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R. E. DENTON
GENERAL MANAGER
CALVERT CLIFFS

January 23, 1992

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

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317; License No. DPR 53
Licensee Event Report 91-007

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/DWM/bjd
Attachment

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

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S PDR

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN: 2 HR RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST. 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), 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 1
 DOCKET NUMBER (2): 050003171 OF 015
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TITLE (4): Emergency Air Lock Inner and Outer Doors Open Simultaneously Due to Mechanical Malfunction

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)												
1	2	4	9	1	0	0	7	0	0	1	2	3	9	2		0	5	0	0	0			
																	0	5	0	0	0		

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11)

OPERATING MODE (9): 4	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10): 0010	30.405(a)(1)(i)	50.38(c)(1)	X 50.73(a)(2)(iv)	73.71(a)
	20.405(a)(1)(ii)	50.38(c)(2)	50.73(a)(2)(iv)	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)(iv)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(iv)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(iv)(C)	
	20.405(a)(1)(vi)	50.73(a)(2)(iv)	50.73(a)(2)(iv)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: D. W. Muth, Compliance Engineer
 TELEPHONE NUMBER: AREA CODE 4110, NUMBER 2610-1315, EXT 1912

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14):

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

EXPECTED SUBMISSION DATE (15): MONTH DAY YEAR

ABSTRACT (Limit to 1,400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On December 24, 1991, maintenance personnel, unaware that the Unit 1 Containment Emergency Air Lock inner door was open, opened the exterior door, briefly breaching containment. Containment integrity was restored within one minute. The interior door remote position indication did not indicate that the door was open and an interlock mechanism that normally prevents both doors from being open simultaneously, did not function properly.

The cause is attributed to mechanical malfunction which includes a slipped chain and misaligned cam in the interlock mechanism and inaccurate interior door position indication.

The chain and cam were realigned and the mechanism verified OPERABLE. A sign has been placed next to the exterior door warning personnel of the loose chain and cautioning them to open the door carefully. Appropriate personnel are being briefed on the details of this incident and cautioned against opening the door before pressure is equalized across it.

Additional testing to confirm the cause of the mechanical malfunction will be conducted when ALARA conditions and Technical Specification OPERABILITY requirements permit. Should it become necessary to use the Emergency Air Lock prior to implementation of final corrective actions, we will implement additional controls to ensure personnel entering the air lock are aware of the status of both air lock doors.

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

I. DESCRIPTION OF EVENT

On December 24, 1991 at 1530 hours, maintenance personnel, having attempted to verify via remote position indication that the interior door to the Calvert Cliffs Unit 1 Containment Emergency Air Lock was closed, opened the exterior door. A contract craft worker was in the air lock corridor and the interior door was open, contrary to the indicated position displayed at the outer door. Since the outer door has no window, the personnel could not see the workers in the corridor or that the inner door was open. Negative pressure inside containment caused an inrush of air into the airlock corridor. The workers immediately began closing both doors. This action took approximately one minute during which time both doors remained open, breaching containment. At the time of this event, Unit 1 was in MODE 4 with the Reactor Coolant System at 150 psia and 222 degrees Fahrenheit.

To enter the air lock from the outside, an operator turns a handwheel next to the outer door, which opens inward. A second handwheel for remote operation of the interior door is located nearby. Interior and exterior position indicators are located next to their respective handwheels. The indicators are mechanical and rotate with the handwheel. An interlock mechanism (see Figure 1) normally prevents both doors from being open simultaneously. After entering the outer door, the operator must then, by handwheel, close the outer door before opening the inner door. A quick-acting type equalizing valve connects the personnel lock with the interior and exterior of the containment structure for the purposes of equalizing pressure with either, depending on which door is used.

