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R. E. DENTON  
GENERAL MANAGER  
CALVERT CLIFFS

July 23, 1992

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

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 and 2; Docket Nos. 50-317 and 50-318;  
License Nos. DPR 53 and DPR 69  
Licensee Event Report 92-004

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  
P. R. Wilson, NRC  
R. I. McLean, DNR  
J. H. Walter, PSC  
Director, Office of Management Information  
and Program Control

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JR ADOCK 05000317  
FDR

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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-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, D.C. 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)

0 5 0 0 0 3 1 7

PAGE (3)

1 OF 0 5

TITLE (4) Inoperable Fire Dampers Due to Conflicting Design Information

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 NUMBERS(8)										
0	5	1	8	9	2	9	2	0	0	4	0	0	0	7	2	3	9	2	Calvert Cliffs, Unit 2	0 5 0 0 0 3 1 8
										0 5 0 0 0										
OPERATING MODE (9)		5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more of the following) (11)																
POWER LEVEL (10)		0 0 0		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)										
				20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)										
				20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 166A)										
				20.405(a)(1)(iii)		X 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)(vii)(B)												
				20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)												

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
R. E. Franke, Compliance Engineer	AREA CODE 4 1 0 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 NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs
B		B D M P	A 1 2 4 N						

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	X					

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

On May 18, 1992, we found three of five Unit-1 45 foot Switchgear (SWGR) Room fire dampers INOPERABLE during testing. On June 29, 1992, engineers performing a root cause analysis determined that damper critical clearances were not met during installation. They were, therefore, INOPERABLE for a period exceeding the Technical Specification ACTION Statement allowed outage time. These clearances are necessary to ensure the fire damper curtains shut smoothly. None of the three fire dampers could fully shut. On further investigation, we found eight other fire dampers INOPERABLE in both Units 1 and 2.

The root cause of this event is incomplete and inadequate design information. The Architect Engineer provided design drawings inconsistent in their treatment of critical installation clearances. For the INOPERABLE dampers, drawings contradicted themselves, resulting in elimination of expansion gaps.

As corrective action we established fire watches in accordance with the Technical Specification ACTION Statement and investigated all similar plant dampers. We will perform design reviews and revise conflicting drawings, as well as repairing or replacing INOPERABLE dampers.

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

## I. DESCRIPTION OF EVENT

On May 18, 1992, we found three of five Unit-1 48 foot Switchgear (SWGR) Room fire dampers INOPERABLE during testing. On June 29, 1992, engineers performing a root cause analysis determined that damper critical clearances were not met during installation. They were, therefore, INOPERABLE for a period exceeding the Technical Specification (TS) ACTION Statement allowed outage time. These clearances are necessary to ensure the fire damper curtains shut smoothly. None of the three fire dampers could fully shut. On further investigation, we found eight other fire dampers INOPERABLE in both Units 1 and 2.

We were conducting drop testing to address concerns raised in NRC Information Notice (IN) 89-52 when the problems were discovered. IN 89-52 warned licensees that curtain-type damper test methods may not prove OPERABILITY under air-flow conditions. This IN received a site applicability review which proposed further actions. As a result, we elected to secure ventilation during fires as a compensatory measure.

We also decided to test all fire dampers to ensure their ability to operate. We wrote and conducted Engineering Test Procedure 91-77 to specifically address this IN. This procedure tested 22 fire dampers by removing the fusible links, allowing them to shut.

These are curtain-type dampers. Several hinged leaves fold and strap securely into the stored position. At high temperatures, a fusible link melts, releasing the straps. This allows the leaves to expand outward, shutting off the duct. Vertically mounted dampers are gravity driven while horizontal dampers are spring loaded. (See Figure 1)

During construction, we built up a concrete curb around some dampers to retain their UL listing and rating. When we removed the curbs, we found they had pressed against the dampers, removing the expansion gaps. When we removed the duct retaining angles, we found that critical 1/8 inch expansion gaps had been back-filled with grout. (See Figure 2)

The critical clearance required to ensure proper operation is a 1/4 inch gap between the curtain and its track. The curb grouting constrained the dampers. We also know, from testing, that high duct temperatures thermally affected the dampers. These two elements worked together to reduce the curtain-to-track clearances and resulted in mechanical binding and damper failures. We have concluded that these dampers do not conform to the installation requirements for meeting the UL listing.

We inspected all similar TS fire dampers and found eight others INOPERABLE.

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

## II. CAUSE OF EVENT

The root cause of this event is incomplete and inadequate design information. The Architect Engineer provided design drawings inconsistent in their treatment of the critical clearances. For these dampers, different drawings contradict themselves. One drawing's notes require expansion gap retention. Another's notes has them backfilled.

## III. ANALYSIS OF EVENT

Equipment found to be INOPERABLE for a period greater than the allowed outage time is reportable under 10 CFR 50.73(a)(2)(i)(B). Technical Specification 3.7.12 specifically prohibits this condition.

Fire protection at Calvert Cliffs is a defense-in-depth scheme. We accomplish this using automatic detection and suppression, manual fire fighting capabilities, passive measures, and administrative controls limiting ignition sources and transient combustibles. Fire barriers fall under the passive measures category.

