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

July 22, 2011

Mr. David A. Heacock
President and Chief Nuclear Officer
Dominion Nuclear Connecticut, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 203060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 2 – ISSUANCE OF RELIEF REQUEST RR-04-05 REGARDING USE OF ALTERNATIVE PRESSURE TESTING REQUIREMENTS (TAC NO. ME4472)

Dear Mr. Heacock:

By letter dated July 29, 2010, as supplemented by letter dated August 5, 2010 (Agencywide Document Access and Management System (ADAMS) Accession Nos. ML1025802040 and ML102220527, respectively), Dominion Nuclear Connecticut, Inc. (DNC or the licensee) submitted relief requests for the fourth 10-year inservice inspection (ISI) interval program at Millstone Power Station, Unit No. 2 (MPS2). DNC requested use of alternatives to certain American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI requirements. Included in this submittal was Relief Request RR-04-05 which proposed to perform periodic flow testing and internal visual inspections for service water system (SWS) buried piping segments instead of ASME Code required pressure test for buried components. RR-04-05 was supplemented by letter dated April 18, 2011 (ADAMS Accession No. ML111090262). Each relief request contained in the July 29, 2010, submittal will be addressed separately.

The Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and concludes, as set forth in the enclosed Safety Evaluation, that performance of an ASME Code system pressure test would result in a hardship without a compensating increase in the level of quality and safety. The NRC staff's review also concludes that the periodic flow testing and internal visual inspections of the SWS described in RR-04-05 are acceptable because they provide reasonable assurance of structural integrity of the SWS buried piping segments.

Therefore, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(a)(3)(ii), the NRC authorizes the use of periodic flow testing and internal visual inspections as an alternative to the ASME Code, Section XI, required pressure test of the SWS buried piping segments for the remainder of the fourth 10-year ISI interval for MPS2. The fourth 10-year ISI interval at MPS2 began on April 1, 2010, and is scheduled to be completed on March 31, 2020.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact the Project Manager, Carleen Sanders, at 301-415-1603.

Sincerely,

FOR HKC

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

Docket No. 50-336

Enclosure:
As stated

cc w/encl: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INSERVICE INSPECTION INTERVAL

REQUEST FOR RELIEF NO. RR-04-05

MILLSTONE POWER STATION, UNIT NO. 2

DOMINON NUCLEAR CONNECTICUT, INC.

DOCKET NO. 50-336

1.0 INTRODUCTION

By letter dated July 29, 2010, as supplemented by letter dated August 5, 2010 (Agencywide Document Access and Management System (ADAMS) Accession Nos. ML1025802040 and ML102220527, respectively), Dominion Nuclear Connecticut, Inc. (DNC or the licensee) submitted relief requests for the fourth 10-year inservice inspection (ISI) interval program at Millstone Power Station, Unit No. 2 (MPS2). DNC requested use of alternatives to certain American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI requirements. Included in this submittal was Relief Request RR-04-05 which proposed to perform periodic flow testing and internal visual inspections for service water system (SWS) buried piping segments instead of ASME Code required pressure test for buried components. RR-04-05 was supplemented by letter dated April 18, 2011 (ADAMS Accession No. ML111090262).

Specifically, DNC requested relief from ASME Code, Section XI, Subsection IWA-5244(b)(1) which requires a pressure test of the buried portion of service water piping. The licensee proposed the alternative of performing periodic flow testing in accordance with Inservice Test (IST) Program surveillance procedures and performing internal visual inspections on alternating SWS trains each refueling outage.

2.0 REGULATORY REQUIREMENTS

Section XI of the ASME Code and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(g), except where specific relief has been granted by the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety; or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein.

The ASME Code of Record for the fourth 10-year ISI interval at MPS2 is the 2004 Edition with no Addenda.

3.0 TECHNICAL EVALUATION

3.1 System/Component(s) For Which Relief Is Requested

Two trains of ASME Code Class 3 buried 24" SWS supply piping from the intake structure to the turbine building identified as 24"-KE-1.

3.2 ASME Code Requirements

The 2004 Edition of ASME Code Section XI requires system pressure test for buried components in accordance with IWA-5244.

IWA-5244, Buried Components, states:

(a) For buried components surrounded by an annulus, the VT-2 visual examination shall consist of an examination for evidence of leakage at each end of the annulus and at low point drains.

(b) For buried components where a VT-2 visual examination requirement cannot be performed, the examination requirement is satisfied by the following:

(1) The system pressure test for buried components that are isolable by means of valves shall consist of a test that determined the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components. The acceptable rate of pressure loss or flow shall be established by the Owner.

(2) The system pressure test for nonisolable buried components shall consist of a test to confirm that flow during operation is not impaired.

(3) Test personnel need not be qualified for VT-2 visual examination.

3.3 Licensee's Basis for Requesting Relief

The licensee states that a VT-2 visual examination cannot be performed on the MPS2 SWS buried piping segments without excavation and that compliance with ASME Code, Section XI, IWA-5244(b)(1) for the buried piping segments would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The ASME Code allows for isolable components to be isolated and tested to determine the pressure loss. RR-04-05 states that "[t]he buried piping segments of the MPS2 Class 3 SWS are bounded by butterfly valves that are not designed or expected to provide an adequate leak tight boundary which is necessary for an accurate pressure decay test." In order to perform this test, it would be required to remove the existing butterfly valves and install valves with better leakage control characteristics or blind flanges.