Containment is normally accessed through the Personnel Air Lock. The Emergency Air Lock was in use at the time because the Personnel Air Lock had failed its Local Leak Rate Test that morning and had not yet been placed back in service. Following this event, the Emergency Air Lock was declared inoperable per Technical Specifications and an operator was stationed to control access. The Personnel Air Lock was returned to service three hours later. The Emergency Air Lock interlock mechanism was later examined. A loose chain was found to have slipped on its sprocket (see Figure 1 detail). A cam was found out of alignment and with its set screws loose. This appears to have been caused by the loose chain. The chain and cam were returned to their normal operating position and the mechanism tested. It functioned normally and the air lock was declared OPERABLE on December 25, 1991 at 0530 hours.

II. CAUSE OF EVENT

The cause of this event is attributed to mechanical malfunction which includes the slipped chain and misaligned cam in the interlock mechanism and inaccurate interior door position indication. Since the door position indicators rotate with the handwheel rather than the door, a misalignment in the interlock could cause an inaccurate position indication. A likely cause of chain slippage and

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

consequent misalignment is excessive force applied to the mechanism by personnel opening the door. Due to ALARA restrictions, testing to confirm the cause will be postponed until the next refueling outage, scheduled to commence in March of this year.

An additional causal factor is maintenance personnel's having not verified that the pressure across the door had equalized prior to opening it. The audible continued inleakage of air through the equalizing valve would have provided additional indication that the interior door was still open.

A Surveillance Test Procedure (STP-M-471) for testing the interlock verifies that the interlock performs its function of preventing the doors from being open simultaneously. The STP had been successfully performed on September 13, 1991.

III. ANALYSIS OF EVENT

There were no safety consequences associated with this event. The negative pressure inside containment prevented any unmonitored release of radioactivity through the air lock. With both Emergency Air Lock doors open, a design basis accident could have resulted in the release of radioactivity greater than allowed by 10 CFR 100. However, several mitigating factors render the safety significance of this incident minimal.

This incident took place with the Reactor Coolant System at 150 psia and 222 degrees Fahrenheit at which pressure and temperature an event involving a release of radioactivity to containment is less likely to occur and the consequences of the event less significant than at full power. Both doors were open for approximately one minute. The chance of an event involving a significant release of radioactivity to containment within this small time window is very remote. The plant Technical Specifications allow an hour for restoration of containment integrity. With the plant in this condition, pressure inside containment would rise much more slowly following an event than it would at full power. The rise in pressure would likely be sufficiently slow to enable the operators to close either or both air lock doors before a significant amount of radioactivity was released.

This item is reportable under the requirements of 10 CFR 50.73(a)(2)(v)(D) as a single condition which alone could have prevented the fulfillment of the safety function of a structure needed to mitigate the consequences of an accident and control the release of radioactive materials.

IV. CORRECTIVE ACTIONS

1. The chain and cam were realigned and the mechanism verified OPERABLE. A sign has been placed next to the exterior door warning personnel of the loose chain and cautioning them to open the door carefully.

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

2. Appropriate plant personnel are being briefed on the details of this incident and cautioned against opening the door before pressure is equalized across it. The Special Work Permit for containment entry will be revised to require a briefing on the need to equalize pressure across each door before opening it.
3. Additional testing to confirm the cause of the mechanical malfunction will be conducted when ALARA conditions and Technical Specification OPERABILITY requirements permit.
4. Should it become necessary to use either the Unit 1 or Unit 2 Emergency Air Lock prior to implementation of final corrective actions, we will implement additional controls to ensure personnel entering the air lock are aware of the status of both air lock doors.

V. ADDITIONAL INFORMATION

A. Affected Component Identification:

	IEEE 803 EIS Funct	IEEE 805 System ID
Emergency Air Lock	AL	NH
Air Lock Door	DR	NH
Interlock	IMEC	NH

B. Previous Similar Events:

One previous similar event was reported via Licensee Event Report (LER 88-10) involving the Personnel Air Lock outer door interlock being removed from service for testing and not being restored within the time allowed by Technical Specifications. That event did not involve simultaneous opening of the doors nor any similar mechanical malfunctions.

