Northeast
Utilities System

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September 20, 1996

Docket No. 50-245
B15840

Re: 10CFR50.73(a)(2)(i)

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

This letter forwards supplemental Licensee Event Report (LER) 96-027-01, documenting an event that occurred at Millstone Nuclear Power Station, Unit No. 1 on March 28, 1996. This LER is submitted pursuant to 10CFR50.73(a)(2)(i).

This LER supplement documents the walkdown and visual inspection performed on the other primary containment bolted closures which was part of the Commitment No. 15684-4.

Also, this LER supplement modifies the corrective action and correspondingly deletes Commitment No B15684-2. NNECO had originally intended to perform a Charpy impact test on a sample of the Gibs manway bolting material. The nuts are too small to facilitate such a test, and so alternate methods to assess primary containment operability will be used.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

W. J. Riffer
Director - Millstone Unit No. 1

Attachment: LER 96-027-01

cc: H. J. Miller, Region I Administrator
T. A. Easlick, Senior Resident Inspector, Millstone Unit No. 1
J. W. Andersen, NRC Project Manager, Millstone Unit No. 1

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4)

Bolting Material Installed on Containment Penetration Does Not Meet Design Specification

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	28	96	96	027	01	09	20	96	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		20.2201(b)	20.2203(a)(2)(v)	[X] 50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	000	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Robert W. Walpole, Nuclear Licensing Supervisor	(860)440-2191

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
A	NH	PEN	C310	N						

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION	MONTH	DAY	YEAR
[X] YES (If yes, complete EXPECTED SUBMISSION DATE).	[ ] NO		01	15	97

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

On March 28, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, it was determined that bolting materials used in certain containment boundary components do not meet their original design specifications, and consequently may have caused primary containment to be inoperable. ASTM A194 Grade 2H nuts were found in lieu of the original A194 Grade 4 nuts in one of the eight containment manways associated with drywell stabilizers (Gibs manway). Although the tensile strengths of the two grades of nuts are equivalent, the original containment design called for Charpy impact testing of bolting materials at 0 degrees F, 35 ft-lbs absorbed energy. There is no evidence that these as-found bolting materials met the specified impact testing requirements. This condition may have caused the primary containment to have been inoperable during previous operating cycles. A walkdown and visual inspection of other primary containment bolted closures has revealed other discrepancies which warrant additional investigation.

Primary containment is required to be operable at all times when the reactor is critical or when the reactor is in POWER OPERATION or in HOT SHUTDOWN, as stated in Millstone Unit No. 1 Technical Specification 3.7.A.3. This event is reportable, pursuant to 10CFR50.73(a)(2)(i)(B), as a condition prohibited by the plant's Technical Specifications. There were no safety consequences as a result of this event.

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

I. Description of Event

On March 28, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, it was determined that bolting materials used in certain containment boundary components do not meet their original design specifications, and consequently may have caused primary containment to be inoperable. ASTM A194 Grade 2H nuts were found in lieu of the original A194 Grade 4 nuts in one of the eight containment manways associated with drywell stabilizers (Gibs manway). Although the tensile strengths of the two grades of nuts are equivalent, the original containment design called for Charpy impact testing of bolting materials at 0 degrees F, 35 ft-lbs absorbed energy. There is no evidence that these as-found bolting materials met the specified impact testing requirements. This condition may have caused the primary containment to have been inoperable during previous operating cycles. A walkdown and visual inspection of other primary containment bolted closures has revealed other discrepancies which warrant additional investigation.

Primary containment is required to be operable at all times when the reactor is critical or when the reactor is in POWER OPERATION or in HOT SHUTDOWN, as stated in Millstone Unit No. 1 Technical Specification 3.7.A.3. This event is reportable, pursuant to 10CFR50.73(a)(2)(i)(B), as a condition prohibited by the plant's Technical Specifications. There were no safety consequences as a result of this event.

II. Cause of Event

The cause of this event is personnel error. Certain bolted closures which serve as primary containment pressure boundary are opened during plant shutdown to allow manway access or inspections. If bolting materials become misplaced, replacement materials are used to secure the closure. In determining adequate replacement materials, a review of form, fit and function is normally performed. Bolting must meet size, material compatibility, and strength requirements. The additional requirements imposed on containment pressure boundary bolting to provide assurance that brittle fracture will not occur may not have been recognized by individuals who were determining the adequacy of replacement materials. This resulted in the installation of bolting materials with adequate strength, but potentially lacking documentation that fracture toughness requirements were met.

