

NORTHEAST UTILITIES



The Connecticut Light and Power Company
Western Massachusetts Electric Company
Hartford Water Power Company
Northeast Utilities Service Company
Northeast Nuclear Energy Company

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

January 30, 1991

MP-91-92

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

Reference: Facility Operating License No. NPF-49
Docket No. 50-423
Licensee Event Report 90-026-01


Gentlemen:

This letter forwards Licensee Event Report 90-026-01 which is being submitted as a revision to Licensee Event Report 90-026-00. Licensee Event Report 90-026-00 was submitted pursuant to 10CFR50.73(a)(2)(vii), any event where a single cause or condition caused two independent trains to become inoperable in a single system designed to mitigate the consequences of an accident.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace
Director, Millstone Station

BY: 
Carl H. Clement
Millstone Unit 3 Director

SES/VRJ:mo

Attachment: LER 90-026-01

cc: T. T. Martin, Region I Administrator
W. J. Raymond, Senior Resident Inspector, Millstone Units Nos. 1, 2 and 3
D. H. Jahn, NRC Project Manager, Millstone Unit No. 3

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LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this information collection request: 60-0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-630), U.S. Nuclear Regulatory Commission, Washington, DC 20555 and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503

FACILITY NAME (1) **Millstone Nuclear Power Station Unit 3** DOCKET NUMBER (2) **0 6 0 0 0 4 2 3** PAGE (3) **1 OF 0 3**

TITLE (4) **Hydrogen Monitor Temperature Profile/Operating Specification Inconsistency Due to Inadequate Design Engineering Interface**

| EVENT DATE (5) | | | LER NUMBER (6) | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | | |
|---|-----|------|-------------------|-----------------|-----------------|-----|------|-------------------------------|--|--|
| MONTH | DAY | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | | |
| 0 6 | 2 5 | 9 0 | 0 2 6 | 0 1 | 0 1 | 3 0 | 9 1 | 0 6 0 0 0 0 0 0 0 0 | | |
| THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check (i), or more of the following: (1)) | | | | | | | | | | |

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|-------------------------------|-------------------|------------------|----------------------|--|
| OPERATING MODE (9) 1 | 20.402(b) | 20.402(b) | 50.70(a)(2)(iv) | 70.71(b) |
| POWER LEVEL (10) 1 0 0 | 20.406(a)(1)(i) | 50.36(d)(1) | 50.70(a)(2)(iv) | 70.71(c) |
| | 20.406(a)(1)(ii) | 50.36(d)(2) | X 50.70(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 306A) |
| | 20.406(a)(1)(iii) | 50.70(a)(2)(i) | 50.70(a)(2)(viii)(A) | |
| | 20.406(a)(1)(iv) | 50.70(a)(2)(ii) | 50.70(a)(2)(viii)(B) | |
| | 20.406(a)(1)(v) | 50.70(a)(2)(iii) | 50.70(a)(2)(ix) | |

LICENSEE CONTACT FOR THIS LER (12)

NAME **Vere R. Joseph, Engineer, Ext. 5571** TELEPHONE NUMBER **2 0 3 4 4 7 - 1 7 9 1**

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

| C | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC |
|---|--------|-----------|--------------|-------------------|-------|--------|-----------|--------------|-------------------|
| | | | | | | | | | |
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SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, (15) IS EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) MONTH DAY YEAR

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

At 1530 hours on June 25, 1990, while operating in Mode 1, at 100% power, 587 degrees Fahrenheit and 2260 psia, the B Train Containment Hydrogen Monitor failed a calibration surveillance. The applicable Technical Specifications Limited Condition for Operation (LCO) had been entered at 0720 hours on June 25, 1990, and the plant remained in the LCO until the B Train Hydrogen Monitor calibration was successfully completed at 1630, on June 26, 1990. On July 22, 1990, an inconsistency was discovered between the anticipated ambient temperature profile at the Containment Hydrogen Monitors, and the operating temperature requirements of the monitors. During some conditions, the ambient temperature could exceed that recommended by the manufacturer. It was immediately directed that the Recombiner Building Ventilation System be maintained in continuous service. The Containment Hydrogen Monitors were reviewed for operability and were determined to be operable provided that the ambient temperature is maintained below 90 degrees Fahrenheit. This finding was documented in a Justification for Continued Operation on July 25, 1990. The root cause of the event is inadequate engineering interface between design organizations for the Recombiner Building and the Containment Hydrogen Monitors.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Estimated burden per response to comply with this information collection request: 50.0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (2-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0106), Office of Management and Budget, Washington, DC 20503.

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|--|--|----------------|--------------------------------|--------------------------|--------------------------------|
| FACILITY NAME (1) Millstone Nuclear Power Station Unit 3 | DOCKET NUMBER (2) 0 5 0 0 0 4 2 3 | LER NUMBER (3) | | | PAGE (3) 0 2 OF 0 3 |
| | | YEAR 9 0 | SEQUENTIAL NUMBER 0 2 6 | REVISION NUMBER 0 1 | |

TEXT (if more space is required, use additional NRC Form 366A's) (17)

I. Description of Event

At 1530 hours on June 25, 1990, while operating in Mode 1, at 100% reactor power, 587 degrees Fahrenheit and 2260 psia the B Train Containment Hydrogen Monitor, failed a calibration surveillance. The applicable Technical Specifications Limited Condition for Operation (LCO) had been entered at 0720 hours on June 25, 1990, to place the B Train Hydrogen Monitor out of service for surveillance testing. The Recombiner Building Ventilation System was placed in service and the calibration surveillance was successfully completed on June 26, 1990. Because of this, it is suspected that ambient temperature contributed to the calibration failure. The plant remained in the LCO until the B Train Hydrogen Monitor successfully completed calibration at 1630 on June 26, 1990.

