

The Light Company

Houston, Texas & Power

South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

October 02, 1992

ST-HL-AE-4227

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 92-012

Regarding an Entry into Technical Specification 3.0.3 Due To
Both Channels of DRPI Becoming Inoperable

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached Licensee Event Report 92-012 regarding an entry into Technical Specification 3.0.3 due to both channels of the Digital Rod Position Indication (DRPI) becoming inoperable. This event did not have an adverse impact on the health and safety of the public.

If you have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628 or me at (512) 972-7205.

William J. Jump
William J. Jump
General Manager,
Nuclear Licensing

JMP/ag

Attachment: LER 92-012 (South Texas, Unit 1)

080042

921009028: 721002
PDR ADOCK 05000498
S PDR

LER\92266001.U1

A Subsidiary of Houston Industries Incorporated

JE22

Houston Lighting & Power Company
South Texas Project Electric Generating Station

ST-HL-AE-4227
File No.: G26
Page 2

CC:

Regional Administrator, Region IV
Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

George Dick, Project Manager
U.S. Nuclear Regulatory Commission
Washington, DC 20555

J. I. Tapia
Senior Resident Inspector
c/o U. S. Nuclear Regulatory
Commission
P. O. Box 910
Bay City, TX 77414

J. R. Newman, Esquire
Newman & Holtzinger, P.C.
1615 L Street, N.W.
Washington, DC 20036

D. E. Ward/T. M. Puckett
Central Power and Light Company
P. O. Box 2121
Corpus Christi, TX 78403

J. C. Lanier/M. B. Lee
City of Austin
Electric Utility Department
P.O. Box 1088
Austin, TX 78767

K. J. Fiedler/M. T. Hardt
City Public Service Board
P. O. Box 1771
San Antonio, TX 78296

Rufus S. Scott
Associate General Counsel
Houston Lighting & Power Company
P. O. Box 61867
Houston, TX 77208

INPO
Records Center
1100 Circle 75 Parkway
Atlanta, GA 30339-3064

Dr. Joseph M. Hendrie
50 Bellport Lane
Bellport, NY 11713

D. K. Lacker
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

Revised 10/11/91

L4/NRC/

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH IF 5301, U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3155-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

PAGE (3)

0	15	0	0	0	4	19	18	1	0F	0	14
---	----	---	---	---	---	----	----	---	----	---	----

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	9	0	3	9	2	9	2	0	1	2	0	0	1	0	0	2	9	2	0 5 0 0 0				

OPERATING MODE (D)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 16 CFR § (Check one or more of the following) (11)									
1		20.402(b)		20.406(c)		50.73(a)(2)(ix)		73.71(b)			
POWER LEVEL (10)	0.86	20.406(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(ix)		73.71(c)			
		20.406(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(ix)		OTHER (Specify in Abstract below and in Text: NRC Form 366A)			
		20.406(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(iii)(A)					
		20.406(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(iii)(B)					
		20.406(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(xi)					

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER	
Charles Ayala - Supervising Licensing Engineer	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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	A A	J X	L O 4 5	NO							

SUPPLEMENTAL REPORT EXPECTED (14)

ABSTRACT (Limit to 1400 characters, or roughly twenty-five lines single space typewritten text) (18)

On September 3, 1992, Unit 1 was in Mode 1 at 86% power (coastdown). Operations personnel and the system engineer noted an unusual condition on the Digital Rod Position Indication (DRPI) panel. Conditions deteriorated to where it was impossible to determine control rod positions. At 1049 hours, both channels of DRPI were declared inoperable and an entry into Technical Specification 3.0.3 was made. At 1149 hours, an Unusual Event was declared due to being in a condition where a shutdown was required by the Technical Specifications. Accordingly, at 1352 hours, with DRPI still inoperable, a shutdown of the unit was commenced. At 1415 hours, I&C Technicians completed the replacement of one of the redundant power supplies and DRPI indication was recovered. The power reduction was immediately terminated and following an assessment DRPI was declared operable at 1426 hours. The cause of this event was the failure of one of the DRPI control module power supplies coupled with an apparent unknown failure of the redundant power supply. Corrective actions include replacing one of the two power supplies and returning DRPI to an operable status, replacing the remaining failed power supply during the upcoming Unit 1 outage, and developing testing for both units for the DRPI system that will include an assessment of the control system power supplies. The test will be implemented during the next Unit 2 refueling outage.

