

# The Light company

Houston Lighting & Power

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December 7, 1990  
ST-HL-AE-3632  
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 90-016  
Regarding a Fuel Handling Building  
HVAC Actuation Due to Loss of Power

Pursuant to 10CFR50.73, Houston Lighting & Power Company (HL&P) submits the attached Licensee Event Report (LER 90-016) regarding a Fuel Handling Building HVAC Actuation due to loss of power. This event did not have any adverse impact on the health and safety of the public.

On November 26, 1990, an extension of the due date of this letter to December 10, 1990 was requested of, and granted by, Mr. Art Howell of NRC Region IV.

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.

*MA McBurnett*  
M. A. McBurnett  
Manager  
Nuclear Licensing

RAD/amp

Attachment: LER 90-016 (South Texas, Unit 2)

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cc:

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Revised 10/08/90

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>South Texas, Unit 2</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 4 9 9 1</b>	PAGE (3) <b>1 OF 0 4</b>
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TITLE (4)  
**Fuel Handling Building HVAC Actuation Due to Loss of Power**

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										
1	0	2	7	9	0	9	0	0	1	6	0	0	1	2	0	7	9	0	
										DOCKET NUMBER(S)		0 5 0 0 0 0							
										DOCKET NUMBER(S)		0 5 0 0 0 0							

OPERATING MODE (9) <b>0</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)														
POWER LEVEL (10) <b>0 0 0</b>	<input type="checkbox"/>	20 402(b)	<input type="checkbox"/>	20 405(c)	<input checked="" type="checkbox"/>	50 73(a)(2)(iv)	<input type="checkbox"/>	73.71(b)							
	<input type="checkbox"/>	20 405(a)(1)(iii)	<input type="checkbox"/>	50 36(c)(1)	<input type="checkbox"/>	50 73(a)(2)(v)	<input type="checkbox"/>	73.71(c)							
	<input type="checkbox"/>	20 405(a)(1)(iv)	<input type="checkbox"/>	50 36(c)(2)	<input type="checkbox"/>	50 73(a)(2)(vi)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
	<input type="checkbox"/>	20 405(a)(1)(v)	<input type="checkbox"/>	50 73(a)(2)(ii)	<input type="checkbox"/>	50 73(a)(2)(vii)(A)	<input type="checkbox"/>								
	<input type="checkbox"/>	20 405(a)(1)(vi)	<input type="checkbox"/>	50 73(a)(2)(iii)	<input type="checkbox"/>	50 73(a)(2)(vii)(B)	<input type="checkbox"/>								
	<input type="checkbox"/>	20 405(a)(1)(vii)	<input type="checkbox"/>	50 73(a)(2)(iv)	<input type="checkbox"/>	50 73(a)(2)(viii)	<input type="checkbox"/>								

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>C. A. Ayala - Supervising Licensing Engineer</b>	TELEPHONE NUMBER <b>5 1 2 9 7 2 - 8 6 2 8</b>
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

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

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

On October 27, 1990, Unit 2 was in its first refueling outage with no fuel in the reactor vessel. At approximately 0159 hours, an Engineered Safety Features (ESF) actuation of all three trains of Fuel Handling Building (FHB) HVAC occurred. The train C 120 Volt AC vital distribution panel DP002 provides power to the radiation monitoring system panel for the FHB radiation monitor RT-8036. Distribution panel DP002 was fed from the E2C2 480 volt load center. At approximately 0128 hours, a cross tying of the E2C1 and E2C2 480 volt load centers was performed which resulted in a momentary loss of power to distribution panel DP002. The 25KVA inverter which normally supplies power to DP002 was out of service therefore the uninterruptable power supply was not available during this manipulation. The cause of this actuation is not known. The most probable cause of the event was a momentary loss of power to the radiation monitor control room panel ZCP023. The momentary power interruption may have resulted in a software error in the two radiation monitoring system modules and later created an actuation of the FHB HVAC system. Corrective action was extensive troubleshooting of the radiation monitors.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	16	0	0	2

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

DESCRIPTION OF EVENT:

On October 27, 1990, Unit 2 was in its first refueling outage with no fuel in the reactor vessel. At approximately 0159 hours, an Engineered Safety Features (ESF) actuation of all three trains of Fuel Handling Building (FHB) HVAC occurred. Upon investigation it was discovered that one of the two FHB spent fuel pool exhaust monitor remote control units located in the Control Room was providing no indication. The Radiation Monitoring System (RMS) indicated no increase in radiation levels. In addition, the local readings at the affected radiation monitor (RT-8036), located in the FHB were determined to be normal. The train C main steam line 'B' monitor remote control unit which is located in the same control room panel ZCP023 as the FHB spent fuel pool exhaust monitor remote control unit also had no indication. The NRC was notified of the actuation at 0323 hours, on October 27, 1990.

