

Dominion Nuclear Connecticut, Inc.  
Millstone Power Station  
Rope Ferry Road  
Waterford, CT 06385



**Dominion™**

SEP 3 2003

Docket No. 50-336  
B18793

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

**Millstone Power Station, Unit No. 2**  
**Order EA-03-009 Relaxation Request RR-89-47 for Vent Line Nozzle Inspection**

On February 11, 2003,<sup>(1)</sup> the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-03-009 for interim inspection requirements for reactor pressure vessel (RPV) heads at pressurized water reactor facilities. The Order requires specific inspection of the RPV head and associated penetration nozzles. Compliance with Section IV.C(1)(b) of the Order does not allow the combination of inspection techniques needed for inspection of the vent line penetration nozzle at Millstone Unit No. 2. Pursuant to Section IV.F of the Order, Dominion Nuclear Connecticut, Inc. (DNC) requests relaxation from Section IV.C(1)(b) of the Order to allow use of a combination of ultrasonic testing (UT) on the vent line nozzle base material, and dye penetrant testing (PT) on the vent line nozzle J-groove weld. Attachment 1 contains the relaxation request and provides the basis for conclusions that the level of quality and safety prescribed in Section IV.C(1)(b) is maintained.

The NRC recently approved a similar relaxation request on June 17, 2003,<sup>(2)</sup> for the D. C. Cook Nuclear Plant, Unit 2. In its safety evaluation approving the D. C. Cook request, the NRC staff stated that the alternative provides reasonable assurance of the structural integrity of the RPV head.

DNC requests approval of the proposed relaxation request by October 15, 2003, to support inspection activities scheduled during the upcoming Fall 2003 refueling outage.

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<sup>(1)</sup> NRC Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 11, 2003, (Accession No. ML030380470).

<sup>(2)</sup> NRC letter to Indiana Michigan Power Company, "Donald C. Cook Nuclear Plant, Unit 2 – Relaxation of the Requirements of Order (EA-03-009) Regarding Reactor Pressure Vessel Head Inspections (TAC No. MB9543)," June 17, 2003, (Accession No. ML031671084).

A101

There are no regulatory commitments contained within this letter.

If you should have any questions regarding this submittal, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

  
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J. Alan Price  
Site Vice President - Millstone

Sworn to and subscribed before me

this 3 day of September, 2003

Diane M. Phillips  
\_\_\_\_\_  
Notary Public

My Commission expires \_\_\_\_\_

**DIANE M. PHILLIPS**  
**NOTARY PUBLIC**  
**MY COMMISSION EXPIRES 12/31/2005**

Attachment (1)

cc: H. J. Miller, Region I Administrator  
R. B. Ennis, NRC Senior Project Manager, Millstone Unit No. 2  
Millstone Senior Resident Inspector

The Director, Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

**Docket No. 50-336**  
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**Attachment 1**

**Millstone Power Station, Unit No. 2**

**Order EA-03-009 Relaxation Request RR-89-47 for**  
**Vent Line Nozzle Inspection**

**Millstone Power Station, Unit No. 2**  
**Order EA-03-009 Relaxation Request RR-89-47 for Vent Line Nozzle Inspection**

*Proposed Alternative  
in Accordance with Section IV.F of the Order*

*- Hardship or Unusual Difficulty without Compensating  
Increase in Level of Quality or Safety -*

**1.0 ASME CODE COMPONENT(S) AFFECTED**

**Reactor Pressure Vessel Head:**

The Millstone Unit No. 2 Reactor Pressure Vessel (RPV) head was fabricated by Combustion Engineering and has sixty-nine (69) penetrations for control element drive mechanisms (CEDMs), eight (8) for incore instrumentation (ICI) nozzles and one (1) head vent connection. The penetrations are all made of ASME SB 167, Alloy 600 material produced by Huntington Alloys. The vent line is a three-quarter inch NPS Schedule 80S pipe. The Millstone Unit No. 2 reactor vessel was built to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section III, Nuclear Vessels, Class A, 1968 edition with addenda through Summer 1969.

**2.0 APPLICABLE EXAMINATION REQUIREMENTS**

The U.S. Nuclear Regulatory Commission (NRC) issued an Order on February 11, 2003,<sup>(1)</sup> establishing interim inspection requirements for reactor pressure vessel heads of pressurized water reactors. The Order establishes a minimum set of RPV head inspection requirements as a supplement to existing inspection requirements contained within the ASME Code and NRC regulations.

Based upon criteria in Section IV.B of the Order, the Millstone Unit No. 2 RPV head has a high primary water stress corrosion cracking (PWSCC) susceptibility. The category of high susceptibility is based in part upon having effective degradation years (EDY) of greater than 12. The Millstone Unit No. 2 RPV is expected to accrue 12.74 EDY by the end of cycle 15. The susceptibility category is also based upon the identification and repair of indications found in three CEDM penetration nozzles as a result of ultrasonic testing (UT) inspections on each of the penetrations conducted during the previous refueling outage. None of those indications were through wall and leak paths were not detected.