NRC Form 306 (6-85)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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)			
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER					
South Texas, Unit 1	0 5 0 0 0 4 9 8 9 2	-	0 1 2	-	0 0 0 2	OF	0 4		

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

DESCRIPTION OF EVENT:

On September 3, 1992, Unit 1 was in Mode 1 at 86% power (coastdown). Operations personnel and the system engineer noted an unusual condition on the Digital Rod Position Indication (DRPI) panel. Lights were observed to be flashing in an intermittent fashion. Conditions deteriorated to where it was impossible to determine control rod positions. At 1049 hours the DRPI was declared inoperable. Technical Specification 3.1.3.2 defines actions to be taken if one half of the rod position assessment system (Data A or Data B) is inoperable. In this case, both Data A and Data B were inoperable and entry into Technical Specification 3.0.3 was required.

Instrumentation and Control (I&C) personnel were contacted and troubleshooting was initiated. At 1149 hours, an Unusual Event was declared due to being in a condition where a shutdown was required by the Technical Specifications. A shutdown was not immediately initiated since the potential for DRPI to be repaired and declared operable within a reasonable time seemed high. Operators determined that if DRPI was not operable by 1349 hours, a shutdown would be initiated to ensure an orderly and controlled shutdown to Mode 3 within the requirements of Technical Specifications. Accordingly, at 1352 hours, with DRPI still inoperable, a shutdown of the unit was commenced. At 1415 hours, the I&C Technicians completed replacement of one of the redundant power supplies and DRPI indication was recovered. The power reduction was immediately terminated and following an assessment DRPI was declared operable and Technical Specification 3.0.3 was exited at 1426 hours.

The DRPI control module contains two redundant 12 volt power supplies. I&C personnel involved did not initially suspect that both power supplies had failed since neither of the power supply failure indicating lights on the control module were lit. In addition, both supplies developed normal voltage in an unloaded condition. Subsequent testing of the replaced power supply indicated that a significant voltage reduction was experienced when loaded. Thus, it is likely that one of the power supplies had previously failed and this event was caused by the failure of the second power supply.

LER\92266001.U1

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0108), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
South Texas, Unit 1	0 5 0 0 0 4 9 8	9 2	- 0 1 2	- 0 0 0	3	OF	0 4

TEXT (If more space is required, use additional NRC Form 895A's) (17)

Failure of one power supply would normally be expected to generate a non-urgent DRPI alarm. This alarm was not received with this particular type of failure. The alarm (and power failure indicator light) is generated from a loss of voltage. Since an auctioneered power circuit is used, the failure of one power supply would result in the remaining power supply picking up the load. The failed power supply (now unloaded) would maintain close to normal voltage and no alarm would be generated. Therefore, it would have been unlikely for operations personnel to discover the degradation of the first power supply prior to the second power supply failing.

The cause of this event was the failure of one of the DRPI control module power supplies coupled with the unknown failure of the redundant power supply. A contributing factor was that no Preventative Maintenance (PM) has been performed on DRPI. A second contributing factor was the design of the power supply circuit. The power supply circuit design does not lend itself to the detection of a power supply failure which results in maintaining voltage in an unloaded condition.

Control rod and shutdown rod position accuracy are essential during power operation. Power peaking, ejected rod worth, or shutdown margin limits may be violated in the event of a Design Basis Accident with control or shutdown rods operating outside their limits. Therefore, the Technical Specifications establish acceptance criteria for rod position indication that rod positions must be known with sufficient accuracy in order to verify the core is operating within the group sequence, overlap, design peaking limits, ejected rod worth, and with minimum shutdown margin.

NRC Form 302A (6-89)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
South Texas, Unit 1	0500049892	-	012	-	0004	OF	04

TEXT (If more space is required, use additional NRC Form 386A's) (17)

ANALYSIS OF EVENT: (Con't)

DRPI provides a highly reliable indication of actual control rod position. Operating with both channels of DRPI inoperable is a condition prohibited by the Technical Specifications and is reportable pursuant to 10CFR50.73(a)(2)(i)(B).

CORRECTIVE ACTIONS:

1. One of the two DRPI power supplies was replaced and DRPI was returned to operability.
2. The remaining failed power supply will be replaced during the upcoming Unit 1 outage.
3. A test will be developed for the DRPI system that will include an assessment of the control system power supplies. The test will be implemented during the upcoming Unit 2 refueling outage.
4. An evaluation will be performed concerning power supplies for selected systems to determine:
 - whether PMS need to be established to detect power supply failures.
 - whether periodic replacement schedules should be implemented on these power supplies.
 - the feasibility of implementing design changes to ensure that the power supply failures can be detected.

This evaluation will be completed by June 3, 1993. Additional corrective actions will be developed as necessary.

ADDITIONAL INFORMATION:

The failed power supplies are model number LCS-CC-12 manufactured by Lambda.

There have been no similar events involving entry in Technical Specification 3.0.3 due to a failed DRPI power supply.

LER\92266001.U1