

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Calvert Cliffs, Unit 2										DOCKET NUMBER (2) 050003118										PAGE (3) 1 OF 013	
TITLE (4) Inadvertent Engineered Safety Features Actuation Due to Failed Logic Module																					
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)									
03	15	86	86	003	00	04	11	86				050003									
OPERATING MODE (9) 3		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																			
POWER LEVEL (10) 01010		20.402(b)				20.408(e)				<input checked="" type="checkbox"/> 80.73(a)(2)(iv)		73.71(b)									
		20.408(a)(1)(i)				80.38(e)(1)				<input checked="" type="checkbox"/> 80.73(a)(2)(v)		73.71(e)									
		20.408(a)(1)(ii)				80.38(e)(2)				<input checked="" type="checkbox"/> 80.73(a)(2)(vi)		OTHER (Specify in Abstract below and in Text, NRC Form 365A)									
		20.408(a)(1)(iii)				80.73(a)(2)(i)				<input type="checkbox"/> 80.73(a)(2)(vii)(A)											
		20.408(a)(1)(iv)				80.73(a)(2)(ii)				<input type="checkbox"/> 80.73(a)(2)(vii)(B)											
		20.408(a)(1)(v)				80.73(a)(2)(iii)				<input type="checkbox"/> 80.73(a)(2)(x)											
LICENSEE CONTACT FOR THIS LER (12)																					
NAME Russell B. Sydnor, Senior Engineer								TELEPHONE NUMBER 301 260-4953													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD											
X	JIE	LIMOID	V111312	Y																	
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR							
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO											
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																					

At 0247 on March 15, 1986 while shutdown in MODE 3 (hot standby), #21 4KV Emergency Bus inadvertently de-energized when the normal feeder breaker to Bus #21 tripped. Number 12 Diesel Generator started automatically due to Bus #21 undervoltage. Operators re-energized Bus #21 with #12 Diesel Generator at 0305, March 15, 1986. Investigation found no tripped Bus protection relays but a UVA-1 (Undervoltage Actuation, Subchannel 1) Logic module was found failed in the trip condition at the ESFAS (Engineered Safety Features Actuation System) cabinets.

The failed UVA-1 logic module was replaced and tested and #21 4KV Bus returned to normal by 0435, March 15, 1986. The other UVA modules were tested satisfactorily and actuation logic power supplies were verified operating correctly. Additional corrective actions planned include: 1) returning the failed module to the vendor for failure analysis and repair; and 2) researching maintenance history to determine mean time between failures for this type of module.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1) Calvert Cliffs, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 8 8 6	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0 0 3	0 0	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At 0247 on March 15, 1986 while shutdown in MODE 3 (hot standby), #21 4KV Emergency Bus (EHS EB-BU) inadvertently de-energized when the normal feeder breaker (EHS EB-52) to Bus #21 tripped. Number 12 Emergency Diesel Generator (EHS-EK) started automatically due to Bus #21 undervoltage, but did not close on the bus because #12 Emergency Diesel Generator is the swing Diesel Generator shared with Unit 1 and will not automatically close on a bus unless there is a coincident Safety Injection Actuation Signal. Control Room operators properly evaluated the event and inspected #21 Bus. After they found no protective relays tripped, an attempt was made to reclose the normal feeder breaker, but the breaker immediately tripped. At 0305 March 15, 1986, #21 Bus was re-energized by manually closing in #12 Emergency Diesel Generator. Operators then inspected the Engineered Safety Features Actuation System (EHS JE) cabinets and found the UVA-1 (Undervoltage Actuation - Subchannel 1) logic module (EHS JC-IMOD) failed in the tripped condition. The UVA-1 logic module normally trips or actuates upon receiving two out of four bus undervoltage input signals. Its function is to ensure Bus #21 is de-energized by tripping bus feeder breakers such that the Emergency Diesel Generator will close on a dead bus in an accident condition (i.e. Safety Injection Actuation) (see figure 1). Similar logic modules (UVA-2, UVA-3, and UVA-4) (EHS JC-IMOD) receive the same input signals and actuate to shed bus loads (UVA-2 and UVA-3) or start the Emergency Diesel Generator (UVA-4). Logic modules UVA-2, 3, and 4 did not initially actuate when UVA-1 failed but did actuate after the UVA-1 failure caused an actual bus undervoltage. Except for the UVA-1 failure all systems responded properly. The failed UVA-1 logic module was replaced and tested and #21 4KV Bus returned to normal by 0435 on March 15, 1986.

Number 21 4KV Bus powers one of two redundant Emergency Safety Features Trains. Number 24 4KV Bus (EHS EB-BU) powers the redundant train and remained operable throughout this event. Number 21 Bus was de-energized for a total of 18 minutes until 0305 March 15, 1986 when it was re-energized with #12 Emergency Diesel Generator. There were no significant safety consequences during this event as redundant safety equipment remained operable throughout the event. The event could have been potentially more severe in MODE 1 operation and likely would have caused a unit trip in MODE 1 due to possible control problems resulting from loss of a 4KV bus. Overall, however, the safety significance is considered minimal.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Immediate corrective actions consisted of replacing the failed UVA-1 logic module with a new module from stock (Vitro Model 1628-1033), functionally testing the new module, verifying the logic power supplies were operating properly, and functionally testing the other UVA logic modules. Additional planned corrective actions include: 1) returning the failed UVA-1 logic module to the vendor for failure analysis and repair; 2) researching maintenance history to determine mean time between failures for this type of module; and 3) an engineering evaluation of the vendors failure analysis will be conducted to determine the need for additional corrective actions, if any.

