

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Perry Nuclear Power Plant, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 4 0	PAGE (3) 1 OF 0 3
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TITLE (4)
Failure Of Steam Supply Valve Results In Inoperable RCIC System

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 0	8 7	8 7	0 0 3	0 0	0 2	0 9	8 7				0 5 0 0 0
												0 5 0 0 0

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 1 1 5	20.405(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)						
	20.405(a)(1)(i)	50.38(e)(1)	X 50.73(a)(2)(v)	73.71(c)						
	20.405(a)(1)(ii)	50.38(e)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 356A)						
	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)		TELEPHONE NUMBER	
NAME	AREA CODE		
Paul Russ, Compliance Engineer, ext. 6472	2 1 1 6	2 1 5 9 - 1 3 7 3 7	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPROS	
X	B J N	M I O	P	2 1 9 1 6	N					

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO		MONTH DAY YEAR 0 4 0 9 8 7

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

On January 10, 1987 at 2212 and January 22 at 1900, the inboard containment isolation steam supply valve for Reactor Core Isolation Cooling (RCIC) system failed to open causing RCIC to be inoperable. The cause of the events is indeterminate. The motor shunt field was continuously energized and it is believed that this condition may have reduced the operating lifetime of the motor.

Corrective actions taken as a result of these events include replacement of the failed motors, replacement of the operator, testing of the MOV using a Motor Operated Valve Analysis and Test System (MOVATS), and disassembly and inspection of the operator and valve internals. In addition, evaluation of the MOV was conducted during the subsequent plant startup to identify if any further problems existed. The continued valve performance monitoring during startup will ensure that the valve is verified operable at rated temperature. An engineering design change was implemented to change the motor wiring configuration to a deenergized shunt field when the motor is not operating. In addition evaluation is continuing to determine if the current motor operator is correct for this application. Testing of MOVs in the RCIC and High Pressure Core Spray (HPCS) systems is continuing in response to IE Bulletin 85-03.

IE 22
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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

On January 10, 1987 at 2212 and January 22 at 1900, the inboard containment isolation steam supply valve for Reactor Core Isolation Cooling (RCIC) system [BN] failed to open causing RCIC to be inoperable. At the time of the January 10 event, the plant was in Operational Condition 1 (Power Operation) with reactor power approximately 15 percent of rated. Reactor coolant temperature was approximately 540 degrees and reactor vessel [RPV] pressure was approximately 1020 psig. At the time of the January 22 event, the plant was in Operational Condition 2 (Startup) with reactor power approximately 5 percent of rated. Reactor coolant temperature was approximately 530 degrees and reactor vessel pressure was approximately 940 psig.

On January 10 at 2212, plant operators were preparing to perform Periodic Test Instruction (PTI)-E51-P001 "Reactor Core Isolation Cooling System Tuneup" which tests RCIC prior to performing RCIC startup testing. When the operator attempted to open the inboard containment isolation steam supply valve 1E51-F063 from the control room, a 50 ampere power fuse supplying the motor operator blew. 1E51-F063 is a DC operated, normally closed valve. The fuse was replaced and the fuse blew again when the operator attempted to close the valve. Troubleshooting of this event was initiated. The motor (Manufacturer: Porter/Peerless, frame #DS202) for 1E51-F063 was identified as failed on January 12 at 0130.

As a result of this event, the motor was replaced and the motor operated valve (MOV) was tested using a Motor Operated Valve Analysis and Test System (MOVATS). Additionally all post maintenance retests were completed satisfactorily. The cause of this failure was originally believed to be due to the setting of the closing limit switch. However investigation subsequent to the January 22 event indicated that the setting of the limit switch was not involved in the January 10 failure.

On January 11 at 1130 during the troubleshooting activities for 1E51-F063 the steam supply bypass containment isolation valve 1E51-F076 failed to open. Troubleshooting found that the valve stem had failed near the stem to stem nut connection in the motor operator. Subsequent testing with a MOVATS indicated that the motor operator was delivering substantially more stem thrust than required due to the incorrect spring cartridge being installed. The incorrect installed spring cartridge is thought to be an isolated vendor supply problem. The Limitorque supplied torque switch calibration plate and spring cartridge installed were incorrect for the application. The correct spring cartridge was installed. The other valve on the bill of material that included 1E51-F076 was examined and determined to have the correct spring cartridge installed. In addition, approximately 30 MOVs that have been previously tested with MOVATS and none have been identified as having the incorrect type of spring pack installed.

