights are installed for use inside containment the flashlights currently provided for the operators in the Appendix R lockers are available. These will provide adequate illumination for the operator to access and operate the valves inside containment specified by the shutdown procedure.

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

Very truly yours,

GCC/JMO/CRS/bjd

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