

The Light company

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

March 31, 1994
Ref: ST-HL-AE-4758
File No.: G26
10CFR50.73

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

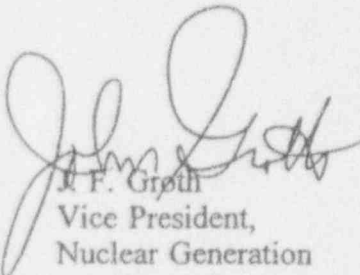
South Texas Project
Unit 1
Docket No. STN 50-498
Revision 1 to Licensee Event Report 93-023
Regarding an Inadvertent ESF Actuation
of Standby Diesel Generator 12 During Testing

Reference: Correspondence ST-HL-AE-4687 dated January 31, 1994

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached revision to Unit 1 Licensee Event Report 93-023 regarding an inadvertent Engineered Safety Features (ESF) actuation of Standby Diesel Generator (SDG) 12 during testing. This event did not have an adverse effect on the health and safety of the public. However, it does not represent the standards of expected performance.

This revision incorporates additional corrective actions which are being implemented to minimize inadvertent starts of the Standby Diesel Generators. Changes are noted with revision bars.

If you should have any questions on this matter, please contact Mr. J. M. Pinzon at (512) 972-8027 or me at (512) 972-8664.


J. F. Groth
Vice President,
Nuclear Generation

JMP/eg

080055

Attachment: Revision 1 to LER 93-023 (South Texas, Unit 1)

LER-94\L9302

Project Manager on Behalf of the Participants in the South Texas Project

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S PDR

03/31/94 (8:55am)

JE27

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LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MRRB 7714), 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 4
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TITLE (4) Inadvertent ESF Actuation of Standby Diesel Generator 12 During Testing

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	
12	31	93	93	-- 023 --	01	01	31	94	FACILITY NAME	DOCKET NUMBER 05000	
										FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 0	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)					
	20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)					
	20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER					
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)					
	20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)						
20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Jairo Pinzon - Senior Engineer	TELEPHONE NUMBER (Include Area Code) (512) 972-8027
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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 (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On December 31, 1993, Unit 1 was in Mode 5 at 0% power. At approximately 0206 hours, a non-emergency Engineered Safety Features (ESF) actuation of Standby Diesel Generator (SDG) 12 occurred. Instrumentation & Control (I&C) Technicians were installing test leads to a recorder which would measure the voltage, frequency and the presence of a 125 vdc start signal. The test leads for the voltage and frequency transducers were connected without incident. When the second lead of the 125 vdc pair was connected to the appropriate terminal, the technician noticed an electrical arc. When the connection was made, ESF SDG 12 started. This condition was not recreated during the investigation. The test equipment and diesel circuitry were checked for malfunction and degradation. All were found satisfactory.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), 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)	DOCKET NUMBER (2)	LER NUMBER (6)		PAGE (3)
South Texas, Unit 1	05000 498	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
		93	-- 023 --	01
				2 OF 4

TEXT (If more space is required, use additional copies)

(of NRC Form 366A) (17)

DESCRIPTION OF EVENT:

On December 31, 1993, Unit 1 was in Mode 5 at 0% power. At approximately 0206 hours, a non-emergency Engineered Safety Features (ESF) actuation of Standby Diesel Generator (SDG) 12 occurred. Instrumentation & Control (I&C) Technicians were installing test leads to a recorder which would measure the voltage, frequency and the presence of a 125 vdc start signal per the "Standby Diesel Generator 12 LOOP-ESF Actuation Test," the "Standby Diesel 12 LOOP Test" and the "Standby Diesel 12 Auto-Start on ESF Actuation Test Signal" procedures. The test leads were first connected to the recorder and then to the test point. This prevents a test lead from grounding out while being hooked to a measurement test point. The test leads for the voltage and frequency transducers were connected without incident. When the second lead of the 125 vdc pair was connected to the appropriate terminal, the technician noticed an electrical arc. When the connection was made, ESF SDG 12 started.

The Unit Supervisor and the I&C Supervisor verified the test connection terminations and determined that the connections were correct. The test connections were left in place to try to determine the cause of the unplanned SDG start. The SDG was placed in the cooldown mode and secured.

A review of the test connections against the procedure showed that the installation was per the approved procedures. These procedures had been previously performed using the same test equipment and by the same technicians without incident.

The recorder and test leads, which were used during the test activity were tested to determine if the unplanned Standby Diesel Generator start could have been caused by faulty test equipment. The input module for the 125 vdc input channel was tested for possible breakdown of internal circuitry. The test leads were checked for breakdown of insulation. Voltage measurements were made in the panel where the test connections were made. All tests were satisfactory and there was no degradation of the test equipment or the test leads. The panel voltage measurements were in the acceptable bands. A review of the electrical drawings did not reveal any abnormal circumstances that could have caused the unplanned SDG start from connection of the recorder to the appropriate terminals.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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TEXT (If more space is required, use additional copies)

(NRC Form 366A) (17)

CAUSE OF EVENT:

The cause of the inadvertent start was most likely the result of an electrical arcing between the SDG panel and the test equipment. This condition was not recreated during the investigation of this event. A review of the test connections against the procedure showed that the installation was per the approved procedures. The Test equipment was checked for malfunction and degradation. All tests were satisfactory and equipment function was correct.

ANALYSIS OF EVENT:

The inadvertent start of SDG 12 is classified as an actuation of an Engineered Safety Feature and therefore is reportable pursuant to 10CFR50.73(a)(2)(iv). The testing of SDG 12 was subsequently completed without further incident.

The Standby Diesel Generators are part of the Class 1E 4.16 KV AC Power System. The Class 1E 4.16 KV AC Power System is composed of three trains designed to provide a reliable source of power to safety-related equipment essential to all modes of plant operation including emergency shutdown following any design basis event. Upon a loss of offsite power, each of the three SDGs starts automatically to supply back-up power to its associated 4.16 KV bus to mitigate the consequences of postulated accidents.

CORRECTIVE ACTIONS:

The following corrective action has been or will be taken:

- 1) The Test equipment was checked for malfunction and degradation. All tests were satisfactory and equipment function was correct without degradation.
- 2) Voltage measurements and checks of the panel where the connections were made determined there were no deficiencies.
- 3) Standby Diesel Generators will be placed in "Pull-to-Stop" whenever maintenance activities are performed which involve connecting Measuring or Test Equipment to the Standby Diesel Generator electrical circuits.
- 4) An evaluation will be performed to analyze modifying the Standby Diesel Generator start circuit to remove Fiber Optic Boards.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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TEXT (if more space is required, use additional copies)

of NRC Form 366A) (17)

ADDITIONAL INFORMATION:

The Standby Diesel Generators are type KSV-20-T, four-stroke turbocharged engines manufactured by Cooper Energy Services.

During the past three years one event was reported regarding an inadvertent start of an SDG. Unit 2 LER 93-015 was submitted on November 18, 1993. The cause was attributed to the spurious failure of a transistor.

On October 11, 1993, SDG 12 had an ESF actuation while the diesel was still inoperable which was the result of an invalid signal. SDG 12 appeared to receive a spurious start signal. The cause of this event was determined to be the degradation of the transistors of a circuit board the same as Unit 2 LER 93-015. This was the result of degraded varistors causing voltage spikes which degraded the transistor's operational characteristics. This event was not reportable because the SDG was inoperable at the time of the start signal, additionally, the start signal was invalid.