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

Dominion

NOV 10 2004

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

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| License No. | NPF-49 |

**DOMINION NUCLEAR CONNECTICUT, INC.**
**MILLSTONE POWER STATION, UNIT 3**
**LICENSEE EVENT REPORT 2004-002-01**
**INOPERABLE MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RESULTING FROM A DEGRADED SERVICE WATER SYSTEM BRAZED JOINT**

This letter forwards Licensee Event Report (LER) 2004-002-01. This is revision 1 to the LER 2004-002-00, which documented an event at Millstone Power Station, Unit 3, that was determined reportable on May 26, 2004. Revision 0 of the LER was submitted on July 26, 2004, pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

If you have any questions or require additional information, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

Stephen E. Scace
Nuclear Station Safety and Licensing

IE22

Attachments: (1)

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission
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Millstone Power Station

Attachment 1

Millstone Power Station, Unit No. 3

LER 2004-002-01

Dominion Nuclear Connecticut, Inc.

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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TITLE (4)

Inoperable Motor Driven Auxiliary Feedwater Pump Resulting From a Degraded Service Water System Brazed Joint

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MO | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MO | DAY | YEAR | FACILITY NAME | DOCKET NUMBER 05000 |
| 05 | 26 | 2004 | 2004 – 002 – 01 | | | 11 | 10 | 2004 | FACILITY NAME | DOCKET NUMBER 05000 |

| OPERATING MODE (9) | 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| POWER LEVEL (10) | 100 | 20.2201(b) | | 20.2203(a)(3)(ii) | | 50.73(a)(2)(ii)(B) | | 50.73(a)(2)(ix)(A) | |
| | | 20.2201(d) | | 20.2203(a)(4) | | 50.73(a)(2)(iii) | | 50.73(a)(2)(x) | |
| | | 20.2203(a)(1) | | 50.36(c)(1)(i)(A) | | 50.73(a)(2)(iv)(A) | | 73.71(a)(4) | |
| | | 20.2203(a)(2)(i) | | 50.36(c)(1)(ii)(A) | | 50.73(a)(2)(v)(A) | | 73.71(a)(5) | |
| | | 20.2203(a)(2)(ii) | | 50.36(c)(2) | | 50.73(a)(2)(v)(B) | | OTHER | |
| | | 20.2203(a)(2)(iii) | | 50.46(a)(3)(ii) | | 50.73(a)(2)(v)(C) | | Specify in Abstract below or in NRC Form 366A | |
| | | 20.2203(a)(2)(iv) | | 50.73(a)(2)(i)(A) | | 50.73(a)(2)(v)(D) | | | |
| | | 20.2203(a)(2)(v) | X | 50.73(a)(2)(i)(B) | | 50.73(a)(2)(vii) | | | |
| | | 20.2203(a)(2)(vi) | | 50.73(a)(2)(i)(C) | | 50.73(a)(2)(viii)(A) | | | |
| | | 20.2203(a)(3)(i) | | 50.73(a)(2)(ii)(A) | | 50.73(a)(2)(viii)(B) | | | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| David W. Dodson, Supervisor Nuclear Station Licensing | 860-447-1791 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| ☐ YES (If yes, complete EXPECTED SUBMISSION DATE). | ☐ NO | | | | |


ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 26, 2004, while operating in Mode 1 at 100 percent power, an investigation determined that a potential existed for the operability of the 'B' motor driven auxiliary feedwater (MDAFW) pump to have been impacted by a degraded service water piping connection that was identified and corrected during the unit's most recent refueling outage on April 15, 2004. A pipe separation at this location would create a service water spray hazard to the motor of the 'B' MDAFW pump. The spray hazard was determined to represent a potential to render the pump unavailable. This historical condition potentially affected the credited design function of the auxiliary feedwater system coincident with a seismic event. The inoperability of the 'B' MDAFW pump would constitute a condition that is prohibited by the plant's technical specifications and is being reported pursuant to reporting criteria of 10 CFR 50.73(a)(2)(i)(B).

This condition is historical in nature and the apparent cause for the condition was a poor work practice during original installation.

No unavailability of safety related equipment or systems, piping failure or flow diversion, had resulted from the affected joint. This condition would not have impacted the redundant 'A' train MDAFW pump or turbine driven AFW pump. This condition has a level of risk that is characterized as very small per Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

The corrective action to prevent recurrence of this specific condition has been completed during the refueling outage. The 'A' and 'B' Engineered Safety Features (ESF) supply header tees were cut out and replaced with new 3 inch butt-welded piping and branch weldolets.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

1. Event Description

On May 26, 2004, while operating in Mode 1 at 100 percent power, an investigation determined that a potential existed for the operability of the 'B' motor driven auxiliary feedwater (MDAFW) [BA] pump to have been impacted by a degraded service water [BI] piping connection that was identified and corrected during the unit's most recent refueling outage on April 15, 2004. The degraded piping condition was inadequate braze bonding and a 360 degree crack of the brazing in a socket joint of the 3 x 3 x 3/4 inch tee in the 3 inch diameter 'A' service water Engineered Safety Features (ESF) supply line (3-SWP-003-67-3) to the residual heat removal and containment recirculation pump ventilation units (HVQ), and the safety injection pump lube oil cooler (CCI).

