



GULF STATES UTILITIES COMPANY

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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

River Bend Station - Unit 1
Docket No. 50-458

Please find enclosed an Informational Report concerning multiple relay failures in the standby cooling tower fans at River Bend Station - Unit 1. This report is submitted to inform the NRC of these failures and document GSU's investigation and corrective actions.

Sincerely,

W. H. Odell
Manager-Oversight
River Bend Nuclear Group

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INTRODUCTION

During a 12 hour time period from 10/05/90 to 10/06/90, with the unit in Operational Condition 5 (Refueling), two 42X relays (*RLY*) in Division I standby cooling tower fans (*FAN*) 1SWP*FN1U and 1SWP*FN1S experienced failures. The 42X relays are used in the starting circuits of the fans. The results of these failures were that control room indication for each of the fans was lost due to blown control fuses. Shortly thereafter, two additional relays, a 62TX and a 62VX (*62*), in the timer circuits of the Division II fans (*FAN*) 1SWP*FN1T and 1SWP*FN1V were also found to be inoperative. The failures of the 62TX and 62VX relays disabled the remote operation of these fans from the control room. However, the fans remained operable locally from motor control center (MCC) (*MCC*) 1EHS*1MCC16B.

The 42X relays (*RLY*) and the 62TX and 62VX relays (*62*) are all Gould J10 relays. Inspection of the failed relays indicates that they overheated. The failed relays have been shipped offsite for failure analysis. A supplemental report will be submitted by February 15, 1991 to provide the results of the failure analysis and additional corrective actions, if required.

INVESTIGATION

An inspection of the failed relays revealed the following observations:

- . The coils of the relays were cracked, and the coils had swelled.
- . The coils exhibited a burned odor.
- . Three relays had low coil resistance.
- . One relay open-circuited.

Low coil resistance is indicative of shorted windings. This and the other observations are evidence of overheating. GSU has shipped 2 of the 4 failed relays to Wyle Laboratories in Huntsville, Alabama for root cause analysis. A supplemental report will be issued by February 15, 1991 to provide the results of the failure analysis.

Following the event, resistance measurements were taken on all of the remaining J10 relays in the starting circuits of the standby cooling tower fans. The resistance values were all found to be within allowable limits.

CORRECTIVE ACTION

The failed relays have been replaced with new J10 relays. GSU continues to evaluate the mode of failure. Additional corrective actions, if required, will be taken following the failure analysis.

As stated in the investigation section of this report, GSU has inspected and taken resistance readings on all of the failed relays and has found evidence of overheating. Resistance measurements were also taken on the relays in the starting circuits that did not fail. There was no evidence of degeneration of the non-failed relays.

SAFETY ASSESSMENT

At the time of the fan failures, the plant was in Operational Condition 5 (Refueling), 7 days following shutdown. The standby cooling tower (*BS*) was being utilized to remove decay heat as normal service water was not available. The fan failures resulted in Division I being inoperable, since Technical Specification 3.7.1.2 requires all fans to be in operation. However, since both inoperable fans (*FAN*) were in the same cell (2 - 50% capacity cells per division), a minimum of 50% cooling capacity from Division I was available. In addition, Division II was operational at the time with power being supplied from offsite. Adequate cooling was therefore available during the period the fans were inoperable to maintain the plant in a safe shutdown condition.

The relays in the starting circuits of the standby cooling tower fans are continuously energized while operating. The Division I fans operated for 21 days, prior to being secured, without additional failures of J10 relays. Based on the continuous operation of the Division I fans for 21 days and the results of the resistance measurements of the non-failed relays, GSU concludes that the non-failed J10 relays in the starting circuits are capable of continued operation.

NOTE: Energy Industry Identification System Codes are identified in the text as (*XX*).