

The Light company

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

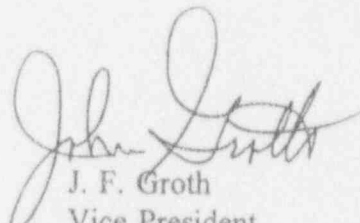
February 14, 1994
ST-HL-AE-4698
File No.: G26
10CFR50.73

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 94-002
Centrifugal Charging Pump 1A Discharge
Bypass Valve in the Open Position Contrary to
the Requirements of Technical Specification 3.1.2.3

Pursuant to 10CFR50.73, Houston Lighting & Power submits the attached Unit 1 Licensee Event Report 94-002 regarding the Centrifugal Charging Pump 1A discharge bypass valve being found in the open position contrary to the requirements of Technical Specification 3.1.2.3. This event did not have an adverse effect on the health and safety of the public but clearly does not meet the standards for expected operational performance.

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.


J. F. Groth
Vice President,
Nuclear Generation

MAC/eg

Attachment: LER 94-002 (South Texas, Unit 1)

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Project Manager on Behalf of the Participants in the South Texas Project

JEZ 1/1

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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 (MNB 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 4
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TITLE (4) Centrifugal Charging Pump 1A Discharge Bypass Valve Being Found in the Open Position Contrary to the Requirements of Technical Specifications 3.1.2.3

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
01	15	94	94	-- 002 --	00	02	14	94	FACILITY NAME	DOCKET NUMBER 05000
									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) 0	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)	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
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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)		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 January 15, 1994, at 1010 hours, Unit 1 was in Mode 5 at 0% power. Increased reactor coolant pump seal injection flow was identified following the start up of the Centrifugal Charging Pump 1A for testing. The pump was secured and subsequent investigation identified that the Centrifugal Charging Pump 1A discharge bypass valve (CV-MOV-8348) to the reactor coolant pump seal injection line hydro-pneumatically opened in violation of Technical Specification 3.1.2.3. The bypass valve opening was caused by a hydro-pneumatic transient that occurred when the Centrifugal Charging Pump 1A was started. The valve was manually closed. Corrective actions include performing a review to identify other valves that may be susceptible to this type of event, adding a caution to the equipment clearance order database for the affected valves and locally labeling all affected valves with a caution statement.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
South Texas, Unit 1	05000 498	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		94	-- 002 --	00	

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

DESCRIPTION OF EVENT:

On January 15, 1994, at 1010 hours, Unit 1 was in Mode 5 at 0% power. Increased reactor coolant pump seal injection flow was identified following the start up of Centrifugal Charging Pump 1A for testing. The pump was secured and subsequent investigation identified that the Centrifugal Charging Pump 1A discharge bypass valve (CV-MOV-8348) to the reactor coolant pump seal injection line hydro-pneumatically opened in violation of Technical Specification 3.1.2.3.

Maintenance had recently been completed on Centrifugal Charging Pump 1A which required the pump to be isolated, uncoupled, and drained. After maintenance was completed, the system was statically filled. Pump testing, which was required prior to the pump being returned to service, was scheduled to be conducted on January 15, 1994. Because the pump was inoperable, Technical Specification 3.1.2.3 required the pump discharge to be isolated from the reactor coolant system when the pump was run for testing. This isolation was accomplished by Equipment Clearance Order which tagged the discharge bypass valve in the closed position and the valve motor controller breaker in the off position. Note, the discharge bypass valve, CV-MOV-8348, was stroke timed in November 1993 and had been properly verified to be in the closed position after testing. In addition, the valve had been verified closed on six other occasions during other maintenance activities on the charging system.

Prior to starting the test run of the pump, the Unit Supervisor conducted a pre-evolution brief with the Reactor Operator and the Reactor Plant Operator assigned to the evolution. The Reactor Plant Operator was directed to physically check the pump ready to start and exit the pump room until the pump was running. After starting the Centrifugal Charging Pump 1A, the following irregular indications were received on the control room control board:

- The auxiliary lube oil pump indicating light did not extinguish as expected. Adequate lube oil pressure was verified, the auxiliary pump was secured and a work order was written to repair the pressure switch.
- The seal injection filter high differential pressure alarm annunciated. The seal injection filters were shifted and the annunciator cleared.
- Seal injection to all reactor coolant pumps increased to greater than 20 gallons per minute each. Seal injection flow was throttled in an attempt to return it to normal.

The seal injection flow could not be reduced by throttling so the Centrifugal Charging Pump 1A was secured and it's associated breaker was racked out. The valve lineup for the Centrifugal Charging Pump was checked to determine if a valve was mispositioned. Discharge bypass valve (CV-MOV-8348) was determined to be open. The valve was manually closed.

