

June 29, 2007

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

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 — ISSUANCE OF AMENDMENT
REGARDING ONE-TIME 5-YEAR EXTENSION OF TYPE A TESTING
(TAC NO. MD2458)

Dear Mr. Christian:

The Commission has issued the enclosed Amendment No. 239 to Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3 (MPS3). By application dated June 14, 2006, as supplemented by letters dated November 27, 2006 and January 17, 2007, Dominion Nuclear Connecticut, Inc. (the licensee) requested approval of a change to the MPS3 Technical Specifications (TSs). Specifically, the change would allow the licensee a one-time extension of its Appendix J, Type A, Containment Integrated Leak Rate Test from the current 10-year interval to the proposed 15-year interval. The TS revision is based on the risk-informed approach developed using Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

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

Sincerely,

/ra/

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

Docket No. 50-423

Enclosures:

1. Amendment No. 239 to NPF-49
2. Safety Evaluation

cc w/encls: See next page

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Millstone Power Station, Unit No. 3

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DOMINION NUCLEAR CONNECTICUT, INC

DOCKET NO. 50-423

MILLSTONE POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 239
License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Dominion Nuclear Connecticut, Inc. (the licensee) dated June 14, 2006, as supplemented by letters dated November 27, 2006 and January 17, 2007, 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 set forth in 10 CFR Chapter I;
 - 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. , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. DNC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 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 License No. NPF-49 and
the Technical Specifications

Date of Issuance: June 29, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 239

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace page 4 of Facility Operating License No. NPF-49 with the attached revised page 4.

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

Remove
6-17

Insert
6-17

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 239 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 June 14, 2006, as supplemented by letters dated November 27, 2006 and January 17, 2007, Dominion Nuclear Connecticut, Inc. (DNC or the licensee) submitted an application requesting a license amendment for Millstone Power Station, Unit No. 3 (MPS3). The proposed amendment will permit MPS3 a one-time 5-year extension of Type A testing of a surveillance requirement referenced in Technical Specification (TS) 6.8.4, relevant to the containment structure.

The supplements dated November 27, 2006, and January 17, 2007, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC or the Commission) staff's original proposed no significant hazards determination as published in the *Federal Register* on September 12, 2006 (71 FR 53717).

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix J, Option B requires that a Type A test be conducted at a periodic interval based on historical performance of the overall containment system. MPS3 TS 6.8.4.f, "Containment Leakage Rate Testing Program," requires that leakage rate testing be performed as required by 10 CFR Part 50, Appendix J, Option B, as modified by approved exemptions, and in accordance with the guidelines contained in Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. This RG endorses, with certain exceptions, Nuclear Energy Institute (NEI) report NEI 94-01, Revision 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995.

NEI 94-01 specifies a Type A initial test interval of 48 months, but allows an extended interval of 10 years, based upon two consecutive successful tests. A Type A test is an overall (integrated) leakage rate test of the containment structure.

RG 1.174 describes a risk-informed approach, acceptable to the NRC, for assessing the nature and impact of proposed licensing-basis changes by considering engineering issues and applying risk insights. This RG also provides risk acceptance guidelines for evaluating the results of such evaluations.

Section 50.55a(b)(2)(vi) of 10 CFR requires the licensees to develop and implement a containment inservice inspection program. The rule incorporates by reference the requirements of the 1992 Edition and the 1992 Addenda of Subsections IWE and IWL of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for certain modifications and limitations.

3.0 TECHNICAL EVALUATION

3.1 Description of Changes

When implementing 10 CFR 50, Appendix J, Option B, licensees typically follow the guidelines in RG 1.163. RG 1.163, Section C, "Regulatory Position" states, "licensees intending to comply with the Option B of Appendix J in the amendment should establish test intervals based upon the criteria in Section 11.0 of NEI 94-01. The NEI 94-01, Section 11 states that Type A testing shall be performed at a frequency of at least once per 10 years. The licensee's proposed TS change is an extension of the currently specified 10-year interval for integrated leak rate tests (ILRTs) to a 15-year interval on a one-time basis. There are no changes to any other code or regulatory requirement or acceptance criteria.

Specifically, the licensee is requesting a change to TS 6.8.4.f which would add an exception from the guidelines of RG 1.163 and NEI 94-01, Revision 0, regarding the Type A test interval. The exception states that the first Type A test performed after the January 6, 1998, shall be performed by January 6, 2013.

The local leakage rate tests (Type B and Type C tests), including their schedules, are not affected by this request.

