

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)

Millstone Nuclear Power Station Unit 1

DOCKET NUMBER (2)

05000245

PAGE (3)

1 of 3

TITLE (4)

Automatic Depressurization System May Not Be Single Failure Proof

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	27	96	96	037	01	10	10	96	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		000	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)		<input checked="" type="checkbox"/> 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

Robert W. Walpole, MP1 Nuclear Licensing Manager

TELEPHONE NUMBER (Include Area Code)

(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

SUPPLEMENTAL REPORT EXPECTED (14)☒ YES

NO

EXPECTED SUBMISSION

MONTH

1

DAY

10

YEAR

97

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

On March 27, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, it was postulated that the automatic depressurization system (ADS) may be vulnerable to a single failure which could prevent more than one safety/relief valve from opening. The ADS is an emergency core cooling system (ECCS) designed to mitigate the consequences of a small break loss of coolant accident (SBLOCA). The ADS performs this function by rapidly depressurizing the reactor pressure vessel following a SBLOCA, to allow coolant injection from the low pressure ECCS pumps (i.e., Low Pressure Coolant Injection (LPCI) and Core Spray (CS) Pumps) in the event that the high pressure system (i.e., Feedwater Coolant Injection (FWCI)) fails. The operating cycle 15 SBLOCA analysis did not credit FWCI, since certain components were determined to be not seismically qualified. This analysis assumed that there is no single failure in the ADS design which will disable more than one ADS valve. On May 17, 1996, during the preparation of an engineering evaluation, it was determined that the ADS may not be single failure proof (i.e., a single failure could disable more than one SRV). Since the design basis of Millstone Unit No. 1 credits the ADS for SBLOCA mitigation, and a single failure may invalidate that assumption, this event was determined to be reportable pursuant to 10CFR50.73(a)(2)(ii) as an unanalyzed condition that significantly compromises plant safety, and was promptly reported pursuant to 10CFR50.72(b)(2)(i).

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		96	--	037	-- 01	

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

I. Description of Event

On March 27, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, it was postulated that the automatic depressurization system (ADS) [EIIS: SB] may be vulnerable to a single failure which could prevent more than one safety/relief valve [EIIS: SB, Component: RV] from opening. The ADS is an emergency core cooling system (ECCS) designed to mitigate the consequences of a small break loss of coolant accident (SBLOCA). The ADS performs this function by rapidly depressurizing the reactor pressure vessel following a SBLOCA, to allow coolant injection from the low pressure ECCS pumps (i.e., low pressure coolant injection (LPCI) pumps [EIIS: BO, Component: P] and core spray (CS) pumps [EIIS: BM, Component: P]) in the event that the high pressure system (i.e., feedwater coolant injection (FWCI) [EIIS: BJ]) fails. The operating cycle 15 SBLOCA analysis did not credit FWCI, since certain components were determined to be not seismically qualified. This analysis assumed that there is no single failure in the ADS design which will disable more than one ADS valve.

On May 17, 1996, during the preparation of an engineering evaluation, it was determined that the ADS may not be single failure proof (i.e., a single failure could disable more than one SRV). Since the design basis of Millstone Unit No. 1 credits the ADS for SBLOCA mitigation, and a single failure may invalidate that assumption, this event was determined to be reportable pursuant to 10CFR50.73(a)(2)(ii) as an unanalyzed condition that significantly compromises plant safety, and was promptly reported pursuant to 10CFR50.72(b)(2)(i).

The in-depth engineering review of the ADS is still on-going. This review, however, has identified several vulnerabilities of the ADS where a single failure could prevent more than one ADS valve from opening.

II. Cause of Event

The issues surrounding this event are still under investigation. NNECO will provide the cause of this event in a supplemental LER when the investigation is complete.

III. Analysis of Event

Following a SBLOCA, the ADS rapidly depressurizes the reactor vessel so that low pressure emergency core cooling systems (e.g., LPCI and CS) can accomplish their safety functions. In the event the ADS system fails to operate completely or partially (i.e., more than one valve fails to open), the reactor will not depressurize rapidly enough to allow injection from the LPCI and CS pumps for a range of small breaks. Such injection is necessary for core cooling in the event the high pressure feedwater system (FWCI) fails to continue to operate. For these small breaks, a failure of the ADS concurrent with the unavailability of the feedwater/FWCI system may jeopardize core cooling.

This event has safety implications since, for a SBLOCA, a failure of the ADS concurrent with the unavailability of the feedwater/FWCI system would jeopardize

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

core cooling. However, there were no safety consequences as a result of this event. The ADS and FWCI are not required under the current operating condition.

IV. Corrective Action

The on-going engineering review of the ADS will be completed and corrective actions will be developed prior to operating Cycle 16. Upon resolution of ADS design issues, the SBLOCA analysis will be revised if necessary. A supplement to this LER will be submitted prior to startup for operating Cycle 16.

V. Additional InformationCommitments

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

B15716-1 The on-going engineering review of the ADS will be completed and corrective actions will be developed prior to operating Cycle 16. A supplement to this LER will be submitted prior to startup for operating Cycle 16.

B15933-1 Upon resolution of ADS design issues, the SBLOCA analysis will be revised, if necessary, prior to startup for operating Cycle 16.

Similar Events

None.

Manufacturer Data

None.