On January 22 at 1900 while performing Surveillance Instruction (SVI)-E51-T2001 "RCIC Pump and Valve Operability Test", 1E51-F063 again failed to open and blew the 50 ampere fuses. Troubleshooting revealed that the motor (Manufacturer: Porter/Peerless, frame #DS204) had failed. After each event, RCIC was declared inoperable and appropriate actions were taken to ensure compliance with Technical Specifications.

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

After the motor was replaced following the January 22 event, MOVATS testing again indicated no operating abnormalities. Disassembly and inspection of the motor operator and the valve by site personnel and vendor representatives revealed no problems with the valve or operator. The valve was reassembled and the operator was replaced. The valve now operates satisfactorily as tested by a MOVATS. The torque switch setting was slightly reduced due to MOVATS data. However the previous setting is not believed to be the cause of the MOV failures. The cause of the valve and the motor failures is indeterminate. The motor shunt field was continuously energized and it is believed that this condition may have reduced the operating lifetime of the motor. An engineering design change was implemented to change the motor wiring configuration to a deenergized shunt field when the motor is not operating. Evaluation of the MOV was conducted during the subsequent plant startup to identify if any further problems existed. During this startup, the motor housing, valve body and surrounding air temperatures were monitored by thermocouples. At preselected pressures the valve was stroked while MOVATS test equipment monitored the valve position, motor operating voltage and current, and the valve stem thrust. An increase in motor current was observed when closing the valve at higher pressures. At approximately 1025 psig the valve failed to completely close. The closing torque switch setting will be increased to allow for complete closure of the valve. The continued valve performance monitoring during startup will ensure that the valve is verified operable at rated temperature. In addition evaluation is continuing to determine if the current motor operator is correct for this application.

The RCIC system is designed to maintain sufficient reactor water inventory should the vessel lose feedwater supply during a reactor vessel isolation condition. Should the RCIC system become inoperable when it is required to be in service during a loss of feedwater, the High Pressure Core Spray (HPCS) system [BG] provides protection against a single failure event by performing the redundant function of maintaining reactor water inventory and adequate core cooling. The RCIC system is not an Emergency Core Cooling (ECCS) system. In addition, 1E51-F076 is normally opened when RCIC is placed in standby readiness at 60 psig reactor pressure. Therefore, any problem with the opening of 1E51-F076 would be identified prior to reaching operational conditions requiring RCIC to be operable. For these reasons these events are not considered to be safety significant. No previous similar events were identified.

As part of the response to IE Bulletin 85-03 "Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings", the Cleveland Electric Illuminating Company has committed to testing the MOVs in the RCIC and HPCS systems. As part of the testing, the actual running characteristics of actuators will be recorded. This testing will ensure that the operation of the MOVs are correct. The testing is in progress and will continue as identified in our letter of May 14, 1986 (PY-CEI/OIE-0206L).

Energy Industry Identification System Codes are identified in the text as [XX].



THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

P.O. BOX 5000 - CLEVELAND, OHIO 44101 - TELEPHONE (216) 622-9800 - ILLUMINATING BLDG. - 55 PUBLIC SQUARE

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SR. VICE PRESIDENT
NUCLEAR

February 9, 1987
PY-CEI/NRR-0589 L

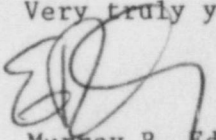
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
LER 87-003-00

Dear Sir:

Enclosed is Licensee Event Report 87-003-00 for the Perry Nuclear Power Plant.

Very truly yours,


Murray R. Edelman
Senior Vice President
Nuclear Group

MRE:njc

Enclosure: LER 87-003-00

cc: Jay Silberg, Esq.
Paul Leech (2)
K. Connaughton

U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

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