PETER E. KATZ
Plant General Manager
Calvert Cliffs Nuclear Power Plant

Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410 495-4101

BGE

March 24, 1997

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 97-002
Misread Technical Specification Requirements Results in an Inadequate Test

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,

Peter Katz

PEK/CDS/bjd

Attachment

cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
A. W. Dromerick, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR
J. H. Walter, PSC

IE22

1/1

280069

NRC FORM 366 (4-95)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Calvert Cliffs, Unit 1	05000 317	1 OF 06

TITLE (4)

Misread Technical Specification Requirements Results in an Inadequate Test

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 NAME	DOCKET NUMBER
									Calvert Cliffs U2	05000 318
02	20	97	97	-- 002	-- 00	03	24	97	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)					
POWER LEVEL (10)	100	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (include Area Code)
Craig D. Sly, Senior Engineer	410-495-4858

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately15 single-space typewritten lines) (16)

On February 20, 1997 personnel at Calvert Cliffs determined that the Technical Specification (TS) surveillance tests for the emergency diesel generators were not adequate to meet the requirements of TS 4.8.1.1.2.d.3.c. This TS Surveillance Requirement requires verification that the automatically bypassed diesel trips are automatically bypassed on a safety injection actuation signal (SIAS) in conjunction with a simulated loss of offsite power. Past tests verified that these trips were bypassed on a SIAS only. At the time, Units 1 and 2 were operating at 100 percent and 98 percent rated thermal power, respectively. All of the emergency diesel generators were declared inoperable and testing was completed in the time frames allowed by the TS.

The cause of the inadequate surveillance test procedures was the lack of strict adherence to the wording of the plants TS requirements. The wording of the TS and TS Bases combined with the description in the Updated Final Safety Analysis Report led us to believe that the automatically bypassed diesel trips only needed to be tested in conjunction with a SIAS.

I. DESCRIPTION OF EVENT

On February 20, 1997, personnel at Calvert Cliffs conducted a review of San Onofre Licensee Event Report (LER) 50-361/50-362 96-009-01. This LER involved the discovery of the failure to perform adequate surveillance testing of the plants emergency diesel generators (EDGs) non-critical trip bypasses in accordance with Technical Specification (TS) Surveillance Requirements. It was determined that Calvert Cliffs had the same problem. An issue report was written and the issue was elevated to plant management attention.

Each Calvert Cliffs unit, Unit Nos. 1 and 2, has two EDGs for use as standby power supplies. Each EDG is designed to provide a dependable onsite power source capable of starting and supplying the essential loads necessary to safely shutdown the unit and maintain it in a safe shutdown condition under all conditions. The EDGs are started by either a 4.16 kV Bus undervoltage (UV) signal or a safety injection actuation signal (SIAS); however, in the latter case, actual transfer to the bus is not made until the preferred source of power (offsite) is actually lost.

Three of the four EDGs are manufactured by Fairbanks Morse (FM) (EDGs 1B, 2A, and 2B). These EDGs were original plant equipment. One of the four EDGs (EDG 1A) is a tandem-engine Societe Alsacienne De Constructions Mechaniques De Mulhouse (SACM) diesel generator which was more recently installed. The SACM EDG was placed in service during the last refueling outage for Unit 1 (spring 1996).

Each EDG has protective functions designed to assure adequate personnel protection and to prevent or limit rapid equipment deterioration during system short circuits or mechanical component failures. Some of these protective functions are automatically bypassed during a SIAS, for the FM design, and a SIAS or UV for the SACM design. The bypasses occur because, during an accident, EDG availability is more critical than protecting the engine against problems not immediately detrimental to engine operation. The devices that will prevent a rapid destruction of the EDG are permitted (not bypassed) during a SIAS (SIAS or UV for the SACM), while the non-critical protective functions are bypassed.

