

Docket file



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 26, 1994

Docket Nos. 50-317
and 50-318

Mr. Robert E. Denton
Vice President - Nuclear Energy
Baltimore Gas & Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-4702

Dear Mr. Denton:

SUBJECT: ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT -
CONTAINMENT VENT/HYDROGEN PURGE SYSTEM UNREVIEWED SAFETY QUESTION,
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 (TAC NOS.
M88191 AND M88192)

Enclosed is a copy of an "Environmental Assessment and Finding of No Significant Impact" for your information. This assessment relates to your request dated November 4, 1993, for approval of license amendments which address an unreviewed safety question associated with the containment vent/hydrogen purge system.

The proposed amendments would allow the removal of an orifice plate in the containment vent/purge line to allow greater flow through the line. The restoration of full-flow capability will result in less time required to vent the containment. A reanalysis of the maximum hypothetical accident, as currently described in the Updated Final Safety Analysis Report, was performed to support the requested amendments. The results of the reanalysis indicate that the consequences of the accident previously analyzed would be increased. Although the consequences result in an increase in the fission product release, the total doses are well within the limits of 10 CFR Part 100, "Factors to be considered when evaluating sites."

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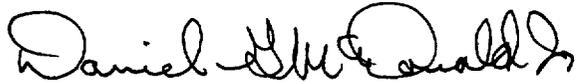
Mr. Robert E. Denton

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April 26, 1994

This notice is being forwarded to the Office of the Federal Register for Publication.

Sincerely,



Daniel G. McDonald, Senior Project Manger
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
Environmental Assessment

cc w/enclosure:
See next page

Mr. Robert E. Denton
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2

cc:

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Calvert County Board of
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UNITED STATES NUCLEAR REGULATORY COMMISSION

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

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

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

By letter dated November 4, 1993, BG&E requested Technical Specifications (TSs) amendments which would allow the removal of an orifice in the 4-inch containment vent/purge line resulting in greater flow. The Unit 1 containment and the Unit 2 containment each have a separate but identical system. Penetration room exhaust fans in the auxiliary building draw air through an in-containment moisture separator and an in-containment motor-operated valve (MOV). The air is passed through the auxiliary building via the vent lines which have an outside containment MOV, flow reducing orifice, a flow monitoring system, a motor-operated butterfly valve, and a set of two

high efficiency particulate air and two charcoal filters in parallel (the penetration room ventilation system filter bank). The air is then discharged by the fans through the main plant vent. Vented air is replaced through a separate penetration. The use of this system as a containment vent was approved by TS Amendment Nos. 115 and 98 for Unit Nos. 1 and 2, respectively, dated February 20, 1986. The maximum hypothetical accident doses in the Updated Final Safety Analysis Report (UFSAR), Chapter 14.42, were revised to include venting of the containment at the initiation of an accident. The NRC staff's Safety Evaluation (SE) which supported TS Amendment Nos. 115 and 98 also approved the higher calculated offsite dose than was currently described in the UFSAR at that time. Subsequently, BG&E identified calculational errors in the offsite dose, which when corrected, indicate an offsite dose higher than that approved in the NRC staff's SE. An orifice plate with a 1-inch opening was installed in each of the vent lines in order to maintain the approved offsite dose levels.

Reanalysis have been performed to support the removal of the orifice plates which indicate that the offsite dose would be increased. Although the consequences of the maximum hypothetical accident would result in an increase in the fission product release, the total dose is well within the limits of 10 CFR Part 100, "Factors to be considered when evaluating sites."

Need for the Proposed Action:

Restoration of full-flow capability to the 4-inch vent/purge lines by removing the orifice plates will significantly reduce the time required to vent or purge. It now takes 7 times longer to vent a containment than it did with a 4-inch line (28 hours versus 4 hours). In addition, venting now occurs

over three operating shifts instead of being completely contained within one shift. Venting is a manually controlled operation, in that it requires operator attention (the operator opens and closes the valves from the control room). Stretching the venting over three shifts introduces the possibility of additional human error into the venting process. Another consideration is that the probability of an accident occurring during venting decreases with decreased vent time. Reducing the venting time will not increase the number of times BG&E needs to vent, because the starting and ending conditions for venting remain the same. Therefore, the total amount of time the containment vents would be open will be decreased.

