May 31, 2005

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
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Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 - ISSUANCE OF AMENDMENT RE: QUENCH SPRAY AND RECIRCULATION SPRAY NOZZLE SURVEILLANCE (TAC NO. MC4743)

Dear Mr. Christian:

The Commission has issued the enclosed Amendment No. 222 to Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3, in response to your application dated September 7, 2004.

The amendment revises the required frequency of quench and recirculation spray nozzle surveillances from once every 10 years to "following maintenance which could result in nozzle blockage." The proposed change also revises wording to correct grammar.

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/

George Wunder, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures: 1. Amendment No. 222 to NPF-49
2. Safety Evaluation

cc w/encls: See next page

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Amendment: ML050670028 Package: Tech Specs:

OFFICE	PDI-2/PM	PDI-2/LA	SPSB/SC*	OGC	PDI-2/SC
NAME	GWunder	CRaynor	RDennig	DCummings	JBoska for DRoberts
DATE	4/14/05	4/14/05	02/28/05	3/27/05	5/27/05

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DOMINION NUCLEAR CONNECTICUT, INC., ET AL.

DOCKET NO. 50-423

MILLSTONE POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 222
License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Dominion Nuclear Connecticut, Inc. dated September 7, 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 Facility Operating License No. NPF-49 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 222, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. Dominion Nuclear Connecticut, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 180 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by JBoska for/

Darrell J. Roberts, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: May 31, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 222

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following pages of the Appendix A Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
3/4 6-12	3/4 6-12
3/4 6-13	3/4 6-13

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 222

TO FACILITY OPERATING LICENSE NO. NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By letter dated September 7, 2004, Dominion Nuclear Connecticut, Inc. (the licensee), submitted a request for changes to the Millstone Power Station, Unit No. 3 (MP3) Technical Specifications (TSs). The requested change revises the required frequency of quench and recirculation spray nozzle surveillances from once every 10 years to "following maintenance which could result in nozzle blockage." The proposed change also revises wording to correct grammatical errors.

2.0 REGULATORY EVALUATION

Part 50 of Title 10 of the *Code of Federal Regulations* 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 quench spray system (QSS) and the recirculation spray system (RSS) are containment heat removal systems.

The Westinghouse Standard Technical Specifications, NUREG-1431, Volume 1, Revision 3, dated June 2004, Surveillance Requirement (SR) 3.6.6.D.5 specifies a testing frequency of 10 years for the QSS nozzle blockage test. SR 3.6.6.E.7 specifies a testing frequency of 10 years for the RSS nozzle blockage test. This frequency has been the Nuclear Regulatory Commission's (NRC or the Commission) and industry's judgment of an acceptable frequency for this test and this is the frequency currently required by the MP3 TSs.

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 foreign material introduced following maintenance if 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 MP3 containment heat removal system, as described in Section 6.2.2 of the MP3 Updated Final Safety Analysis Report (UFSAR) consists of the QSS and the RSS. The QSS 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 QSS also removes iodine and other radionuclides from the containment atmosphere following a LOCA. The QSS consists of two trains with each train consisting of one pump and one 360-degree spray header. One quench spray header has 192 nozzles and the other header has 70 nozzles.

The RSS maintains the containment at approximately subatmospheric pressure after the initial depressurization. The RSS has the additional safety function of extended core cooling. The RSS consists of two trains with each train consisting of two recirculation coolers, two pumps, one dewatering pump and one 360-degree spray header. The upper recirculation spray header contains 160 nozzles and the lower spray header contains 162 nozzles.

The MP3 UFSAR states that the containment heat removal systems are constructed entirely of corrosion-resistant materials, primarily stainless steel. Thus, clogging by rust or other corrosion products is not an issue. The nozzle orifices will pass particles less than 0.375 inches in diameter. The fine mesh on the screens of the emergency sump, which supplies the recirculation spray pumps, is smaller (3/32 inch). The spray nozzles are made of corrosion-resistant stainless steel.

Each QSS discharge line contains a check valve inside containment and a motor operated valve outside containment. Small diameter drain lines, located downstream of the check valves within the containment, drain the quench spray headers should any water enter the headers during periodic testing. The UFSAR states that the size of the drain lines does not significantly decrease the capacity of the QSS during operation.

MP3 TS SR 3.6.2.1 currently requires a test every 10 years to ensure that the QSS nozzles are not obstructed. TS SR 3.6.2.2 contains a similar surveillance requirement for the RSS nozzles. The test is currently done, according to the licensee's September 7, 2004, letter, with the respective spray pump isolation valves shut and air admitted by means of a temporary flange on a downstream check valve in each line.

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 licensee states that the spray headers are normally maintained dry. 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 as required by the proposed TS surveillances.

The other possible blockage source is debris (foreign material) in the system. The licensee's September 7, 2004, letter describes the MP3 FME 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 QSS or RSS boundaries are breached for maintenance or testing.

Performance History at MP3

The licensee's September 7, 2004, letter describes the past testing done to ensure that the containment spray nozzles are unobstructed. Pre-operational tests and tests performed since start-up have confirmed that no blockage existed in the quench and recirculation system spray lines.

The licensee described the operating experience since the last tests as follows:

> A review of maintenance history on the QSS and the RSS was performed, and work that occurred since the last air/smoke tests on the systems resulted in minor issues with respect to cleanliness. In fact, two issues that were identified both involved the rotation of the spectacle flanges downstream of the QSS and RSS check valves which are used for other testing activities. Both issues identified that grafoil pieces (used for gasketing material) were found within the pipe during check valve inspections. The amount of grafoil was insignificant and would not have impacted the ability of the QSS and the RSS systems to perform their safety functions.

The staff finds that the MP3 operating experience supports the requested amendment.

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 MP3 in particular, is corrosion resistant; therefore, this failure mechanism is not applicable to MP3. 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.

The licensee also requested an editorial change to TS SR 4.6.2.1.a to make it grammatically correct. The change will revise the wording: "At least once per 31 days:" to: "At least once per 31 days, by:" The staff agrees that this is more appropriate and is, therefore, acceptable.

4.0 SUMMARY

The spray system is constructed from corrosion-resistant materials; therefore, it is not likely that corrosion products will clog the system. Industry operating experience indicates that systems similar to that at MP3 are not susceptible to plugging under normal operating conditions. The staff, therefore, finds that the licensee's proposal to inspect the quench spray nozzles only after maintenance that could result in foreign material being introduced into the system to be acceptable.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official agreed with the staff's assessment.

6.0 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 SRs. 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 (69 FR 70715). 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.

7.0 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: R. Lobel

Date: May 31, 2005

Millstone Power Station, Unit No. 3

cc:

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