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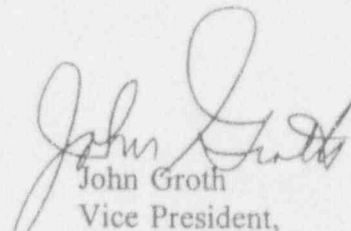
March 30, 1994
ST-HL-AE-4746
File No.: G26
10CFR50.73

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 94-009
Manual Reactor Trip Due to Malfunctioning
Main Feedwater Regulating Valve

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached Unit 1 Licensee Event Report 94-009 regarding a manual reactor trip initiated as a result of a malfunctioning Main Feedwater Regulating Valve. 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. J. M. Pinzon at (512) 972-8027 or me at (512) 972-8664.


John Groth
Vice President,
Nuclear Generation

GSC/eg

Attachment: LER 94-009 (South Texas, Unit 1)

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PDR ADOCK 05000498
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LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1)

South Texas Unit 1

DOCKET NUMBER (2)

05000 498

PAGE (3)

1 OF 3

TITLE (4)

Manual Reactor Trip Due to Malfunctioning Main Feedwater Regulating Valve

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 NAME	DOCKET NUMBER
02	28	94	94	-- 009 --	00	03	30	94	FACILITY NAME	DOCKET NUMBER 05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		29	20.402(b)			20.405(c)			X 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)			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)			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

Jairo Pinzon - Senior Engineer

TELEPHONE NUMBER (Include Area Code)

(512) 972-8027

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	JB	CNV	F130	Yes					
X	JB	TC	W120	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
				06	30	94

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

On February 28, 1994 at 2212 hours, Unit 1 was in Mode 1 at 29% power when a steam flow/feed flow mismatch alarm was received on Steam Generator 1D. The reactor was manually tripped at 2213 hours following an unsuccessful attempt to take remote manual control of the 1D Main Feedwater Regulating Valve. The malfunction of the 1D Main Feedwater Regulating Valve was caused by a failed transformer coil in the torque motor in the current to pneumatic converter (Fisher Controls Type 546 Current to Pneumatic Converter). The root cause of the failed transformer coil has not yet been determined. Corrective actions include performing failure analyses on the current to pneumatic converter and the associated Westinghouse 7300 Series driver card which had failed and was replaced earlier. The failed current to pneumatic converter was replaced as were two other Unit 1 current to pneumatic converters. A revision to this Licensee Event Report will be submitted following receipt of the failure analyses and determination of root cause.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
South Texas, Unit 1	05000 498	94	-- 009 --	00	2 OF 3

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

DESCRIPTION OF EVENT

On February 28, 1994 at 2212 hours, Unit 1 was in Mode 1 at 29% power when a steam flow/feed flow mismatch alarm was received on Steam Generator 1D. Attempts to control the 1D Main Feedwater Regulating Valve via remote manual control were unsuccessful and a manual reactor trip was initiated at 2213 hours. NRC was notified at 2327 hours via the Emergency Notification System. This event is reportable in accordance with 10CFR50.73 (a)(2)(iv).

There had not been any significant perturbations in steam flow or in feed flow to the 1D Steam Generator for approximately three hours prior to this event. Steam Generator Feed Pump 13 had been placed in service three and one-half hours earlier causing a feed flow perturbation. The level control system for the 1D Steam Generator exhibited quarter-wave darning during this perturbation indicating a finely tuned control loop. A steam flow/feed flow mismatch alarm was received on Steam Generator 1D at 2212 hours. The Reactor Operator attempted to take remote manual control of steam generator level but the 1D Main Feedwater Regulating Valve would not respond. Steam Generator 1D level continued to decrease and the reactor was manually tripped at 2213 hours. The level in Steam Generator 1D was approximately 40%. An automatic trip on low steam generator level occurs at 33%. The Main Turbine tripped and a low T-average Feedwater Isolation occurred as expected. This was followed by an expected auxiliary feedwater actuation on Steam Generator 1D Level Lo-Lo. The plant was stabilized in Mode 3.

CAUSE OF EVENT

The malfunction of the 1D Main Feedwater Regulating Valve was caused by a failed transformer coil in the torque motor in the current to pneumatic converter (Fisher Controls Type 546 Current to Pneumatic Converter). The transformer coil was found to be open circuited resulting in a "fail low" pneumatic signal to the valve positioner. This resulted in the closure of the 1D Main Feedwater Regulating Valve and the subsequent loss of feedwater flow to the 1D Steam Generator. The root cause for the failed transformer coil in the current to pneumatic converter has not yet been determined.

Preventive actions had been taken during the unit outage maintenance period prior to this event to verify reliability of the Main Feedwater Regulating Valves. All four Unit 1 Main Feedwater Regulating Valves and their current to pneumatic converters had been successfully calibrated on November 13, 1993. No component replacements were necessary and all of the current to pneumatic converters were found to be in calibration.

The Westinghouse 7300 Series driver card, which provides current input signals to the 1D Main Feedwater Regulating Valve current to pneumatic converter had failed and was replaced on February 25, 1994. The root cause of the driver card failure has also not been determined, but will be investigated in order to determine if a relationship exists between the two failures.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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South Texas, Unit 1	05000 498	94	-- 009 --	00	3 OF 3

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

ANALYSIS OF EVENT

Loss of normal feedwater flow is classified as a moderate frequency event in the Updated Final Safety Analysis Report. This type of event is not expected to result in fuel rod failures or in reactor coolant system or secondary system overpressurizations. Additionally, the auxiliary feedwater system initiated automatically as designed, providing an alternate source of feedwater to the 1D Steam Generator. Therefore, there were no adverse radiological or safety consequences resulting from this event. This event is reportable in accordance with 10CFR50.73(a)(2)(iv).

CORRECTIVE ACTIONS

The following corrective actions either have or will be taken as a result of this event:

1. The D train Main Feedwater Regulating Valve current to pneumatic converter was replaced and its valve control loop calibrated. The B and C train current to pneumatic converters were also replaced because there was no history of previous replacement. The A train current to pneumatic converter had been replaced on January 14, 1993, and is operating properly.
2. The failed Westinghouse 7300 Series driver card and the failed Fisher Controls Type 546 current to pneumatic converter have been returned to their respective manufacturers for failure analysis.
3. Following receipt of these failure analyses, along with receipt of additional equipment qualification testing data for the Fisher Controls Type 546 current to pneumatic converter, final root cause determination will be made and additional corrective actions will be taken as necessary. A revision to this Licensee Event Report will be submitted following the receipt of the failure analyses and determination of root cause.
4. All four Unit 2 Main Feedwater Regulating Valve current to pneumatic converters will be replaced to improve reliability prior to resumption of power operation.

ADDITIONAL INFORMATION

A previous similar event described in Licensee Event Report 92-010 for Unit 2 resulted from the failure of a Westinghouse 7300 Series driver card. The power supply and the primary clock counter were determined to be the specific components whose failure led to the loss of card output.