We've installed numerous automatic detection and suppression systems throughout the Auxiliary Building. Very few building areas are without both types of automatic protection and all areas have at least three of four defense-in-depth protections. This, in addition to low combustible loadings, assures us there was minimal risk to public health and safety.

## IV. CORRECTIVE ACTIONS

### Short-Term Corrective Actions:

- A. We declared three fire dampers INOPERABLE, verified automatic fire detection, and established fire-watch patrols in accordance with the TSs.
- B. We investigated similar Unit 1 and 2 fire dampers, declared eight INOPERABLE, and similarly established fire-watch patrols.
- C. We are performing a design review. We will revise drawings, as required, to show proper installation details.

### Long-Term Corrective Actions:

- D. We will repair or replace all failed dampers.

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

## V. ADDITIONAL INFORMATION

### A. Component identification described in this report:

	IEEE 803a/83	IEEE 805/84
Component or System	Funct. Ident.	System Code
Fire Damper	BDMP	N.A.

### B. There have been no similar reportable events at Calvert Cliffs.

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME

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PAGE

Calvert Cliffs, Unit 1

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

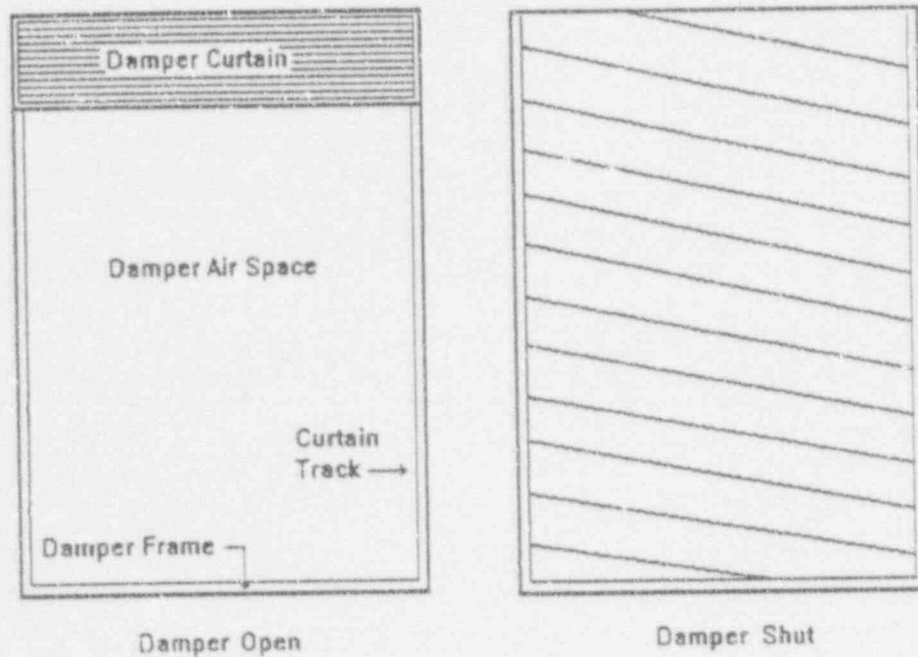


FIGURE 1

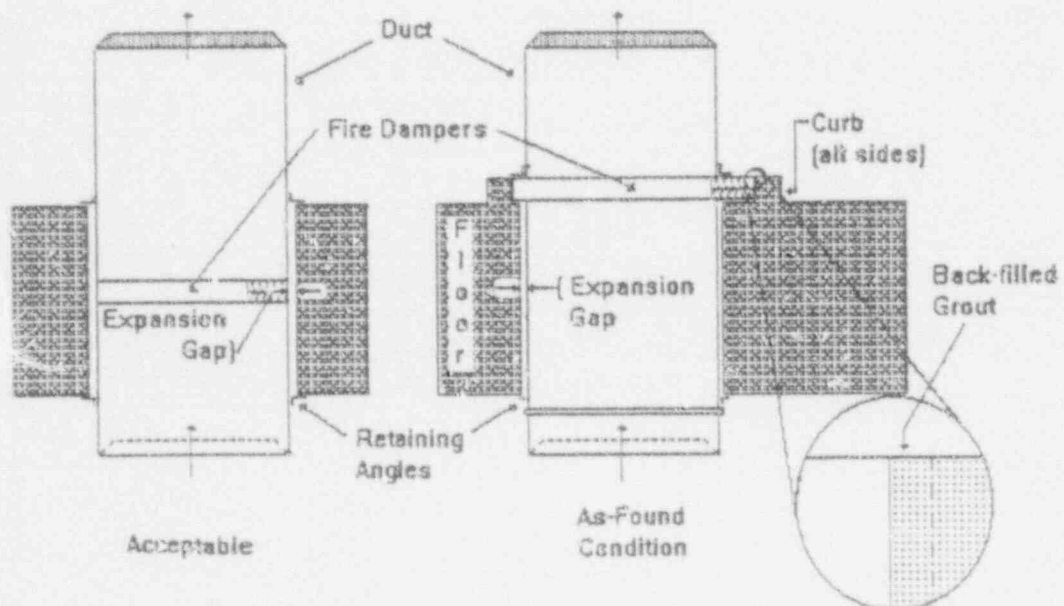


FIGURE 2