

The Light company

Houston Lighting & Power

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December 7, 1990

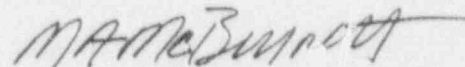
ST-HL-AE-3641
File No.: G26
10CFR50.73

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

South Texas Project Electric Generating Station
Unit 2
Docket No. STN 50-499
Licensee Event Report 90-018 Regarding
Unplanned Engineered Safety Features (ESF)
Actuations During the Performance of a Surveillance Test

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) Company submits the attached Licensee Event Report (LER 90-018) regarding unplanned ESF actuations during the performance of a surveillance test. This event did not have any adverse impact on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628 or myself at (512) 972-8530.



M. A. McBurnett
Manager
Nuclear Licensing

HBR/amp

Attachment: LER 90-018 (South Texas, Unit 2)

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Revised 10/08/90

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) South Texas, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 4 9 9 1	PAGE (3) 1 OF 0 5
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TITLE (4)
**Unplanned Engineered Safety Features Actuations
During the Performance of a Surveillance 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 NAMES		DOCKET NUMBER(S)					
1	1	0 7	9	0	9	0	1	8	0	0	0	0	5	0	0	0
1	1	0 7	9	0	9	0	1	8	0	0	0	0	5	0	0	0

OPERATING MODE (9) 6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																						
POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.405(a)(1)(vi)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 50.36(a)(1)	<input type="checkbox"/> 50.36(a)(2)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME C. A. Ayala - Supervising Licensing Engineer	TELEPHONE NUMBER
	AREA CODE: 5 1 2 9 7 2 - 8 6 2 8

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On November 7, 1990, Unit 2 was in mode 6. At 0022 hours, during the performance of a surveillance procedure to satisfy Technical Specification requirements, an electrical transient occurred on the Class 1E 120 volt AC vital distribution panels DPO01 and DP1201. This transient, which apparently resulted in a voltage fluctuation on "A" train powered radiation monitors, caused Engineered Safety Features actuations of Control Room, Reactor Containment Building, and Fuel Handling Building HVAC systems. The cause of the electrical transient, which occurred after closure of the AC input breaker for Inverter 1201 that supplies DP1201, is not known at this time. After the event, the AC input breaker for Inverter 1201 was cycled and Inverter/DPO01 was monitored, and no abnormalities were detected.

A1/LER018U2.L01

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) South Texas, Unit 2	DOCKET NUMBER (2) 050004999	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	18	00	3	5

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

DESCRIPTION OF EVENT: (cont'd)

After further investigation, the AC input breaker for Inverter 1201 was determined to have tripped open on an overvoltage protection signal from its associated relay. The relay was removed and inspected, and it was determined that the overvoltage protection trip setpoint had drifted low. This setpoint was adjusted to its normal setting and the relay was reinstalled.

CAUSE OF EVENT:

This event occurred as a result of a voltage transient on DP001, the 120 volt AC vital distribution panel which powers the radiation monitors that initiated the actuation. This voltage transient occurred concurrently with the closure of the AC input breaker for Inverter 1201, but the source of the transient is not understood at this time. Extensive troubleshooting was performed. This troubleshooting included cycling the AC input breaker for Inverter 1201 and monitoring Inverter/DP001 for any voltage, frequency, current, or alarm transients. No abnormalities were detected during this test.

A contributing factor to this event was the opening of the AC input breaker to Inverter 1201. This breaker is designed to remain closed on a LOOP so that the inverter is automatically restored to its AC source when power is restored to the standby bus. The breaker opened on an overvoltage trip signal from its associated relay during voltage fluctuations as the SDG initially loaded onto the standby bus. Further investigation has revealed that the overvoltage trip setpoint for the relay had drifted low.