The SACM bypass logic has a different design than the FM bypass logic. The FM logic does not include a UV signal to the non-essential trip bypass circuits. The SACM non-essential trip bypass circuit does include a UV signal input.

Calvert Cliffs TS Surveillance Requirement 4.8.1.1.2.d.3 specifies that each diesel generator shall be demonstrated operable at least once per refueling

interval by, "Simulating a loss of offsite power in conjunction with a safety injection actuation test signal, and:

a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

b) Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer and operates for >/= 5 minutes while its generator is loaded with the emergency loads.

c) Verifying that automatically bypassed diesel trips are automatically bypassed on a SIAS."

In regards to TS Surveillance Requirement 4.8.1.1.2.d.3.c, the TS Bases state;

> Surveillance 4.8.1.1.2.d.3.c demonstrates that diesel generator non-critical protective functions are bypassed on a SIAS. The diesel generator availability to mitigate the Design Basis Accident is more critical than protecting the engine against problems that are not immediately detrimental to emergency operation of the diesel generator. The automatic trips that are required to be bypassed on a SIAS are identified in the Updated Final Safety Analysis Report.

A review of our plant procedures determined that we verified that the automatically bypassed diesel trips were automatically bypassed on a SIAS only. We concluded that the wording of TS Surveillance Requirement 4.8.1.1.2.d.3.c requires that the automatically bypassed diesel trips be verified automatically bypassed while simulating a loss of offsite power (LOOP) in conjunction with a SIAS. A LOOP is simulated by a 4.15 kV Bus UV signal.

The conclusion was presented to the Shift Supervisor, who agreed and declared all four EDGs inoperable. The plant was already in TS 3.8.1.1 Action b (72-hour Action), for EDG 1B being out-of-service for maintenance, since February 19, 1997. Technical Specification 3.8.1.1 Action e was entered for each Unit at 1245 on February 20, 1997 for two inoperable diesel generators. Technical Specification 3.8.1.1 Action e requires restoration of one diesel generator within 2 hours or the plant must be shutdown. However, TS 4.0.3 allows the time limits of the applicable TS Action requirement to be delayed to up to 24 hours to complete the Surveillance Requirements which have not been performed when the allowable outage time limits of the Action

requirements are less than 24 hours. Technical Specification 4.0.3 was invoked and the EDG testing was commenced.

Existing surveillance procedures were modified for EDGs 1B, 2A, and 2B to verify, upon a simulated SIAS and UV signal, the automatically bypassed diesel trips were automatically bypassed. These procedures were run successfully, and both plants exited TS 3.8.1.1 Action e by 0900 on February 21, 1997. Unit 1 remained in TS 3.8.1.1 Action b until a special test procedure for EDG 1A was prepared and completed at 1950 on February 21, 1997. For the duration of the event, the total time that two EDGs were inoperable on either unit was less than 24 hours, as allowed by TS 4.0.3. In addition, the total time that one EDG was out-of-service on Unit 1 was less than 72 hours, as allowed by TS 3.8.1.1 Action b.

For the duration of the event, Units 1 and 2 were operating at 100 and 98 percent rated thermal power, respectively.

II. CAUSE OF EVENT

The immediate cause of the event was inadequate surveillance test procedures (STPs) for the FM EDGs, and an inadequate pre-operation test procedure for the SACM EDG. The procedures did not require that the test of the automatically bypassed diesel trips be performed while simulating a LOOP in conjunction with a SIAS.

The underlying cause of this event was a lack of strict adherence to the wording of the plants TS requirements. Plant personnel felt they were meeting the technical intent of this TS requirement. This led to an incorrect interpretation of the wording of TS 4.8.1.1.2.d.3.c. In the past, we read TS 4.8.1.1.2.d.3.c as a single stand alone statement, as follows:

c) Verifying that automatically bypassed diesel trips are automatically bypassed on a SIAS.

