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10 CFR 50.73

August 27, 2018

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Calvert Cliffs Nuclear Power Plant, Units No. 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
NRC Docket Nos. 50-317 and 50-318


Subject: Licensee Event Report 2018-003, Revision 00
Control Room Loss of Ventilation due to Smoke Detector Failure Causing Common
Supply Damper to Shut

The attached report is being sent to you as required by 10 CFR 50.73.

There are no regulatory commitments contained in this correspondence.

Should you have questions regarding this report, please contact Mr. Larry D. Smith at
(410) 495-5219.

Respectfully,


Todd A. Tierney
Plant Manager

TAT/PSF/bjm

Attachment: As stated

cc: NRC Project Manager, Calvert Cliffs
NRC Regional Administrator, Region I

NRC Resident Inspector, Calvert Cliffs
D. A. Tancabel, DNR

IE22
NRR

**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name

Calvert Cliffs Nuclear Power Plant, Unit 1

2. Docket Number

05000317

3. Page

1 OF 4

4. Title

Control Room Loss of Ventilation due to Smoke Detector Failure Causing Common Supply Damper to Shut

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
07	07	2018	2018	003	00	08	27	2018	Calvert Cliffs Nuclear Power Plant Unit 2	05000 318
									Facility Name	Docket Number
										05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. Power Level	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
100	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)		

12. Licensee Contact for this LER**Licensee Contact**

Patricia Furio, Principal Regulatory Engineer

Telephone Number (Include Area Code)

410-495-4374

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
X	VI	DET		Y	N/A				

14. Supplemental Report Expected☒ Yes (If yes, complete 15. Expected Submission Date) ☐ No**15. Expected Submission Date**

Month	Day	Year
10	31	2018

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On July 7, 2018, at 02:42 the main Control Room experienced a loss of ventilation due to the Control Room supply damper fully closing. This isolated ventilation flow to the Control Room which resulted in both trains of the Control Room Emergency Ventilation System and Control Room Emergency Temperature System being out of service, resulting in Technical Specification Limiting Condition for Operations 3.7.8 and 3.7.9 not being met, respectively. Field troubleshooting isolated the cause of failure to Control Room ventilation smoke detector. The smoke detector functions to shut the Control Room supply damper by energizing the associated solenoid valve. Air was manually isolated to the solenoid valve and air pressure removed to open the Control Room supply damper. The Unit exited the associated Technical Specifications at time 02:49. This event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(D) and 10 CFR 50.73(a)(2)(vii). The cause of the smoke detector failure is under investigation and will be reported in a supplement to this LER.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Calvert Cliffs Nuclear Power Plant Unit 1	05000317	2018	- 003	- 00
NARRATIVE				

PLANT AND SYSTEM IDENTIFICATION

Calvert Cliffs Nuclear Power Plant, Units 1 and 2, are Combustion Engineering Pressurized Water Reactors with a licensed maximum power level of 2737 megawatts thermal. The Energy Industry Identification System codes used in the text are identified as [XX].

A. CONDITION PRIOR TO EVENT

Units 1/2

Date: July 7, 2018

Power level: 100 percent/100 percent

Mode: 1/1


There were no structures, systems, or components out-of-service that contributed to this event.

B. DESCRIPTION OF EVENT

On July 7, 2018, at 02:42 the main Control Room experienced a loss of ventilation due to the Control Room [NA] supply damper [DMP] fully closing. This isolated ventilation flow to the Control Room which resulted in both trains of the Control Room Emergency Ventilation System [VI] (CREVS) and Control Room Emergency Temperature System [VI] (CRETS) being out-of-service and, therefore, inoperable. Both Units were affected.

With both trains of CREVS inoperable, Technical Specification Condition 3.7.8.D applies. This Condition has a 24-hour Completion Time to restore one train to Operable status. With both trains of CRETS inoperable, Technical Specification Condition 3.7.9.C applies. This Condition requires entry into LCO 3.0.3.