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<sup>(1)</sup> NRC Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 11, 2003.

According to Section IV.C(1)(b) of the Order, RPV head penetration nozzles in the "High" PWSCC susceptibility category shall be inspected using either of the following non-destructive examination (NDE) techniques each refueling outage:

- "(i) Ultrasonic testing (UT) of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred into the interference fit zone, OR*
- (ii) Eddy current testing (ECT) or dye penetrant testing (PT) of the wetted surface of each J-groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld."*

DNC understands that the Order requires the same technique specified in Section IV.C(1)(b) be used to inspect the entire population of RPV head penetration nozzles; and that combining techniques, or using one technique on one nozzle and the other technique on another nozzle, is not permitted.

### 3.0 REASON FOR THE REQUEST

DNC will use UT for the volumetric examination of the RPV head penetration nozzles. However, the absence of an interference fit region between the head vent nozzle and its vessel penetration prevents an acceptable performance of a leakage assessment using the UT technique, which is required by Section IV.C(1)(b) of the Order. Consequently, DNC has determined relaxation of the inspection requirements imposed by Section IV.C(1)(b) is warranted.

### 4.0 PROPOSED ALTERNATIVE

For the inspection of the head vent penetration nozzle, and in lieu of the requirements in Section IV.C(1)(b)(i) of the Order, DNC requests authorization to perform UT of the nozzle base material from two (2) inches above the J-groove weld to the bottom of the nozzle, and a PT of the wetted surface of the J-groove weld. DNC will inspect the remaining CEDM and ICI nozzles using the UT inspection technique as specified in Section IV.C(1)(b)(i) of the Order. DNC will provide in the 60-day report for Millstone Unit No. 2, as required by the Order, specified inspection information; i.e., extent of inspections and results of those inspections.

### 5.0 BASIS FOR USE

Inspection of the entire population of RPV head penetration nozzles is required using only one of the techniques specified in Section IV.C(1)(b) of the Order. This limits the licensee's options without measurably increasing the level of quality or safety. DNC believes that using either inspection technique is sufficient to detect the PWSCC phenomena and that no significant benefit is gained by requiring the same technique to be used on all nozzles.

The configuration of the vent line nozzle at Millstone Unit No. 2 warrants using a different technique from the requirements in Section IV.C(1)(b)(i) of the Order. Specifically, the UT inspection that is used to examine the CEDM and ICI nozzles is not suitable for the leakage assessment on the vent line nozzle due to the lack of an interference fit region on the smaller vent line nozzle. Accordingly, DNC proposes to use a different technique (PT).

Section IV.F of NRC Order EA-03-009 states:

*"Licensees proposing to deviate from the requirements of this Order shall seek relaxation of this Order pursuant to the procedure specified below. The Director, Office of Nuclear Reactor Regulation, may, in writing, relax or rescind any of the above conditions upon demonstration by the Licensee of good cause. A request for relaxation regarding inspection of specific nozzles shall also address the following criteria:*

- (1) The proposed alternative(s) for inspection of specific nozzles will provide an acceptable level of quality and safety, or*
- (2) Compliance with this Order for specific nozzles would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."*

As has been described above, DNC believes that using either inspection technique is sufficient to detect the PWSCC phenomena. Therefore, the requested authorization to allow use of a combination of UT on the vent line nozzle base material, and PT on the vent line nozzle J-groove weld, maintains the level of quality and safety prescribed in Section IV.C(1)(b). Accordingly, DNC requests that the proposed alternative be authorized pursuant to Section IV.F of the Order.

## 6.0 DURATION OF PROPOSED ALTERNATIVE

This requested relaxation from the requirements in Order EA-03-009 is for the Third Ten-Year Interval of the ISI Program at Millstone Unit No. 2, which began on April 1, 1999, and its authorization is requested until superseded by design changes to the RPV head or to 10 CFR 50.55a requirements.

## 7.0 PRECEDENTS

The NRC recently approved a similar relaxation request on June 18, 2003,<sup>(2)</sup> for the D. C. Cook Nuclear Plant, Unit 2. In its safety evaluation approving the D. C. Cook request, the NRC staff stated that the alternative provides reasonable assurance of the structural integrity of the RPV head.

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<sup>(2)</sup> NRC letter to Indiana Michigan Power Company, "Donald C. Cook Nuclear Plant, Unit 2 – Relaxation of the Requirements of Order (EA-03-009) Regarding Reactor Pressure Vessel Head Inspections (TAC No. MB9543)," June 17, 2003, (Accession No. ML031671084).