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

DEC 16 2005
Dominion

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

Serial No.	05-796
MPS Lic/GJC	R0
Docket No.	50-423
License No.	NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
LICENSEE EVENT REPORT 2005-004-00,
PRESSURIZER SPRAY NOZZLE WELD INDICATIONS

This letter forwards Licensee Event Report (LER) 2005-004-00, documenting an event that occurred at Millstone Power Station Unit 3, on October 18, 2005. This LER is being submitted pursuant to 10 CFR 50.73(b)(2)(ii)(A), as a condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, related to the discovery of indications in the pressurizer spray nozzle weld.

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

Very truly yours,

A. J. JORDAN FOR

J. Alan Price
Site Vice President - Millstone

IE22

Attachments: 1

Commitments made in this letter: None.

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

Mr. V. Nerses
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Mr. S. M. Schneider
NRC Senior Resident Inspector
Millstone Power Station

Attachment 1

Licensee Event Report 2005-004-00,
Pressurizer Spray Nozzle weld indications

Millstone Power Station Unit 3
Dominion Nuclear Connecticut, Inc. (DNC)

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

LICENSEE EVENT REPORT (LER)

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

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.

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TITLE (4)
Pressurizer Spray Nozzle Weld Indications

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
10	18	2005	2005 – 004 – 00			12	16	2005	FACILITY NAME	DOCKET NUMBER 05000

		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)			
OPERATING MODE (9)	6	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
POWER LEVEL (10)	N/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)	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) X	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).	X	NO				

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

On October 18, 2005 a prompt notification to the NRC was made per 10CFR50.72(b)(3)(ii)(A) to report discovery of flaws in the pressurizer spray nozzle [AB] to safe-end bimetallic weld region. With the plant in Mode 6 (Refueling), engineering personnel performing preplanned radiography (RT) examinations in accordance with the Alloy 600 weld inspection program (as committed to in response to NRC Bulletin 2004-01), discovered two linear indications. In an effort to better characterize the indications, additional ultrasonic examinations were performed which identified three indications. The indications were conservatively identified as degradation of the reactor coolant system pressure boundary in that corrective action to restore the barrier's capability was necessary. A request was made and the NRC granted approval for Millstone to utilize an alternate repair method from that specified in the ASME Code. The weld was repaired utilizing a weld overlay process.

This event/condition is being reported pursuant to 50.73(a)(2)(ii)(A), as a condition that resulted in the nuclear power plant, including its principal safety barriers, being degraded.

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

1. Event Description

On October 18, 2005 a prompt notification to the NRC was made per 10CFR50.72(b)(3)(ii)(A) to report discovery of flaws in the pressurizer spray nozzle [AB] to safe-end bimetallic weld region. With the plant in Mode 6 (Refueling), engineering personnel performing preplanned RT examinations in accordance with the Alloy 600 weld inspection program (as committed to in response to NRC Bulletin 2004-01), discovered two linear indications. In an effort to better characterize the indications, additional ultrasonic (UT) examinations were performed which identified three indications. There was no evidence of any past RCS leakage from any of the indications.

The indications are located at or near the inner diameter surface of the pressurizer spray nozzle to safe-end bimetallic weld region, which is part of the RCS pressure boundary. Though it cannot be conclusively stated that the indications break the ID surface, all three indications are characterized by the rules of IWA-3310 (b) as surface planar indications due to their proximity to the ID surface. This rule states that even if the indication was characterized as a sub-surface indication, if any portion of the indication is less than $0.4d$ (d = indication depth) from the nearest surface of the component to the indication it must be classified as a surface indication.

Indication Number 1

Indication number 1 is a lack of fusion between the inconel weld at the fusion line between the structural weld and the nozzle butter. The length of this indication is 16.75 inches with a measured through wall depth of 0.208" (~ 24% of wall thickness). This indication is a circumferential indication between the carbon steel nozzle and the nozzle butter. This indication is essentially comprised of 5 indications, which due to their proximity to one another, must be considered as one continuous circumferential indication. However the specifics of the five locations are: 3.05" to 5.85", 6.90" to 12.55", 12.95" to 13.85", 14.25" to 18.25", and 19.2" to 22.6". The distance between these indications is such that all indications would require evaluation as a single indication whether classified as parallel planar indications or multiple nonaligned coplanar indications.

