

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Calvert Cliffs, Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 1 7 1				PAGE (3) 1 OF 3									
TITLE (4) RCP Shaft Seal Bleedoff Line Weld Failure																							
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 NA			DOCKET NUMBER(S) 0 5 0 0 0											
1	0	0	9	8	5	8	5	0	1	3	0	0	1	1	0	5	8	5	0	5	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																					
POWER LEVEL (10)		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)									
11010		20.405(a)(1)(i)				50.38(a)(1)				50.73(a)(2)(v)				73.71(c)									
		20.405(a)(1)(ii)				50.38(a)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
		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)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																							
NAME Peter M. Knoetgen, Engineer, PMD										TELEPHONE NUMBER AREA CODE 3 0 1 2 6 0 1 4 8 6 0													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD													
B	A	B	P			B	5	8	0	Y													
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR							
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO											

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

While operating in **MODE 1** at 1200 on 9 October 1985, unidentified reactor coolant system (RCS) leakage was determined to be greater than 1.0 gpm. Unit 1 entered the action statement of T.S. 3.4.6.2b and commenced power reduction for shutdown.

At approximately 2142 on 9 October, the source of the RCS leakage was determined to be a cracked weld at the attachment point between the 11A reactor coolant pump (RCP) shaft seal and the control bleedoff (CBO) line. After reaching cold shutdown conditions (**MODE 5**), the CBO line and its associated flange were replaced with a continuous section of pipe without flanges.

Similar failures have occurred on both Unit 1 and Unit 2 RCP shaft seal CBO lines. Preventive maintenance actions are now established to perform non-destructive examination of the RCP shaft seal CBO line welds during each cold shutdown and seal replacement. Additionally, a design modification is being implemented which changes the CBO line configuration to minimize the probability of future failures.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 9/31/85

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		8 5	0 1 3	0 0	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 308A's) (17)

While operating in **MODE 1** at 0100 on 9 October 1985, routine performance of Surveillance Test Procedure (STP) O-27-1, "Reactor Coolant System (AB) Leak Evaluation", indicated an increasing trend in the RCS leak rate for the previous 24 hours. Subsequent RCS leak rate evaluation at 0500 and 0900 indicated an increasing leak rate. An additional indication of RCS leakage was the decreasing time interval between reactor containment (NH) sump discharges. At 1200, 9 October, the RCS leak rate was determined by STP-O-27-1 to be 1.22 gpm, and TS 3.4.6.2b action statement for reactor coolant unidentified leakage greater than 1.0 gpm was entered.

Reactor containment entries made at 0722, 1256, and 1557 were unsuccessful in locating the leak. Reactor power reduction was commenced at 1630, with reactor power at 10.6% at 2010. Reactor containment entries were again made at 2022 and 2142, with the source of the leak discovered during the latter entry. The leak was determined by visual inspection to be at the attachment point of the control bleedoff (CBO) line to the 11A reactor coolant pump (AB-P) shaft seal. At 2158, 9 October, Unit 1 was shutdown. RCS cooldown was commenced with the plant reaching **MODE 5** at 0240, 11 October.

The cause of the weld failure was determined to be high tension and torsional stresses with low cycle fatigue failure. Excessive stresses were caused by the vibratory motion of a relatively massive, unsupported CBO line flange located several inches from the RCP shaft seal cartridge.

Immediate corrective action was to remove the existing CBO lines and their associated flange connections from all Unit 1 RCPs and replace them with a continuous section of piping between the RCP shaft seal and the undamaged piping downstream of the original flanged connection.

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TEXT (If more space is required, use additional NRC Form 388A's. (17))

The following long term corrective actions are being taken:

1. A modification is being implemented during planned outages which relocates the flange connection to minimize stress and vibrational induced fatigue failures of the CBO line. Currently all Unit 1 RCPs have continuous CBO piping without a flange, and Unit 2 RCPs will have continuous piping or the modified flange arrangement at the completion of the current Unit 2 planned refueling outage.
2. Non-destructive examinations of each RCP seal attachment weld are being performed during each cold shutdown and seal rebuild.
3. The RCP alignment and balancing program to minimize vibrations in the RCPs is continuing.
4. The importance of handling and rigging RCP seals to minimize stress on RCP seal attachment welds is emphasized to maintenance personnel.

Similar events on Unit 1 RCPs (LER 83-20, 80-24) and Unit 2 RCPs (LER 84-06) have occurred.

The event never endangered the safety of the plant or the public. The CBO line carries low temperature and low pressure reactor coolant bleedoff from the RCP seal to the volume control tank (CB-TK). All leakage occurred within the reactor containment and was directed to the containment sump for collection and processing.

The contact for further discussion of this event is Peter M. Knoetgen, (301) 260-4869.

BALTIMORE GAS AND ELECTRIC COMPANY

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NUCLEAR POWER DEPARTMENT
CALVERT CLIFFS NUCLEAR POWER PLANT
LUSBY, MARYLAND 20657

November 5, 1985

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

Docket No. 50-317
License No. DPR 53

Dear Sirs:

The attached LER 85-013 is being sent to you as required by 10 CFR 50.73.

Should you have any questions regarding this report, we would be pleased to discuss them with you.

Very truly yours,

LB Russell

L. B. Russell
Plant Superintendent

AMK
LBR:F/K:fld

cc: Dr. Thomas E. Murley
Director, Office of Management Information
and Program Control
Messrs: A. E. Lundvall
J. A. Tiernan
W. J. Lippold

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