



CHARLES CENTER • P.O. BOX 1475 • BALTIMORE, MARYLAND 21203-1475

R. E. DENTON  
GENERAL MANAGER  
CALVERT CLIFFS

May 7, 1991

U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit No. 2; Docket No. 50-318; License No. DPR 69  
Licensee Event Report 91-003, Revision 00

Gentlemen:

The attached report is being sent to you as required under 10 CFR 50.73 guidelines. Should you have any questions regarding this report, we will be pleased to discuss them with you.

Very truly yours,

RED/REF/bjd  
Attachment

cc: D. A. Brune, Esquire  
J. E. Silberg, Esquire  
R. A. Capra, NRC  
D. G. McDonald, Jr., NRC  
T. T. Martin, NRC  
L. E. Nicholson, NRC  
R. I. McLean, DNR  
J. H. Walter, PSC  
Director, Office of Management Information  
and Program Control

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## LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1)

Calvert Cliffs, Unit 2

DOCKET NUMBER (2)

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

PAGE (3)

TITLE (4)

Inadvertent Actuation of Reactor Protection System While Troubleshooting

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)
04	09	91	91	003	0	05	07	91		0 5 0 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)		20.402(b) <input checked="" type="checkbox"/> 20.405(a) <input checked="" type="checkbox"/> 50.73(a)(2)(iv) <input checked="" type="checkbox"/> 73.71(b) <input type="checkbox"/>								
POWER LEVEL (10)		20.406(a)(1)(i) <input type="checkbox"/> 50.36(a)(1) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> 73.71(a) <input type="checkbox"/>								
		20.406(a)(1)(ii) <input type="checkbox"/> 50.36(a)(2) <input type="checkbox"/> 50.73(a)(2)(vi) <input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A) <input type="checkbox"/>								
		20.406(a)(1)(iii) <input type="checkbox"/> 50.73(a)(2)(i) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/>								
		20.406(a)(1)(iv) <input type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/>								
		20.406(a)(1)(v) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix) <input type="checkbox"/>								

LICENSEE CONTACT FOR THIS LER (12)

NAME

TELEPHONE NUMBER

R. E. Franke, Engineer

AREA CODE

3 0 1 2 6 0 - 2 0 6 0

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

☐ YES (If yes, complete EXPECTED SUBMISSION DATE)☒ NO

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

On April 9, 1991 at 0137, an inadvertent Reactor Protection System (RPS) actuation occurred at Calvert Cliffs Unit 2 while the plant was conducting Control Element Assembly testing. The plant was in Hot Shutdown, at a Reactor Coolant System Pressure of 2250 psia and temperature of 532 degrees Fahrenheit. The incident occurred when personnel who intended to key a portable radio and observe for RPS trip actuations (in the performance of troubleshooting Radio Frequency Interference problems) accidentally keyed the radio out of sequence.

The root cause of the event was personnel error complicated by a combination of the portable radio's design and standard controls for minimizing contamination.

Immediate corrective actions included an entry on the Shift Supervisor's log informing personnel not to take portable radios in the vicinity of the flow transmitters and a similar entry made on the Shift Turnover Sheet. Actions to prevent recurrence include permanent signs outside of containments accesses, changes to site procedures, informing all site portable radio users of the restrictions inside the containments, and reassessing industry experiences to ensure current plant controls are adequate.

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TEXT (If more space is required, use additional forms)

## I. DESCRIPTION OF EVENT

On Tuesday, April 9, 1991, at 0137, a Low Flow Reactor Protective System (RPS) trip was received while performing Control Element Assembly (CEA) testing (PSTP-2) in MODE 3 (Hot Standby) at a plant pressure of 2250 psia and temperature of 532 degrees Fahrenheit. A single CEA was withdrawn two steps to 1.5 inches. All other CEAs were deenergized. The trip was caused by a portable radio transmission near the No. 22 Steam Generator (SG) differential pressure transmitters used for measuring Reactor Coolant System (RCS) flow.

Preceding the trip event of April 9, spurious RPS channel trip actuations were received on April 7 on RCS Low Flow channels A and D, and pre-trip actuations were received on SG Level channel B. The plant was operating in MODE 3. The RPS logic required to trip the plant (2 of 4) was not met on RCS low flow since channels A and D bistables were never in the tripped condition simultaneously. No further spurious actuations were received.

A Calvert Cliffs Problem Report and Maintenance Request were immediately drafted to address the problem. Troubleshooting was performed that day by Instrument Maintenance (IM) on the RPS flow channels. The troubleshooting performed by IM was unable to determine the cause of the spurious actuations.

On April 8, 1991, the Operations Shift concluded that a potential cause of the spurious RPS channel actuations might have been the use of a portable radio near SG differential pressure transmitters (PDTs). A worker with a portable radio was in the vicinity of the flow transmitters when the spurious trips were received on April 7. To confirm the actuations were caused by a portable radio, the Shift Supervisor and Control Room Supervisor (CRS) decided to troubleshoot and attempt to repeat the symptoms by keying a portable radio. Since CEA testing was in progress, the plan was to secure the test with all CEAs fully inserted, open all individual 240v breakers to the CEAs, and then perform the troubleshooting.