ANALYSIS OF EVENT:

Unplanned actuation of Engineered Safety Feature systems is reportable pursuant to 10CFR50.73(a)(2)(iv). The Control Room Envelope, Fuel Handling Building and Reactor Containment Building HVAC systems actuated as required. The failure mode of this equipment will not interfere with the ability of the Radiation Monitoring System, the electrical distribution system, or building HVAC actuation systems to perform their safety functions. Should the problems reappear, the only consequence would be that an unanticipated actuation to the safe condition may result. Had a radiological release occurred during this event, these systems would have already been in their safest mode. While any unnecessary challenge of an ESF system is undesirable, actuation of these systems represents a minimal hazard since it could not cause, worsen, or prevent mitigation of an accident.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT (If more space is required, use additional NRC Form 388A's) (17)

DESCRIPTION OF EVENT:

On November 7, 1990, Unit 2 was in mode 6. At 0022 hours, during the performance of a surveillance procedure to satisfy Technical Specification requirements, an electrical transient occurred on the Class 1E 120 volt AC vital distribution panels DP001 and DP1201. This transient, which apparently resulted in a voltage fluctuation on "A" train powered radiation monitors, caused Engineered Safety Features (ESF) actuations of Control Room, Reactor Containment Building, and Fuel Handling Building HVAC systems. These ESF actuations were subsequently reset and all affected equipment was restored to normal lineups.

A simplified electrical line diagram is supplied in Figure 1.

The surveillance procedure in progress at the time of the event, "Standby Diesel 21 LOOP-ESF Actuation Test", was being performed to demonstrate the capability of the #21 Standby Diesel Generator (SDG) to respond to a Loss of Offsite Power (LOOP) - Safety Injection (SI). At 2312 hours on November 6, switchgear bus E2A was deenergized by opening the 13.8 kV breaker supplying the Auxiliary ESF transformer to simulate the LOOP. At that time Inverters 001 and 1201 (which normally supply distribution panels DP001 and DP1201 respectively) began drawing power from their DC sources as expected. The diesel then successfully started and loaded switchgear bus E2A. After diesel loading, the Emergency Response Facilities Data Acquisition and Display System (ERFDADS) alarm history showed a trouble alarm for Inverter 1201, indicating that the DC source was still supplying Inverter 1201. This evidence indicates that the AC input breaker for Inverter 1201, which is supplied power from switchgear bus E2A, opened at this time.

An operator was dispatched to investigate and discovered that the AC input breaker for Inverter 1201 was open. When the breaker was shut to restore the inverter to its normal configuration, numerous alarms were received in Channel 1 related instruments. Not only were indications of a voltage transient noted on DP1201 fed components, but Inverter/DP001 related voltage transients occurred as indicated by "spikes" on "A" train powered radiation monitors and indications that "A" train QDPS components lost power. Both inverters remained in operation however, with no indicated alarms.

The "spikes" on radiation monitors RT-8012, RT-8033, and RT-8035 resulted in the ESF HVAC actuations. After verifying proper operation of all associated equipment, operations personnel restored the ventilation lineups to normal and noted that all "A" train related vital AC components were functioning normally. A second LOOP test was performed after the event on "A" train and both Inverter 001 and 1201 performed their static transfers between AC and DC input as designed.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

CORRECTIVE ACTIONS:

1. The AC input breaker for Inverter 1201 was cycled and Inverter/DPO01 was monitored for any voltage or frequency transients. No abnormalities were detected. This action was completed on November 28, 1990.
2. The relay that signalled the AC input breaker for DP1201 to open was removed and inspected. The setpoint for an overvoltage protection trip signal on the relay was checked and determined to have drifted low. This setpoint was adjusted to its normal setting and the relay was reinstalled. This action was completed on November 28, 1990.

The plant will continue to monitor the performance of the radiation monitoring system and these power sources per our existing programs. Should a similar event occur a thorough investigation will be performed to establish appropriate corrective actions.

ADDITIONAL INFORMATION:

The relay that provides protection trip signals to the AC input breaker for Inverter 1201 is a Potter Brumfield DC Voltage Relay. The model number for this relay is CSL-38-60010.

The AC input breaker for Inverter 1201 is a Westinghouse Type HFB Shunt Trip 460 Volt AC Breaker. The model number for this breaker is EHB3030.

