

EXPIRES 04/30/98

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)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 (7-  
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.

FACILITY NAME (1)

Millstone Nuclear Power Station Unit 2

DOCKET NUMBER (2)

05000336

PAGE (3)

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TITLE (4)

Leakage Through Letdown Valves 2-CH-089 and 2-CH-515

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
06	22	93	93	-- 023 --	02	06	17	97	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)		X 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)		X 50.73(a)(2)(vii)			

## LICENSEE CONTACT FOR THIS LER (12)

NAME

R. G. Joshi, MP2 Nuclear Licensing

TELEPHONE NUMBER (include Area Code)

(860) 440-2080

## 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 (If yes, complete EXPECTED SUBMISSION DATE).	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On June 22, 1993, at 1315 hours, with the Unit in Mode 1 at 100% power, it was noted that 20 to 30 gallons per minute of letdown was flowing through Letdown Isolation Valve 2-CH-089 with the valve indicating closed. On June 25, 1993, at 1300 hours, with the Unit in Mode 1 at 100% power, it was noted that 40 gallons per minute was flowing through Letdown Isolation Valve 2-CH-515 with the valve indicating closed. On August 30, 1993, an engineering analysis performed to assess the consequences of leakage through valves 2-CH-089 and 2-CH-515 concluded that leakage from the reactor coolant system to an area outside of containment could occur. These valves, along with 2-CH-516, are installed in series and provide Containment Isolation and/or Letdown isolation following receipt of a Safety Injection Actuation Signal or Containment Isolation Actuation Signal. Additionally, a review performed in 1996 identified that the potential leakage through valve 2-CH-089 would have exceeded the Reactor Coolant System leakage assumptions made in the Appendix R analysis during the first 4 hours of a fire in Fire Area R-1 (Control Room, Cable Vault and portions of the Auxiliary Building). Recent As-Found testing identified these valves as having been improperly set and would not adequately isolate against Normal Operating System Pressure (NOSP).

The cause of this event was an inadequate program to ensure that facility procedures clearly address all design basis functions.

To correct this condition the affected valves will be readjusted to ensure they will close against NOSP. Procedures will be revised to ensure proper valve control parameters are specified and verified following valve maintenance.

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

0I. Description of Event

On June 22, 1993, at 1315 hours, with the Unit in Mode 1 at 100% power, it was noted that 20 to 30 gallons per minute of letdown was flowing through Letdown Header Outside Containment Isolation Valve 2-CH-089 with the valve indicating closed. The valve was being closed to support an injection type leak repair on Letdown Manual Isolation Valve 2-CH-442.

On June 25, 1993, at 1300 hours, with the Unit in Mode 1 at 100% power, it was noted that 40 gallons per minute was flowing through Letdown Header Isolation Valve 2-CH-515 with the valve indicating closed. The valve was being closed to support troubleshooting work addressing the previously indicated leakage through 2-CH-089.

An operability assessment performed on July 23, 1993, concluded that the operability of the valves was not affected by the leakage at full system pressure, because the valves had successfully passed the local leak rate test at containment accident pressure of 54 psig. Thus, they would have performed their containment isolation function. However the assessment did not address the ability to close against Normal Operating System Pressure (NOSP).

The Letdown flow path, shown in Figure 1, contains three Fisher air-operated globe valves, 2-CH-089, 2-CH-515 and 2-CH-516 which provide Containment isolation and/or Letdown isolation following receipt of a Safety Injection Actuation Signal (SIAS) or Containment Isolation Actuation Signal (CIAS). Isolation of the Letdown line achieves two safety functions, Reactor Coolant System (RCS) inventory control and prevention of an uncontrolled release of radioactive material. On August 30, 1993, with the Unit in Mode 1 at 100% power, a final engineering analysis performed to assess the consequences of leakage through 2-CH-089 and 2-CH-515, concluded that for this particular scenario, a double-ended letdown line break downstream of 2-CH-089 with failure of 2-CH-516 to close would result in some leakage from the RCS to an area outside of Containment and was thus reportable. (It is noted that a preliminary engineering analysis had previously concluded on July 23, 1993, that the leakage was not reportable.) These two valves, 2-CH-089 and 2-CH-515, would not have been able to perform part of their intended function, Letdown isolation at full system pressure.

Recent As-Found testing reported in LER 97-011-00 identified that the three valves involved, 2-CH-089, 2-CH-515, & 2-CH-516, were improperly set and would not adequately isolate against NOSP.

II. Cause of Event

The cause of this event was an inadequate program to ensure that facility procedures clearly address all design basis functions.

III. Analysis of Event

This event was originally reported pursuant to the requirements of 10 CFR 50.73(a)(2)(vii)(C) as an event where a single condition caused two independent trains or channels to become inoperable in a system designed to control the release of radioactive material.

There were originally believed to be no safety consequences associated with this event based on the following:

1. Despite the improper bench setting, the Containment isolation function of the valves was maintained throughout, since the valves successfully passed their Local Leak Rate Testing (LLRT) with air at 54 psig

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differential pressure during the last refueling outage. No work had been performed on the valves between the successful completion of that LLRT conducted on this penetration, and the point of discovery of the leakage.

2. Analysis performed has shown that the calculated leak rate of 53 gallons per minute for this condition following closure of the isolation valve to isolate the postulated leak would be less than the makeup capability of the two charging pumps. Thus, after closure, this would no longer be considered a Loss Of Coolant Accident (LOCA). Further the small leak rate would not prevent safe shutdown and thus from a system performance aspect, the isolation valves could be considered operable.

The above calculation is conservative since it assumes a constant valve position regardless of differential pressure across the valve. It is anticipated the leak would approach zero gallons per minute because the leakage rate is dependent upon the differential pressure across the valve.