A SG flow PDT for RPS Low Flow channel A (2-PDT-121A) was selected for the troubleshooting since this channel was associated with both spurious actuations on April 7, 1991. To avoid an inadvertent ESFAS/AFAS actuation, drawings were reviewed to determine other transmitters which could be affected by the troubleshooting. It was determined that the SG level transmitters associated with AFAS would be in the vicinity and that a further evaluation of their proximity to 2-PDT-121A would be necessary.

A briefing was held between the Shift Supervisor, the CRS, and the Plant Operator who would enter the containment to key the portable radio. This briefing consisted of:

- o The objective of the troubleshooting evolution.

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TEXT (if more space is required, use additional forms)

- o The desired location near 2-PDT-121A at which to key the portable radio.
- o The identified SG level transmitters which could be in proximity and cause an ESFAS/AFAS actuation.
- o The point-of-contact for communications (CRS).
- o The sequence of the troubleshooting process including distance to 2-PDT-121A for each portable radio transmission.

Following this brief, the Plant Operator entered containment, to locate 2-PDT-121A and the transmitters associated with AFAS start. This was done while CEA testing was in progress because it would not conflict with the testing. The transmitters were located and two telephone communications were made to the CRS to discuss the transmitters and describe physical locations. When the Plant Operator returned to the location of the transmitters at 0137, channels A, B, and C low flow trips were received, RPS logic was met, and a reactor trip signal caused the RTBs to open. One CEA (No. 63) was withdrawn to 1.5 inches at the time of the trip. Control Room operators verified CEA No. 63 was fully inserted and all RTBs open. A telephone call with the Plant Operator in containment revealed that the portable radio transmit key may have been accidentally bumped. CEA testing was suspended, the RTBs were left open, and the radio was keyed again at 8 feet and 3 feet from 2-PDT-121A. This resulted in trips on RPS Low Flow channels A, B, and C, and A, B, and D respectively. Based on these test results, it was concluded that the April 7 RPS alarms likely resulted from keying a portable radio transmitter inside of containment, therefore the maintenance request was closed out.

This event resulted in an automatic actuation of the RPS and is reportable in accordance with 10 CFR 50.73(a)(2)(iv). There were no components or systems which were inoperable and/or out-of-service which contributed to this event.

## II. CAUSE OF EVENT

The root cause of this event was personnel error due to the combination of portable radio design and standard protective equipment and clothing required by the containment environmental conditions. The radio's transmission button is located on the side of the radio. It is flush with the body of the radio, and takes only light pressure to transmit. To prevent contamination, the radio was wrapped in a poly bag. The radio was held by the Plant Operator (in lieu of the normal hip carrier). Since full anti-contamination clothing was worn, the Plant Operator wore both cloth and rubber gloves. This combination of a sensitive transmission button and insensitive fingers due to protective equipment led to the inadvertent keying.

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TEXT (If more space is required, use additional forms)

## III. ANALYSIS OF EVENT

The unplanned actuation of the RPS resulted in tripping open the RTBs which were shut in support of CEA testing. This resulted in the scrambling of a single CEA which was at 1.5 inches. Due to the operating MODE at the time of the occurrence and the anticipated nature of the trip, there was no safety significance associated with this event.

Troubleshooting of this nature is not conducted at power. The occurrence of a plant trip as a result of a portable radio transmission during a containment entry for other purposes was unlikely because of limited entries at power, the nature of the tasks involved (e.g. highly practiced and proceduralized, and hence little need for communication) as well as the availability of phones inside the containment. The consequences of a plant trip at power have been analyzed as not being safety significant.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv) because the trip occurred before the desired plant conditions were properly established and outside the planned troubleshooting sequence.

## IV. CORRECTIVE ACTIONS

### Immediate:

1. The Control Room Operators verified all RTBs tripped open and the energized CEA fully inserted.
2. An entry was made in the Shift Supervisor's log of the occurrence with a caution statement not to use portable radios in the vicinity of the flow transmitters.
3. A similar entry was made on the Shift Turnover Sheets.

### Actions to Prevent Recurrence:

1. Workers who utilize portable radios were notified of the concern for radio communications inside containment.
2. Changes to Calvert Cliffs Instructions 115 (Containment Access Requirements) and 140 (Shift Staffing) have been initiated to exclude portable radio communications inside containment. Additionally, a site wide instruction to control radio use is being evaluated.
3. Security Post Orders were changed to prevent taking portable radios inside the containments.



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4. Areas currently identified as susceptible to Radio Frequency Interference (RFI) were reviewed. Accesses to these areas are now properly posted.
5. Permanent signs prohibiting portable radios inside containment are now posted in the vicinity of the outer doors of the Normal and Emergency Personnel Air Lock's.
6. Industry experience on RFI will be assessed to ensure current plant controls are adequate. This review will include possible additional area controls and will determine if additional testing is needed.

## V. ADDITIONAL INFORMATION

### A. Table of Components and Systems mentioned in this LER.

Component or System	IEEE 803A/83 Funct Ident	IEEE 805/84 System Code
Reactor Prot System	N/A	JC
Reactor Coolant System	N/A	AB
Steam Generator	SG	N/
Flow Differential Pressure Transmitter	PDT	N/A
Control Element Assembly	N/A	AA
Flow Transmitters	FT	N/A
Steam Generator Level Transmitters	LT	N/A

### B. Previous Similar Events.

There have been no previous similar reportable events at Calvert Cliffs.