

# The Light company

Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

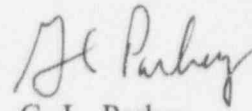
April 17, 1997  
ST-HL-AE-5626  
File No.: G26  
10CFR50.73

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

South Texas Project  
Unit 1  
Docket No. STN 50-498  
Licensee Event Report 97-004  
4160 Volt Bus Undervoltage Logic Circuitry Not Fully Tested by Surveillance Procedures

Pursuant to 10CFR50.73, the South Texas Project submits the attached Unit 1 Licensee Event Report 97-004 regarding surveillance procedures that did not test all of the contacts in the logic circuit that initiates starting and loading of standby diesel generators during a loss of offsite power. This condition did not have an adverse effect on the health and safety of the public.

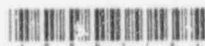
If you should have any questions on this matter, please contact Mr. S. M. Head at (512) 972-7136 or me at (512) 972-7800.

  
G. L. Parkey  
Plant Manager,  
Unit 1

DNB/

Attachment: LER 97-004 (South Texas, Unit 1)

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Houston Lighting & Power Company  
South Texas Project Electric Generating Station

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Attention: Document Control Desk  
Washington, D.C. 20555-0001

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY  
INFORMATION COLLECTION REQUEST: 60.0 HRS. REPORTED LESSONS LEARNED ARE  
INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY.  
FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND  
RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION,  
WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-  
0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

South Texas, Unit 1

DOCKET NUMBER (2)

05000 498

PAGE (3)

1 OF 3

TITLE (4)

4160 Volt Bus Undervoltage Logic Circuitry Not Fully Tested by Surveillance Procedures

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
03	19	97	97	-- 004 --	00	04	17	97	SOUTH TEXAS, UNIT 2	05000499
									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)	<input checked="" type="checkbox"/>	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)(iii)	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 or in NRC Form 366A			
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)				

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Scott M. Head - Licensing Supervisor

TELEPHONE NUMBER (Include Area Code)

(512) 972-7136

## 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)

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

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

On March 19 1997, both units were operating at 100 percent power. During a review of surveillance procedures against Nuclear Regulatory Commission (NRC) Generic Letter 96-01 and associated NRC clarifications, the reviewer found that the surveillance testing for the 4160 volt Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection did not adequately test all logic contacts to fully meet the surveillance requirements (Technical Specification 4.3.2.1, Table 4.3-2, Items 8.b and 8.c). The cause of inadequate surveillance procedures was not recognizing that a failure in one actuation scheme could affect the ability to detect a failure in a parallel scheme. Corrective actions include testing the affected logic circuitry, revising the affected surveillance procedures, and completing the surveillance procedure review specified in NRC Generic Letter 96-01.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
South Texas, Unit 1	05000 498	97	-- 004	-- 00	2 OF 3

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF EVENT:

On March 19, 1997, both units were in Mode 1 operating at 100 percent power. During a review of surveillance procedures against Nuclear Regulatory Commission (NRC) Generic Letter 96-01 and associated NRC clarifications, the reviewer found that the surveillance testing for the 4160 volt Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection did not adequately test all logic contacts to fully meet the surveillance requirements (Technical Specification 4.3.2.1, Table 4.3-2, Items 8.b and 8.c). The Sustained Degraded Voltage actuation scheme is in parallel with the Degraded Voltage Coincident with Safety Injection actuation scheme. During the surveillance, tests are provided to ensure both schemes are functional, but do not provide assurances that a failure in one actuation scheme will not mask a failure in the other actuation scheme. As such, this condition did not fully meet the Trip Actuating Device Operational Test surveillance requirements of Technical Specification 4.3.2.1, Table 4.3-2, Items 8.b and 8.c.

At 1520 hours on March 19, 1997, all three trains of Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection in both units were declared inoperable due to the missed surveillance and Technical Specification 3.0.3 was entered for both units. Technical Specification 4.0.3 was also entered for both units, which allows delaying a required shutdown for up to 24 hours to complete required surveillance testing.

At 1157 hours on March 20, 1997, after satisfactorily testing the affected logic contacts in both units, both units exited Technical Specification 3.0.3.

During initial surveillance procedure development and subsequent upgrades, the plant staff did not consider that a failure in one actuation scheme could affect the ability to detect the failure in a parallel scheme. Generic Letter 96-01 and the clarifications provided in support of Generic Letter 96-01, including actuation, interlock, and permissive component contact arrangements, were instrumental in helping to recognize this type of circuit.

The Nuclear Regulatory Commission Operations Center was notified at 1224 hours on March 20, 1997, that Units 1 and 2 were not in compliance with the surveillance requirement of Technical Specification 4.3.2.1, Table 4.3-2, Items 8.b and 8.c.

CAUSE OF EVENT:

The cause of inadequate surveillance procedures was not considering that a failure in one actuation scheme could affect the ability to detect a failure in a parallel scheme.

ANALYSIS OF EVENT:

Failure to perform complete logic testing of the 4160 volt Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection actuation scheme does not meet the requirements for the Trip Actuating Device Operational Test surveillance requirements of Technical Specification 4.3.2.1 Table 4.3-2 Items 8.b and 8.c quarterly test and is reportable in accordance with 10CFR50.73(a)(2)(i)(B). Complete testing

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
South Texas, Unit 1	05000 498	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 3
		97	-- 004 --	00	

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

ANALYSIS OF EVENT (continued):

of the Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection actuation scheme had not been previously included in the surveillance procedures.

The function of the Class 1E 4160 Volt Alternating Current Power System is to supply power to Engineered Safety Features equipment during normal power generation, plant transients, and design basis accidents. During times when offsite power sources, unit auxiliary transformer, and standby transformer are not available, the Standby Diesel Generators start and supply power to the 4160 Volt buses. The Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection logic circuitry sense voltage on the 4160 volt buses and, if the voltage falls below 92.2% of 4160 volts, provide a signal to the load sequencer, which starts the Standby Diesel Generators, strips unnecessary loads from buses, and sequences loads onto buses in programmed timed increments. The Degraded Voltage Coincident with Safety Injection logic circuitry has a 35-second time delay to prevent unwanted actuation of the sequencer as a result of voltage degradation caused by the worst case motor accelerating time. The Sustained Degraded Voltage logic circuitry has a 50-second time delay to prevent unwanted actuation of the sequencer. The Sustained Degraded Voltage actuation scheme is in parallel with the Degraded Voltage Coincident with Safety Injection actuation scheme. Due to the testing methodology and the circuit arrangement, the system would still respond to the degraded voltage condition even with a failure of one scheme. Therefore, there is no safety significance to this event.

CORRECTIVE ACTIONS:

The following corrective actions have been or will be taken as a result of this occurrence:

1. The 4160 volt Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection logic circuitry have been tested to verify that both contacts in the coincident trip scheme were open.
2. Surveillance procedures have been revised to properly test 4160 volt Sustained Degraded Voltage and the Degraded Voltage Coincident with Safety Injection logic circuitry.
3. The review of surveillance procedures in response to Generic Letter 96-01 will be used to verify that other surveillance testing meets the testing requirements as clarified by Generic Letter 96-01.

ADDITIONAL INFORMATION:

There have been two Licensee Event Reports submitted in the last three years by the South Texas Project to the Nuclear Regulatory Commission for not testing required logic circuitry contacts:

LER 1-95-004, "Failure to Meet the Requirements of Technical Specifications Due to Not Testing a Contact of a Load Sequencer Relay"

LER 1-97-002, "Safety Injection Logic Circuitry Not Fully Tested by Surveillance Procedures"