3.2 Probabilistic Evaluation

The licensee has performed a risk impact assessment of extending the Type A test interval to 15 years. The risk assessment was provided in the June 14, 2006, application for license amendment. Additional analysis and information was provided by the licensee in supplemental letters dated November 27, 2006, and January 17, 2007. In performing the risk assessment, the licensee considered the guidelines of NEI 94-01, the methodology used in Electric Power Research Institute (EPRI) TR-104285, "Risk Impact Assessment of Revised Containment Leak Rate Testing," and RG 1.174, July 1998, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

The basis for the current 10-year test interval is provided in Section 11.0 of NEI 94-01, Revision 0, and was established in 1995 during the development of the performance-based Option B to Appendix J. Section 11.0 of NEI 94-01 states that NUREG-1493, "Performance-Based Containment Leak-Test Program," provided the technical basis to revise leakage rate testing requirements contained in Option B to Appendix J. The basis consisted of qualitative and quantitative assessments of the risk impact (in terms of increased public dose)

associated with a range of extended leakage rate test intervals. To supplement this basis, industry undertook a similar study. The results of that study are documented in EPRI Research Project Report TR-104285.

The EPRI study used an analytical approach similar to that presented in NUREG-1493 for evaluating the incremental risk associated with increasing the interval for Type A tests. The Appendix J, Option A, requirements that were in effect for MPS3 early in the plant's life required a Type A test frequency of three tests in 10 years. The EPRI study estimated that relaxing the test frequency from three tests in 10 years to one test in 10 years would increase the average time that a leak, that was detectable only by a Type A test, goes undetected from 18 to 60 months. Since Type A tests only detect about 3 percent of leaks (the rest are identified during local leak rate tests (LLRTs) based on industry leakage rate data gathered from 1987 to 1993), this change results in a 10 percent increase in the overall probability of leakage. The risk contribution of pre-existing leakage for the pressurized water reactor (PWR) and boiling water reactor representative plants in the EPRI study confirmed the NUREG-1493 conclusion that a reduction in the frequency of Type A tests from three tests in 10 years to one test in 20 years leads to an "imperceptible" increase in risk that is on the order of 0.2 percent and a fraction of one person-roentgen equivalent man (rem) per year in increased public dose.

Building upon the methodology of the EPRI study, the licensee assessed the change in the predicted one person-rem per year frequency. The licensee quantified the risk from sequences that have the potential to result in large releases if a pre-existing leak were present. Since the Option B rulemaking was completed in 1995, the NRC staff has issued RG 1.174 on the use of probabilistic risk assessment (PRA) in evaluating risk-informed changes to a plant's licensing basis. The licensee has proposed using RG 1.174 guidance to assess the acceptability of extending the Type A test interval beyond that established during the Option B rulemaking.

RG 1.174 defines very small changes in the risk-acceptance guidelines as increases in core damage frequency (CDF) less than 10^{-6} per year and increases in large early release frequency (LERF) less than 10^{-7} per year. Since the Type A test does not impact CDF, the relevant criterion is the change in LERF. The licensee has estimated the change in LERF for the proposed change and the cumulative change from the original frequency of three tests in a 10-year interval. RG 1.174 also discusses defense-in-depth and encourages the use of risk analysis techniques to help ensure and show that key principles, such as the defense-in-depth philosophy, are met. The licensee estimated the change in the conditional containment failure probability for the proposed change to demonstrate that the defense-in-depth philosophy is met.

The licensee provided analyses, as discussed below. The following comparisons of risk are based on a change in test frequency from three tests in 10 years (the test frequency under Appendix J, Option A) to one test in 15 years. This bounds the impact of extending the test frequency from one test in 10 years to one test in 15 years. The following conclusions can be drawn from the analysis associated with extending the Type A test frequency:

- a. Given the change from a three in 10-year test frequency to a one in 15-year test frequency, the increase in the total integrated plant risk is estimated to be about 0.1 person-rem per year. This increase is comparable to that estimated in NUREG-1493, where it was concluded that a reduction in the frequency of tests from three in 10 years to one in 20 years leads to an "imperceptible" increase in risk.

Therefore, the increase in the total integrated plant risk for the proposed change is considered small and supportive of the proposed change.

- b. The increase in LERF resulting from a change in the Type A test frequency from the original three in 10 years to one in 15 years is estimated to be about 3.1×10^{-7} per year based on the 2002 internal events PRA, and 5.0×10^{-7} per year when external events (fire and seismic) are included. There is some likelihood that the flaws in the containment estimated as part of the Class 3b frequency would be detected as part of the IWE/IWL visual examination of the containment surfaces (as identified in ASME Code, Section XI, Subsections IWE/IWL). Visual inspections are expected to be effective in detecting large flaws in the visible regions of containment, and this would reduce the impact of the extended test interval on LERF. The licensee's risk analysis considered the potential impact of age-related corrosion/degradation in inaccessible areas of the containment shell on the proposed change. The increase in LERF associated with corrosion events is estimated to be less than 1×10^{-8} per year.

When the calculated increase in LERF is in the range of 10^{-7} per year to 10^{-6} per year, applications are considered if the total LERF is less than 10^{-5} per year. Based on information provided by the licensee, the total LERF for internal events (from the 2002 PRA) and external events is about 9.8×10^{-7} per year without the requested change. Thus, the total LERF including the requested change would remain below 10^{-5} per year. The NRC staff concludes that increasing the Type A interval to 15 years results in only a small change in LERF and is consistent with the acceptance guidelines of RG 1.174.

