



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

R. E. DENTON  
MANAGER  
CALVERT CLIFFS NUCLEAR  
POWER PLANT DEPARTMENT

July 17, 1990

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

Docket No. 50-317  
License No. DPR 53

Dear Sirs:

The attached LER 90-20, Revision 0, is being sent to you as required under 10 CFR 50.73 guidelines.

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

Very truly yours,

R. E. Denton  
Manager

CDS/bjd  
Attachment

cc: Mr. T. T. Martin  
Director, Office of Management Information  
and Program Control

Messrs: G. C. Creel  
C. H. Cruse  
R. E. Denton  
R. P. Heibel  
J. R. Lemons  
L. B. Russell

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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, 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)

0 5 0 0 0 3 1 7 1 OF 0 5

TITLE (4)

Inoperable Fire Door Affects Halon System Operation Resulting in Violation of Plant Technical Specifications

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)						
0	6	1	5	9	0	9	0	0	0	2	0	0	0	0	3	1	8
0	6	1	5	9	0	9	0	0	0	2	0	0	0	0	3	1	8

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8. (Check one or more of the following) (11)									
POWER LEVEL (10)	5	20.402(b)		20.406(c)		50.73(a)(2)(iv)		73.71(b)			
	0	20.406(a)(1)(i)		50.38(e)(1)		50.73(a)(2)(v)		73.71(c)			
	0	20.406(a)(1)(ii)		50.38(e)(2)		50.73(a)(2)(vi)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
	0	20.406(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)					
	0	20.406(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)					
		20.406(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(ix)					

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Craig D. Sly - Compliance Engineer	3 0 1 2 6 0 - 4 8 5 8

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)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/>	<input type="checkbox"/>				

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

On June 18, 1990 at 1830 hours, it was determined that Calvert Cliffs Unit 1 was in a condition prohibited by Technical Specification (TS) 3.7.11.3 "Halon Systems." Specifically, it was determined that the Halon system in the 45 foot Switchgear Room had been inoperable for at least 30 days without performing the appropriate ACTION requirements. The Halon system inoperability was caused by an inoperable emergency escape hatch latch which would not have maintained the hatch door closed during a Halon discharge in the Switchgear Room. Thus, it could not be assured that a design concentration of Halon would be maintained in the room during a fire. A similar situation was subsequently discovered at Unit 2. At the time of discovery the Unit was in cold shutdown with temperature at 113 degrees Fahrenheit and atmospheric pressure.

The root cause of the event was a failure to immediately recognize that an inoperable fire door effected the 45 foot Switchgear Room Halon system operability.

The appropriate TS ACTION requirements were satisfied until a temporary latch was installed to return the doors to an operable status. Replacement doors have been ordered and will be installed after they are received. Other fire doors were inspected for similar deficiencies as part of an ongoing fire door inspection. Operations personnel have been notified of the possibility of inoperable fire doors effecting Halon system operability.

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

### I. DESCRIPTION OF EVENTS

On June 18, 1990 at approximately 1830 hours, it was determined that Calvert Cliffs Unit 1 was in a condition prohibited by the plants Technical Specifications (TS). Specifically, it was determined that the Halon system in the 45 foot Switchgear Room had been inoperable for at least 30 days without satisfying the appropriate TS ACTION Statement. At the time of the discovery, the Unit was in cold shutdown with the reactor coolant system temperature at 113 degrees Fahrenheit and atmospheric pressure.

On May 15, 1990, an operator discovered that Emergency Escape Hatch Number 5 was open and its latch was not functioning properly. The operator immediately notified the Control Room to report the problem. He was instructed to tape the latch shut. Control Room operators considered this action adequate to return the TS Fire Door to an operable status until a permanent solution to the problem could be found.

None of the Operations personnel involved in the incident considered that the inoperable escape hatch could have any effect on the operability of the Halon system in the Switchgear Room. They did, however, realize that the fire door was a TS fire barrier and satisfied themselves that taping the latch shut temporarily preserved the operability of the fire barrier until the hatch could be permanently repaired. The operator who discovered the inoperable escape hatch prepared a Maintenance Request (MR 35766) to initiate its repair.

On June 15, 1990 a fire protection engineering contractor discovered the Maintenance Report (MR) tag on Emergency Escape Hatch Number 5. The engineer was performing a walkdown of plant fire doors. Emergency Escape Hatch Number 5 is located between the Unit 1 45 foot Switchgear Room and the East Electrical Penetration Room. The MR tag indicated that the hatch latch was not working properly. The contractor notified the Design Fire Protection Engineer who went with a Security Officer to the door and pushed against it. The door opened relatively easily.

The condition of the door was promptly discussed with the responsible System Engineer and the Shift Supervisor. Based on this discussion, it was determined by the Shift Supervisor that the Halon system in the Unit 1 45 foot Switchgear Room was inoperable. The basis of this determination was that the hatch door may not have been capable of remaining closed in the event of a Halon discharge into the 45 foot Switchgear Room. If the hatch opened during or after a Halon discharge, Halon concentration in the Switchgear Room would have been reduced along with the potential for extinguishing a fire.

Upon declaring the Halon system in the 45 foot Switchgear Room inoperable, the ACTION Statement to TS 3.7.11.3 "Halon Systems" was entered. In accordance

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with the ACTION Statement, an hourly fire watch patrol with backup fire suppression equipment was established in the 45 foot Switchgear Room.