The ASME Code also allows measurement of change in flow between ends of buried components to satisfy the test requirements. The licensee states that "[t]he configuration of the piping segments does not provide for a sufficient straight length of pipe to properly install a flowmeter for accurate flow measurement at the ends of the buried pipe segments. Therefore, it is not possible to compare a change in flow between the ends of the buried components."

The licensee states that, for the aforementioned reasons, complying with ASME Code requirements would present a hardship since extensive maintenance or system modification would be necessary to conduct the test.

3.4 Licensee's Proposed Alternative

The licensee proposes to use, as an alternative to the requirements of IWA-5244(b)(1), verification that flow during operation is not impaired, in accordance with the test requirements of IWA-5244(b)(2) for non-isolable buried piping. For each segment of the MPS2 SWS buried piping segments, periodic flow testing will be performed in accordance with MPS2 IST program surveillance procedures. "These surveillance procedures require that flow is measured, recorded, and compared to established acceptance criteria to provide assurance that flow is not impaired during operation," according to the licensee. The flow rate is currently specified as 10,300 gallons per minute (gpm).

RR-04-05 states that in addition to performing periodic flow testing, "... internal visual inspection is to be performed on the buried pipe segments periodically during plant refueling outages [RFOs] to ensure that the piping and lining are not experiencing unacceptable degradation. For MPS2 this visual inspection is performed on alternating trains each refueling outage."

4.0 NRC STAFF EVALUATION

ASME Code, Section XI, Subsection IWA-5244(b)(1) requires a system pressure test for the buried portion of isolable SWS piping that will determine the rate of pressure loss or an alternative test to determine the change in flow at the ends of the buried piping. A meaningful measurement of the rate of pressure loss in the buried SWS piping at MPS2 cannot be performed with the system in its present configuration because the butterfly valves at the ends are not capable of leak proof pressure isolation. In order to perform this test, it would be required to remove the valves and install different valves or blind flanges. The alternative test,

measurement of change in flow at the ends of the buried pipe, is not possible in the present configuration because one end of the buried piping is not instrumented for flow measurement and it does not have a sufficient straight length to properly install a flow meter.

ASME Code, Section XI, Subsection IWA-5244(b)(2) allows for testing of non-isolable buried components by confirming that flow during operation is not impaired. The licensee proposes to perform periodic flow testing in accordance with IST Program surveillance procedures. The surveillance procedures require flow to be measured, recorded and compared to established acceptance criteria to ensure that flow is not impaired during operation. If, during the IST surveillance procedures, the minimum flows cannot be achieved, the pump(s) would be declared inoperable and a condition report would be initiated in accordance with the Millstone Power Station Corrective Action Program, with further corrective actions, as required, to restore the systems to an operable status. In the April 18, 2011, letter the licensee states that the flow elements used for pump IST surveillance are downstream of the buried SWS piping segments. Therefore, the flow measured at that point is the flow available for the systems that are fed by the buried piping. Based on this, the NRC staff finds that the IST flow test is acceptable to ensure that adequate flow is available for service.

While the IST flow test proposed by the licensee ensures that adequate flow is available for service at the time of the test, it does not address the structural integrity of the buried pipe. Excessive wall thinning below the ASME Code-required minimums, and pitting with minor leakage, could exist without significantly affecting the specified 10,300 gpm flow rate. To address this aspect, the licensee proposes to perform periodic internal visual inspections of the buried portions of the SWS piping to ensure that the piping and lining are not experiencing unacceptable degradation. The visual inspection is currently performed on alternating trains each refueling outage. In the April 18, 2011, letter the licensee states that past internal visual inspections of the buried SWS piping segments have not identified any significant degradation of the liner and that there is no history of leakage for the SWS buried piping segments. The NRC staff finds, based on the internal visual examination and the operational history, that the proposed visual inspection ensures continued structural integrity of the buried SWS piping segments. Therefore, the NRC staff finds that the licensee's visual inspection program is capable of detecting degradation of the buried piping in a timely manner.

The NRC staff concludes that the licensee's proposed alternative, to perform periodic flow testing in accordance with IST Program surveillance procedures and to perform internal visual inspections on alternating trains each refueling outage, provides a reasonable assurance of structural integrity and leak tightness. The NRC staff further concludes that performance of the ASME Code required test would require extensive modification of the SWS and would result in hardship without a compensating increase in the level of quality and safety.

5.0 CONCLUSION

Based on the review presented above, the NRC staff finds that complying with the specified ASME Code requirement to perform a test that determines the rate of pressure loss or the change in flow for the buried portion of the SWS piping would result in hardship without a compensating increase in the level of quality and safety. The NRC staff also concludes that the proposed periodic flow testing and internal visual inspections provide reasonable assurance of structural integrity. Therefore, pursuant to 10 CFR 50.55a(a)(3(ii), the NRC authorizes the use of Relief Request RR-04-05 for the remainder of the fourth 10-year ISI interval for MPS2. The

fourth 10-year ISI interval for MPS2 began on April 1, 2010, and is scheduled to be completed on March 31, 2020.

All other requirements of the ASME Code, Section XI for which relief has not been specifically requested and approved remain applicable, including a third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: J. Wallace

Date: July 22, 2011

If you have any questions, please contact the Project Manager, Carleen Sanders, at 301-415-1603.

Sincerely,

/ra/ (GMiller for)

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

Docket No. 50-336

Enclosure:
As stated

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