NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 3	0 5 0 0 0 4 2 3	1 OF 0 4

TITLE (4)

Cold Overpressure Protection System Fails to Operate During Pressure Transient

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 1	1 9	8 8	8 8	— 0 0 5	— 0 0	0 2	1 8	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Thomas Cleary, Engineer	AREA CODE 2 0 3 — 4 4 7 - 1 7 9 1

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	

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 fifteen single-space typewritten lines) (16)

At 1056 on January 19, 1988 with the plant in cold shutdown (Mode 5), temperature 135 degrees, pressure 350 psia, a pressure transient occurred which challenged the Cold Overpressure Protection System (COPPS). The COPPS failed to operate when required. The transient was mitigated by manual operator action.

The reactor coolant system was initially in a cold condition with both charging and letdown in operation. The letdown path was through B train residual heat removal (RHR) with the A train inoperable due to a general outage of the A train.

The pressure transient was initiated when a contract technician removed fuses for work in what was believed to be an unrelated system resulting in isolation of the RHR letdown path.

The failure of COPPS to operate was due to a lack of input from the solid state protection system, which was not available. The root cause of the event was a lack of a procedure for the arming of Cold Overpressure Protection. A procedure would have provided the operators with a set of prerequisites needed to ensure that the system was operable.

The action to prevent recurrence of this incident is the preparation of a procedure for the use of the Cold Overpressure Protection and increased training to prevent recurrence of the events leading to the transient.

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I. Description of Event

At 1056 on January 19, 1988 with the plant in cold shutdown (Mode 5), temperature 135 degrees, pressure 350 psia, a pressure transient occurred which challenged the Cold Overpressure Protection System (COPPS). The COPPS failed to operate when required. The transient was mitigated by manual operator action.

The reactor coolant system was initially in a solid condition with both charging and letdown in operation. The letdown path was through B train residual heat removal (RHR) with the A train inoperable due to a general outage of the A train.

At 10:55 the RHR low flow alarm was received at the Main Control Board. The operators noted that the RHR suction valve was going closed and stopped the operating RHR pump. The reactor operator reviewed the condition of the plant and noted that pressure was rising rapidly due to the charging system operating on a solid plant. Within two minutes, the operator manually isolated charging and increased letdown through the chemical and volume control system. The pressure increase immediately stopped and turned. Within 15 minutes the transient stabilized with reactor coolant pressure below 310 psia.

The pressure transient was initiated when a contract technician removed fuses for work in what was believed to be an unrelated system. When removed, the fuses deenergized the power supply for the RHR valve auto-closure relays causing the valves to go closed. The function of the auto-closure feature is to ensure that the low pressure RHR system does not become inadvertently connected to the high pressure reactor coolant system.

The technician had verified the function of the fuse he removed using an elementary diagram. This diagram was not sufficient to determine all the functions of the root power supply, merely to show the power supply for the circuit on the diagram. The technician had questioned a technician properly qualified in the maintenance of Solid State Protection, but the review performed by that technician was not sufficiently detailed to determine the consequences of the fuse removal. The responsibility for the consequences of the fuse removal was not firmly established between the technician and the system expert, each believing that the other had performed an adequate review. That responsibility has now been firmly established with the qualified system expert.

The failure of COPPS to operate was due to a lack of input from connected systems. The operation of COPPS is dependent upon the operation of the solid state protection system. The solid state protection system had been removed from service in November, 1987, at the start of the present refueling outage. From the start of the outage until January 16, 1988, cold overpressure protection was being provided by direct vent path or the two RHR suction relief valves, depending on plant conditions. From January 16 until January 19, the A train of RHR was removed from service for an A train general outage, the B train RHR suction remained available for overpressure protection, and two trains of COPPS provided through the primary power operated relief valves were assumed to be available.

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

I. Description of Event (Continued)

At the time COPPS was required, the licensed operators and instrument technicians conducted a review of the requirements necessary for arming the system. The operators verified that all required surveillances were complete for arming. The Instrument and Controls Department reported that all of their equipment required for COPPS operation was operating. The review was inadequate in that neither department successfully identified all of the prerequisites for system operation.

II. Root Cause

The cause of the loss of RHR was the closure of the RHR suction valves due to a misuse of the plant design drawings. The loss of RHR caused the transient which challenged the COPPS. The root cause of the failure of COPPS to function was a lack of a procedure for the arming of Cold Overpressure Protection. A procedure would have provided the operators with a set of prerequisites needed to ensure that the system was operable.

III. Analysis of Event

This event is reportable under 10CFR50.73(a)(2)(vii), any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

There was no danger posed to the public during this event as operator action was sufficient to mitigate the pressure transient prior to reaching any limiting condition. Had operator action not occurred, the overpressure limits set in Appendix G to 10CFR50 would have been violated.

The total elapsed time of the pressure transient was approximately 15 minutes. The challenge to overpressure protection system was less than 2 minutes in duration. Restoration of COPPS was complete 6 hours after the start of the event.

Had the normal letdown path been inadvertently lost, no significant transient would have occurred due to the action of the RHR letdown path. The normal letdown path passes little flow in this plant condition.

A formal engineering evaluation, as required by Technical Specification 3.4.9.1, was completed on January 15, 1988 which confirmed that an "out of limit" condition did occur from a minimum possible temperature of 134 degrees to a maximum possible pressure of 526 psia. The pressure value of 515 psia allowed by Technical Specifications assumes that the values are as read at the Main Control Boards and contain error components of 10 degrees and 60 pounds per square inch. A zero error curve would allow 580 psia at 135 degrees. The limiting transient condition of 526 psia at 134 degrees did not violate this curve when corrected for actual instrument loop accuracy.

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

IV. Corrective Action

The action to prevent recurrence of this incident is the preparation of a procedure for the use of the Cold Overpressure Protection. This procedure will be approved no later than April 15, 1988.

To provide short term guidance, the Unit Superintendent has issued a memorandum to all personnel describing tne incident and defining changes in the conduct of operations related to the use of drawings to determine electrical loads.

Training in the use of plant and vendor drawings, and "Lessons Learned" will be incorporated in the Operations and Instrument and Control training curricula no later than April 15, 1988. Proper use of plant, vendor, and contractor drawings will be stressed. Those panels of greatest complexity have been identified and deenergizations in these panels limited to qualified system experts. The use of designated experts to pull fuses ensures that the responsibility for the action is clearly defined and appropriately carried out.

V. Additional Information

There have been no similar events where the Cold Overpressurization Protection System was challenged.

EIIS CODES

Systems

Reactor Coolant System	AB
Residual Heat Removal System	BP
Chemical and Volume Control System	CB
Solid State Protection System	JC

Components

Relief Valves	RV
Isolation Valves	ISV

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

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February 18, 1988
MP-11527
Re: 10CFR50.73(a)(2)(vii)

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 88-005-00

Gentlemen:

This letter forwards Licensee Event Report 88-005-00 required to be submitted within thirty days pursuant to 10CFR50.73(a)(2)(vii), any event or condition where a single cause or condition caused two or more independent trains to become inoperable in a single system designed to mitigate the consequences of an accident.

Yours truly,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

SES/BMP:mo

Attachment: LER 88-005-00

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

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