

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Calvert Cliffs, Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 3 1 1 7 PAGE (3) 1 OF 012

TITLE (4) Reactor Trip Caused by Failure of TCB #2 During Surveillance Testing

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 (8)														
0	1	2	3	8	6	8	6	-	0	0	1	-	0	0	0	2	1	4	8	6	0	5	0	0	0

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

OPERATING MODE (9) <u>1</u>	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(a)	<input checked="" type="checkbox"/> 90.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
POWER LEVEL (10) <u>100</u>	<input type="checkbox"/> 20.408(a)(1)(i)	<input type="checkbox"/> 90.38(a)(1)	<input type="checkbox"/> 90.73(a)(2)(v)	<input type="checkbox"/> 73.71(a)
	<input type="checkbox"/> 20.409(a)(1)(ii)	<input type="checkbox"/> 90.38(a)(2)	<input type="checkbox"/> 90.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 388A)
	<input type="checkbox"/> 20.408(a)(1)(iii)	<input type="checkbox"/> 90.73(a)(2)(i)	<input type="checkbox"/> 90.73(a)(2)(vii)(A)	
	<input type="checkbox"/> 20.408(a)(1)(iv)	<input type="checkbox"/> 90.73(a)(2)(ii)	<input type="checkbox"/> 90.73(a)(2)(vii)(B)	
	<input type="checkbox"/> 20.408(a)(1)(v)	<input type="checkbox"/> 90.73(a)(2)(iii)	<input type="checkbox"/> 90.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME B. E. Holian, Engineer TELEPHONE NUMBER (1) 3 0 1 2 6 0 - 4 3 8 4

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
B	J	C	1 5 2	G	0 1 8 0	Y			

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO X

EXPECTED SUBMISSION DATE (15) MONTH DAY YEAR

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

At 1056 on January 23, 1986, while operating in MODE 1 at 100% power, an automatic trip of Calvert Cliffs Unit 1 Reactor occurred during monthly Reactor Protective System Surveillance testing. The normal surveillance test sequence causes one pair of trip circuit breakers to trip open at a time. This action does not normally cause a unit trip because redundant trip breakers remain closed. However, in this case, one redundant breaker (#2) remained partially open after reset. Technicians did not realize the breaker had not fully reset because it indicated shut. The unit immediately tripped when the next set of breakers was opened per the Surveillance Test Procedure. Investigation revealed the root cause of the trip to be a mechanical failure of #2 trip circuit breaker (GE AK-2-25). The breaker was found to have one of its two mechanism operating springs displaced, resulting in inadequate main contact wipe. The breaker was replaced and functionally tested by 1500, January 23, 1986. Unit 1 reentered MODE 1 at 1710 on January 24, 1986.

All Unit 1 and Unit 2 trip circuit breakers, (including nine front frame assemblies in stock), were inspected for indications of a similar defect. There was no evidence of loose or displaced operating springs as was found on Unit 1 trip circuit breaker #2. Additional corrective actions planned include: 1) returning the failed breaker to the vendor for repair and testing; and 2) evaluating additional methods of ensuring trip circuit breaker main contact closure.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Calvert Cliffs, Unit 1	0500031786	86	001	00	02 OF 02

TEXT (if more space is required, use additional NRC Form 308A (11/77))

At 1056 on January 23, 1986, while operating in MODE 1 at 100% power, an automatic trip of Calvert Cliffs Unit 1 Reactor occurred due to a mechanical failure of #2 Reactor Trip Circuit Breaker (TCB) (EHS JC-52). Monthly Reactor Protective System (EHS JC) testing was being conducted at the time. The Surveillance Test Procedure required technicians to trip, and then subsequently reset one pair of TCBS at a time. Prior to the trip, each set of TCBS had been successfully cycled several times. At 1056, immediately following the opening of TCBS #3 and #7 (per the Surveillance Test Procedure), the unit tripped. Investigation following the trip revealed that TCB #2, which was cycled just prior to the trip, did not close, although by indication it appeared reset. Further investigation revealed the root cause of the trip to be a mechanical failure of TCB #2. The breaker was found to have one of its two mechanism operating springs displaced, resulting in inadequate main contact wipe (C-phase was not making contact). This combination of TCB "opens" resulted in Unit 1's trip.

Following the trip, the control room operators properly evaluated the event and carried out the applicable procedures for this reactor trip — Emergency Operating Procedures #0 and #1. An Auxiliary Feedwater (AFW) Signal (EHS BA), apparently triggered by a momentary low spike on the steam generator water level instrument, caused 13 AFW pump to start immediately after the trip. The pump was secured at 1124. All safety systems functioned as expected.

Calvert Cliffs uses General Electric AK-2-25 trip circuit breakers. The failed breaker, TCB #2, has a relatively new operating mechanism (front frame assembly). The front frame assembly was delivered on 2-28-85 and installed 4-4-85. Following the unit trip TCB #2 was cycled again. Once more, the breaker indicated shut, yet remained "cocked open". The breaker was replaced and functionally tested by 1500, January 23, 1986. Unit 1 reentered MODE 1 at 1710 on January 24, 1986.

All Unit 1 and Unit 2 trip circuit breakers, (including nine front frame assemblies in stock), were inspected for indications of a similar defect. There was no evidence of loose or displaced operating springs as was found on Unit 1 TCB #2. There was no indication of defects or problems with any of the springs inspected (or with the metal pins that retain the springs). We are returning the failed breaker to the vendor for repair and testing. If any generic concerns are substantiated through the vendor examination, we will notify the industry. Also, we are evaluating additional methods of ensuring trip circuit breaker main contact closure.

The Reactor Protective System functioned properly in performing its design function; i.e., shutting down the reactor. This event would not have been more severe under credible, reasonable alternative circumstances. The overall safety significance is considered minimal.

A review of previous reportable events at Calvert Cliffs revealed no similar occurrences. The contact for further discussion of this event is B. E. Holian, (301) 260-4384.

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 1475

BALTIMORE, MARYLAND 21203

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

February 14, 1986

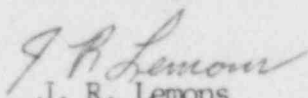
U. S. Nuclear Regulatory Commission Docket No. 50-317
Document Control Desk License No. 53
Washington, D. C. 20555

Dear Sirs:

The attached LER 86-01 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,



J. R. Lemons
Manager
Nuclear Operations Department

^{ret}
JRL:BEH:pah

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

IE 22
1/1