

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 (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.

FACILITY NAME (1)

Millstone Nuclear Power Station Unit 3

DOCKET NUMBER (2)

05000423

PAGE (3)

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TITLE (4)

Motor Operated Valve Performance Outside the Design Basis of the Plant

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
09	20	96	96	035	00	10	18	96	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)								
		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)		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

J.M. Peschel, MP3 Nuclear Licensing Manager

TELEPHONE NUMBER (Include Area Code)

(860)437-5840

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)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO
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**EXPECTED
SUBMISSION**

MONTH DAY YEAR

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

On September 20, 1996, while the plant was in Cold Shutdown Mode, an evaluation was performed on all Motor Operated Valves (MOV's) within the scope of Generic Letter 89-10 to determine if they would have stroked under design basis conditions based on the use of Limitorque's Pullout Efficiency and an application factor (APFR) of 0.9. The review identified 27 MOV's that potentially may not have stroked fully under design basis conditions using the most conservative design input assumptions available. This condition is being reported pursuant to 10 CFR 50.73 (a)(2)(ii) as a condition outside the design basis of the plant.

This evaluation was predicated by NRC issuance of Information Notice 96-48, "Motor Operated Valve Performance Issues" dated August 21, 1996. The IN questioned the use of the vendor supplied data for MOV thrust calculations in determining the actuator capability to stroke against their respective design basis conditions. This evaluation identified 27 MOV's that may not be capable of stroking against their design basis differential pressure at this newly assumed actuator efficiency. The identified MOV's have been determined to be inoperable.

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

I. Description of Event

On September 20, 1996, while the plant was in Cold Shutdown Mode, an evaluation was performed on all Motor Operated Valves (MOV's) within the scope of Generic Letter (GL) 89-10 to determine if they would have stroked under design basis conditions based on the use of Limitorque's Pullout Efficiency and application factor (APFR) of 0.9. The review identified 27 MOV's that potentially may not have stroked fully under design basis conditions using the most conservative design input assumptions available. The following MOV's were identified as lacking capability and declared inoperable:

3CHS*LCV112D	3CHS*LCV112E	3CHS*MV8110	3CHS*MV8111B
3CHS*MV8468A	3CHS*MV8468B	3CHS*MV8511A	3CHS*MV8511B
3CHS*MV8512A	3CHS*MV8512B	3FWA*MOV35B	3MSS*MOV18A
3MSS*MOV18B	3MSS*MOV18C	3MSS*MOV18D	3MSS*MOV74A
3MSS*MOV74B	3MSS*MOV74C	3MSS*MOV74D	3RHS*MV8701A
3RHS*MV8701C	3RHS*MV8702B	3RHS*MV8702C	3SIL*MV8808A
3SIL*MV8808B	3SIL*MV8808C	3SIL*MV8808D	

Information Notice (IN) 96-48, "Motor Operated Valve Performance Issues", identified potential non-conservative assumptions in adaptations to the Limitorque standard sizing equation for determining actuator thrust and torque capability under design basis conditions. Limitorque Technical Update 93-03 allowed the use of an APFR 1.0 if the voltage was below 90% of the rated nameplate voltage. Additionally, Limitorque allowed the use of running efficiency vice pullout efficiency for an AC motor without throttling capability for the close stroke

II. Cause of Event

The cause of the event is inadequate design, and verification of actuator and motor performance characteristics. The design of the identified MOV's incorporated the use of running efficiency and/or motor application factor of 1.0. Incorporating pullout efficiency and/or a motor application factor of 0.9 reduced the actuator capability to a point less than that required to stroke the MOV(s) against their respective design basis conditions.

III. Analysis of Event

This evaluation was predicated by NRC issuance of IN 96-48, "Motor Operated Valve Performance Issues" dated August 21, 1996. The IN questioned the use of the vendor supplied data for MOV thrust calculations in determining the actuator capability to stroke against their respective design basis conditions. The IN stated that the use of a 1.0 application factor in conjunction with running efficiency may not bound the motor actuator performance characteristics based on limited industry testing. Therefore, preliminary calculations were performed using an application factor of 0.9 and pullout efficiency for all GL 89-10 MOV's in the plant. This evaluation identified 27 MOV's that may not be capable of stroking against their design basis differential pressure at this newly assumed actuator efficiency. The identified MOV's have been determined to be inoperable.

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IV. Corrective Action

- The MOV actuator efficiency and motor capability for each valve will be determined by performing on site testing, or, by utilizing bounding performance characteristics (application factor and efficiencies) from industry testing prior to start-up from the current outage.
- The MOV calculations will be revised based on bounding application factor/pullout efficiency or MOV specific performance characteristics prior to start-up from the current outage.
- The actuator torque switches will be reset based on the newly calculated setpoints prior to start-up from the current outage.
- MOVs will be modified as required to ensure adequate capability of the MOV to stroke during their credited design basis event(s). These modifications will be completed prior to start-up from the current outage.

V. Additional Information

Not Applicable

Similar Events

LER 96-019-00: Reactor Coolant System Power Operated Relief Valve Block Valves Inoperable due to Potential Structural Design Deficiency

On June 27, 1996, at 1350 hours with the plant shutdown in Mode 5 the Reactor Coolant System (RCS) Power Operated Relief Valves (PORV) Block Valves (3RCS*MV8000A/B) were determined to be unable to perform their intended safety functions to close and reopen under design basis accident conditions. Tests performed at Kalsi Engineering Inc. (KEI) provided evidence showing the valves would require greater thrust to close than had been previously calculated, and damage to the valve during attempted closure under design basis conditions could prevent reopening. An immediate notification was made at 1454 hours on June 27, 1996, pursuant to 10CFR50.72(b)(1)(iii)(B) for a condition outside the design basis of the plant. The cause of this event appears to be a structural design deficiency.

Failure of the valves to perform their required opening or closing function during design basis events could result in difficulty controlling Reactor Coolant System (RCS) pressure and inventory, thereby potentially increasing the severity of an accident.

Further full scale testing was performed by Kalsi Engineering using representative components to determine the full extent of the problem. Modifications to the valve internals, or replacement of the valves will be performed.

LER 94-004-00 Feedwater Isolation Valves Potentially Inoperable as a Historical Condition

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Manufacturer Data

ELIS System Codes

Auxiliary Feedwater - BA

Residual Heat Removal - BP

Chemical and Volume Control - CB

Main Steam - SB

ELIS Equipment Codes

Motor Operated Valve - 20