Upon entering the ACTION Statement for Unit 1, the corresponding hatch (Emergency Escape Hatch Number 6) in Unit 2 was inspected. There was no MR tag and pressure applied against the door did not open it. However, on June 18, 1990 the door was inspected more thoroughly and it was conservatively determined that its latch was also inoperable. The Unit 2 TS 3.7.11.3 ACTION Statement was conservatively entered at that time.

The issue was determined to be reportable per 10 CFR 50.73(a)(2)(i)(B) because there was firm evidence to conclude that the condition for Unit 1 had existed since May 15, 1990 when MR 35766 was initiated. The known duration of the event was from May 15 until June 15, 1990 a total of 31 days.

## II. CAUSE OF EVENT

The root cause of this event was the failure to immediately recognize that the inoperable fire door had an effect on the Switchgear Room Halon system operability. Although Control Room personnel did recognize that the inoperable escape hatch did effect the operability of a TS fire barrier, they did not make the much more subtle determination that the inoperable hatch had an effect the operability of a Halon system.

The cause of the latch failure appears to be cyclic fatigue. The fatigue appears to be related to a combination of door use and changes in pressure differential between the 45 foot Switchgear Room and the East Electrical Penetration Room. The East Electrical Penetration Room is always at a negative pressure with respect to the 45 foot Switchgear Room even when the Switchgear Room Ventilation system is in operation. However, cycling of the 45 foot Switchgear Room Ventilation system results in frequent changes to the negative pressure differential between these two rooms.

## III. ANALYSIS OF EVENT

Emergency Escape Hatches 5 and 6 serve as Halon system boundaries, TS Fire Doors, Security Boundaries, and Radiological Controlled Area Boundaries. TS 3.7.11.3 was considered applicable in this case, since upon a Halon system discharge in the 45 foot Switchgear Room, the unlatched hatch could be forced open and Halon concentration lost. Thus, if the hatch were open or even slightly out of position, two separate alarms would have been received and a Security Officer dispatched to investigate and close the door. There is a

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high level of confidence that the door has remained in the closed position throughout the duration of this event.

This condition is mitigated by several factors. 1) Both the Switchgear Rooms and the East Electrical Penetration Rooms have smoke detection systems. These systems provide an early warning of fire conditions to permit action while the fire is still in an incipient stage. 2) The East Electrical Penetration Room also has automatic sprinklers which will prevent a fire from growing to a point where the fire barrier and hatch will be threatened. 3) In the interim period between the latch initially becoming inoperable and actually entering the ACTION Statement, the ability of the Halon system to perform its intended safety function may have been degraded but it still would have provided some fire suppression capabilities. The Halon system in the Switchgear Rooms were designed to provide an initial concentration of seven percent. The concentration needed to extinguish flaming combustion is much lower, closer to three percent. Even with the 32 inches by 32 inches hatch open it would have taken some time for the concentration to be reduced from seven to three percent. When the speed with which Halon extinguishes flaming fires is considered, it is likely that the extent of any fire in the area would have been limited. Therefore, the Halon system would have provided at least some level of fire protection in the Switchgear Rooms.

Even with the loss of a Switchgear Room, each Unit has been shown through analysis to be capable of being successfully shutdown. Based on this, and the mitigating factors noted above, it is concluded that this event did not present any conditions that adversely impacted the safe operation of the plant or the public health and safety.

## IV. CORRECTIVE ACTIONS

Upon realizing that the Halon system was inoperable in the Switchgear Room, immediate correction action was taken to assure that the requirements of the ACTION Statement to TS 3.7.11.3 were satisfied by establishing an hourly fire watch with backup fire suppression equipment.

A temporary modification was performed to install temporary latches on both hatch doors. After this temporary modification was completed, the Halon system was returned to an operable status, the ACTION Statement was exited, and the fire watch was discontinued.

Replacement doors for both hatches have been ordered and will be installed after they are received.

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A GS-NO Note and Instruction has been issued to inform all Operations shifts of the possibility that an inoperable fire door could possibly be blown open if a Halon system were to flood the room on the inside of the door.

All other fire doors were inspected for similar deficiencies during the plant walkdown by the Contractor Engineer who discovered this issue. No other similar situations were found during the walkdown.

There has recently been much discussion about fire doors added to the annual retraining program that is received by all personnel who have protected area access. The intent of this added discussion is to increase the sensitivity of all site personnel to the symptoms and effects of inoperable fire doors. The initial annual cycle of training with this added discussion included is still underway.

A Root Cause investigation is planned to determine the reasons for the recent significant increase in fire door problems at Calvert Cliffs.

A walkdown shall be conducted to verify that all fire door latches are currently in an operable status.

## V. ADDITIONAL INFORMATION

Emergency Escape Hatches Numbers 5 and 6 are 32 inch x 32 inch fire rated doors manufactured by Milcor. The doors are Milcor part number 3208-32, UL fire rated at 1 1/2 hours, "B" label, complete with a standard knurled knob and latch assembly.

There have been no previous similar reportable events involving inoperable Emergency Escape Hatches affecting Halon system operability at Calvert Cliffs.

Identification of components referred to in this LER

Component	IEEE 803 EHS Funct	IEEE 805 System ID
Fire Door	DR	N/A