Northeast
Nuclear Energy

Rope Ferry Rd. (Route 156), Waterford, CT 06385

Millstone Nuclear Power Station
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385-0128
(860) 444-4300
Fax (860) 444-4277

The Northeast Utilities System

February 5, 1996

B15524

Re: 10CFR50.73(a)

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

Reference: Facility Operating License No. DPR-65
Docket No. 50-336
Licensee Event Report 96-002-00

This letter forwards Licensee Event Report 96-002-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Fred R. Dacimo
Vice President - Nuclear Operations

weh

Attachment: LER 96-002-00

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit No. 2
G. S. Vissing, NRC Project Manager, Millstone Unit No.

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) |
|---|---|---|
| Millstone Nuclear Power Station Unit 2 | 05000336 | 1 of 3 |

TITLE (4)

Loss of Capability to Backwash Service Water Strainers Due to Formation of an Ice Plug

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 01 | 08 | 96 | 96 | 002 | 00 | 02 | 05 | 96 | FACILITY NAME | DOCKET NUMBER |

| OPERATING MODE (9) | 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | |
|---|---|---|---|---|---|
| POWER LEVEL (10) | 100% | 20.2201(b) | 20.2203(a)(2)(v) | 50.73(a)(2)(i) | 50.73(a)(2)(viii) |
| | | 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) | [X] 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) |
|---|---|
| Philip J. Lutzi, Nuclear Licensing | (860)440-2072 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|
| B | BI | PSP | | | | | | | | |
| | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION | 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 January 8, 1996, at 0900 hrs, with the plant in Mode 1, at 100% power, it was determined that an ice plug in a common line resulted in the inability to backwash the service water strainers on both facilities.

This event is being reported pursuant to the requirements of 10CFR50.73(a)(2)(v)(B), reporting of any event or condition that alone could have prevented the safety function of structures or systems that are needed to remove residual heat.

The cause of this event was a modification to the backwash line piping that created a horizontal leg susceptible to freezing. A subsequent review of records has revealed no evidence of a formal engineering review of the modification.

Corrective actions consisted of removing the ice plug to restore the ability to backwash, establishment of a temporary log to manually backwash a strainer every four hours to prevent similar ice blockage, and modification to the backwash line to eliminate its susceptibility to the formation of an ice plug.

There were no automatic or manually initiated safety systems activated as a result of this event.

I. Description of Event

On January 8, 1996, at 0900 hrs, with the plant in Mode 1, at 100% power, it was determined that an ice plug in a common line resulted in the inability to backwash the service water strainers. The ice plug was caused by the accumulation of water in a horizontal pipe exposed to an unusually long period of sub-freezing temperatures. The blockage was discovered by a plant equipment operator performing normal rounds in the Intake Structure. Since strainer differential pressure remained within normal limits, no operator action was required to ensure the safe operation of the plant, however, Operations immediately notified maintenance personnel and the system engineer. Removal of the ice plug was completed approximately 3-1/2 hours after discovery.

The original design required the strainer backwash to end inside the intake structure with a 45°elbow welded to the end of a vertical leg. The elbow directed the backwash discharge into a trough which runs through the intake wall and into a fish basket. A modification implemented in the early 1980s added a two foot horizontal extension to the backwash line so that it ran within the trough to a point just outside the intake wall.

II. Cause of Event

The cause of this event was a modification to the backwash line piping that created a horizontal leg susceptible to freezing. A subsequent review of records has revealed no evidence of a formal engineering review of the modification.

A contributing cause was the minor leakage past the strainer backwash isolation valves. This leakage formed the ice plug when it contacted the horizontal leg of piping exposed to the unusually long period of sub-freezing temperatures experienced prior to the event.

III. Analysis of Event

This event is being reported pursuant to the requirements of 10CFR50.73(a)(2)(v)(B), reporting of any event or condition that alone could have prevented the safety function of structures or systems that are needed to remove residual heat. The ice plug that was discovered in a line common to all of the strainers would have prevented the automatic backwash function of the service water strainers. The potential existed that had the differential pressure across the strainers risen, the inability to backwash the strainers would have rendered the service water system inoperable. However, the service water strainer differential pressure remained below the backwash setpoint, therefore there were no safety consequences as a result of this event. Additionally, this is the first known occurrence of ice plug formation in the backwash line since this line was modified approximately 15 years ago.

The modification was performed in the early 1980s. Based on a review of records, there is no evidence that a formal engineering review of the modification was performed. It is surmised that, since the backwash is an open ended, non-QA, drain line, a modification adding 2 feet of additional pipe was not considered a significant change and was not formally documented. It has been concluded that engineering did not evaluate the consequences of the pipe modification.

There were no automatic or manually initiated safety systems activated as a result of this event.

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | | | PAGE (3) |
|---|---|---|---|---|---|---|---|
| | | YEAR | SEQUENTIAL NUMBER | | | REVISION NUMBER | |
| Millstone Nuclear Power Station Unit 2 | 05000336 | 96 | -- | 002 | -- | 00 | 3 of 3 |

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

IV. Corrective Action

Maintenance personnel immediately worked to remove the ice plug and restore strainer backwash capability.

Operations established a temporary log requiring that the strainers be manually backwashed every 4 hours. This frequency is sufficient to ensure that another ice plug will not form. This practice was continued until the pipe section was modified.

Current engineering procedural requirements, contained in the Design Control Manual, ensure that the appropriate engineering reviews are performed prior to the implementation of modifications. These current controls would prevent the installation of an unreviewed design modification.

The backwash line has been modified to eliminate the horizontal run of pipe in which the ice plug formed. There is no plan to perform maintenance on the leaking valve seat since minor leakage through this valve, caused by solids in the backwash, is normal.

V. Additional Information

During this investigation, it became apparent that the service water strainer backwash piping has pockets of water which are vunerable to ice blockage following an extended loss of intake structure heating. These pockets are located at the outlet of each strainer, and are stagnant unless the strainers are backwashing. Since the intake structure heating system is non-QA, this scenario could occur following a loss of normal power (LNP). This potential for freezing was not previously addressed in existing design documentation. This condition was reported to the NRC in accordance with 10CFR 50.72(b)(1)(ii)(B) on January 31, 1996, and will be followed up by a subsequent LER.

Similar Events

None

Manufacturer Data

None