

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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) Limerick Generating Station Units 1 and 2		DOCKET NUMBER (2) 05000 352	PAGE (3) 1 OF 4
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TITLE (4) Condition Prohibited by Technical Specifications due to Error in Calibration of Core Spray Line Break Differential Pressure Instruments

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
02	16	95	98	-- 015 --	01	09	28	98	FACILITY NAME	05000 353
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) L	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 100%	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)						
	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)						
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER						
	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)						
	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)

NAME T. A. Moore, Manager, Experience Assessment, Limerick	TELEPHONE NUMBER (Include Area Code) (610)718-3400
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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 July 11, 1998, at 1500 hours, licensee engineering personnel identified that an error in the calibration of the Unit 2 core spray (CS) internal line break detection differential pressure (DP) instrument loop had resulted in a setpoint which would not satisfy Technical Specifications (TS) requirements. Specifically, the calibration did not compensate for the zero offset created by plant-specific application characteristics. This resulted in an alarm setpoint which would not alarm in the event of a DP of 4.4 psid as required by TS surveillance requirement 4.5.1.c.4. Additional reviews identified that the same condition existed on Unit 1. This constitutes an operation in a condition prohibited by the TS and is being reported in accordance with 10CFR50.73(a)(2)(i)(B). The cause of this condition was the failure to account for baseline CS sparger DP in the setpoint basis for the CS line break detection instrumentation. As a result of this oversight, the setpoints were not adjusted to compensate for the change in baseline DP introduced when the Units were uprated in 1995 and 1996. The affected instrumentation was recalibrated to account for the change in baseline DP and returned to operable status.

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TEXT CONTINUATION

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

Unit Conditions Prior to the Event:

Unit 1 was in Operational Condition 1 (Power Operation) at 100%. Unit 2 was in Operational Condition 1 (Power Operation) at 60% rated thermal power. There were no systems, structures, or components out of service which impacted this event.

Description of the Event:

On July 9, 1998, Operations declared the Unit 2 core spray differential pressure (DP) instrumentation (CS, EIIS:BM, PDIS) inoperable due to the receipt of spurious alarms. Technical Specifications (TS) action 3.5.1.e was entered. This action requires that the instrumentation be restored to operable status within 72 hours or that DP be determined locally once per 12 hours. Otherwise, the affected CS loop must be declared inoperable. Subsequent investigation on July 10, 1998, identified that the alarms were caused by process noise spikes which resulted in brief spikes above the alarm setpoint.

On July 11, 1998, at 1500 hours, engineering personnel continuing to evaluate the setpoints identified a calibration error which rendered the Unit 2 CS internal line break detection instrumentation inoperable. The system vendor specifies that the setpoint should be a +/- 3.8 psid change from the normal DP as measured during operation under rated power conditions. This setpoint is more conservative than the +/- 4.4 psid allowable value specified in TS surveillance requirement 4.5.1.c.4. The actual Unit 2 normal DP under rated power conditions is -2.5 psid; however, the instrumentation was calibrated for a setpoint of +/- 3.8 psid change from 0 psid. As a result, the channel would alarm at +6.3 psid and -1.3 psid from normal rated power DP. The +6.3 psid value is outside the TS allowable value.

An initial review of the Unit 1 instrument calibration data on July 11, 1998, indicated that the Unit 1 calibration included compensation for the normal DP between piping loops. Additional assessment concluded on July 23, 1998, that this compensation was approximately -0.275 psid. The actual value of normal DP as measured on July 23 was -2.5 psid. As a result, the channel would alarm at +6.025 psid and -1.575 psid from normal rated power DP. The +6.025 psid value is outside the TS allowable value. The Unit 1 instrumentation was declared inoperable and TS action 3.5.1.e was entered.

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A review of historical data indicates that this condition has existed on each Unit since the implementation of power uprate (Unit 1, February 1996; Unit 2, February 1995). As such, each Unit operated with inoperable CS DP instrumentation without the required TS actions in place. This constituted an operation prohibited by TS and is being reported in accordance with 10CFR50.73.(a)(2)(i)(B).

Analysis:

The consequences of this event were minimal in that no actual CS line failures occurred while the instrumentation was inoperable, and there was no radiological release as a result of this event. Had a line break occurred while the instrumentation was inoperable and had the break not been detectable through other means, such as loose parts detection system indication or abnormal system operation, the line break would not have prevented the plant from responding within the design analysis. As stated in UFSAR sections 6.3.1.1.2.e and 7.3.1.1.1.3.6, if there is a line break in CS piping, no single active component failure prevents automatic initiation and successful operation of at least three low pressure coolant injection (LPCI) pumps and the automatic depressurization system. This combination of equipment is in excess of the minimum equipment required to preclude fuel damage as a result of transients or LOCA initiating events as described in UFSAR section 6.3.1.1.2. As a result, the inability of the CS DP instrumentation to detect a line break and the resultant potential failure of personnel to identify the break would not prevent the mitigation of the consequences of analyzed accidents.

Cause of the Event:

The cause of this event was a failure to include the effect of baseline operating DP in the setpoint basis for the CS internal line break DP instrumentation. Sufficient margin existed prior to power uprate such that the setpoint was within the TS limit. Power uprate caused an increase in the baseline DP which resulted in the setpoint being outside of the TS limit. The impact of this increase in baseline DP was not recognized due to the deficiency in the setpoint basis.

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Corrective Actions:

The Unit 2 instrumentation was recalibrated and restored to operable status on July 14, 1998.

The Unit 1 instrumentation was recalibrated and restored to operable status on July 24, 1998.

A preliminary assessment of instrumentation for similar susceptibility to baseline changes identified the Unit 1 and 2 LPCI line break DP instrumentation. The calibration of these instruments on both Units was verified to be acceptable under the current baseline operating conditions. A review to identify and verify the acceptability of any additional setpoints listed in the TS which could be affected by changes in baseline operating conditions will be completed by September 15, 1998.

All setpoints listed in the TS will be reviewed to confirm that the impact of power uprate was addressed. This review will be completed by September 15, 1998.

Previous Similar Occurrences:

There have been no previous reportable occurrences of incorrect setpoints due to a failure to include baseline operating conditions in the setpoint basis.