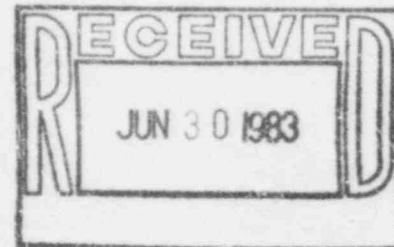


# The Light company

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

June 29, 1983  
ST-HL-AE-972  
File Number: G12.144

Mr. John T. Collins  
Regional Administrator, Region IV  
Nuclear Regulatory Commission  
611 Ryan Plaza Dr., Suite 1000  
Arlington, Texas 76012



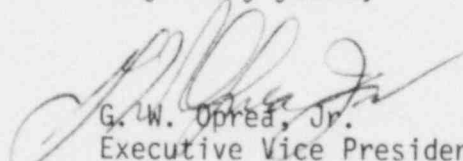
Dear Mr. Collins:

South Texas Project  
Units 1 & 2  
Docket Nos. STN 50-498, STN 50-499  
Final Report Concerning the  
Voltage Regulation Problem for Large  
Motors on 480V Class 1E Load Centers

On April 19, 1983, pursuant to 10CFR50.55(e), Houston Lighting & Power Company (HL&P) notified your office of an item concerning a voltage regulation problem for the ESF 4160/480 Volt Load Center Transformers. Attached is the Final Report concerning this item.

If you should have any questions concerning this matter, please contact Mr. Michael E. Powell at (713) 877-3281.

Very truly yours,

  
G. W. Oprea, Jr.  
Executive Vice President

MEP/mg  
Attachment

Houston Lighting & Power Company

June 29, 1983

cc: G. W. Oprea, Jr.

ST-HL-AE-972

J. H. Goldberg

File Number: G12.144

J. G. Dewease

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Director, Office of Inspection & Enforcement

Nuclear Regulatory Commission

Washington, D. C. 20555

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U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Revision Date 04-29-83

Final Report Concerning the  
Voltage Regulation Problem for Large  
Motors on 480V Class 1E Load Centers

I. Summary

The ESF 4160/480 volt transformers are required to supply the ESF 480 volt load centers and to ensure that the ESF load center bus voltage does not drop below 80% of the motor rated voltage of 460 volts. As presently designed, the subject transformers have an impedance which is too high for acceptable voltage regulation on the 480 volt ESF load center on start up of equipment on the busses.

II. Description of the Deficiency

On April 19, 1983, pursuant to 10CFR50.55(e), Houston Lighting & Power (HL&P) notified your office of an item concerning the ESF 4160/480 volt load center transformers.

There are six transformers per unit which supply the 480 volt load centers E1A, E1B, and E1C in a double ended, split bus arrangement utilizing a normally open tie breaker. This results in two busses per load center or train, which are identified as E1A1, E1A2, E1B1, E1B2, E1C1 and E1C2. There is one RCFC Supply Fan Motor assigned to each of these busses. The transformers are required to ensure that the ESF load center busses identified above do not drop below 80% of motor rated voltage (460 volts).

On initiation of a safety injection (SI) signal, two (2) RCFC Supply Fan Motors per train are designed to start simultaneously. As a result of the transformer impedance (7%) and the high starting current of the RCFC Supply Fan Motors, there is a high probability that the ESF bus voltages would drop below 80% of motor rated voltage to the extent that none of the motors could be started. Without the RCFC Supply Fan Motors, the ability to remove heat from the Containment could be inhibited during an accident.

Other equipment served by the same busses are the Residual Heat Removal Pumps and the Spent Fuel Pool Cooling Pumps. The ability of this equipment to be started may also be impacted by the high transformer impedance.

III. Corrective Action

The corrective action will be to replace the existing ESF Load Center Transformers with new transformers with a lower impedance based on system requirements. Once the re-design has progressed sufficiently, Chapter 8 of the FSAR will be updated providing the details of the change.

IV. Recurrence Control

A recurrence control program is not necessary. Bechtel has procedures in place to preclude this type of incident from recurring.

V. Safety Analysis

No detailed safety hazards analysis will be performed. It is conservatively assumed that the large Class 1E motors served by the auxiliary transformers would fail to start on demand. This is considered to be a potential common mode failure.