

LICENSEE EVENT REPORT (LER)

Facility Name (1) Dresden Nuclear Power Station, Unit 3 Docket Number (2) 0 | 5 | 0 | 0 | 0 | 2 | 4 | 9 | 1 | of | 0 | 5 Page (3)

TITLE (4) Main Steam Isolation Valve Pneumatic Line Exceeds FSAR Design Criteria Due to Design Deficiency

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 6 1 6 8 8	8 8	8 8	0 1 5	0 0	0 7 1 5 8 8	N/A	0 5 0 0 0				
N/A											

OPERATING MODE (9) N

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

POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name: Joseph Welch, Technical Staff Engineer Ext. 666

TELEPHONE NUMBER: AREA CODE 8 | 1 | 5 | 9 | 4 | 2 | - | 2 | 9 | 2 | 0

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)

On June 16, 1988 at 1110 hours with Unit 3 shutdown for a refuel outage, the Technical Staff Supervisor was notified by the Commonwealth Edison Boiling Water Reactor Engineering Department (BWRED) that a pneumatic supply line to the inboard Main Steam Isolation Valve (MSIV), 3-203-1B, manifold block assembly did not meet the allowable stress levels specified in the Final Safety Analysis Report (FSAR). This line was verified by analysis to meet operability criteria, therefore this event was of minimal safety significance.

The root cause of this event was attributed to a design deficiency during original construction. A redesigned support assembly was installed prior to Unit 3 startup to ensure FSAR compliance. The pneumatic line was inspected as part of a corrective action program following a recent failure of Unit 2 MSIVs to close upon loss of pneumatic supply, as reported by LER 88-012 Docket 050237.

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TEXT

PLANT AND SYSTEM IDENTIFICATION:

General Electric Boiling Water Reactor - 2527 Mwt rated core thermal power. Energy Industry Identification System (EIS) codes are identified in the text as [XX].

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX).

EVENT IDENTIFICATIONS:

Main Steam [SB] Isolation Valve [JM] (MSIV) 3-203-1B Pneumatic Supply Line Exceeds Final Safety Analysis Report (FSAR) Design Criteria Due to a Design Deficiency.

A. CONDITIONS PRIOR TO EVENT

Unit: 3 Event Date: 6/16/88 Event Time: 1110

Reactor Mode: N Mode Name: Refuel Power Level: 0%

Reactor Coolant System (RCS) Pressure: 0 psig

B. DESCRIPTION OF EVENT

On June 16, 1988 at 1110 hours with Unit 3 in cold shutdown for a refuel outage, the Technical Staff Supervisor was notified by the Commonwealth Edison Boiling Water Reactor Engineering Department (BWRED) that a pneumatic supply line to the 3-203-1B inboard Main Steam Isolation Valve (MSIV) manifold block assembly did not meet the allowable stress levels specified in the Final Safety Analysis Report (FSAR). However, this line was verified by analysis to meet operability criteria for all design basis events. All of the other MSIV pneumatic manifold supply lines on both Unit 2 and Unit 3 were verified to be within FSAR and operability limits.

These analyses and inspections were performed as part of a corrective action program following a recent event involving failure of the Unit 2 inboard MSIV's to close upon loss of pneumatic supply, as reported by LER 88-012 Docket 050237.

Dresden Station Units 2 and 3 utilize four Main Steam Lines (MSLs) to conduct steam from the reactor vessel through the Primary Containment to the turbine [TA]-generator [TB]. Each MSL is equipped with two MSIVs. One located inside the Primary Containment (inboard) and the second located outside the Primary Containment (outboard). The safety function of an MSIV is to isolate the MSL upon receipt of a closure signal. MSIV closure must occur within three to five seconds and assure Primary Containment isolation. The three to five second time range was selected to ensure that a fast closure would not induce a severe reactivity transient in the reactor, and a slow closure would not allow excessive off-site radiation release through the MSLs.

