

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Millstone Nuclear Power Station Unit 3

DOCKET NUMBER (2)
0 5 0 0 0 4 2 3 1 OF 0 5

PAGE (3)
1 OF 0 5

TITLE (4)
Refueling Water Storage Tank Level Below Plant Technical Specifications Due to Incorrect Level Transmitters Calibration and Personnel Error

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 NAMES		DOCKET NUMBER(S)															
0	8	1	4	8	7	8	7	8	7	0	3	3	0	0	0	0	9	1	4	8	7	0	5	0	0	0

OPERATING MODE (8) 1

POWER LEVEL (10) 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: Vere R. Joseph, Associate Engineer, X5113

TELEPHONE NUMBER: 203 447-1791

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete 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)

On August 14, 1987 at 1400 hours, 100% power, it was confirmed that there was a calibration error of approximately 17,000 gallons in the non-conservative direction for the Refueling Water Storage Tank (RWST) level transmitters. The discovery was made a day earlier while investigating the RWST low level alarm. The error was caused by an incorrect assumption made during initial calibration. Immediate operator action was to verify that levels in the RWST were above the minimum requirement.

As corrective action the licensee has recalibrated the level transmitters and has verified that similar calibration errors do not exist in its other safety related tanks.

On August 22, 1987 at 0705 hours, 100% power, a Shift Supervisor discovered that RWST level was 33,000 gallons below the minimum requirement. Immediate operator action was to restore RWST level above the requirements of the Technical Specifications. The low level was attributed to the boration of the Spent Fuel Pool Cooling and Purification Demineralizer on August 20, 1987 using the RWST as the water source.

As corrective action improved guidance and communication has been provided in the procedure for borating the SFC demineralizer. Additional guidance has been provided for tracking the RWST level when the low level alarm is present.

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TEXT (if more space is required, use additional NRC Form 306A's) (17)

I. Description of Event

This Licensee Event Report discusses two incidents where levels in the Refueling Water Storage Tank were below the minimum level of 1,166,000 gallons required by the plant's Technical Specifications.

Incident I

On August 14, 1987 at 1400 hours, while the plant was operating at 100% power, plant engineering confirmed a calibration error in the non-conservative direction for the level transmitters of the Refueling Water Storage Tank (RWST). The discovery of a possible calibration error was made a day earlier while investigating the reason why the low level alarm annunciator for the RWST was continually alarmed. The RWST is the borated water source for the Emergency Core Cooling System and the error resulted in the levels of the RWST being approximately 17,000 gallons lower than indicated by the level transmitters.

At the time the calibration error was discovered, operators verified that the level in the RWST was above the minimum level required by the plant Technical Specifications. After reviewing historical data on RWST level dating from plant startup, it was discovered that there were several instances where RWST level went below the minimum level required by the plant's Technical Specifications. Based on the data reviewed, the largest margin of deviation from the plant's Technical Specifications limit of 1,166,000 gallons was determined to be approximately 13,000 gallons, occurring on July 15, 1987.

Following confirmation of the level discrepancy, Administrative Control in the form of a caution tag, informing operators of the disparity between indicated and actual RWST level, was placed on the RWST level indicator in the control room. Although the level transmitters for the RWST were incorrectly calibrated, they were still operable.

Due to the nature of the incident no Engineered Safeguards Features were actuated or required.

Incident II

The second incident was discovered on August 22, 1987 at 0705 hours while operating at 100% power. The RWST had been inadvertently drained 33,000 gallons below the minimum level required by the plant's Technical Specifications. The inadvertent draindown occurred on August 20, 1987 while operating at 100% power. At that time a plant equipment operator was borating the Spent Fuel Pool (SFC) Purification Demineralizer. The plant operated with a RWST level below the minimum required plant Technical Specification level for a period of approximately two days.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

I. Description of Event (Continued)

At approximately 0700 hours on August 20, 1987 a plant equipment operator began boration of the SFC Purification Demineralizer as preparation for placing the SFC Purification Demineralizer into service. During the boration of the demineralizer, another plant equipment operator observed that the volume in the B Boron Recovery (BRS) Tank had increased approximately 36,000 gallons. The volume increase in the B BRS Tank was attributed to the transfer of inventory from the A BRS Tank to the B BRS Tank, which was scheduled to occur so that maintenance on the A BRS Tank could be performed. In reality, no transfer of the borated water from the A BRS Tank to the B BRS Tank ever occurred. Since the Reactor Operator was under the impression that the Spent Fuel Pool was being used as the borated water source, he did not monitor the level in the RWST. The Reactor Operator was without an audible alarm annunciation for the RWST low level because the low level alarm was already present. At 0705 on August 22, 1987 while conducting a turnover review, a shift supervisor observed an unusually low level in the RWST. After verification from the plant computer, it was determined that the volume in the RWST was approximately 1,133,000 gallons, taking into consideration the 17,000 gallon calibration error.