Field troubleshooting isolated the cause of failure to Control Room ventilation smoke detector [DET] (0AE5347). The smoke detector functions to shut the Control Room supply damper by energizing the associated solenoid valve (0-SV-5342) [PSV]. The associated solenoid valve was observed in the energized state via thermography. The solenoid valve is normally de-energized to maintain the damper open. Air was manually isolated to the solenoid valve and air pressure removed to return the Control Room supply damper to an open state. Once the damper was opened, the trains of CREVS and CRETS were restored to Operable status and the associated Technical Specifications for each Unit were exited at time 02:49. For a period of 7 minutes there was a loss of CREVS and CRETS function, therefore this event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(D) as an event or condition that could have prevented the fulfillment of the safety function of SSCs that are needed to mitigate the consequences of an accident, and 10 CFR 50.73(a)(2)(vii) as an event where a single cause or condition caused two independent trains to become inoperable in a single system.

NRC FORM 366A (04-2018)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0104	EXPIRES: 03/31/2020
 LICENSEE EVENT REPORT (LER) CONTINUATION SHEET		Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.	
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1. FACILITY NAME Calvert Cliffs Nuclear Power Plant Unit 1	2. DOCKET NUMBER 05000317	3. LER NUMBER	
		YEAR 2018	SEQUENTIAL NUMBER - 003
			REV NO. - 00
NARRATIVE			

The CREVS and CRETS are a two-train system that serves the common Unit 1 and Unit 2 Control Room. The CREVS is an emergency system that provides automatic airborne radiological, smoke and toxic gas protection for Control Room occupants. The CRETS is an emergency system that provides adequate cooling to maintain equipment in the Control Room operable. The CREVS and CRETS systems share the same ductwork. In the shared ductwork, the supply damper is a single damper that controls flow to both trains. Failure of that single damper renders both trains inoperable due to lack of ventilation flow.

This condition was entered into the corrective action program and the NRC was notified via Event Notification 53493 on July 7, 2018.

C. CAUSE OF EVENT


This event is documented in the site's Corrective Action Program under IR 4153797. Field troubleshooting isolated the cause of failure to Control Room ventilation smoke detector (0AE5347). The smoke detector functions to shut the Control Room ventilation supply damper by energizing the associated solenoid valve (0-SV-5342). The associated solenoid valve was observed in the energized state via thermography. The solenoid valve is normally de-energized to maintain the damper open.

The cause of the smoke detector failure is under investigation and will be reported in a supplement to this LER.

D. SAFETY ANALYSIS

The actual consequence resulting from this identified event was the loss of all Control Room ventilation circulation for a 7-minute period of time. During this short loss of ventilation, the Control Room remained habitable and the temperature remained within operability limits for the equipment in the Control Room. If an event occurred during a loss of ventilation, resulting in a radioactive or toxic gas release, self-contained breathing apparatus is available in the Control Room for the operations staff to support their response to the event. Operations staff are qualified and trained on the use of the self-contained breathing apparatus during plant events. Additionally, the Units were previously analyzed for a loss of Control Room ventilation for an extended period (4 hours) as part of the response to 10 CFR 50.63, Station Blackout. That analysis determined that the equipment could withstand the loss of ventilation for the extended period of time and still perform its functions.

The probabilistic risk assessment analysis determined that the estimated increase in core damage frequency was less than 1E-07 and the estimated increase in large early release frequency was less than 1E-08 per year for the subject condition. The PRA analysis conservatively assumed elevated temperature in the CR due to failure of the CR HVAC damper and that assumed temperature increase would not have a significant impact on plant risk. This issue would be "GREEN" using the NRC's Significance Determination Process.

NRC FORM 366A (04-2018)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0104	EXPIRES: 03/31/2020	
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		YEAR 2018	SEQUENTIAL NUMBER - 003	REV NO. - 00
NARRATIVE				

E. CORRECTIVE ACTIONS

Immediate corrective action was taken to re-open the Control Room supply damper by manually isolating air to the solenoid valve and removing air pressure to return the Control Room supply damper to an open condition.

Additional corrective actions will be determined, if any, during the on-going causal analysis. They will be reported in the supplement to this LER.

F. PREVIOUS OCCURRENCES

No previous similar events have occurred at the site within the last 5 years.

G. COMPONENT FAILURE DATA

Control Room ventilation smoke detector