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

Dominion℠

NOV 28 2011

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

Serial No. 11-643
MPS Lic/LES R0
Docket No. 50-423
License No. NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
LICENSEE EVENT REPORT 2011-002-00
MILLSTONE POWER STATION UNIT 3 FAILURE OF TWO MAIN STEAM SAFETY VALVES TO LIFT WITHIN THE ACCEPTANCE CRITERIA

This letter forwards Licensee Event Report (LER) 2011-002-00 documenting a condition prohibited by the plant's Technical Specifications at Millstone Power Station Unit 3 on October 6, 2011. This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B).

If you have any questions or require additional information, please contact William D. Bartron at (860) 444-4301.

Sincerely,

A. J. Jordan
Site Vice President – Millstone

Attachments: 1

Commitments made in this letter: None

IE22
NRR

cc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

C. J. Sanders
Project Manager - Millstone Power Station
U.S. Nuclear Regulatory Commission
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NRC Senior Resident Inspector
Millstone Power Station

ATTACHMENT

LICENSEE EVENT REPORT 2011-002-00

MILLSTONE POWER STATION UNIT 3
DOMINION NUCLEAR CONNECTICUT, INC.

NRC FORM 366 (10/2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 an 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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Millstone Power Station - Unit 3	05000423	1 OF 2

4. TITLE

Failure of Two Main Steam Safety Valves to Lift Within the Acceptance Criteria

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
10	06	2011	2011	– 002 –	00	11	28	2011	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
William D. Bartron, Supervisor, Station Licensing	860-444-4301

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

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

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

With the plant in MODE 1 at 100% power on October 6, 2011, set pressure testing of Millstone Power Station Unit 3 (MPS3) Main Steam Safety Valves (MSSVs) was conducted per plant procedures. Two MSSVs, 3MSS*RV23B and 3MSS*RV22D, failed to lift within the +/- 3% acceptance criteria listed in Technical Specification (TS) 3.7.1.1.

The failure of two MSSVs to lift within the required set pressure range is attributed to a corrosive oxide locking action between surface layer materials of the disc-seat interface, sometimes referred to as "oxide locking" or "microbonding." This cause is validated because the valves initially lifted above the required setpoint and subsequently lifted at lower pressures approaching the nominal lift setpoint.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's TS.

Both valves were declared inoperable, and retested. All twenty MPS3 MSSVs were verified to be within + / - 1% of the lift setpoint. Valves are being replaced in accordance with a multi-year plan with seats containing materials less susceptible to microbonding. Additional corrective actions to address microbonding are being implemented in accordance with the station's Corrective Action Program.

NARRATIVE

1. Event Description

With the plant in MODE 1 at 100% power on October 6, 2011, set pressure testing of Millstone Power Station Unit 3 (MPS3) Main Steam Line Safety Valves (MSSVs) [MS] [RV] was conducted per plant procedures. Two MSSVs, 3MSS*RV23B and 3MSS*RV22D, failed to lift within the + / - 3% acceptance criteria listed in Technical Specification (TS) 3.7.1.1.

The test result for "B" MSSV (3MSS*RV23B) was 0.6 psi (0.05%) above the 3% tolerance. The test result for "D" MSSV (3MSS*RV22D) was 21.6 psi (1.8%) above the 3% tolerance.

Following the test failure, both valves were retested and found to lift within the test acceptance criteria + / - 1% and adjusted as required.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's TS.

2. Cause

The failure of two MSSVs to lift within the required set pressure range is attributed to a corrosive oxide locking action between surface layer materials of the disc-seat interface, sometimes referred to as "oxide locking" or "microbonding." This cause is validated because the valves initially lift above the required setpoint and subsequently lift at lower pressures approaching the nominal lift setpoint.

3. Assessment of Safety Consequences

This event is of low safety significance. As described in the Final Safety Analysis Report (FSAR), the MSSVs protect the SG and portions of the main steam [SB] and feedwater systems [SJ] from overpressure conditions. The valves also serve as a heat sink for the reactor coolant system [AB] in the event that the main condenser is not available. The accidents presented in FSAR Section 15.2 assume all MSSVs open at 3% higher than their nominal set pressure. Only two of twenty valves opened at lift pressures that were slightly above the 3% tolerance. The remaining valves opened well within the + / - 1% tolerance. The average of all 20 MSSVs was much less than 1% above the nominal lift set pressure. Additionally, the valves that failed have the lowest and second lowest setpoints. Therefore, if a FSAR Chapter 15 event had occurred, the MSSVs would have provided adequate pressure relief to ensure the safety analysis assumption was not challenged.

4. Corrective Action

Both valves were declared inoperable, and successfully retested. All twenty MPS3 MSSVs were verified to be within + / - 1% of the lift setpoint. Five of twenty MSSVs were replaced during the current refueling outage with seats that have x-750 inconel seats, which are less susceptible to microbonding, instead of the existing stainless steel seats. Plans are to continue replacing five valves each refueling outage until all twenty valves are replaced. Additional corrective actions to address microbonding are being implemented in accordance with the station's Corrective Action Program.

5. Previous Occurrences

A review of past LERs found that there have been previous events at MPS3, the latest 2 events reported as LERs 2007-001-00 and 2008-003-00. Additional events have occurred back to at least 2005. Millstone Power Station Unit 2 (MPS2) has also experienced microbonding of MSSV's as reported in LER 2008-005-00.

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