Peter E. Katz
Plant General Manager

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410 495-4101

Constellation Nuclear

Calvert Cliffs Nuclear Power Plant

A Member of the Constellation Energy Group

July 12, 2001

U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 2; Docket No. 50-318; License No. DPR 69
Licensee Event Report 2001-001
22 Saltwater Air Compressor Appendix R Handswitch Fuses Shunted

The attached report is being sent to you as required under 10 CFR 50.73 guidelines. Should you have questions regarding this report, we will be pleased to discuss them with you.

Very truly yours,

for
P. E. Katz
Plant General Manager

PEK/ALS/bjd

Attachment

cc: R. S. Fleishman, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
D. M. Skay, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR

IE22

NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information 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 Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Calvert Cliffs, Unit 2	050000 318	1 OF 004

TITLE (4)

22 Saltwater Air Compressor Appendix R Handswitch Fuses Shunted

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										050000
05	16	2001	2001	- 001	- 00	07	12	2001	FACILITY NAME	DOCKET NUMBER
										050000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)	X	50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		or in NRC Form 366A
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
A. L. Simpson, Senior Engineer	410-495-6913

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	LD	BKR	I203	Y						

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (16)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 16, 2001 during performance of a causal analysis, a condition was discovered at Calvert Cliffs that could have prevented the Instrument Air System from fulfilling its Appendix R safety function. Specifically, the analysis identified that the effects of an extra wire in the Instrument Air System's 22 Saltwater Air Compressor's (SWAC's) control circuit could, in the event of a fire, shunt out the protective fuses. This could result in loss of local operation of the 22 SWAC as required in the event of an Appendix R (Control Room) fire. The 22 SWAC could have been incapable of performing its Appendix R function from the time when a plant modification was completed (February 25, 1999) until the additional wire was ultimately removed (February 14, 2001), a period of about two years. The additional wire was removed and 22 SWAC was tested with satisfactory results on February 14, 2001. An inspection was performed for the other SWACs (11, 12, and 21) and the additional wire had been removed as required at the time of the modification.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Calvert Cliffs, Unit 2	05000 318	01	- 001 -	00	02 OF 04

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

I. DESCRIPTION OF EVENT

On February 13, 2001, while performing scheduled preventative maintenance, an additional wire was found installed on the starter auxiliary contacts for 22 Saltwater Air Compressor (SWAC) feeder breaker. The additional wire was not identified on the design drawing. A station issue report (IR3-050-935) was initiated recommending removal of the wire and for a visual inspection of the other SWACs' feeder breakers. The additional wire was removed from the 22 SWAC feeder breaker and visual inspection confirmed that similar wires were not installed in the others.

On February 26, 2001, during station issue report review for maintenance rule functional failures, the maintenance rule coordinator identified that a causal analysis should be performed for the event described in IR3-050-935. Station issue report number IR3-052-763 was initiated requesting a causal analysis to address the effects of the additional wire found in 22 SWAC feeder breaker.

On May 16, 2001 during performance of the causal analysis, it was determined that the described scenario did not affect the design safety function of 22 SWAC [to start and operate upon receipt of a safety injection actuation signal (SIAS)]. However, it could affect the Appendix R function of the 22 SWAC (safely shut down the plant and maintain in a safe shutdown condition in the event of a severe control room fire). As a result, the Shift Manager-Nuclear Plant Operations was notified and informed to initiate an RM-1-101 Attachment 1, "Calvert Cliffs Nuclear Operations' Checklist For Timely Notification" to document this potentially reportable event. And, on June 8, 2001, station issue report IR3-052-763 was elevated from a Category II issue (causal analysis required) to a Category I issue (root cause analysis required).