No unavailability of safety related equipment or systems, piping failure or flow diversion, had resulted from the affected joint. However, upon disassembly and inspection of the joint, the braze bond was found to be deficient. Conservatively assuming that there had been no bond strength (no braze bond material), analysis of the affected socket joint shows a potential for pipe separation under seismic conditions. A pipe separation at this location would create a service water spray hazard to the motor of the 'B' MDAFW pump. The spray hazard was determined to represent a potential to render the pump unavailable. The 'A' MDAFW pump and turbine driven auxiliary feedwater pump would have been unaffected by the break.

This historical condition potentially affected the credited design function of the auxiliary feedwater system coincident with a seismic event. Technical specifications 3.7.1.2, Auxiliary Feedwater System, requires restoration of an inoperable auxiliary feedwater pump within 72 hours. Installation of the affected joint with the deficient braze bonding was original construction. The inoperability of the 'B' MDAFW pump would constitute a condition that is prohibited by the plant's technical specifications and is being reported pursuant to reporting criteria of 10 CFR 50.73(a)(2)(i)(B). This is revision 1 to the LER 2004-002-00 that was issued on July 26, 2004.

2. Cause

This condition is historical in nature and the apparent cause for the condition was a poor work practice during original installation.

The affected socket joint and piping in the 3 inch tee remained intact until the socket was cut away and disassembled during inspection. Disassembly of the joint showed that the silver braze had cracked and was not fully bonded to surfaces within the piping socket. The joint was quartered axially to examine the condition of each of the tee's brazes. In addition, the corresponding piping tee on the opposite train ('B' train) ESF supply was also removed and axially quartered. These inspected brazes were concluded satisfactory, with the exception of the one affected piping socket that is described by this condition.

3. Assessment of Safety Consequences

The condition resulted in a potential for a loss of service water from the 3 inch diameter 'A' service water supply line to the residual heat removal and containment recirculation pump ventilation units (HVQ) and the safety injection pump lube oil cooler (CCI) following a postulated seismic event. The 'B' service water header was not adversely affected by this condition. An evaluation of the potential for service water flow diversion concluded that all other safety related loads on the 'A' service water header would have received adequate flow. For the postulated scenario, the loss of cooling to the affected 'A' train ESF equipment could be mitigated as there is sufficient time to restore ventilation to the affected residual heat removal pump room by installation of portable fans, opening doors, and other similar temporary measures that would maintain required cooling following a seismic event. The containment recirculation pump ventilation unit and safety injection pump lube oil cooler are not required equipment following a seismic event. The postulated piping separation from a seismic event could cause flooding in the cubicle above the 'B' MDAFW pump that could overflow upon the MDAFW pump motor and

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

adversely impact the availability of the pump. The AFW system provides a supply of high pressure feedwater to the secondary side of the steam generators for reactor coolant system (RCS) heat removal. There are two motor driven AFW pumps, and one turbine driven AFW pump. The design of the AFW system protects against single failures as well as providing power source diversity. This condition would not have impacted the redundant 'A' train MDAFW pump or turbine driven AFW pump. An evaluation of the flooding associated with this scenario concluded that no other equipment required for safe shutdown following a seismic event would be adversely affected.

The seismic fragility of the subject service water piping connection could not be analyzed. However, a sensitivity analysis was performed to assess the potential core damage and large early release risk impact of this condition. The scenario analyzed in the sensitivity analysis is based upon the following:

a. a seismic event at the Safety Shutdown Earthquake (SSE) level (0.17g),
b. the 3 inch diameter 'A' train service water supply line to the ESF building coolers fails,
c. the 'A' service water train continues to supply all its loads following the supply line failure except those supplied from the affected ESF header (i.e., the 'A' train residual heat removal and containment recirculation pump ventilation units (HVQ) and the safety injection pump cooler (CCI) are assumed failed),
d. offsite power is lost due to the seismic event and cannot be restored within 24 hours,
e. the station blackout (SBO) diesel fails due to the seismic event and cannot be recovered,
f. the 'B' train MDAFW pump fails from the service water flooding/spray, and
g. the operators are successful in isolating the service water flood via a manual isolation valve before affecting any other risk significant equipment in the ESF building.

Based on the seismic hazard analysis for Millstone Unit 3, the frequency of exceeding the SSE is approximately 1E-4 per year. Based on the SSE exceedence frequency and the above assumptions, the changes in core damage and large early release frequencies from this condition were calculated to be 4.3E-07 per year and 3.4E-09 per year, respectively. This level of risk is characterized as very small per Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

4. Corrective Action

The corrective action to prevent recurrence of this specific condition has been completed during the refueling outage. The 'A' and 'B' ESF supply header tees were cut out and replaced with new 3 inch butt-welded piping and branch weldolets.

A multi-year program is continuing to replace major portions of the brazed joint service water system piping to preclude similar brazed joint failures. The corrective actions associated with this condition are being addressed in accordance with the Millstone Corrective Action Program.

5. Previous Occurrences

No previous similar events/conditions were identified.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].