Environmental Impacts of the Proposed Action:

The environmental impact of allowing increased flow results from consideration of the maximum hypothetical accident (large break loss-of-coolant accident) occurring when a vent is open. Fission products would be released until the in-containment and outside containment isolation valves receive a safety injection actuation signal (SIAS) or a containment radiation signal (CRS) which would close the valves isolating the vent line.

BG&E's reanalysis of the hypothetical loss-of-coolant accident (LOCA) indicate a dose of 118 rem to the thyroid and 10.6 rem to the whole body at the exclusion area boundary (EAB) and 39.3 rem to the thyroid and 2.7 rem to the whole body at the low-population zone (LPZ) boundary. The previously approved doses in the UFSAR, Chapter 14, are a dose of 124 rem to the thyroid and 3.0 rem to the whole body at the EAB and 33 rem to the thyroid and 0.8 rem to the whole body at the LPZ.

The reanalyses results show a slight dose decrease to the thyroid at the EAB and a slight dose increase to the thyroid at the LPZ. The whole-body doses are increased by approximately 3.5 times at the EAB and LPZ. The 10 CFR Part 100 limits are 300 rem to the thyroid and 25 rem to the whole body at both the EAB and LPZ. The increase doses to the whole body are approximately 40% at the EAB and 10% at the LPZ of the 25 rem limit provided in 10 CFR Part 100.

The results of the reanalysis are similar to the licensing basis evaluation contained in the Commission's Safety Evaluation Report (SER) dated August 28, 1972. The SER results are 110 rem to the thyroid and 4 rem to the whole body at the EAB and 80 rem to the thyroid and 3.0 rem to the whole body, at the LPZ with no containment venting or purging assumed. It should be noted that the dose estimates in the reanalysis represent an extreme upper bound because the release from the containment was assumed to contain fission products derived from a uniform mixing in the containment atmosphere of the iodines and noble gases specified in TID-14844. Even though the percentage increase in offsite doses is not small, the actual total doses are a fraction of the limits of 10 CFR Part 100, as noted above. In evaluating the impact of the increased doses, it is important to view these results in light of the low probability of the accident. This change does not significantly affect the risk of any dominant accident scenario and the effect on overall risk of accident at this facility is insignificant.

With regard to normal environmental releases when venting during power operation with the orifice plates removed, the release limits are controlled by the previously approved TS for each of the Calvert Cliffs units.

Therefore, the removal of the orifice plates and reestablishing full flow through the vent lines will result in no additional environmental impact for non-accident releases.

Alternatives to the Proposed Action:

The principal alternative to approving the removal of the orifice plates allowing full flow for venting or purging would be to deny the request and retain the limited flow capability. However, this alternative would not significantly enhance the protection of the environment. As noted above, the total doses based on the reanalysis are similar to those in the initial licensing basis SE dated August 28, 1972. The doses represent an extreme upper bound, and the doses are a fraction of the 10 CFR Part 100 limits. In addition, the removal of the orifice plates would reduce the required time to vent from 28 hours to 4 hours and the probability of an accident occurring during venting decreases with a decreased vent time.

Alternate Use of Resources:

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

Agencies and Persons Consulted:

The NRC staff contacted the State of Maryland, Department of Natural Resources, regarding the environmental impact of this proposed action.

FINDING OF NO SIGNIFICANT IMPACT

Based upon the foregoing environmental assessment, the NRC staff concludes that the proposed action will not have a significant effect on the

quality of the human environment and has determined, therefore, not to prepare an environmental impact statement for the proposed action.

For further details with respect to this action, see the application dated November 4, 1993, which is available for public inspection at the Commission's Public Document Room, The Gelman Building, 2120 L Street, NW, Washington, DC 20555, and at the local public document room located at Calvert County Library, Prince Frederick, Maryland 20678.

Dated at Rockville, Maryland, this 26th day of April 1994.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Mr. Robert E. Denton

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April 26, 1994

This notice is being forwarded to the Office of the Federal Register for Publication.

Sincerely,

Original signed by:

Daniel G. McDonald, Senior Project Manger
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
Environmental Assessment

cc w/enclosure:
See next page

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