The train C 120 Volt AC vital distribution panel DP002 provides power to the RMS panel which houses the remote control units for the FHB spent fuel pool exhaust monitor (RT-8036) and the main steam line 'B' monitor (RT-8047). The 25 KVA instrument inverter/rectifier which is the normal power supply for distribution panel DP002 was out of service from October 25, 1990 until October 29, 1990 for various preventative maintenance activities. During this period, power to distribution panel DP002 was supplied by the alternate power source which is fed from the E2C2 480 volt load center. At approximately 0127 hours, on October 27, 1990 plant operations personnel performed a cross tying of the E2C1 and E2C2 480 volt load centers in preparation for maintenance activities. Since the 25 KVA inverter rectifier was out of service, the cross tying manipulation resulted in momentary loss of power to the DP002 distribution panel. At 0128 hours, the radiation monitoring system recorded a loss of sample flow on the FHB radiation monitor RT-8036 which can be attributed to this momentary loss of power. A review of the Emergency Response Facility Data Acquisition and Display System (ERFDADS) computer logs indicated that a high radiation alarm was received on radiation monitor RT-8036 at 0128 hours which is consistent with a loss of power to the radiation monitor. Momentary loss of power to the radiation monitoring system will not necessarily result in an ESF actuation of HVAC systems. There were no indications or alarms on either the radiation monitoring system or ERFDADS to support the FHB HVAC actuation at 0159 hours, on October 27, 1990. At approximately 0700 hours, on October 27, 1990 the FHB spent fuel pool exhaust monitor and main system Line "B" remote units located in the control room panel ZCP023 regained indication concurrent with another momentary power interruption associated with maintenance activities on the train C power supply.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		0	016	00	03	OF 04

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

DESCRIPTION OF EVENT: (cont'd)

The redundant FHB radiation monitor (RT-8035) remained operable throughout the event indicating no high radiation levels or alarms. Power to radiation monitor RT-8035 is supplied by the train A 120 Volt AC distribution panel DP001 which was energized by its normal power supply (inverter/rectifier).

On October 27, 1990 at approximately 0254 hours, the FHB actuation relay was reset and Train A and B of Fuel Handling Building HVAC were restored to normal.

Extensive troubleshooting was performed which found no apparent problem. At approximately 1521 hours on November 1, 1990, FHB radiation monitor RT-8036 was declared operable after successful completion of the spent fuel pool exhaust monitors surveillance procedure which verified that the FHB HVAC will actuate on a high radiation signal.

CAUSE OF EVENT:

The cause of this actuation is not known. However, the most probable cause of the Fuel Handling Building HVAC actuation was a momentary loss of power to the radiation monitor control room panel ZCP023. The momentary power interruption may have resulted in a software error in two of the radiation monitoring system modules located in ZCP023 as indicated by the blank displays. The software error may have caused the display to lose indication and later create an actuation of the FHB HVAC system.

ANALYSIS OF EVENT:

Unplanned actuation of an Engineered Safety Feature is reportable pursuant to 10CFR50.73(a)(2)(iv). The Fuel Handling Building HVAC actuated on all three trains to the recirculation mode. No evidence of high radiation was determined to be present. This event had no impact on refueling outage activities.

The failure mode of this equipment will not interfere with the ability of the Radiation Monitoring System or the Fuel Handling Building HVAC activation system to perform their safety functions. As noted above, the actuation logic was retested and shown to properly perform the required actuations. Should the problem reappear the only consequence would be that an unanticipated actuation to the safe condition may result.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	16	00	4	OF 04

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

ANALYSIS OF EVENT: (cont'd)

While any unnecessary challenge to an ESF is undesirable, actuation of the FHB HVAC to the recirculation mode represents a minimal hazard since it could not cause, worsen or prevent mitigation of an accident.

CORRECTIVE ACTION:

The following corrective actions are being taken as a result of this event:

1. Troubleshooting was performed on the affected radiation monitor which found no apparent problems. The spent fuel pool exhaust monitors surveillance procedure was successfully performed on November 1, 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:

There have been ESF HVAC actuations caused by radiation monitors, however, there have been no previous events regarding a Fuel Handling Building HVAC actuation which can be attributed to a momentary loss of power while power was being provided by the alternate power supply.

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