GULF STATES UTILITIES COMPANY

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

Gentlemen:

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

Enclosed is Gulf States Utilities Company's Special Report concerning an invalid failure of the Division II diesel generator at River Bend Station. This report is being submitted pursuant to River Bend Station Technical Specification 4.8.1.1.3 and 6.9.2.

Sincerely,

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

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REPORTED CONDITION

At 1404 on 10/21/90 with the plant in Operational Condition 5 (Refueling), during post maintenance period testing, a Nuclear Control Operator (NCO) synchronized the Division II diesel generator (DG) out of phase. The out of phase synchronization occurred because the operator did not follow site procedure to determine when to close the DG output breaker. This is considered an invalid failure in accordance with Regulatory Guide 1.108 position C.2.e.2. This Special Report is submitted pursuant to the requirements of River Bend Technical Specifications 4.8.1.1.3 and 6.9.2.

INVESTIGATION

The sequence of events was as follows. The operator used the synch lights alone to determine when to close the DG output breaker, closing the breaker when the synch lights were dim. Approximately 0.2 seconds after the DG output breaker closed, the normal supply breaker to the bus tripped open. The diesel generator supplied about 900 KW of power to the electrical loads on the bus as the only source of AC power. After about 18 minutes of operation, the diesel generator was paralleled to the grid through the alternate feed breaker. The diesel load was increased to about 1800 KW for about 24 minutes before the diesel was shutdown. No abnormal conditions were detected during this period of diesel generator operation.

The diesel engine and generator were inspected after this event to determine if any damage had been done to the equipment. The following inspections of the diesel engine were performed:

The gear train was inspected for damaged components. None were found.

The main governor drive coupling was inspected for damage. No degradation of the coupling was identified.

The grout supporting the engine-generator skid was inspected for degradation. No degradation of the grout was identified.

The engine-generator foundation bolt torques were checked. No loose bolts were found.

The portion of the crankshaft where connecting rod number 8 is attached was inspected using fluorescent liquid penetrant. No unsatisfactory conditions were identified.

The portion of the crankshaft between cylinders 7 and 8 that is supported by the main bearing journal was inspected using fluorescent liquid penetrant. No unsatisfactory conditions were identified.

A limited scope calculation was performed to determine if the flywheel bolting needed inspection. The results of this evaluation indicated that the flywheel bolting was not overstressed during the event.

The results of the mechanical inspection show that the diesel engine was not damaged as a result of this event. The generator and excitation system components were also inspected for damage. The inspections performed were as follows:

The rotor poles, stator windings and support structure, and the slip rings were visually inspected for damaged components. None were found.

The rotor shaft, rotor pole support plates, and stator supports were visually inspected for cracking. No cracks were found in these components.

One of the dowels in the generator pedestal bearing was inspected to determine if the pedestal bearing had shifted. The dowel could be removed easily, had no apparent damage, and was reinstalled.

The excitation panel was inspected for damaged components. No damage was found to the silicon control rectifiers and diodes within the panel. A damaged surge arrester was found and replaced.

CAUSE OF FAILURE

The root cause of the out of phase synchronization of the Division II diesel generator is operator error. The operator did not use the synch scope to determine when to close the diesel generator output breaker. As a result, the diesel was synchronized to the grid out of phase. The operator's action violated site procedures which require that the synch scope and lights be used together to determine the correct timing for breaker closure.

This situation occurred while the Division II diesel generator was undergoing post maintenance period test runs. At no time during the out of phase synchronization was the Division II DG required to be operable per the River Bend Technical Specifications. The operable DG was the Division I DG, and the ability of the Division I DG to perform its safety function was not impaired. In addition, the Division III DG was conservatively maintained in an operable condition during the out of phase synchronization.

CORRECTIVE ACTION

This occurrence has been discussed in shift briefings to make all operators aware of the serious nature of synchronizing any generator out of phase. In addition, this report will be required reading for all operators by January 31, 1991.

Length of Time Diesel Generator was Out-of-Service:
6 days 3 hours

Current Surveillance Interval:

Division I	Monthly
Division II	Monthly
Division III	Monthly

Test Intervals Conforms to Technical Specification:
Yes

Failures for Division I:
1 Valid failure in the last 20 Valid Tests
1 Valid failure in the last 100 Valid Tests

Failures for Division II:
0 Valid failures in the last 20 Valid Tests
4 Valid failures in the last 100 Valid Tests

Failures for Division III:
0 Valid failures in the last 20 Valid Tests
2 Valid Failures in the last 100 Valid Tests

Cummulative Failures for all River Bend Diesel Generators:
3 Valid Failures in the last 100 Valid Tests