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

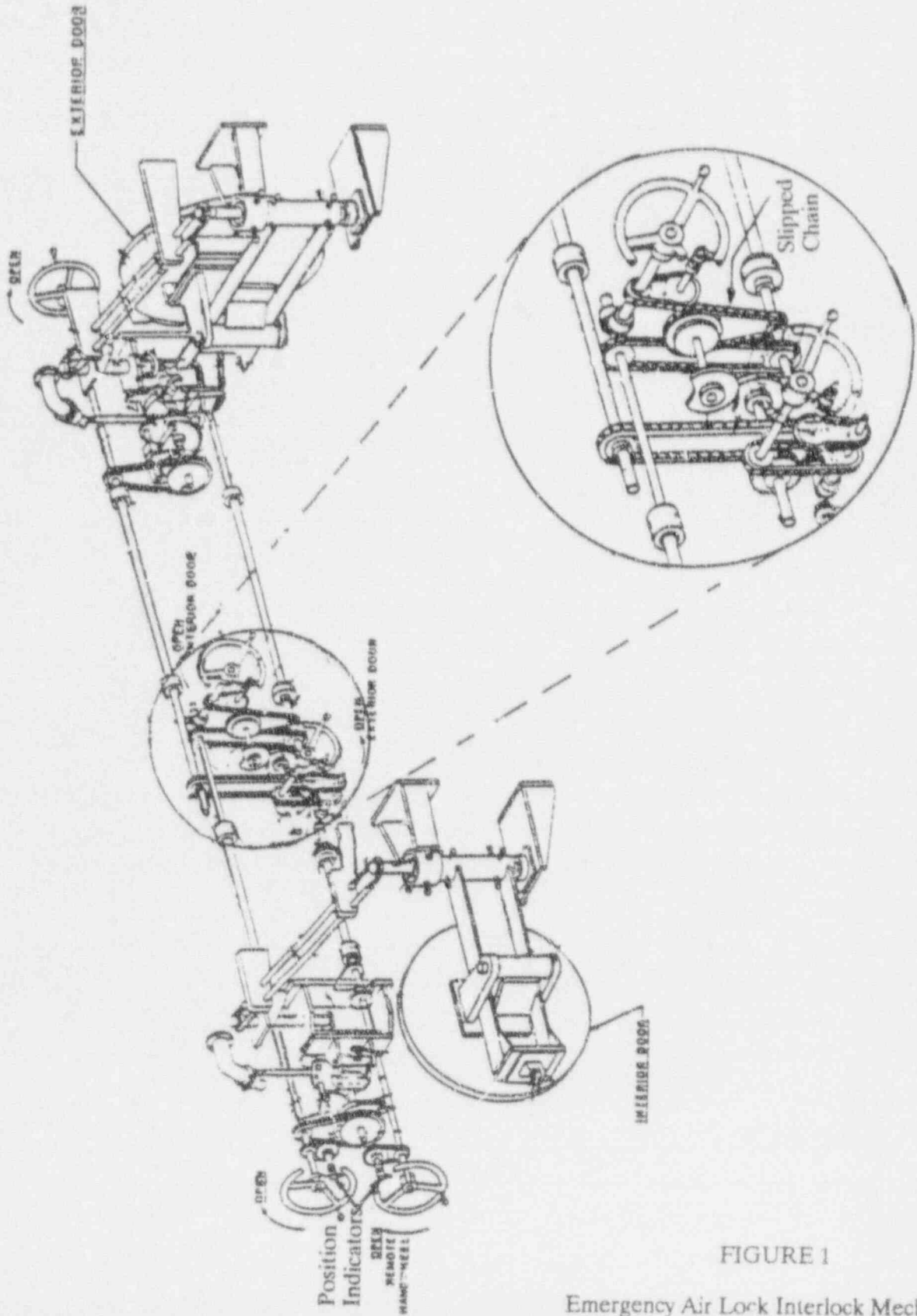


FIGURE 1

Emergency Air Lock Interlock Mechanism