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TEXT

The MSIVs were designed by the manufacturer to close by spring force alone, stored pneumatic pressure alone, or by the combination of spring force and stored pneumatic pressure. However, MSIV closure by spring force only was not included in the design basis of the MSIVs by General Electric. Closure of an MSIV by a rapid loss of pneumatic pressure was the only method of valve closure considered by General Electric when performing the original transient analysis. Spring closure was included as an additional engineering feature of the valve and was never considered as a safety feature. Each MSIV is provided with an accumulator to store the air which is supplied by the appropriate pneumatic supply system. A check valve is installed between the pneumatic supply and the accumulator in the event that the pneumatic supply becomes unavailable (see to Figure 1).

The pneumatic supply for the inboard MSIVs is provided by the drywell nitrogen pumpback [LK] system while the pneumatic supply for the outboard MSIVs is provided by the instrument air [LP] system. Both the drywell nitrogen pumpback system and the instrument air system are independent and isolated from each other. Because of the independent pneumatic supply systems and the redundant Primary Containment isolation circuitry, two MSIVs on a single MSL meet the required single failure criteria.

C. APPARENT CAUSE OF EVENT

The root cause of this event has been attributed to a design deficiency during the original construction of the MSIV pneumatic accumulator supply system. This event is being reported under 10CFR50.73(a)(2)(ii)(B), which requires the reporting of any event or condition outside the design basis of the plant.

D. SAFETY ANALYSIS EVENT

Technical Specification (T.S.) 3.7.D.2 specifies that if any isolation valve becomes inoperable, reactor power operation may continue provided if at least one valve in each line having an inoperable isolation valve is in the mode corresponding to the isolation condition. When the pneumatic supply line for the 3-203-1B inboard MSIV was discovered outside of the FSAR design criteria, Unit 3 was in cold shutdown and all of the MSIVs were closed and out-of-service. The pneumatic line was repaired prior to returning the MSIVs to service.

In addition, the MSIVs are designed to fail in the close direction. If the pneumatic supply line had been severed under power operation, it would have resulted in MSIV closure within the Technical Specification limit of three to five seconds. This was demonstrated on May 29, 1988 by performing Dresden Operating Surveillance (DOS) 250-3, MSIV Fail-Safe Test During Cold Shutdown. Therefore, the safety significance of this event can be considered minimal.

E. CORRECTIVE ACTIONS

As immediate corrective action, Modification 12-3-88-027 was performed to modify the 1/2 inch pneumatic supply line between the manual isolation valve and the MSIV manifold block to meet the FSAR design criteria. The modification consisted of mounting the pneumatic line on a single tube steel support attached to an existing beam located beneath the drywell's second elevation grating. This support was installed per drawing M-4012 Rev. A and Field Change Request (FCR) 12-18-18M. The modification was completed prior to Unit 3 startup.

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TEXT

F. PREVIOUS EVENTS

<u>LER Number/Docket Number</u>	<u>Title</u>
88-012/050237	Main Steam Isolation Valves Failure to Close Due to High Stem Drag Forces Caused by Valve Packing.

As described previously in this report, the MSIV pneumatic line support inspections were part of a corrective action program following a failure of the Unit 2 inboard MSIVs to close upon loss of pneumatic supply, as reported by LER 88-012 Docket 050237.

G. COMPONENT FAILURE DATA

This event did not involve a component failure. As this event did not involve an equipment failure reportable to the NPRDS data base, an NPRDS data search was not performed.

FACILITY NAME (1)

DISCRET NUMBER (2)

LER NUMBER (3)

