

March 31, 2008

Mr. David A. Christian
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Virginia Electric and Power Company
Innsbrook Technical Center
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Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 2 - ISSUANCE OF AMENDMENT
RE: TECHNICAL SPECIFICATION CHANGE REQUEST REGARDING
CONTAINMENT SPRAY NOZZLE TEST REQUIRMENTS (TAC NO. MD4992)

Dear Mr. Christian:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 303 to Renewed Facility Operating License No. DPR-65 for the Millstone Power Station, Unit No. 2 (MPS2). This amendment consists of changes to the Technical Specifications (TS) in response to your application dated March 28, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML070880705), as supplemented by letter dated March 10, 2008 (ADAMS Accession No. ML080710354).

The amendment modifies the MPS2 TS Surveillance Requirement 4.6.2.1.1.e to allow performance of testing for nozzle blockage to be based on the occurrence of activities that could potentially result in nozzle blockage rather than a fixed periodic basis.

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

Sincerely,

/RA/

John D. Hughey, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-336

Enclosures:

1. Amendment No. 303 to DPR-65
2. Safety Evaluation

cc w/encls: See next page

Millstone Power Station, Unit No. 2

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March 31, 2008

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Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 2 - ISSUANCE OF AMENDMENT RE:
TECHNICAL SPECIFICATION CHANGE REQUEST REGARDING CONTAINMENT
SPRAY NOZZLE TEST REQUIRMENTS (TAC NO. MD4992)

Dear Mr. Christian:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 303 to Renewed Facility Operating License No. DPR-65 for the Millstone Power Station, Unit No. 2 (MPS2). This amendment consists of changes to the Technical Specifications (TS) in response to your application dated March 28, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML070880705), as supplemented by letter dated March 10, 2008 (ADAMS Accession No. ML080710354).

The amendment modifies the MPS2 TS Surveillance Requirement 4.6.2.1.1.e to allow performance of testing for nozzle blockage to be based on the occurrence of activities that could potentially result in nozzle blockage rather than a fixed periodic basis.

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

Sincerely,
/RA/
John D. Hughey, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-336

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- 1. Amendment No. 303 to DPR-65
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- cc w/encls: See next page

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Accession Nos:Package: ML080720301

***By SE dated 6/18/07**

Letter & SE: ML080720304; TS: ML080720342

**** with comments**

OFFICE	LPL1-2/PM	LPL1-2/PM	LPL1-2/LA	SCVB/BC	ITSB/BC	OGC	LPL1-2/BC
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DATE	3-31-08	3-31-08	03-31-08	06/18/2007	03/14/08	03/19/08	3/31/08

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DOMINION NUCLEAR CONNECTICUT, INC.

DOCKET NO. 50-336

MILLSTONE POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 303
Renewed License No. DPR-65

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the applicant dated March 28, 2007, as supplemented by letter dated March 10, 2008, 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 Title 10 of the *Code of Federal Regulations* (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-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 303, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the License
and Technical Specifications

Date of Issuance: March 31, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 303

RENEWED FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove

Insert

Page 3

Page 3

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

Insert

3/4 6-13

3/4 6-13

Connecticut, in accordance with the procedures and limitations set forth in this renewed operating license;

- (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter 1: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady-state reactor core power levels not in excess of 2700 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 303, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

Renewed License No. DPR-65
Amendment No. 303

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 303

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-65

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

1.0 INTRODUCTION

By letter dated March 28, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML070880705), as supplemented by letter dated March 10, 2008 (ADAMS Accession No. ML080710354), Dominion Nuclear Connecticut, Inc. (DNC or the licensee), submitted a license amendment request (LAR) proposing a change to the Millstone Power Station, Unit No. 2 (MPS2) Technical Specifications (TS). The requested change would revise the MPS2 TS Surveillance Requirement (SR) 4.6.2.1.1e performance frequency for testing of nozzle blockage from once every 10 years to “following activities that could cause nozzle blockage.”

2.0 REGULATORY EVALUATION

Engineered safety features are systems which are provided for the protection of the public and station personnel against the postulated release to the environment of radioactive products from the reactor coolant system, particularly as the result of loss-of-coolant accident (LOCA). These safety features function to localize, control, mitigate, and terminate such incidents and to hold exposure levels below limits of Title 10 of the *Code of Federal Regulations*, Part 100 (10 CFR Part 100). Following a LOCA, these systems function to cool the core to limit fuel damage, to limit the magnitude and duration of pressure transients within the containment, to provide post-incident cooling for extended periods and to limit fission products release.

The MPS2 containment spray system is an engineered safety feature that limits the containment pressure and temperature after a LOCA and main steam line break (MSLB) accident to reduce the possibility of leakage of airborne radioactivity to the outside environment. The containment spray system consists of two-independent subsystems which are comprised of a containment spray pump, shutdown cooling heat exchanger, spray nozzles, piping, valves, and instrumentation. Upon receipt of a containment spray actuation signal, the containment spray pump draws water from the refueling water storage tank (RWST) and delivers flow to separate risers, which then discharge water into containment via the spray nozzles.

10 CFR Part 50, Appendix A, contains General Design Criteria (GDC) for nuclear power reactors. In particular, GDC 40 states that the containment heat removal system be designed to

Enclosure

permit periodic testing. The containment spray system is a heat removal system. As stated in Appendix 1A of the MPS2 Final Safety Analysis Report (FSAR), the extent to which MPS2 complies with the GDC 40 is, “the spray system and air recirculation and cooling systems in the containment have provisions for online testing to assure system operation, performance and structural and leak tight integrity of the associated components.”

