

October 3, 1996

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: ENVIRONMENTAL ASSESSMENT OF REQUEST FOR EXEMPTION FROM 10 CFR 70.24
CRITICALITY MONITORING REQUIREMENTS - CALVERT CLIFFS NUCLEAR POWER
PLANT, UNIT NOS. 1 AND 2 (TAC NOS. M96386 AND M96387)

Dear Mr. Cruse:

Enclosed for your information is a copy of an "Environmental Assessment and Finding of No Significant Impact." This assessment relates to your application dated August 19, 1996, which requested an exemption from certain requirements of 10 CFR 70.24, "Criticality Accident Requirements." This section requires a criticality monitoring system for the receipt, possession, inspection, and storage of special nuclear materials in the form of unirradiated fuel assemblies that are not handled or stored beneath water shielding, and requires maintaining emergency procedures for responding to the criticality monitoring system alarm, conducting drills to meet the emergency procedures, and designating responsible individuals to determine the cause of the alarm.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/
Alexander W. Dromerick, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-317
and 50-318

Enclosure: Environmental Assessment

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Mr. Charles H. Cruse
Calvert Cliffs Nuclear Power Plant

Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2

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UNITED STATES NUCLEAR REGULATORY COMMISSIONBALTIMORE GAS AND ELECTRIC COMPANYDOCKET NOS. 50-317 AND 50-318CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an exemption from certain requirements of its regulations for Facility Operating License Nos. DPR-53 and DPR-69, issued to Baltimore Gas and Electric Company (the licensee), for operation of the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, located in Calvert County, Maryland.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed action would exempt the licensee from the requirements of 10 CFR 70.24, which requires a monitoring system that will energize clearly audible alarms if accidental criticality occurs in each area in which special nuclear material is handled, used, or stored. The proposed action would also exempt the licensee from the requirements of 10 CFR 70.24(a)(3) to maintain emergency procedures for each area in which this licensed special nuclear material is handled, used, or stored to ensure that all personnel withdraw to an area of safety upon the sounding of the alarm and to conduct drills and designate responsible individuals for such emergency procedures.

The proposed action is in accordance with the licensee's application for exemption dated August 19, 1996.

The Need for the Proposed Action:

Power reactor license applicants are evaluated for the safe handling, use, and storage of special nuclear materials. The proposed exemption from

criticality accident requirements is based on the original design for radiation monitoring at Calvert Cliffs. Exemptions from the requirements of 10 CFR 70.24(a) "Criticality Accident Requirements" were granted in the Special Nuclear Material (SNM) licenses for each unit as part of the 10 CFR Part 70 license. However, with the issuance of the Part 50 license this exemption expired because it was inadvertently omitted in that license. Therefore, the exemption is needed to clearly define the design of the plant as evaluated and approved for licensing.

Environmental Impacts of the Proposed Action:

The NRC staff has completed its evaluation of the proposed action and concludes that there is no significant environmental impact if the exemption is granted. Inadvertent or accidental criticality will be precluded through compliance with the Calvert Cliffs Technical Specifications, the geometric spacing of fuel assemblies in the new fuel storage facility and spent fuel storage pool, and administrative controls imposed on fuel handling procedures.

Inadvertent or accidental criticality in the reactor vessel is prevented through compliance with the facility Technical Specifications, including reactivity requirements (e.g., shutdown margin limits and control rod movement limits), instrumentation requirements (e.g., power and radiation monitors), and control on refueling operations (e.g., refueling boron concentration and source range monitor requirements). In addition, the operators' attention is directed toward instruments monitoring behavior of the nuclear fuel in the reactor, assuring that the facility is operated in a manner that precludes inadvertent criticality.

