

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)  
La Crosse Boiling Water Reactor (LACBWR)DOCKET NUMBER (2)  
0 5 0 0 0 4 0 9 1 OF 0 3TITLE (4)  
Reactor Partial Scram due to Lower Control Rod Drive Mechanism

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	5	1	7	8	5	8	5	0	1	2	0	0	0	6	0	7	8	5	None	0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
1		20.402(b)		20.405(c)	X	50.73(a)(2)(iv)		73.71(b)			
POWER LEVEL (10)	0 9 7	20.405(a)(1)(i)		50.38(c)(1)		50.73(a)(2)(v)		73.71(c)			
		20.405(a)(1)(ii)		50.38(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract Below and in Text, NRC Form 365A)			
		20.405(a)(1)(iii)		50.73(a)(2)(ii)		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)(ix)					

LICENSEE CONTACT FOR THIS LER (12)  
NAME  
Lynne S. Goodman, LACBWR Operations Engineer  
TELEPHONE NUMBER  
AREA CODE  
6 0 8 6 8 9 - 2 3 3 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	
X	A	A	6 3	R	4 0 0	N				
X	A	A	F S V	R	4 0 0	N				

SUPPLEMENTAL REPORT EXPECTED (14)  
YES (If yes, complete EXPECTED SUBMISSION DATE) ☐ NO ☒  
EXPECTED SUBMISSION DATE (15)  
MONTH DAY YEAR

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

A reactor partial scram occurred due to a low gas or oil signal from a control rod drive mechanism (CRDM). During a partial scram, the center 13 control rods are automatically inserted, rendering the reactor subcritical.

The low gas pressure alarm and scram setpoints were determined to be too high on CRDM's in positions 8 and 21. The setpoints were near normal operating pressure. It is believed that the accumulator pressure on CRDM No. 8 or 21 decreased over time until the low pressure setpoint was reached, resulting in the partial scram. The switches may have been disturbed when the mechanisms were reinstalled during the recent refueling outage. The setpoints were adjusted.

An internal oil leak on the CRDM in position 12 was found to be due to a small metal chip imbedded in 1 of the 2 scram solenoids' valve seat, which allowed oil flow past the seat. This condition could have caused a CRDM low oil level partial scram, but is considered a less likely scram cause, since a CRD charging pump had been running periodically to maintain system pressure. The spare mechanism was installed in position 12.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  La Crosse Boiling Water Reactor	DOCKET NUMBER (2)  0 5 0 0 0 4 0 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 5	0 1 2	0 0	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At 0405 on May 17, 1985, a reactor (RCT) partial scram occurred from 97% Rated Thermal Power. During a partial scram, the 13 center control rods (AA) automatically insert, rendering the reactor subcritical. All automatic functions worked properly. The operators manually scrammed the remaining control rods at 0407.

The cause of the partial scram was most likely a low control rod drive mechanism (CRDM) (75) gas pressure signal. The LACBWR CRDM's each have a scram accumulator (ACC). The accumulator consist of two chambers divided by a piston. One chamber contains a hydraulic fluid, the other nitrogen. When a scram signal is generated, two parallel solenoid valves (FSV) open, allowing the hydraulic fluid to flow to a hydraulic motor (MO), with the motive force supplied by the nitrogen pressure. If during plant operation the gas pressure starts decreasing, a partial scram signal is initiated before the pressure decreases below that necessary for a full-stroke rod scram. Adjustment of a pressure switch (63) determines the scram setpoint.

During troubleshooting, the alarm and scram setpoints of the pressure switches on the CRDMs in positions 8 and 21 were found to be too high and close to normal operating pressure. The scram pressure switch for CRDM 21 required the most adjustment. The switches were adjusted. The CRDMs had been charged with nitrogen prior to reactor startup on April 21, 1985. Over time, the pressure in the accumulators gradually decreases. It is postulated that on May 18, the accumulator gas pressure in CRDM 8 or 21 had decreased to the pressure switch scram setpoint, though it was still in the normal operating range.

The lower CKDMs in both positions 8 and 21 had been removed during the March-April 1985 refueling outage. The mechanism which was installed in position 21 had routine preventive maintenance performed on it, including calibration of the pressure switches, during the outage. It is not known why the switches on either CRDM were out of adjustment, though the switches could have been disturbed during reinstallation, which could have affected the setpoints.

Low oil level in any one of the 29 CRDMs accumulators also causes a partial scram. During operation, an internal leak in the CRDM in position 12 was causing the hydraulic charging pumps (P) to periodically run to maintain system pressure. It is possible, but considered less likely, that low oil level in CRDM 12 caused the partial scram. A small metal chip (see next page) was found imbedded in the sealing edge of the seat of one of its scram solenoids. This chip would have allowed a small amount of internal hydraulic fluid leakage, causing the charging pump to run periodically to maintain system pressure and hence oil level in CRDM 12's accumulator. Since the

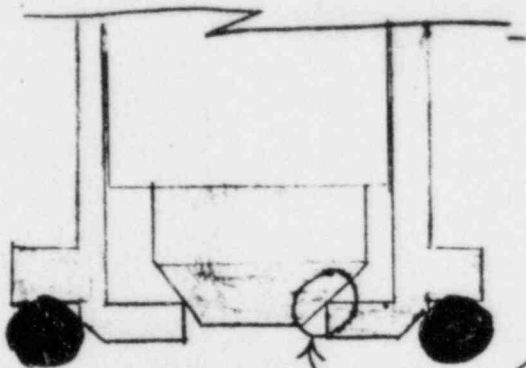
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		0 1 2 —	0 0	0 3	OF	0 3	

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

hydraulic charging system was operating properly, low oil level in CRDM 12 is a less likely cause of the partial scram. The spare lower CRDM was installed in position 12 and the scram solenoid was replaced in the mechanism which had been removed.



Metal chip found  
imbedded in valve  
seat.

June 7, 1985

In reply, please  
refer to LAC-10941

DOCKET NO. 50-409

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

SUBJECT: DAIRYLAND POWER COOPERATIVE  
LA CROSSE BOILING WATER REACTOR (LACBWR)  
PROVISIONAL OPERATING LICENSE NO. DPR-45  
LICENSEE EVENT REPORT NO. 85-12

Reference: 10 CFR 50.73

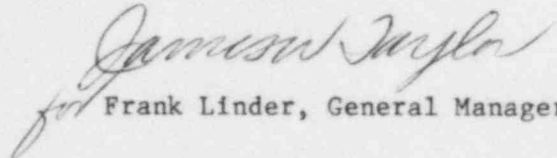
Gentlemen:

In accordance with 10 CFR 50.73, attached is Licensee Event Report  
No. 85-12.

If there are any questions, please contact us.

Sincerely,

DAIRYLAND POWER COOPERATIVE

  
for Frank Linder, General Manager

FL:LSG:sks

Attachment

cc: J. G. Keppler, NRC Region III  
NRC Resident Inspector  
D. Sherman, ANI Library  
Richard Dudley, LACBWR Project Manager  
INPO