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

December 31, 1992
ST-HL-AE-4293
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 92-019
Calculation Errors in the
Setpoint Curves for the Cold Overpressure Mitigation System

Pursuant to 10CFR50.73, Houston Lighting & Power Company (HL&P) submits the attached Unit 1 Licensee Event Report (LER 92-019) regarding Calculation Errors in the Setpoint Curves for the Cold Overpressure Mitigation System (COMS). This event did not have an adverse effect 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 me at (512) 972-7138.

S. L. Rosen
Vice President,
Nuclear Engineering

MAC/ag

Attachment: LER 92-019 (South Texas, Unit 1)

050003

LER\92356001.U1

IE22
1/1

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., STE 1000
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/

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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 (MNBB 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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
South Texas, Unit 1	05000498	1 OF 05

TITLE (4) Calculation Errors in the Setpoint Curves for the Cold Overpressure Mitigation System

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									South Texas Unit 2	05000 499
12	02	92	92	-- 019 --	00	12	31	92	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)	000	20.402(b)	20.405(c)	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) X	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) X	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	TELEPHONE NUMBER (Include Area Code)
Charles Ayala - Supervising Licensing Engineer	(512) 972-8628

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)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On December 2, 1992, Unit 1 was in Mode 5 during a refueling outage and Unit 2 was in Mode 1 at 100% power. At 1500 hrs, while reviewing a Nuclear Network item regarding a calculation error affecting the Power Operated Relief Valve (PORV) setpoint curves for the Cold Overpressure Mitigation System (COMS), it was determined that the same condition existed at South Texas Project. The analysis performed by Westinghouse for the COMS setpoint neglected the pressure loss of the reactor coolant flow through the reactor core. This resulted in a higher pressure at the reactor core midplane elevation than the pressure at the sensing point in the RCS hot leg. Because of the error, COMS has been technically inoperable since the startup of each unit. Corrective actions for this event include issuing a Justification for Continued Operation (JCO), resetting the high PORV COMS setpoint curves to meet the JCO limit and requesting Westinghouse to revise the COMS Safety Analysis as well as providing a root cause analysis on this event to determine the generic implication and corrective actions.

REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

DESCRIPTION OF EVENT:

On December 2, 1992 Unit 1 was in Mode 5 during a refueling outage and Unit 2 was in Mode 1 at 100% power. At 1500 hours, while reviewing a Nuclear Network item regarding a calculation error affecting maximum Power Operated Relief Valve (PORV) setpoint curves for the Cold Overpressure Mitigation System (COMS), it was determined that the same conditions existed at the South Texas Project Electric Generating Station (STPEGS). The Reactor Coolant System (RCS) COMS analysis by Westinghouse indicated that the setpoint curve in Technical Specification 3.4.9.3, Figure 3.4-4 was non-conservative.

The Network entry described a condition where two discrepancies were noted which affect the heatup and cooldown curve shown in the Technical Specification and also the maximum PORV setpoint curves for the COMS. First, it was determined that the pressure difference between the RCS wide range pressure sensing location and the region of interest for the heatup/cooldown curves (typically, the core midplane elevation) had not been considered. Secondly, the dynamic pressure (which varies, depending on the number of operating reactor coolant pumps and which wide range pressure transmitter is used) had been neglected. These discrepancies result in a higher pressure at the reactor core midplane elevation than the pressure at the sensing point in the RCS hot leg. STPEGS uses the wide range pressure transmitters located on the hot legs of three of the four coolant loops for indication to ensure compliance with the heatup/cooldown pressure/temperature curves. Transmitters sensing pressure at two of these same locations are used for the automatic operation of the COMS. It has been determined that the static and dynamic pressure differences between wide range pressure indication location and the region of interest for the heatup/cooldown curves had not been considered in the safety analysis for STPEGS.

COMS is designed to provide protection by monitoring RCS pressure and temperature and opening the Pressurizer PORVs if the COMS setpoint curve is exceeded.

DESCRIPTION OF EVENT: (Con't)

Both PORVs in Units 1 and 2 have always been set within the Technical Specification setpoint curve. The error in the safety analysis has caused the COMS to be technically inoperable since the startup of each unit. However, one of the two COMS setpoint curves is low enough to have provided adequate overpressure protection even considering the calculation error.

The NRC was notified on December 3, 1992 at 1438 hours that this event was a violation of the Plant Operating License No. NPF-76(2G) Section 2.C(2). A Justification for Continued Operation (JCO) was completed on December 4, 1992.

CAUSE OF EVENT:

The Westinghouse analysis which was used to determine the COMS setpoint curves and the Licensing Basis neglected to allow for the differential pressure between the reactor vessel cold legs and the pressure transmitter instrument taps on the RCS hot leg piping.

ANALYSIS OF EVENT:

STPEGS has reviewed the PORV COMS setpoint curves and the Technical Specification limits and determined that there is margin in the low PORV (PCV-656A) setpoint curve. The PCV-656A setpoint is approximately 70 PSIG below the Technical Specification limit throughout the curve. A maximum differential pressure of 35 PSID across the core has been calculated for two Reactor Coolant Pump (RCP) operation. This calculation represents a conservative, worst-case maximum for the given conditions. Even with a 35 PSID differential across the core, PCV-656A will open approximately 35 PSIG prior to exceeding the COMS Technical Specification limit for any operating temperature. Therefore, PCV-656A will perform its intended function during two RCP operation with no change to its setpoint curve.

ANALYSIS OF EVENT: (Con't)

The high PORV (PCV-655A) COMS setpoint curve is only 10 PSIG below the Technical Specification limit. In order to provide a conservative margin to the Technical Specification limit, the PCV-655A COMS setpoint curve had to be lowered by 35 PSIG, the maximum core differential pressure. Following this temporary change, even with a 35 PSID differential across the core, PCV-655A will open approximately 10 PSIG prior to exceeding the COMS Technical Specification limit, per the original design intent. This still assumes a maximum of two RCPs operating.

Requirements addressing overpressure protection are given in the Technical Specification Limiting Condition for Operation (LCO) 3.4.9.3. This LCO requires that two PORVs be operable during Modes 4, 5, and 6 with the reactor vessel head on; or that the RCS be depressurized and a 2.0 square inch or greater vent be provided. Since COMS was technically inoperable since plant startup for each unit, this event is reportable pursuant to 10CFR50.73(a)(ii)(B) and 10CFR50.73(a)(i)(B).

CORRECTIVE ACTIONS:

1. A JCO has been issued for both units, limiting Reactor Coolant Pump operation to two (2) RCPs when RCS temperature is below 245°F and lowering the high PORV COMS setpoint curve by 35 PSIG. These actions insure the operability of COMS within the existing Technical Specification limitations and Licensing Basis.

2. The high PORV COMS setpoint has been reset to meet the limits provided in the JCO.

3. Westinghouse will be requested to revise the COMS Safety Analysis. Upon receipt of the revised analysis, a Technical Specification change request will be submitted to correct the COMS curve. Approval of that Technical Specification change will initiate recalibration of the PORV COMS setpoint curves and eliminate the need for the JCO.

4. In an effort to determine the generic implications of this event, STPEGS will request that Westinghouse perform a root cause analysis and develop any necessary corrective actions.

ADDITIONAL INFORMATION:

A similar event has been reported regarding the NSSS Vendor having discrepancies in their safety analysis which led to a reportable event: LER 91-024 (Unit 1 and 2) "A Safety Analysis Deficiency concerning the Pressurizer Safety Relief Valve (SRV) Loop Seal Delay Time."