



March 31, 2005

U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318; License Nos. DPR 53 & DPR 69
Licensee Event Report 2002-004, Revision 01
Post-Accident Monitoring Instrumentation Not Seismically Connected

The attached report is being sent to you as required under 10 CFR 50.73 guidelines. The revision is required to correct technical errors identified in the original Licensee Event Report. Should you have questions regarding this report, we will be pleased to discuss them with you.

Very truly yours,

A handwritten signature in black ink, appearing to read "DA Holm".

for
David A. Holm
Plant General Manager

DAH/MJY/bjd

Attachment: As stated

cc: R. V. Guzman, NRC
S. J. Collins, NRC

Resident Inspector, NRC
R. I. McLean, DNR

IE22

LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@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 05000 317	3. PAGE 1 OF 004
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4. TITLE
Post-Accident Monitoring Instrumentation Not Seismically Connected

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
08	27	02	2002	- 004 -	01	03	31	2005	Calvert Cliffs, U2	05000 318
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)							
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)				
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)				
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)				
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)				
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)					
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER					
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A					

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Michael J. Yox, Senior Engineering Analyst	TELEPHONE NUMBER (Include Area Code) 410-495-6652
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	IP	RI	G063	Y					

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On August 27, 2002, a condition was discovered that could have prevented the Unit 1 and Unit 2 Post-Accident Monitoring System from fulfilling its safety function. Loose cable connectors for Containment Area Radiation High Range Indicators 1(2)-RI5317A(B) could have caused the channels to fail during a seismic event. The cause of the loose cable connectors was the loss of pin retention springs in the connectors due to time and normal use. The pin retention springs are required for the operability of each channel. Corrective maintenance performed on each channel indicated that retention springs were missing from all four channels. The affected channels remained in service, but would not have been operable from the time of discovery until completion of the post maintenance testing after the corrective maintenance.

This condition was first identified on April 14, 2000 and ended on February 16, 2002 (Unit 1) and April 11, 2002 (Unit 2). Analysis indicated that during this period the channels should have been declared out-of-service and a Technical Specification Limiting Condition for Operation should have been entered, but was not. The connectors were promptly replaced upon determination of cause. Maintenance procedure revisions will add measures to prevent recurrence of this condition.

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		2002	- 004	- 01			

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

I. DESCRIPTION OF EVENT

On August 27, 2002, a condition was discovered that could have prevented the Unit 1 and Unit 2 Post-Accident Monitoring (PAM) System from fulfilling its safety function. Specifically, loose cable connectors for Containment Area Radiation High Range Indicators 1(2)-RI5317A(B) could have caused the channels to fail during a seismic event. The cause of the loose cable connectors was the loss of pin retention springs in the connectors due to time and normal use. The pin retention springs are required for the operability of each channel. Corrective maintenance performed on each channel indicated that retention springs were missing from all four channels. The affected channels remained in service, but would not have been operable from the time of discovery until completion of the post-maintenance testing after the corrective maintenance.

The first indication of problems with containment high range radiation monitor connections was traced back to April 14, 2000, when an alarm condition on 1-RI-5317B was received with no apparent cause. Troubleshooting indicated that the problem was related to loose cables or connectors. Discovery of this condition occurred on April 14, 2000 and ended on February 16, 2002 (Unit 1) and April 11, 2002 (Unit 2). The duration for Unit 1 ended earlier due to entry into Mode 4 for refueling on February 16, 2002. Analysis indicated that during this period the channels should have been declared out-of-service and the appropriate Technical Specification Limiting Condition for Operation (LCO) should have been entered, but was not.

This reportable condition was discovered on August 27, 2002, during a review of the causal analyses performed on the instrument connections. No other structures, systems, or components were inoperable during this condition that contributed to or influenced the event.

II. CAUSE OF EVENT

The inoperability of the Unit 1 and 2 containment area high range radiation indicators was caused by a loss of the pin retention springs within the connectors, which are required to maintain circuit continuity during a seismic event. The loss, over time, of the pin retention springs was caused by inadequate preventive maintenance, inconsistent use of the proper extraction tool, and a failure to recognize the connector retention springs as a critical component for operability.

III. ANALYSIS OF EVENT

A Technical Specification LCO requires PAM indication channels to be operable while in Modes 1, 2, and 3. During the time period from April 14, 2000 through February 16, 2002 (Unit 1) and April 11, 2002 (Unit 2), the Unit 1 and 2 containment area radiation high range indication should have been declared out-of-service and the associated Technical Specification LCO entered, while each Unit was in the applicable modes. This condition required submittal of a report to the Nuclear Regulatory Commission within 14 days, in accordance with Technical Specifications,

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outlining alternate monitoring methods, the cause of the inoperability, plans, and schedule for restoring the instrumentation channels of the function to operable status. The failure to submit this report placed both Units in a condition prohibited by Technical Specifications 21 days after first identifying the condition on April 14, 2000. The inoperability of both channels of Unit 1 and 2 containment area high range instrumentation resulted in the loss of the safety function for those indications.

The subject event describes a condition prohibited by the plant's Technical Specifications, which existed for a time longer than permitted by the Technical Specification LCO. Therefore, this event is reportable, per 10 CFR 50.73(a)(2)(i)(B), as a condition which was prohibited by the plant's Technical Specifications.

The PAM instrumentation ensures, per the Technical Specification Bases, the operability of Regulatory Guide 1.97 Type A variables. This allows the Control Room operating staff to:

- perform the diagnosis specified in the emergency operating procedures, or
- take the specified, preplanned, manually-controlled actions, for which no automatic control is provided, that are required for safety systems to accomplish their safety functions.

This condition, therefore, is also reportable, per 10 CFR 50.73(a)(2)(v)(D), as a condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

This condition was also found to cause two independent channels (in both units) in a single system to become inoperable in excess of the Technical Specification LCO allowed completion time. The safety function of the PAM System is to mitigate the consequences of an accident, therefore, 10 CFR 50.73(a)(2)(vii) reporting criteria were also met.

There were no actual safety consequences as a result of this condition. The containment area radiation high range indication does not impact core damage frequency or large early release assessments. The system is required for mitigation of accidents and, therefore does not contribute to the probability of any specific event. The containment area radiation monitors provide similar indication at a lower operating range and were operable throughout the duration of this condition.

IV. CORRECTIVE ACTIONS

- A. The connectors were promptly replaced upon determination of cause.
- B. Maintenance procedures were revised to add requirements to perform checks of connector integrity prior to reconnection of the affected instrumentation. A requirement was also added to ensure the use of the proper extraction tool when disconnecting. An additional

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procedure revision alerts craft personnel to the significance of the specific connectors on operability of the equipment.

- C. The subject connectors are now checked for integrity at each Refueling Outage based on the procedure revisions implemented as a result of this event.

V. ADDITIONAL INFORMATION

A. Component Identification

Component	IEEE 803 EIIIS Function	IEEE 805 System ID
Containment Area Radiation High Range Monitor	RI	IP

B. Previous Occurrences

No other previous similar events have occurred within the past three years.