On July 22, 1990, while reviewing information on the Containment Hydrogen Monitors, it was discovered that an inconsistency exists between the ambient temperature profile at the Containment Hydrogen Monitors, and the operating temperature requirements of the monitors. Containment Hydrogen Monitors are located in the Heating, Ventilating, and Air Conditioning (HVAC) room in the Hydrogen Recombiner Building. Under most conditions, ambient temperatures at the monitors support proper operation of the monitors. During days of very high outdoor temperature, the HVAC room temperature may exceed the Containment Hydrogen Monitor manufacturer's recommended operating temperature. During normal or accident conditions, calculations estimate that Recombiner Building HVAC Room temperature could increase from 85 degrees Fahrenheit to 110 degrees Fahrenheit for up to eight hours, or 120 degrees Fahrenheit for up to four hours. Plant experience shows that for various outdoor temperatures, the HVAC room temperature remains below 86 degrees Fahrenheit. Hydrogen Monitors are designed to operate below 90 degrees Fahrenheit by the manufacturer's specification. Containment Hydrogen Monitor operation above design temperature specifications may degrade the ability of the monitors to accurately indicate containment hydrogen concentration.

Based on the July 22, 1990, discovery, it was immediately directed that the Recombiner Building Ventilation System be placed in continuous service. The Containment Hydrogen Monitors were reviewed for operability and were determined to be operable provided that ambient temperature in the area remains below 90 degrees Fahrenheit. This finding was documented in a Justification for Continued Operation on July 25, 1990.

II. Cause of Event

Root cause of the inconsistent design condition is inadequate engineering interface between the facilities design organization concerned with the temperature profile in the Recombiner Building HVAC room, and the design engineering organization which selected and installed the Containment Hydrogen Monitors.

III. Analysis of Event

This event is reportable under 10CFR50.73(a)(2)(vii), as an event where a single cause or condition caused two independent trains to become inoperable in a single system designed to mitigate the consequences of an accident. A high temperature condition in the Recombiner Building HVAC room caused both trains of Containment Hydrogen Monitors to become inoperable. The Post Accident Sample System would still be available to determine containment atmosphere hydrogen concentration. Containment Hydrogen Monitors are Regulatory Guide 1.97 Post Accident Monitors.

A Train and B Train Containment Hydrogen Monitors are maintained operable during Mode 1 (Power Operation), 2 (Hot Standby), and 3 (Hot Shutdown), and are placed in service following accidents which could increase hydrogen concentration in the containment atmosphere. Containment Hydrogen Monitors and the Post Accident Sample System are used to determine containment atmosphere hydrogen concentration in support of decisions to start Hydrogen Recombiners. If both Containment Hydrogen Monitors were inoperable following an accident, there is no significant safety concern since the Post Accident Sample System is a diverse method for determining containment atmosphere hydrogen concentration.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Estimated burden per response to comply with this information collection request: 50 0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-630), U.S. Nuclear Regulatory Commission, Washington, DC 20545, and to the Paperwork Reduction Project (3150-0106), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (3)

PAGE (3)

Millstone Nuclear Power Station
Unit 3

| YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
|-------|-------------------|-----------------|-------|----|-------|
| 9 0 | 0 2 6 | 0 1 | 0 3 | OF | 0 3 |

TEXT (if more space is required, use additional NRC Form 366A's) (17)

Analysis has shown that if a single Hydrogen Recombiner is started as late as 24 hours following a Design Basis Accident (DBA), the containment hydrogen concentration will remain below 4 volume percent. Without any methods available to measure containment atmosphere hydrogen concentration, Hydrogen Recombiners could be started when the containment atmosphere hydrogen concentration is estimated, or calculated to be less than 5 volume percent. Conditions which could produce elevated levels of hydrogen in containment had not occurred.

IV. Corrective Action

The Recombiner Building Ventilation System will be maintained in continuous service. Caution tags were placed on main control board indicators of Containment Hydrogen Concentration to alert operators that indication may become erratic if Recombiner Building HVAC room temperature exceeds 90 degrees Fahrenheit. The doors of the Containment Hydrogen Monitors were opened to facilitate heat removal from the monitors. A visual surveillance of the Containment Hydrogen Monitor displays in the Recombiner Building HVAC room will be performed each shift to ensure operability. A personal computer located in the main control room, which is connected to a temperature data logger, will audibly alarm should the Recombiner Building HVAC room temperature exceed 90 degrees Fahrenheit. Above this temperature, Containment Hydrogen Monitors will be monitored hourly to verify satisfactory operation. A design review of normal and accident temperature profiles at the Containment Hydrogen Monitors was initiated.

A design change to install vented baseplates on the Hydrogen Monitor cabinets, will be implemented during the upcoming refueling outage (scheduled for February, 1991). This design change is intended to significantly lower the cabinet ambient temperature. The impact of the change on ambient temperature inside the cabinets will be evaluated seasonally to verify satisfactory performance over varying outside ambient temperature ranges. Cabinet temperature profiles following the design change will determine if additional compensatory action is necessary.

V. Additional Information

There have been no similar events with the same root cause and sequence of events.

ELIS CodesSystems

Containment Combustible Gas Control - BB

Containment Environmental Monitoring System - 1K

Hydrogen Recombiner Building

Components

Indicator, analyzer - A1

Monitor - MON