II. CAUSE OF EVENT

The extra wire had been installed since original installation of the feeder breaker cubicles. It was a spare wire or "jumper" installed off the starter motor auxiliary contacts wired back to the terminal block. This extra wire originally had no impact on the function of the 22 SWAC. However, on February 25, 1999 a plant modification (dual fuse modification) was completed requiring removal of the spare wire as identified on the design change notice, but the wire was inadvertently left installed. With the spare wire installed post-modification, the condition was created (protective fuses shunted) for potential failure of 22 SWAC in the event of a Control Room fire. Subsequent inspection identified that the spare wire had been removed from the other SWACs (11, 12, and 21) as required during the dual fuse modification.

III. ANALYSIS OF EVENT

The compressed air system at Calvert Cliffs includes safety-related air compressors; the SWACs that provide redundant air supply to safety-related components when the normal air compressors are lost. The SWACs are independently powered from the stations emergency diesel generators,

seismically qualified, air-cooled, and oil-free. The instrument air portion of the compressed air system is primarily used for valve actuation and is not used in any reactor indication, control, or protective circuitry. The valve actuators are designed to fail in the safe position after loss of the instrument air supply. The SWACs are normally not running, but will start automatically on receipt of a SIAS, or may be manually started from the Control Room. Upon evacuation of the Control Room, remote manual control may be shifted to local manual control, and SIAS input to the compressors is overridden.

As described above, the additional wire affects the Appendix R function of the 22 SWAC only and would not prevent it from starting and operating upon receipt of a SIAS. The Appendix R function specifically affected involves recovery in the event of a severe Control Room fire. Specifically, in the event of a severe Control Room fire, coincident with a loss-of-offsite power, a loss of all instrument air compressors is assumed. For this scenario, with evacuation of the Control Room, the only available diesel generator is the station blackout (0C) diesel. In the event of a Control Room fire, the 0C diesel generator is aligned to the 11 (Unit 1) and 24 (Unit 2) 4 kV buses. So for Unit 2, the only available source of instrument air is provided by the 22 SWAC (it is electrically aligned to the 24 4 kV bus). With evacuation of the Control Room, the 22 SWAC must be operated from the local manual control (Appendix R) handswitch. However, with the additional wire installed, the protective fuses are shunted out and a short circuit could result in failure of the 22 SWAC transformer. A short circuit is possible during a Control Room fire since the cables associated with the 22 SWAC feeder breaker run through the postulated fire area. Calvert Cliffs analysis for safe shutdown of the plant as a result of a severe Control Room fire relies on the 22 SWAC being available. Without the 22 SWAC, manual action would be required, however, that manual action is not documented in Abnormal Operating Procedure 9A "Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire". Therefore, this event is reportable pursuant to 10 CFR 50.73(a)(2)(v)(A) as an event that could have prevented the fulfillment of the safety function of a system needed to shut down the reactor and maintain it in a safe shutdown condition.

A significance determination process assessment was performed to evaluate this issue. Based on a bounding qualitative analysis, the delta increase in core damage frequency was estimated to be less than 10-6 and the delta increase for large early release frequency was estimated to be less than 10-7. Therefore, this issue is considered "Green," very low safety significance as per Calvert Cliffs Nuclear Power Plant procedure QL-2-100, "Issue Reporting and Assessment."

IV. CORRECTIVE ACTIONS

A. The extra wire was removed from the 22 SWAC and the SWAC tested satisfactorily.

B. Maintenance activities were performed to inspect the other SWAC feeder breakers for the additional wire. The 22 SWAC feeder breaker was the only one with the wire installed.

C. An Issue Report was initiated requesting a causal analysis. A formal root cause assessment is in progress to determine the causal factors, evaluate generic implications, and establish additional corrective actions as required.

V. ADDITIONAL INFORMATION

A. Affected Component Identification:

Component or System	IEEE 803 EIIS Funct	IEEE 805 System ID
Compressed (Instrument) Air	CMP	LD
Breaker	BKR	LD

B. Previous similar events:

A review of Calvert Cliffs' licensee event reports over the past several years was performed. The review did not identify any similar reportable events where the operability of the instrument air system was challenged by Appendix R circuit failures.