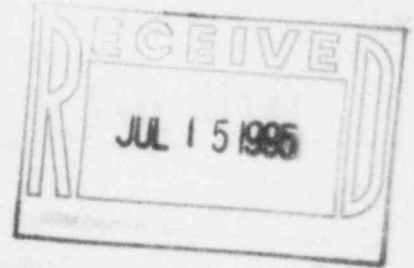


# The Light company

Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

July 11, 1985  
ST-HL-AE-1284  
File No.: G12.227

Mr. Robert D. Martin  
Regional Administrator, Region IV  
Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011



South Texas Project  
Units 1 & 2  
Docket Nos. STN 50-498, STN 50-499  
Final Report Concerning Potential  
Failure of Non-Seismic CCW Tank Level  
and Flow Switches

Dear Mr. Martin:

On February 7, 1985, Houston Lighting & Power Company notified the Nuclear Regulatory Commission that an item regarding the potential failure of non-seismic tank level and flow switches during an earthquake was potentially reportable pursuant to 10CFR50.55(e). Attached is our Final Report on this item.

If you should have any questions on this matter, please contact Mr. Michael E. Powell at (713) 993-1328.

Very truly yours,

A handwritten signature in dark ink, appearing to read "J. H. Goldberg". The signature is fluid and cursive, written over the typed name.

J. H. Goldberg  
Group Vice President, Nuclear

JSP/as

Attachment: Final Report Concerning Potential  
Failure of Non-seismic CCW Tank Level and Flow Switches

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cc:

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U.S. Nuclear Regulatory Commission  
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South Texas Project  
Units 1 & 2  
Final Report Concerning Potential  
Failure of Non-Seismic CCW  
Tank Level and Flow Switches

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I. Summary

The present design of the Component Cooling Water System (CCWS) uses surge tank level switches and flow switches which are not seismically qualified. In the event of an earthquake, these switches could experience contact chatter or spurious closure. Due to the pump protection logic of the CCWS, the system pumps could all be tripped and inhibited from restart by the control room operator. Restart could be accomplished from the switchgear room but additional operator response time would have to be considered. Although further investigation revealed other Class 1E equipment which could be affected by an interface with non-seismic equipment, the final evaluation of this item concluded that only the CCW tank level and flow switches could have had an adverse effect on the safety of plant operations.

II. Description of Deficiency

The CCW surge tank level switches and CCW flow switches are designed to protect the CCW pumps from loss of suction pressure. These switches are not seismically qualified and could experience contact chatter or spurious closure during an earthquake. Due to the pump protection function of the switches, the CCW pumps could be automatically tripped and inhibited from restart by the control room operator. This could result in a complete loss of CCW. Restart could be accomplished from the switchgear rooms, but this would require additional operator action time.

As stated in our First Interim Report (ST-HL-AE-1203, dated March 7, 1985), during the initial investigation of this problem it was determined that there are also non-seismically qualified pressure switches in the CCW header and in each ECW pump discharge. These switches are connected to the CCW and ECW pumps such that on low pressure the standby ECW and CCW pumps are automatically started.

The functions of the autostart feature have been evaluated further. This feature is not required for any safety function because even if the switch failed to signal the pumps to start on low pressure, other safety grade signals provide necessary pump starts during abnormal or accident conditions. Therefore, no concern exists for this non-seismic interface with the Class 1E pump circuits and no upgrade is necessary.

Elementary drawings of the isolation relay panels and logic drawings were reviewed to identify other non-seismically qualified devices that interface with Class 1E devices. (See Table 1 of the second interim report, ST-HL-AE-1242 dated April 26, 1985, for a list of the interfaces reviewed.) This review determined that no safety hazard exists with other interfaces.

### III. Corrective Action

The CCW surge tank level switches were provided to protect the CCW system pumps from possible cavitation by automatically tripping the pumps when low-low water level was present within the tank. This function has been changed to annunciate in the main control room. The operator can then trip the CCW pumps manually. Two (2) separate 1E level switches at higher setpoints alert the operator to decreasing CCW surge tank level. There is also a safety-grade level transmitter that provides surge tank level indication in the control room.

The CCW flow switches have been upgraded to Class 1E devices that are seismically and environmentally qualified, but powered from non-Class 1E sources. The qualification ensures that contact chatter or spurious closure do not occur and that the pumps are not tripped during a seismic event. The cabling from the flow switches to the Class 1E isolation panels is run in seismically supported raceways. The supports are the same as those used in Class 1E applications. The cable is purchased to Class 1E requirements.

### IV. Recurrence Control

In order to determine whether a safety hazard might exist elsewhere in the plant due to interfaces between Class 1E and non-Class 1E devices, a comprehensive list of such interfaces was prepared. Each of these interfaces has been evaluated and no other potential safety hazards were identified. Bechtel's Design Change Management procedure (Engineering Department Procedure 4.73) will ensure that future system design changes will be reviewed and approved by all affected engineering disciplines.

### V. Safety Analysis

This item, were it to have remained uncorrected, could have resulted in the temporary loss of CCW flow following a seismic event and could have adversely affected the safety of plant operations. The item, therefore, meets the reportability criteria of 10CFR50.55(e). Any safety hazard which could have occurred as a result of this deficiency is prevented by corrective actions taken.