The Nuclear Regulatory Commission (NRC) staff has approved, on a plant-specific basis, several revisions to this frequency. 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 mechanisms which can cause nozzle blockage are corrosion deposits and foreign material. The first mechanism is addressed by the piping system being constructed out of corrosion-resistant materials. The second mechanism is addressed by the licensee’s foreign material exclusion (FME) program.

3.0 TECHNICAL EVALUATION

This LAR proposes to allow performance of testing for nozzle blockage to be based on the occurrence of activities that could potentially result in nozzle blockage rather than a fixed periodic basis. Specifically, the LAR proposes to change the MPS2 TS SR 4.6.2.1.1e from:

“At least once per 10 years by verifying each spray nozzle is unobstructed.”

to:

“By verifying each spray nozzle is unobstructed following activities that could cause nozzle blockage.”

As discussed above, MPS2 containment spray system is an Engineered Safety Feature, as described in Section 6.4 of the MPS2 FSAR, used in response to a postulated LOCA or MSLB. The containment spray system, in conjunction with the containment air recirculation and cooling system, is designed to limit the reactor containment building pressure to within design limits. These functions are performed by subcooled water solution sprayed into the containment atmosphere through nozzles from the spray headers located in the containment dome.

MPS2 TS SR 4.6.2.1.1.e currently requires testing for nozzle blockage to be performed “at least once per 10 years by verifying each spray nozzle is unobstructed.” The test is currently done with air by closing the containment spray pump discharge isolation valves and connecting an external air source to a temporary flange on a downstream check valve. Air flow is then verified through each associated spray nozzle. The proposed SR is designed to verify that the spray nozzles are not obstructed. The two potential mechanisms of blockage are by corrosion products and foreign material.

3.1 Nozzle Blockage Mechanisms

One postulated mechanism of blockage of the spray nozzles is corrosion products. The licensee states in the March 28, 2007, LAR, that the piping, ring headers, and nozzles are constructed of corrosion-resistant materials: Type 304 or Type 316 stainless steel. Thus,

clogging by rust or other corrosion products is unlikely. Additionally, the licensee states that the containment spray ring header is normally maintained dry above the RWST static height. However, the licensee recognizes that the potential exists for nozzle blockage caused by solid boric acid accumulation in the spray lines or nozzles due to evaporated borated water. Should there be inadvertent fluid flow through the nozzles, such as the result of spurious actuation, the licensee would evaluate testing and methods for determining the nozzles remain unobstructed as required by the proposed TS surveillance.

The other possible mechanism for nozzle blockage is foreign material in the system. The MPS2 FSAR states that the containment spray nozzles are a Lechler model 372.975.17.BL or a Spraco model 1713A. The nozzles are located a minimum distance of 65 feet away from the highest obstruction in the containment. Due to its location at the top of the containment, introduction of foreign material into the spray header via the open nozzles is unlikely. Foreign material introduced as a result of maintenance is the most likely cause for obstruction. Verification that no foreign material has entered the system following such maintenance will be performed to confirm that the nozzles are free from blockage. The potential for unidentified nozzle obstruction is very low due to the licensee's FME program.

3.2 FME Program

The licensee maintains an FME Program governed by approved procedures. The procedures ensure that appropriate precautions are taken to minimize the inadvertent and uncontrolled introduction of foreign materials into plant systems and components. FME training is required for all personnel performing work planning, maintenance, modifications, repairs, testing or inspections on plant equipment and components. Breached fluid or piping systems are required to be covered when not being directly accessed for inspection or maintenance. FME procedures also delineate program requirements for maintaining cleanliness of plant systems and components. For safety class systems and components, the final cleanliness inspection is performed by quality control inspectors.

The proposed change is supported by the existing requirement to verify system operability after system maintenance or repair. Foreign material introduced as a result of maintenance is the most likely cause of obstruction. Therefore, verification to confirm the nozzles are free of blockage following activities that could result in nozzle blockage, as in the proposed amendment, is sufficient to confirm the nozzles are free of any blocking substance. Additionally, due to the location and orientation of the spray headers and nozzles, introduction of foreign materials into the system through the nozzles is unlikely.

3.3 Industry Experience and Failure Mechanisms

NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," (May 1992) reported on an NRC staff review of industry experience which indicated that containment spray systems of similar design are highly reliable and not subject to plugging after testing following construction. The staff reviewed industry experience and found that, in general, once tested after construction, containment spray systems 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. The piping at MPS2 is corrosion resistant; therefore, this failure mechanism is unlikely. 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.

3.4 Performance History

The licensee's March 28, 2007, LAR describes the past testing done to ensure that the containment spray nozzles are unobstructed. Pre-operational testing identified eight nozzles that had blocked flow due to construction debris. After removal of the blockage caused by the foreign material, air flow tests were performed to confirm air flow through all containment spray nozzles which demonstrated that the system was free from construction debris and that no debris that could cause obstructions had entered the system.

Subsequent air flow tests performed following the startup and operation of MPS2, and conducted at the interval specified in TS, have demonstrated unobstructed flow through each of the nozzles further verifying that the system was free from debris and that no debris that could cause obstructions had entered the system.

3.5 Summary

As a result of reviewing the licensee's request to revise the testing frequency for the containment spray nozzles air test frequency from "at least once per 10 years by verifying each spray nozzle is unobstructed" to "by verifying each spray nozzle is unobstructed following activities that could cause nozzle blockage," and reviewing and assessing the information provided by the licensee, the NRC staff concludes that the design of the MPS2 containment spray cooling system, the past history of these spray systems, and the foreign materials 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. Therefore, the staff finds the amendment request acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. NRC staff addressed the State official's comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (73 FR 2549). Accordingly, the amendment meets 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 amendment.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: B. Heida

Date: March 31, 2008