Immediate operator action was to begin normal makeup of borated water to the RWST in order to return RWST volume above the minimum volume requirement of the plant's Technical Specifications within the required time limit. At 0945 the RWST volume was 1,166,000 gallons (taking into account the calibration error), which is the minimum volume required by the plant's Technical Specifications.

Due to the nature of the incident no Engineered Safeguards Features were actuated or required.

II. Cause of Event

Originally, the span of the transmitters was calculated from the elevation of the instruments' taps to the centerline of the overflow piping tap. The additional height of the RWST up to the loop seal was not considered. This resulted in the RWST level transmitters being calibrated to read 10 inches (or approximately 17,000 gallons) below indicated level.

The root cause of the second incident was operator error and inadequate communication between the plant equipment operator performing the evolution and the Reactor Operator. Since the source of the borated water was not explicitly stated the Reactor Operator assumed that the Spent Fuel Pool was the borated water source for the boration of the SFC Purification Demineralizer. Therefore the Reactor Operator did not monitor the RWST level. The situation was complicated by the fact that the RWST low level alarm, which has a reset setpoint of 1,171,000 gallons, was in an alarmed state prior to the boration of the SFC Purification Demineralizer.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

III. Analysis of Event

These events are being reported pursuant to the requirements of 10CFR50.73 (a)(2)(i) as deviations from the plant's Technical Specifications.

The major concern over these incidents is whether the RWST volume being below the minimum volume required by the plant's Technical Specifications could have challenged the ability of the plant to mitigate a Design Basis Accident (DBA) Loss of Coolant Accident (LOCA), by limiting the borated water volume available to the Emergency Core Cooling System (ECCS). In the most limiting case the volume in the RWST was reduced 33,000 gallons below the minimum Technical Specifications for the plant. This is equivalent to approximately two minutes of ECCS operation with all ECCS pumps running. If a postulated DBA LOCA would have occurred with the RWST volume at 1,133,000 gallons, the minimum allotted time before the operator would have been directed to switchover from the Injection phase to the Cold Leg Recirculation phase of ECCS operation, subsequent to the LOCA, would have been reduced from the intended 35 minutes to 33 minutes. This 2 minute reduction in the Injection phase would neither have affected the Net Positive Suction Head Requirements (NPSH) of any of the ECCS pumps, since sufficient NPSH margin is provided in the ECCS design, nor would it have degraded the ability of the Containment Recirculation Pumps to provide long term core cooling as documented in the Final Safety Analysis Report.

The plant was not in an unanalyzed condition of operation at any time while the plant was operating below the plant's Technical Specifications minimum level for the RWST. The ability of the ECCS to fulfill its intended safety function was maintained and the health and safety of the public was not adversely affected.

IV. Corrective Action

Incident I

After the level error was identified, immediate corrective action was to verify that RWST level was within the limits allowed by the plant's Technical Specification. Administrative Control, in the form of a caution tag on the RWST analog level indicator located in the control room, was implemented to inform operators of the error of the level transmitters. These actions were completed on August 14, 1987.

Calculations were performed on the RWST level transmitters in question and the level transmitters were recalibrated to the correct maximum level in the RWST on September 11, 1987. The licensee has also verified that similar level calibration errors do not exist for the other safety related tanks. These actions serve both as corrective action and action to prevent recurrence of the first incident.

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

IV. Corrective Action (Continued)

Incident II

As corrective action, the control room operators restored the level in the RWST to above the minimum level required by the plant's Technical Specifications.

As action to prevent recurrence, a change was made to the procedure for borating the SFC Purification Demineralizer. This change provides direction in monitoring RWST level during the boration of the SFC Purification Demineralizer. Procedures were modified to direct operators to increase the frequency of the RWST level monitoring surveillance from weekly to shiftly when off-normal RWST level indication is present. On September 11, 1987, the RWST level alarm setpoints were modified to provide a better reset band for the RWST low level alarm.

V. Additional Information

The issue of improper instrument calibration was addressed in LER 86-058-01, "Inadequate Radiation Monitor Surveillances Due to Inadequate Technical Specification Review." As corrective action an informational LER will be sent by 9/30/87 summarizing an overall review for programmatic difficulties.

EIIS Codes

Systems

Boron Recycle System - BA
Fuel Pool Cooling and Purification System - PA

Components

Demineralizer, Filter - FDM
Level Alarm - LA
Level Transmitter - LT
Refueling Water Storage Tank - BP

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

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September 14, 1987

MP-10845

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

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 50-423/87-033-00

Gentlemen:

This letter forwards Licensee Event Report 87-033-00 required to be submitted within thirty days pursuant to 10CFR50.73(a)(2)(i), any operation or condition prohibited by the Plant's Technical Specifications.

Yours truly,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

SES/VRJ:mo

Attachment: LER 87-033-00

cc: W. T. Russell, Region I
W. J. Raymond, Senior Resident Inspector

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