3. Calculations show that the offsite doses due to RCS fluid leakage into the Auxiliary Building for the event would have been negligible.

Recent as-found testing identified that the three valves involved, 2-CH-089, 2-CH-515, & 2-CH-516, had failed testing conducted as part of the dual function valve investigation. The closing force for these valves was found to be incorrectly set. These deficiencies were identified as a result of testing of the unit's dual function valves which was completed on March 14, 1997. The as-found testing was performed as part of a follow-up action to establish controls over the set-up and retesting of valves that must isolate against two different pressure requirements - Containment Design Pressure and NOSP.

However, if a failure had occurred in the downstream piping of the letdown line in the Auxiliary Building and if all three of the letdown dual function valves had failed to close tightly against NOSP, a release of radioactive materials outside containment greater than assumed in the FSAR could have occurred, resulting in a higher than assumed offsite radiation dose. Therefore, this event is considered to be potentially safety significant. This information was reported as part of LER 97-011-00.

This supplemental report is being submitted pursuant to 10 CFR 50.73(2)(ii)(B), as a condition that was outside the design basis of the plant, based on the leakage through the letdown valves that exceeded the assumption made for leakage from the RCS during the first 4 hours of an Appendix R fire in Fire Area R-1 (Control Room, Cable Vault, & portions of the Auxiliary Building).

A fire in Fire Area R-1 is assumed to generate spurious control signals that prevent closure of two of the three letdown valves, 2-CH-515 and 2-CH-516, coincident with loss of charging capability for 4 hours. The reported leakage of 20 to 30 gallons per minute would have exceeded the assumed RCS leakage rate of 15 gpm, if valve 2-CH-089 had been relied upon to isolate the RCS letdown line.

The increased leakage of RCS inventory would cause a loss of level in the pressurizer, and would result in a loss of pressure control. Thus, the ability to achieve safe shutdown would be diminished or lost.

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IV. Corrective Action

As a result of this event, the following actions have been, or will be, performed.

1. Appropriate procedures shall be revised prior to entry into Mode 4 from the current outage to ensure that proper valve control parameters (bench set, air regulator, and stroke length) are specified and verified after any maintenance activities are performed that could affect dual function valve closing forces. (This commitment was previously sent to the NRC in LER 336/97-011-00, NNECO Commitment No. B16372-01.)
2. The affected valves will be adjusted to ensure they properly close against containment design pressure and NOSP, and they will be tested to ensure Appendix J, Type C leakage rate testing criteria are met. These activities will be performed prior to entry into Mode 4 from the current outage. (This commitment was previously sent to the NRC in LER 336/97-011-00, NNECO Commitment No. B16372-02.)

V. Additional InformationSimilar Events

LER 97-011: Reported that the As-Found testing of 23 dual function valves identified that the closing force had been improperly set for 11 of these valves, resulting in the valves being incapable of closing tightly against Normal Operating System Pressure.

ELIS Code: CB ISV F135 (Air Operated Letdown Header Outside Containment Isolation Valve 2-CH-089)  
CB ISV F135 (Air Operated Letdown Header SIAS Isolation Valve 2-CH-515)  
CB ISV F135 (Air Operated Letdown Heater CIAS Containment Isolation Valve 2-CH-516)  
CB P G045 (Charging Pumps)

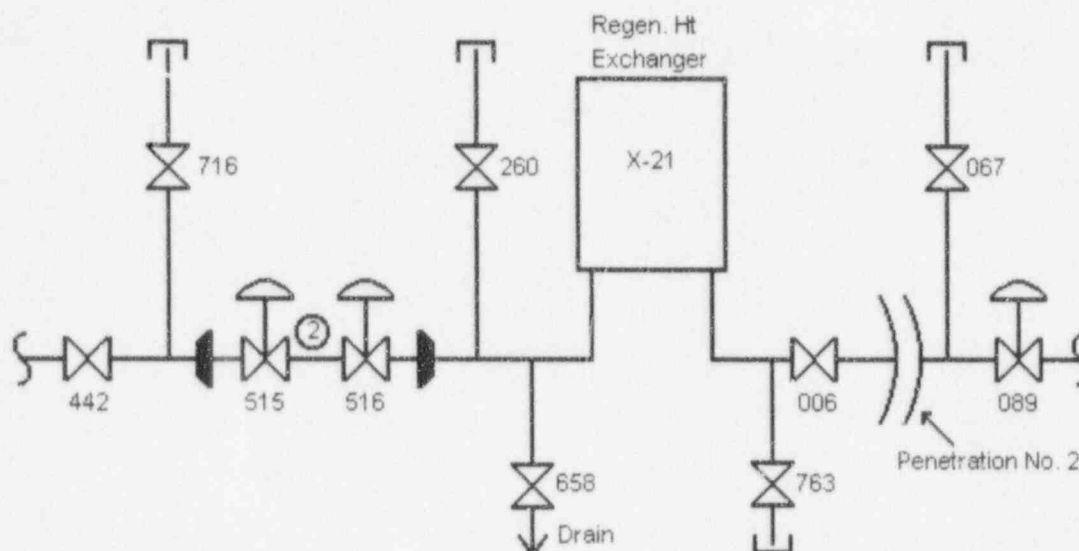
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## MP2 LETDOWN PIPING AND VALVE ARRANGEMENT



- Note ① all valves are 2-CH-XXX as shown on drawing 25203-26017, Sh. 2
- Note ② piping section is 3" piping, the balance of letdown piping is 2" piping
- Note ③ only valves 2-CH-515, 2-CH-516, and 2-CH-089 have remote actuators (air operators), all others shown are manual valves

FIGURE 1