Indication Number 2

Indication number 2 is located on the opposite side of the weld at the interface between the weld and the safe-end and is also a lack of fusion. The length of this indication is 7.7" with a measured through wall depth of 0.219" (~ 24% of wall thickness). This indication is a circumferential indication between the inconel weld and the stainless steel safe-end. The separation between the circumferential indications along the long axis of the component is the width of the butter material, which is calculated to be approximately 0.7".

Indication Number 3

Indication number 3 is an axial indication originating at the inside surface and located wholly in the nozzle weld butter region. The length of this indication is 0.25" with a measured through wall depth of 0.214" (~ 24% of wall thickness). Note: This is an estimated value only as through wall and length sizing of axially orientated indications is not qualified through the Performance Demonstration Initiative (PDI) program for Appendix VIII, Supplement 10 of Section XI of the ASME Code. Axial indications are only qualified for detection.

Previous examination results were reviewed. Neither the pre-service examination performed in 1985 nor the in-service examination conducted in 1991 noted any recordable indications. It should be noted that the UT technique utilized for the pre-service and the 1991 examinations were not qualified through the PDI program for Appendix VIII, Supplement 10 of Section XI of the ASME Code, as they predated the development of the PDI program.

A request was made and the NRC granted approval for Millstone to utilize an alternate repair method from that specified in the ASME Code. A structural weld overlay was applied to restore the structural integrity of the pressurizer spray nozzle.

This event/condition is being reported pursuant to 50.73(a)(2)(ii)(A), as an event or condition that resulted in the nuclear power plant, including its principal safety barriers, being degraded.

2. Cause

The cause of these weld indications was attributed to defects in the weld that occurred during original construction. Improvements in the NDE techniques over those in place at the time of the original construction, allowed these indications to be found at this time. The indications are in the transition area between the pressurizer spray nozzle and the safe-end weld butter. Dominion NDE personnel reviewed the original RTs. Since the existence of the indications was known (as a result of the additional UTs), the indications could then be 'seen' in the original RTs. However, the NDE personnel indicated that had they been reviewing the RTs for the first time without the benefit of knowing the indications existed, they would have also accepted the RTs as satisfactory. The spray nozzle had radiography performed to meet the ASME Section III (construction) requirements and a pre-service UT was performed using shear waves. An in-service inspection was performed in 1991 utilizing a 45 degree refracted longitudinal wave transducer based upon industry experience in dissimilar metal (DM) welds (Hope Creek). Since the last in-service inspection performed in 1991, Appendix VIII, Supplement 10 of ASME Section XI has become mandatory (November 2002) for DM welds through the PDI Program. The PDI Program has identified through procedure, personnel and equipment qualification that previous inspections performed to DM welds were inadequate for detection of flaws. It should also be noted that differences in the RT technique is what enabled the indications to be seen more clearly on the 3R10 radiographs. The construction radiographs used Kodak AA film, which is a grainy high-speed film typically used for construction in order to reduce the exposure time. The radiographs taken during 3R10 utilized D4 film, which is a fine grain film, used to ensure high quality radiographs.

3. Assessment of Safety Consequences

An evaluation in accordance with ASME XI (IWB-3600) showed that the indication sizes did not currently exceed code limits. Therefore the as found structural integrity of the weld was adequate for all design loads, and the pressure boundary integrity and structural loading capability of the weld was not impaired below acceptable limits. The pressure and structural integrity was also adequate for all prior plant operations. However, future adequacy of the flawed weld could not be assured without completion of the weld overlay repair. A request was made and the NRC granted approval for Millstone to utilize an alternate repair method from those specified in the ASME Code. A structural weld overlay was designed and installed via DCN DM3-00-0422 and AWO M3-05-14477. A structural weld overlay was applied to ensure future structural integrity of the pressurizer spray nozzle.

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

4. Corrective Action

The structural weld overlay provided structural integrity for the pressurizer spray nozzle to address the identified weld indications. Additionally, in response to NRC Bulletin 2004 -01, a plan has been developed to provide direction for administrating Alloy 600/82/182 inspections, and will be fully implemented over several outages.

There is high confidence that the ISI program, implemented in accordance with Section XI of the ASME code, would be capable of detecting similar weld defects.

6. Previous Occurrences

None

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