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

CAUSE OF EVENT

The cause of the isolation valve opening was a hydro-pneumatic transient initiated when Centrifugal Charging Pump 1A was started.

The valve was closed at the start of the test. Valve position verification had occurred seven times since stroke time testing in November 1993. As part of position verification, the valve had been declutched and the handwheel engaged to move the valve in the closed direction. Historical data taken from the Emergency Response Facilities Data Acquisition and Display System indicated the valve lifted slightly off its seat. This Emergency Response Facilities Data Acquisition and Display System indication coincided with the dynamic motor-operated valve actuator testing system test of the seal injection valves on January 6, 1994. The dynamic testing required charging pump 1B to be run and flow to the seal injection valves under test to be stopped and started numerous times. The hydraulic transients generated by the pressure and flow being stopped and started were being applied to the down stream side of the centrifugal charging pump 1A discharge bypass valve (CV-MOV-8348). The pressure and flow pulses caused the valve to rise off its seat. Emergency Response Facilities Data Acquisition and Display System continued to indicate the valve was open until the valve was manually closed on January 15, 1994. The valve stroke is one to one and one-half inches and for the Emergency Response Facilities Data Acquisition and Display System to change state requires approximately five percent valve movement.

A system walkdown determined that static fill and vent of this portion of the charging system would not be sufficient to eliminate trapped air in the portion of piping between the pump and the bypass valve because the pipe run is vertical and there are no vent paths in this section of piping. Per discussion with the valve manufacturer, Limitorque, it is possible for the valve to hydro-pneumatically open due to the stem thread angle if the handwheel is engaged and if there is sufficient system pressure. Operations confirmed that the handwheel was engaged at the time of this event. The trapped air in the vertical section of piping coupled with the bypass valve being slightly off its seat, and the handwheel engaged (effectively eliminating the actuator and motor gear ratios which would have maintained the valve closed against increased pressure on the valve disc) provided enough valve disc area to be available for the valve to be hydro-pneumatically stroked open upon starting the charging pump (pump output pressure approximately 2600 psi).

ANALYSIS OF EVENT

This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B). Technical Specification 4.1.2.3.2 requires that all charging pumps, excluding the one required operable pump, be demonstrated inoperable at least once per 31 days in Modes 4, 5, 6. This is accomplished by verifying that the motor circuit breakers are secured in the open position. The Technical Specification provides a note which states that an inoperable pump may be energized for testing provided the discharge of the pump has been isolated from the reactor coolant system by a closed isolation valve with power removed from the valve operator, or by a manual isolation valve secured in the closed position. Failure to maintain the valve in the closed position during testing constituted a condition contrary to the requirements of Technical Specification 3.1.2.3.

Since the valve failed to maintain its closed position, a condition contrary to Technical Specification 3.4.9.3 also occurred. Technical Specification 3.4.9.3 requires administrative control during testing periods

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

ANALYSIS OF EVENT : (Cont'd)

on components which could result in a reactor coolant system mass or temperature increase. Per a review of the control room log book, it was determined that when Centrifugal Charging Pump 1A was started on January 15, 1994, at 1010 hours the seal injection flow increased which potentially resulted in an addition to the reactor coolant system mass. Technical Specification 3.4.9.3 was exited on January 15, 1994, at 1055 hours when the power-operated relief valves were declared operable alleviating the requirement for administrative controls. As such, there was a time period between 1010 hours to 1055 hours when the administrative controls were required and not met.

Technical Specifications require an inoperable charging pump to be isolated from the reactor coolant system. This requirement is based upon the mitigation of a mass input transient accident while in Modes 4, 5, and 6 with the reactor vessel head installed. The mass input transient accident is described in the Updated Final Analysis Report Section 5.2.2.11.2 and the Safety Evaluation Report Section 5.2.2.2. These documents assume that charging flow is injected into the reactor coolant system and letdown has been isolated. The conditions present during this event included letdown flow which would minimize the consequences of the mass input, therefore this mass input transient is determined to be not significant.

CORRECTIVE ACTIONS

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

1. The MOV database was searched to identify other valves that may be susceptible to this type of event.
2. A note has been entered in the Unit 1 and Unit 2 Equipment Clearance Order database for all valves identified in corrective action 1 that cautions operators to electrically close the valves and not de-clutch the valve for manual operation.
3. The affected Unit 1 and Unit 2 valves will be labeled locally with a caution statement. The Unit 1 valves have been labeled. This action will be completed for Unit 2 prior to Mode 6 entry.

ADDITIONAL INFORMATION:

There have been no previous similar events reported to the NRC.