III. Analysis of Event

On February 8, 1996, incorrect bolting material was discovered on one of the eight containment manways associated with drywell stabilizers (Gibs manway). After an engineering review, this condition was determined to have had the potential to cause primary containment to be inoperable during previous operating cycles, and so was determined to be reportable on March 28, 1996. The bolting materials discovered were adequate from a form, fit, and function standpoint, but did not have documentation that they met fracture toughness requirements. The fracture toughness testing is performed at 30 degrees F below the minimum service temperature of 30 degrees F (i.e., must be performed at 0 degrees F), which is conservative for the Millstone Unit No. 1 drywell and torus. Fracture toughness testing is required in order to ensure that the bolting material will not suffer brittle failure due to low service temperatures.

The failure to use appropriate bolting materials on the Gibs manway may have resulted in the inoperability of the primary containment during past operating cycles, which is contrary to the requirements of Millstone Unit No. 1 Technical Specification 3.7.A.3. This event is reportable, pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications. The replacement bolting material used had

equivalent tensile strength properties to the original bolting material. The fracture toughness of the nuts however, is unknown, and it is possible that the nuts would have experienced brittle fracture at low temperatures. Had the nuts fractured, the Gibs manway may have become loose, and post-accident primary containment atmosphere would have escaped into the reactor building. Only six of the 16 nuts were identified as incorrect, so the manway would most likely have been able to perform its function under accident conditions. Additionally, since the fracture toughness test temperature is conservative for the Millstone Unit No. 1 drywell and torus, it is unlikely that brittle fracture will occur for the types of bolting materials which are currently known to have been used.

Northeast Nuclear Energy Company (NNECO) completed a walkdown and visual inspection of the other primary containment bolted closures. One containment penetration (penetration X-3, drywell bottom) and the backside nuts of the Gibs manways were not accessible. A way to access these is being investigated to complete their inspection. All other inspected bolting were found to be the proper size. However, some of the inspected bolting were not of the proper type. Specifically, nine of the 21 penetrations inspected revealed bolting materials which are not in conformance with the original design requirements: Gibs manways no. 2 and 4 have A194 Gr. 2H nuts verses A194 Gr. 4; penetrations X-35A through X-35E (Traversing Incore Probe drive and purge) have SAE Gr. 5 bolts vs. A193 Gr. B7; and penetrations X-213A,B (suppression chamber bottom, construction drains) have SAE Gr. 5, A193 Gr. B8 bolts, and other materials, verses A320 L7 bolts. In addition, the containment head bolting exhibit varying markings. The results of the inspection are under review to determine the adequacy of these materials.

There were no safety consequences as a result of this event.

IV. Corrective Action

NNECO had originally intended to perform a Charpy impact test on a sample of the Gibs manway bolting material. The nuts are too small to facilitate such a test, and so alternate methods to assess primary containment operability will be used.

The incorrect bolting material used in primary containment bolted closures will be removed prior to startup for operating cycle 16, and will be replaced with appropriate material. NNECO will continue to evaluate the bolting discrepancies for their impact on primary containment operability, and will forward the results in a supplemental LER prior to startup for operating cycle 16.

In order to ensure that this condition does not exist in other containment bolted closures, NNECO performed a walkdown and visual inspection to determine if the original bolting materials are in place. NNECO will review the applicable program and procedures for bolting replacement to ensure that adequate control exists over the specification for replacement bolting material. This review will be completed prior to startup for operating cycle 16.

V. Additional Information

Commitments

The following are NNECO's commitments made within this letter. All other statements made within this letter are for information only.

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

B15684-1 NNECO commits to remove the incorrect bolting material in the Gibs manway prior to startup for operating cycle 16, and to replace it with appropriate material.

B15684-3 NNECO commits to supplement this LER with the results of an evaluation of the primary containment bolting material evaluations, which will assess the historical operability of the primary containment. This supplemental LER will be forwarded to the Staff prior to startup for operating cycle 16.

B15684-4 NNECO commits to perform a review to determine if adequate documentation exists for the bolting discovered during walkdown and visual inspection of other primary containment bolted closures, and whether or not replacement is warranted. This review and any bolting material replacement will be completed prior to startup for operating cycle 16.

B15684-5 NNECO commits to review the applicable program and procedures for bolting replacement to ensure that adequate control exists over the specification for replacement bolting material. This review will be completed prior to startup for operating cycle 16.

Similar Events

A similar event was reported as LER 95-007-00, "Incorrect Stud Material on 1-CU-3," in which stud material with different strength properties was used as a replacement material.

Manufacturer Data

None.