

# The Light company

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

April 25, 1990  
ST-HL-AE-3443  
File No. G26  
10CFR50.73

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

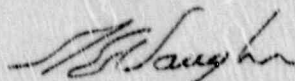
South Texas Project Electric Generating Station  
Unit 2

Docket No. STN 50-499

Licensee Event Report 90-004 Regarding a Reactor Trip on Low  
Steam Generator Level Due to a Feedwater Regulating Valve Failure

Pursuant to 10CFR50.73, Houston Lighting & Power Company (HL&P) submits the attached Licensee Event Report (LER 90-004) regarding a reactor trip on low steam generator level due to a feedwater regulating valve failure. 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) 972-8623 or myself at (512) 972-7921.



G. E. Vaughn  
Vice President  
Nuclear Generation

BEM/nl

Attachment: LER 90-004 (South Texas, Unit 2)

9005020166 900425  
PDR ADOCK 05000499  
S PDC

A:LER004U2.L01

A Subsidiary of Houston Industries Incorporated

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11

Houston Lighting & Power Company  
South Texas Project Electric Generating Station

ST-HL-AE- 3443  
File No.: G26  
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Revised 12/15/89



## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) South Texas, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 4 9 9										PAGE (3) 1 OF 0 3			
TITLE (4) Reactor Trip on Low Steam Generator Level Due to a Feedwater Regulating Valve Failure																							
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)											
0	3	2	6	9	0	9	0	0	0	4	0	0	0	4	2	5	9	0	0	5	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																					
1		20.402(b)				20.406(c)				<input checked="" type="checkbox"/> 19.73(a)(2)(iv)				73.71(b)									
POWER LEVEL (10)		20.406(a)(1)(i)				50.50(c)(1)				50.73(a)(2)(iv)				73.71(c)									
1		0				20.406(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
		20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)													
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)													
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																							
NAME Charles 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 NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC				
B	SIJ	FCV	C16	315	No																		
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)													
YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO													

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

On March 26, 1990, Unit 2 was in Mode 1 at 100 percent power. At 0721 hours, a steam flow/feed flow mismatch alarm was received on Steam Generator 2 C. Feedwater flow to Steam Generator 2 C had decreased to 50 percent of full power flow. Attempts to manually control the Steam Generator 2 C feedwater regulating valve to restore feedwater flow were unsuccessful. The reactor subsequently tripped on low steam generator level. The plant was brought to a stable condition in Mode 3 with no unexpected post trip transients. The cause of this event was separation of the feedwater regulating valve stem from the plug which allowed the plug to lodge in the feedwater flow stream restricting flow to approximately 50 percent. The Unit 2 feedwater regulating valve stems have been welded to the plugs to prevent separation. The Unit 1 feedwater regulating valve stems will be welded during the current refueling outage.

A1/LER004U2.101

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  South Texas, Unit 2	DOCKET NUMBER (2)  0500049990-004-00002 OF 03	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0	04	0	02	0	3

TEXT (If more space is required, use additional NRC Form 305A-J (17))

DESCRIPTION OF EVENT:

On March 26, 1990, Unit 2 was in Mode 1 at 100 percent power. At 0721 hours, a steam flow/feed flow mismatch alarm was received on Steam Generator 2 C. Feedwater flow to Steam Generator 2 C had decreased to approximately 50 percent of full power flow. Attempts to manually control the Steam Generator 2 C feedwater regulating valve to mitigate the transient were unsuccessful. The reactor tripped on low steam generator level at 0723 hours. The feedwater isolation valves closed as expected and the auxiliary feedwater system actuated. The main steam isolation valves were closed to limit the Reactor Coolant System cooldown and the plant was stabilized in Mode 3 at approximately 0745 hours. The NRC was notified of this event at 0852 hours.

The main feedwater regulating valve actuator is connected to the valve plug by a tapered, threaded stem. The stem, once installed in the plug, is drilled and pinned to prevent rotation.

During this event, the plug separated from the valve stem and lodged in the feedwater flow stream causing the reduction in flow observed. Inspection of the valve stem and plug revealed that the locking pin had broken and the threads had worn and the assembly separated. Based on an examination of the failure, it is apparent that the stem to plug connection became loose causing excessive wearing and subsequent failure of the locking pin and stem threads.

Based on metallurgical examination, it has been concluded that the failure could have been caused either by inadequate tightness in the valve stem to plug assembly or a slight initial slack in the hole for the locking pin. The design of the valve stem to plug assembly has been determined to be sensitive to proper torquing and locking pin tightness. An examination of other valves in Unit 2 indicated that the assemblies were tight, and radiography showed no wear of the pins. Nevertheless, to preclude any potential for loosening of the assembly, HL&F has elected to redundantly weld the valve stems to the plugs on all of the feedwater regulating valves.

CAUSE OF EVENT:

The cause of this event was mechanical failure of the Steam Generator 2 C main feedwater regulating valve due to loosening and subsequent separation of the valve stem to plug connection.

ANALYSIS OF EVENT:

Reactor trip and Engineered Safety Features actuation is reportable pursuant to 10CFR50.73(a)(2)(iv). The plant was brought to a stable condition in Mode 3 with no unexpected post trip transients.

A1/LE0004U2.101



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104  
EXPIRES 6/31/85

FACILITY NAME (1)  South Texas, Unit 1	DOCKET NUMBER (2)  0 5 0 0 0 4 9 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 0	0 0 4	0 0	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 360A's) (17)

CORRECTIVE ACTION:

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

1. The Unit 2 feedwater regulating valve stems have been welded to the plugs to prevent rotation and separation.
2. The Unit 1 feedwater regulating valve stems will be welded to the plugs during the current refueling outage.

ADDITIONAL INFORMATION:

There have been no previous events reported regarding failure of feedwater regulating valves.

The valve which failed was a 16" x 12" x 16" Class 900 valve manufactured by Copes-Vulcan.

A1/LER004U2.L01