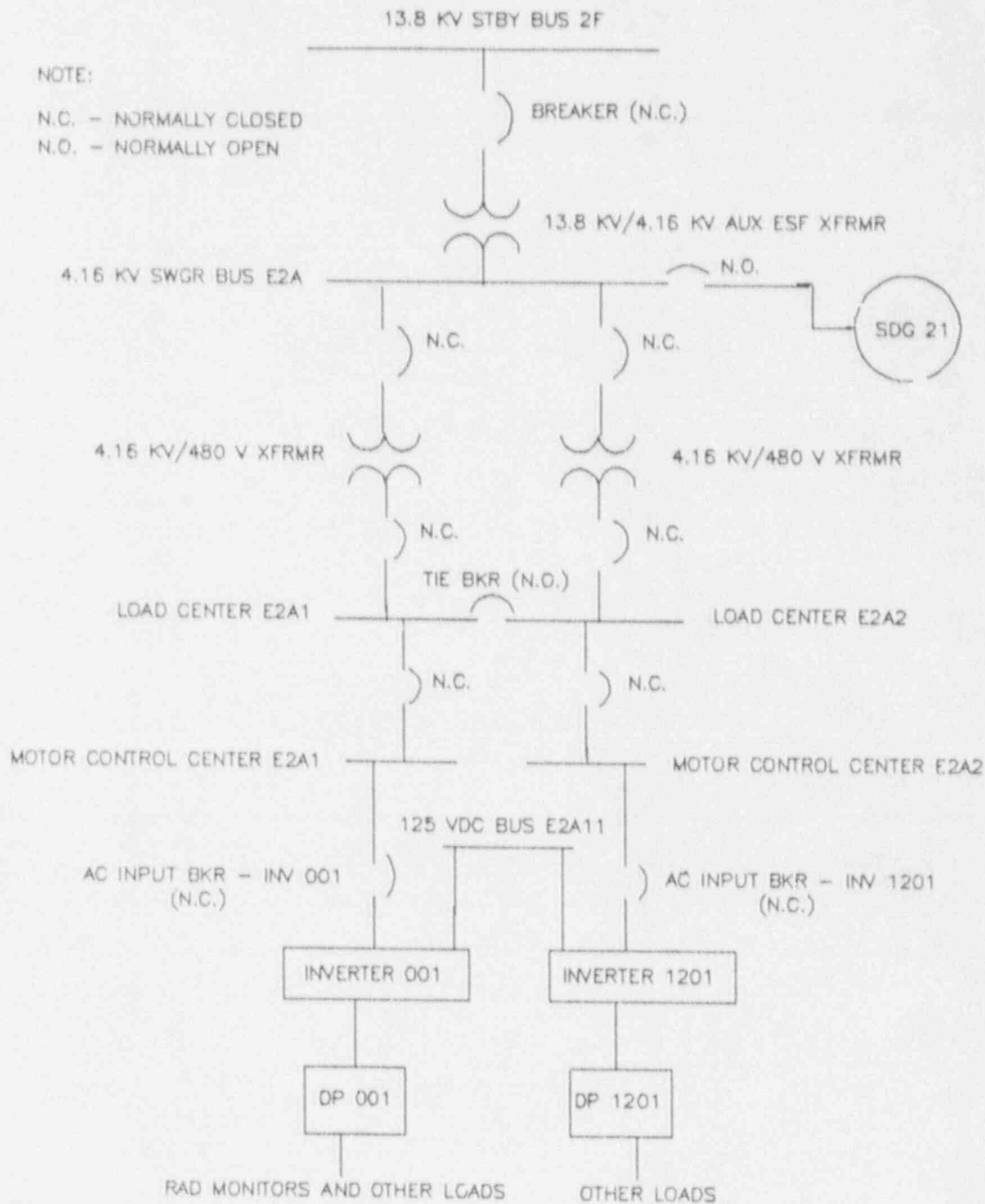
There have been no previous events regarding ESF actuations following a voltage transient upon closure of a breaker.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 306A's) (17)

FIGURE 1
SIMPLIFIED ELECTRICAL LINE REFERENCE



A1/LER01BU2.L01