Special nuclear material, as nuclear fuel, is stored in the spent fuel pool, the new fuel storage racks, and the Independent Spent Fuel Storage Installation. The spent fuel pool is used to store irradiated fuel under water after its discharge from the reactor, and new fuel prior to loading into the reactor. The Independent Spent Fuel Storage Installation utilizes dry canisters to store spent fuel. Dry fuel storage facilities are specifically excluded from criticality monitoring in accordance with 10 CFR 72.124(c).

The spent fuel pool is designed to store the fuel in a geometric array using a solid neutron absorber that precludes criticality. The effective neutron multiplication factor, K_{eff} is maintained less than or equal to 0.95 by the solid neutron absorber. Although soluble boron is maintained in the spent fuel pool, no credit is taken for it in determining K_{eff} .

The new fuel storage racks may be used to receive and store new fuel in a dry condition upon arrival on site and prior to loading in the reactor or spent fuel pool. The maximum enrichment of 5.0 wt% U-235 for the new fuel assemblies results in a maximum effective multiplication factor of 0.89 at a water density of 1.0 gm/cc (full flood), and a multiplication factor of less than 0.89 for aqueous foam.

Nuclear fuel is moved between the new fuel storage racks, the reactor vessel, the refueling pool, and the spent fuel pool to accommodate refueling operations. In addition, fuel is moved into the facility and within the reactor vessel, or within the spent fuel pool. In all cases, fuel movements are procedurally controlled and designed to preclude conditions involving criticality concerns. In addition, the Technical Specifications also preclude certain movements over the spent fuel pool to prevent an inadvertent

criticality. Previous accident analyses have demonstrated that a fuel handling accident (i.e., a dropped fuel assembly) will not create conditions which could result in inadvertent criticality. Additionally, the Emergency Response Plan contains provisions for coping with unusual events such as a dropped fuel assembly.

In summary, exemptions from the requirements of 10 CFR Part 70, Section 70.24 approved by the NRC in connection with the SNM licenses for Calvert Cliffs Unit Nos. 1 and 2 were based upon NRC's finding that the inherent features associated with the storage and inspection of unirradiated fuel established good cause for granting the exemption and that granting such a exemption at this time will not endanger public life or property or the common defense and security and is otherwise in the public interest. The training provided to all personnel involved in fuel handling operations, the administrative controls, the Technical Specifications on new and spent fuel handling and storage, and the design of the new and spent fuel storage racks in place preclude inadvertent or accidental criticality. Since the facilities, storage, and inspection and procedures currently in place are consistent with those in place at the time the exemptions were granted in connection with the SNM licenses, an exemption from 10 CFR 70.24 is appropriate.

The proposed exemption will not affect radiological plant effluents nor cause any significant occupational exposures. Only a small amount, if any, of radioactive waste is generated during the receipt and handling of new fuel (e.g., smear papers or contaminated packaging material). The amount of waste would not be changed by the exemption.

With regard to potential nonradiological impacts, the proposed exemption involves systems located within the restricted area as defined in 10 CFR Part 20. It does not affect nonradiological plant effluents and has no other environmental impact. Accordingly, the Commission concludes that there are no significant nonradiological environmental impacts associated with the proposed action.

Alternatives to the Proposed Action:

Since the Commission has concluded that there is no measurable environmental impact associated with the proposed action, any alternatives with equal or greater environmental impact need not be evaluated. The principal alternative would be to deny the requested exemption. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the Final Environmental Statement related to the operation of Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, dated April 1973.

Agencies and Persons Consulted:

In accordance with its stated policy, on September 18, 1996, the staff consulted with the Maryland State Official, Mr. Richard I. McLean of the Maryland Department of Natural Resources, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

Based upon the environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the

human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated August 19, 1996, which is available for public inspection at the Commission's Public Document Room, The Gelman Building, 2120 L Street, NW., Washington, DC and at the local public document room located at the Calvert County Library, Prince Frederick, Maryland 20678.

Dated at Rockville, Maryland, this 3rd day of October 1996.

FOR THE NUCLEAR REGULATORY COMMISSION



Alexander W. Dromerick, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation