

April 8, 2004

Mr. George Vanderheyden, Vice President
Calvert Cliffs Nuclear Power Plant, Inc.
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 -
AMENDMENT RE: CHANGES TO THE TESTING REQUIREMENTS FOR
CONTAINMENT SPRAY NOZZLES (TAC NOS. MC0030 AND MC0031)

Dear Mr. Vanderheyden:

The Commission has issued the enclosed Amendment No. 264 to Renewed Facility Operating License No. DPR-53 and Amendment No. 241 to Renewed Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated July 14, 2003, as supplemented December 5, 2003, and February 12, 2004.

These amendments change the Surveillance Requirement 3.6.6.8 to verify each containment spray nozzle is unobstructed only following maintenance that could result in nozzle blockage.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

/RA/

Guy S. Vissing, Senior Project Manager, Section 1
Project Directorate 1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosures: 1. Amendment No. 264 to DPR-53
2. Amendment No. 241 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

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ADAMS Accession Numbers: Letter - ML040720077; TS - ML
Package Accession No.: ML040720104

*Safety evaluation provided - no significant changes made

OFFICE	PDI-1/PM	PDI-1/LA	OGC	SPSB*	PDI-1/SC
NAME	GVissing	SLittle		RDennig	RLaufer
DATE				3/4/04	

OFFICIAL RECORD COPY

DATED: April 8, 2004

AMENDMENT NO. 264 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53
CALVERT CLIFFS UNIT 1

AMENDMENT NO. 241 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69
CALVERT CLIFFS UNIT 2

PUBLIC
PDI-1 R/F
RLauffer
SLittle
GVissing
OGC
GHill (2)
TBoyce
WBeckner
ACRS
CBixler, RI

cc: Plant Service list

Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2

cc:

President
Calvert County Board of
Commissioners
175 Main Street
Prince Frederick, MD 20678

Patricia T. Birnie, Esquire
Co-Director
Maryland Safe Energy Coalition
P.O. Box 33111
Baltimore, MD 21218

James M. Petro, Esquire
Counsel
Constellation Energy Group, Inc.
750 East Pratt Street, 5th floor
Baltimore, MD 21202

Mr. Loren F. Donatell
NRC Technical Training Center
5700 Brainerd Road
Chattanooga, TN 37411-4017

Jay E. Silberg, Esquire
Shaw, Pittman, Potts, and Trowbridge
2300 N Street, NW
Washington, DC 20037

Mark Geckle
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

Resident Inspector
U.S. Nuclear Regulatory
Commission
P.O. Box 287
St. Leonard, MD 20685

Mr. Richard I. McLean, Manager
Nuclear Programs
Power Plant Research Program
Maryland Dept. of Natural Resources
Tawes State Office Building, B3
Annapolis, MD 21401

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Kristen A. Burger, Esquire
Maryland People's Counsel
6 St. Paul Centre
Suite 2102
Baltimore, MD 21202-1631

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 264

Renewed License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) dated July 14, 2003, as supplemented December 5, 2003, and February 12, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Renewed Facility Operating License No. DPR-53 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 264, are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by PTam for/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 8, 2004

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 241
Renewed License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) dated July 14, 2003, as supplemented December 5, 2003, and February 12, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Renewed Facility Operating License No. DPR-69 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 241, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by PTam for/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 8, 2004

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 264 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 241 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page

3.6.6-4

Insert Page

3.6.6-4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 264 TO RENEWED
FACILITY OPERATING LICENSE NO. DPR-53
AND AMENDMENT NO. 241 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69
CALVERT CLIFFS NUCLEAR POWER PLANT, INC.
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated July 14, 2003, (ADAMS Accession No. ML031990230), as supplemented December 5, 2003 (Accession No. ML033440414), and February 12, 2004 (Accession No. ML040500425), the Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, Technical Specifications (TSs). The requested changes would change the Surveillance Requirement 3.6.6.8 to verify each containment spray nozzle is unobstructed only following maintenance that could result in nozzle blockage. The supplements dated December 5, 2003, and February 12, 2004, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on August 19, 2003 (68 FR 49814).

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A contains General Design Criteria (GDC) for nuclear power reactors. In particular, GDC 40 requires that the containment heat removal system be designed to permit periodic testing. The containment spray system is included in the containment heat removal system.

The Combustion Engineering Standard Technical Specifications, NUREG-1432, Volume 1, Revision 2, dated March 2003, SR 3.6.6.A.9 specifies a testing frequency of 10 years for the nozzle blockage test. While this is not a requirement, it had been the Nuclear Regulatory Commission's (NRC's) and industry's judgment of an acceptable frequency for this test and this is the frequency currently required by the Calvert Cliffs Technical Specifications.

The NRC has approved, on a plant-specific basis, several revisions to this requirement. The revisions require verification that each spray nozzle is unobstructed only following maintenance which could potentially result in nozzle blockage. This is based on the judgment that once the

containment spray system nozzles are determined to be unobstructed, the only mechanism which can cause nozzle blockage is by foreign material introduced following maintenance when the licensee's foreign material exclusion (FME) program is not effective. This is substantiated by operational experience, as discussed below.

3.0 TECHNICAL EVALUATION

The Calvert Cliffs containment heat removal system consists of the reactor containment fan cooler system and the containment spray system. The containment spray system actuates automatically on a high containment pressure signal or remote-manually from the control room. The containment spray system has two safety functions. It removes heat from the containment atmosphere following a design basis loss-of-coolant accident (LOCA) or main steam line break accident inside containment. This reduces the driving force for containment leakage and ensures the containment structural limits are not exceeded. The containment spray system also removes iodine and other radionuclides from the containment atmosphere following a LOCA.

The containment spray system is described in Section 6.4, "Containment Spray System," of the Calvert Cliffs Updated Final Safety Analysis Report (UFSAR). It consists of two independent 50% capacity trains with no common headers. The spray nozzles are made of corrosion resistant stainless steel and are of a hollow core, centrifugal-type design without any internal parts which could cause clogging. The system includes two spray headers. The Unit 1 containment spray system consists of 179 nozzles. The Unit 2 system consists of 180 nozzles. The minimum area flow path in the containment spray system is the spray nozzle. The licensee's July 14, 2003, letter states that the nozzle orifice will pass particles less than 0.375 inches in diameter.

Calvert Cliffs TS SR 3.6.6.8 currently requires a test every 10 years to ensure that the containment spray system nozzles are not obstructed. The test is currently done, according to the licensee's July 14, 2003, letter, with the spray inlet valves closed. Low pressure air or smoke is blown through test connections downstream of the spray inlet valves and the movement of flagging confirms flow from each nozzle.

One postulated mode of blockage of the spray headers and nozzles is solid boric acid accumulation in the spray lines or nozzles due to evaporated borated water. This could occur following an inadvertent containment spray actuation. The spray headers are normally maintained dry and are isolated from the water in the rest of the containment spray system by a normally closed air operated control valve on each header. Any leakage through this valve is directed to the containment sump by a drain line. The containment spray system piping is corrosion-resistant stainless steel. Should there be inadvertent flow through the nozzles, such as a spurious actuation, the licensee would evaluate the need for remedial actions or flow testing.

The other possible blockage source is debris (foreign material) in the system. The licensee's July 14, 2003, letter describes the Calvert Cliffs foreign material exclusion program. The program is consistent with expected standards for system cleanliness and provides high confidence that debris will not be introduced during times when the containment spray (CS) system boundary is breached for maintenance or testing.

3.1 Performance History at Calvert Cliffs

The licensee's July 14, 2003, letter describes the past testing done to ensure that the containment spray nozzles are unobstructed. Pre-operational tests were successfully conducted on both units. In addition, a successful test was performed on Unit 1 in 1994 and Unit 2 in 1997. The licensee states that "no work has been done on the [containment spray system] header or nozzles since these tests. Maintenance work has been done on the portion of the system upstream of the containment spray header isolation control valve. This work was performed with FME controls in place...". In response to an NRC request for additional information, the licensee reported in a December 5, 2003, letter that there had not been "any condition reports on incidents that would have affected nozzle flow since the last flow tests."

Based on the fact that it is unlikely that any foreign material has entered the containment spray system since the last surveillance test on each unit and based on the licensee's FME program, the NRC staff finds the Calvert Cliffs operating experience acceptable for approving the proposed TSs change.

3.2 Industry Experience and Failure Mechanisms

Review of industry experience using the NRC's Sequence Coding and Search System for Licensee Event Reports indicates that spray systems of similar design are not susceptible to plugging. The staff reviewed industry experience and found that, with a few exceptions, once tested after construction, containment spray nozzles have not been subject to blockage. There have been several exceptions. In the case of one pressurized-water reactor (PWR), a chemical added to the inner surface of a spray system pipe to eliminate corrosion detached and the loose material blocked some spray nozzles. Spray piping in PWRs, and Calvert Cliffs in particular, is corrosion resistant; therefore, this failure mechanism is not applicable to Calvert Cliffs. The licensee for another PWR found debris, identified as construction debris, in the spray nozzle headers. The fraction of blockage was not significant and the sprays remained functional. The debris was found by visual observation, not by an air flow test.

3.3 Conclusion of the Technical Aspects

As a result of reviewing the licensee's request to revise the testing frequency for the containment spray nozzles from "10 years" to "following maintenance which could result in nozzle blockage" and reviewing and assessing all the applicable information provided by the licensee, the staff concludes that the design of the Calvert Cliffs containment spray systems, the past history of these spray systems, and the licensee's FME controls provide reasonable assurance that the potential for nozzle obstruction is acceptably low. The FME controls provide reasonable protection from the introduction of foreign materials into open piping during maintenance or testing and require post-maintenance verification of system cleanliness and freedom from foreign materials. In addition, review of industry-wide experience has not demonstrated any problem with the licensee's proposed change. Therefore, the staff finds the amendment request acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (68 FR 49814). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Lobel

Date: April 8, 2004