This statement, read alone, in conjunction with the TS Bases discussion concerning TS 4.8.1.1.2.d.3.c and the Updated Final Safety Analysis Report discussion concerning the EDG trip bypass function indicated that the test was to be performed with only a SIAS signal in place. Performing the test with a simulated LOOP in place was considered to provide no additional assurance that the EDG trip bypasses would operate as designed. For the FM EDGs, there is no electrical tie between the UV relays that start the EDGs on a LOOP, and the circuits utilized to bypass the non-critical diesel trip functions that occur on a SIAS. For the SACM EDG, either a UV or a SIAS signal will actuate its emergency start relays. The emergency start relays, in turn, initiate the

trip bypass function. Since either a SIAS or UV will actuate the emergency start relays it would not provide any additional assurance to show that the trip bypasses with both a UV and a SIAS.

However, reading TS 4.8.1.1.2.d.3.c in its entirety yields the conclusion that the test must be performed by simulating a LOOP in conjunction with a SIAS test signal.

III. ANALYSIS OF EVENT

The tests performed on each EDG on February 20 and 21, 1997 verified that automatically bypassed diesel trips were automatically bypassed while simulating a LOOP in conjunction with a SIAS. Based on the successful completion of these tests, we have concluded the EDGs were capable of performing their intended safety function and this event resulted in no safety consequences.

The protective functions of the EDGs are provided to assure adequate personnel protection and to prevent or limit rapid equipment deterioration during system short circuits or mechanical component failures. The devices not needed to prevent a rapid destruction of the diesel generators are bypassed during a SIAS because the EDG availability to mitigate the Design Basis Accident is more critical than protecting the engine against problems that are not immediately detrimental to the emergency operation of the EDG.

Performance of the LOOP/SIAS test did not increase the likelihood of discovering problems with the EDG bypass functions when compared to the SIAS only test. For the FM EDGs, the bypassed protective functions are activated as a result of a SIAS only. Therefore, for the FM EDGs, performing the test with a simulated LOOP in conjunction with a SIAS is not considered to add any additional assurance that the bypass function will perform as required during an accident. For the SACM EDGs, either a SIAS or UV actuates the emergency start relays which, in turn signal bypasses the EDG non-essential trips. Performing the test with concurrent signals would provide no additional assurance that the EDG trip bypasses would operate as required.

This event is considered reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any event or condition prohibited by the plants Technical Specifications."

IV. CORRECTIVE ACTIONS

A. We entered TS 3.8.1.1 Action e, for both Units at 1245 hours on February 20, 1997, due to two EDGs being inoperable for each unit. The

requirements of TS 4.0.3 were implemented and EDGs 1B, 2A, and 2B were successfully tested and returned to operability by 0900 hours on February 21, 1997. Emergency Diesel Generator 1A was successfully tested and returned to service on February 21, 1997, at 1950 hours.

B. Three surveillance procedures have been permanently changed to require the diesel generator trip bypass tests for EDGs 1B, 2A, and 2B be performed with a SIAS in conjunction with a simulated LOOP. A surveillance test for the SACM EDG (EDG 1A), will be developed prior to its next scheduled performance date.

C. Management will reemphasize expectations that TS requirements will be performed as written.

D. We will investigate the reason that the corrective actions for LER 317/94002 were not effective in preventing this event.

V. ADDITIONAL INFORMATION

A. Identification of components referred in this LER:

Component	IEEE 803 EIIS Funct	IEEE 805 System ID
Emergency Diesel Generator	DG	EK

B. Previous Similar Events

A review of LERs submitted in the past three years identified one similar reportable event at Calvert Cliffs. Details concerning this event are located in LER 317/94002, "Missed Surveillance on Diesel Generators Due to Misunderstood Applicability." This event was caused by a communications error between site personnel concerning the requirement to perform TS surveillance testing on an EDG load sequencer in Modes 5 and 6, a time when the load sequencer performs no safety function. Details concerning this event may be found in the LER.