- c. RG 1.174 also encourages the use of risk analysis techniques to help ensure and show that the proposed change is consistent with the defense-in-depth philosophy. Consistency with the defense-in-depth philosophy is maintained if a reasonable balance is preserved between prevention of core damage, prevention of containment failure, and consequence mitigation. The licensee estimates the change in the conditional containment failure probability to be an increase of approximately one percentage point for the cumulative change of going from a test frequency of three in 10 years to one in 15 years. The NRC staff finds that the defense-in-depth philosophy is maintained based on the small magnitude of the change in the conditional containment failure probability for the proposed amendment.

Based on these conclusions, the NRC staff finds that the increase in predicted risk due to the proposed change is within the acceptance guidelines, while maintaining the defense-in-depth philosophy, of RG 1.174 and, therefore, is acceptable.

3.3 Deterministic Evaluation

MPS3 utilizes a Westinghouse PWR, sub-atmospheric reinforced concrete cylinder primary containment with a steel liner and a secondary containment. The primary containment is designed to accommodate access penetrations, and other process piping and electrical penetrations. The leak tight integrity of the penetrations and isolation valves are verified through Type B and Type C LLRTs as required by 10 CFR 50, Appendix J, and the overall

penetrations. The leak-tight integrity of the penetrations and isolation valves are verified through Type B and Type C LLRTs as required by 10 CFR 50, Appendix J, and the overall leak-tight integrity of the primary containment is verified through the containment ILRT. These tests are performed to verify the essentially leak-tight characteristics of the containment at the design basis accident (DBA) pressure. The licensee stated that the last ILRT for the MPS3 primary containment was performed in January 1998. With the extension of the ILRT time interval, the next overall verification of the containment leaktightness will be performed no later than January 2013.

The licensee provided information on IWE and IWL general and detailed examination methods and how they meet the requirements of 10 CFR 50.55a, and ASME Section XI Subsections IWE and IWL. The information also includes detailed standards and frequencies for visual inspections past and future intervals. All examination techniques references the applicable code associated with each inspection conducted by the licensee. The licensee is using the 1998 Edition of Subsections IWE of Section XI of the ASME Code, with certain approved relief from some code requirements, for conducting the inservice inspection of the MPS3 primary containment. At the time of the application the licensee had completed the IWE first interval first and second period examinations. The licensee stated that all accessible areas were examined.

The licensee indicated that the first and second interval IWL outer concrete examinations were implemented in August of 2001 and March of 2006, respectively. The licensee also indicates it has found measurable cracks which required no remedial action but were accurately documented and continuously monitored during each examination. Since these cracks have little or no measurable depth, and past inspections have not uncovered any major structural issues, the NRC staff finds the licensee's actions to monitor the condition of MPS3 containment adequate.

The licensee identified that they had previously requested, and had been authorized pursuant to 10 CFR 50.55a(a)(3)(i), an alternative to the ADME Code, 1998 Edition. This alternative dealt with the examination of penetration seals and gaskets, and examination and testing of bolted connections associated with the primary containment pressure boundary (examination categories E-D and E-G), the licensee requested relief from the requirements of Section XI of the ASME Code, 1992 Edition, 1992 Addenda. As an alternative, the licensee proposed to examine the above items under the 1998 Edition, during the leak-rate testing of the primary containment. Option B of Appendix J for Type B and Type C testing (per NEI 94-01 and RG 1.163), and the ILRT extension requested in this amendment for Type A testing, provide flexibility in the scheduling of these inspections. The NRC staff reviewed the licensee's schedule of Type B testing of the mechanical and electrical penetrations, and believes that the seals, gaskets, and pressure retaining bolts associated with these penetrations are not likely to be a significant source of leakage during the ILRT extended interval period.

The above information indicates that the licensee is monitoring the condition as required by the regulation and will continue to do so during the ILRT extended interval. The NRC staff finds that with the implementation of the ISI program, as described, the licensee will be able to maintain the primary containment condition during the extended period, that will help maintain its leak tight integrity during the period. The NRC staff considers that the licensee has adequate procedures to examine and monitor potential age-related and environmental degradation of the pressure retaining components of the MPS3 primary containment.

Therefore, granting a one-time extension for performing the ILRT as proposed by the licensee in Section 6.8.4.f of the proposed TS revision request is acceptable.

3.4 Technical Conclusion

The NRC staff finds that the increase in predicted risk from the proposed change is within the acceptance guidelines while maintaining the defense-in-depth philosophy of RG 1.174, July 1998. Therefore, the staff finds that the interval until the next Type A test a MPS3 may be extended to 15 years, and that the proposed change to TS Section 6.8.4 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. The Connecticut State official agreed with the NRC staff's conclusion as stated in Section 6.0 of this Safety Evaluation.

5.0 ENVIRONMENTAL CONSIDERATION

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 change 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 (71 FR 53717). Accordingly, the amendment meets the eligibility criteria for categorical exclusion as 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 NRC staff concludes 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 activity will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not inimical to the common defense and security or health and safety of the public.

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Date: June 29, 2007