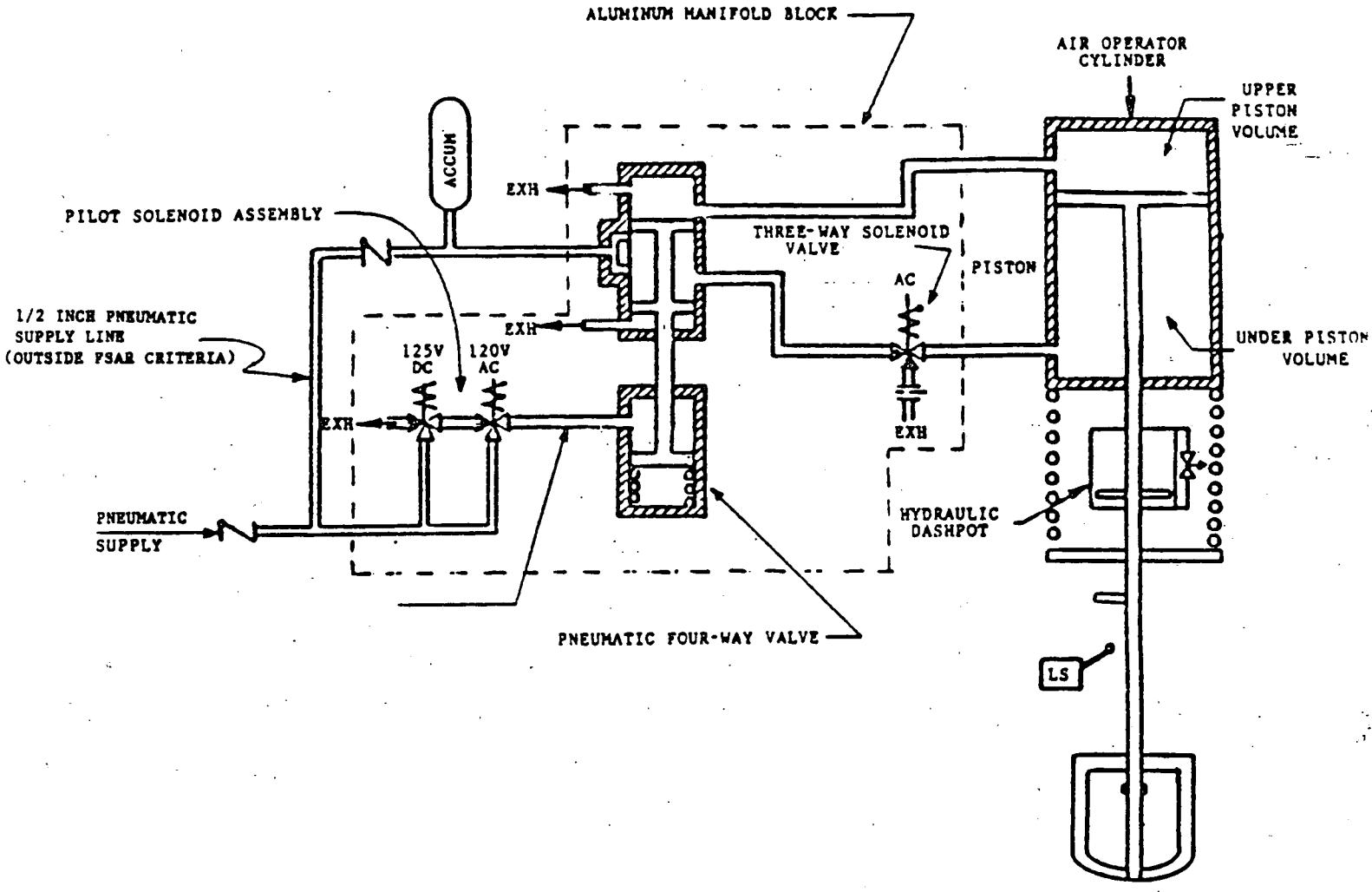
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TEXT



3-203-1B MSIV PNEUMATIC SUPPLY SYSTEM SCHEMATIC

(MSIV SHOWN IN OPEN POSITION)

Figure 1



Commonwealth Edison
Dresden Nuclear Power Station
R.R. #1
Morris, Illinois 60450
Telephone 815/942-2920

July 15, 1988

EDE LTR #88-518

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Licensee Event Report #88-015-0, Docket #050249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(ii)(B).

A handwritten signature in cursive script, appearing to read 'E. Eenigenburg'.

E.D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/ade

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
File/NRC
File/Numerical

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