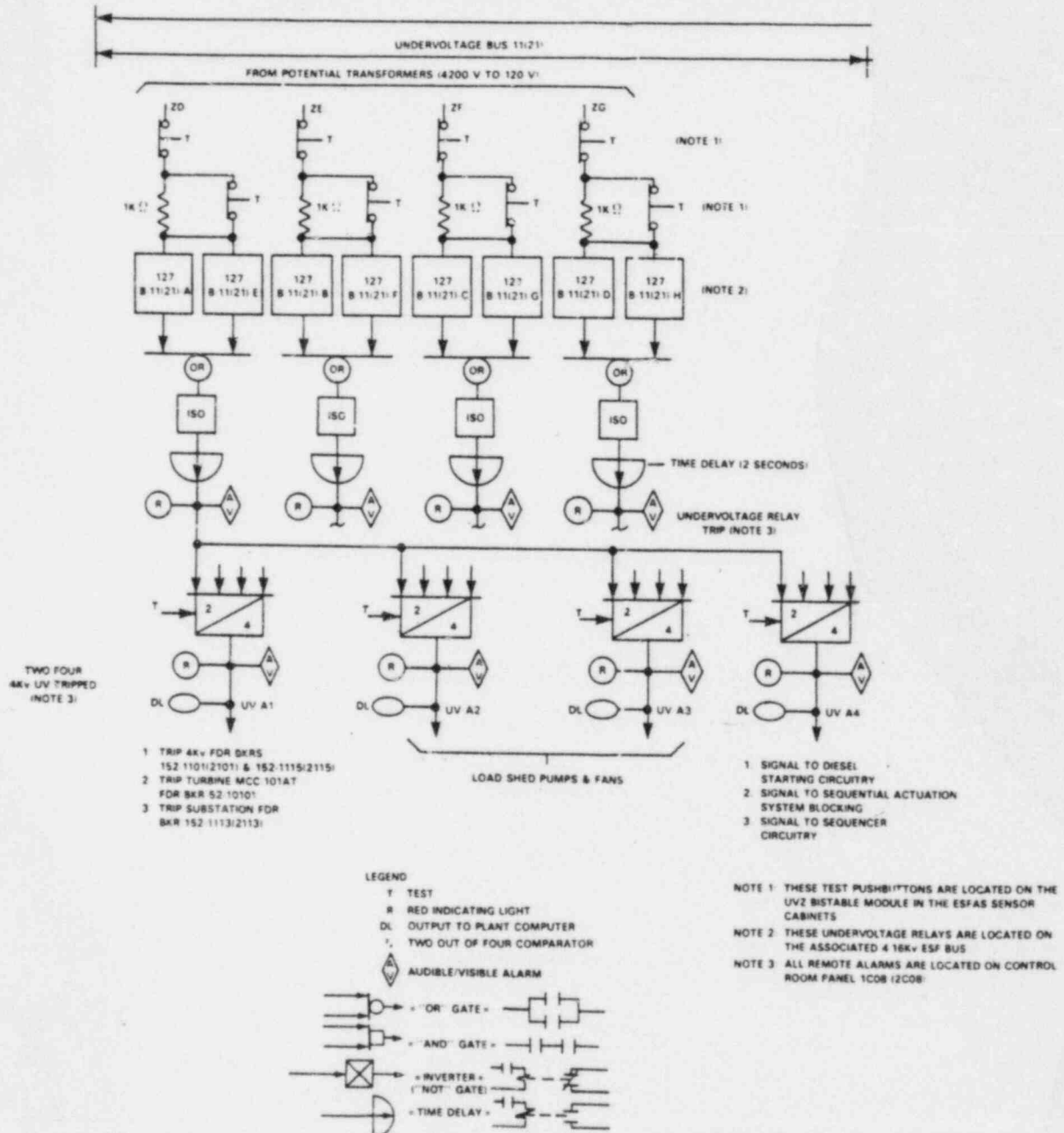
A review of previous reportable events at Calvert Cliffs revealed no similar occurrences. The contact for further discussion of this event is R. B. Sydnor, (301) 260-4384.

Calvert Cliffs, Unit 2

Docket # 05000318

LER # 86-003-00

FIGURE 1





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JOSEPH A. TIERNAN
VICE PRESIDENT
NUCLEAR ENERGY

April 11, 1986

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

Docket No. 50-318
License No. DPR 69

Dear Sirs:

The attached LER 86-03 is being sent to you as required by
10 CFR 50.73.

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

Very truly yours,

J. R. Lemons
Manager - Nuclear Operations

JRL:^{RJS}RBS:pah

cc: Dr. Thomas E. Murley
Director, Office of Management Information
and Program Control
Messrs: A. E. Lundvall
J. A. Tiernan
W. J. Lippold

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