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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Unit 1
Docket No. STN 50-498
Special Report Regarding a Valid Failure of
Standby Diesel Generator 12 on October 14, 1992

Pursuant to the South Texas Project Electric Generating Station (STPEGS) Technical Specifications 4.8.1.1.3 and 6.9.2, Houston Lighting & Power submits the attached Special Report regarding a valid failure of Standby Diesel Generator 12 which occurred on October 14, 1992.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628 or me at (512) 972-7205.

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MAC/ag

Attachment: Special Report Regarding a Valid Failure of SDG 12 on October 14, 1992

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South Texas Project
Unit 1
Docket No. STN 50-498
Special Report Regarding a Valid Failure of
Standby Diesel Generator 12 on October 14, 1992

DESCRIPTION OF EVENT:

On October 8, 1992, prior to the October 14, 1992 event, Standby Diesel Generator (SDG) 12 was operating in steady state at 5500 kW for a post-maintenance run, when the diesel shed approximately a 3500 kW load. After operating several minutes at reduced load, the operators tripped the engine since they were unable to reduce the speed. It was observed that the governor called for full fuel and that the exhaust temperatures were unbalanced. Initial troubleshooting was conducted finding no apparent problem. The engine ran satisfactorily on October 12.

On October 14, 1992, at 0138 SDG 12 was loaded to 2000 kW in accordance with procedure 1PSP03-DG-0020, Standby Diesel 12 Test Mode Override Verification. After a few seconds, SDG 12 shed its load to 0 kW. The output breaker was opened. Engine speed became erratic with frequency increasing to 61.5 hertz then decreasing to 58.5 hertz. The SDG was then emergency-stopped from the control room since the speed could not be controlled.

After the failed surveillance test, the SDG 12 was instrumented with test equipment to monitor various parameters. The engine was started and again shed its load from 2000 kW to 0 kW without operator action. Personnel monitoring the performance noted that the governor drove the fuel rack to the maximum fuel position. Based on monitoring the fuel oil pressure in the manifolds, the test pressure transducers indicated an abrupt increase in pressure upstream of check valve DO-3292 in the fuel oil feed line, simultaneously with a rapid (but not instantaneous) decrease in the right and left bank header pressures. It was concluded that check valve DO-3292 which supplies fuel oil may have degraded and blocked the fuel oil flow.

The check valve DO-3292 was removed and disassembled revealing that the nut which secures the disk to the swing hinge had backed completely off. The disk was loose in the valve body. The nut was recovered in the left bank fuel oil manifold piping. The stud which joins the disc to the hinge is split to allow for mechanical locking but this locking device had not been utilized, thus allowing the nut to back-off. The other two similar check valves in the fuel oil piping on this engine were also disassembled and determined to be in the as-designed condition.

CAUSE OF EVENT:

The cause of this event was due to the failure of a swing disk check valve in the fuel supply line. A contributing cause was the bolt locking device which was not utilized to secure the disk in place. The SDGs were apparently supplied by the vendor without these check valve disk locking mechanisms utilized.

ANALYSIS OF EVENT:

In the subject failure, it is concluded that the load shedding in all three cases was due to partial or complete fuel oil blockage caused by the loose check valve disk in the valve body. Because the disk was loose, it is likely that the flow interruption was intermittent as evidenced by periods of satisfactory operation between load shedding events.

This event is significant in that if the DG were challenged, it would not have been able to perform its safety function since it was unable to carry load. As such, this event is reportable as a valid failure. The testing frequency for the DG will remain at once every 31 days since the number of failures in the last 20 valid tests is 1, and the number of failures in the last 100 valid tests is less than 4.

CORRECTIVE ACTIONS:

1. The damaged check valve was replaced and the internals were removed. (Note: The check valve serves no useful function at South Texas Project because the elevation of the fuel oil tank is sufficient to ensure a positive head to the fuel injector pump.) The engine started and loaded successfully. No anomalies were observed in the fuel oil system.

2. The remaining SDGs' fuel oil feed line check valves in both units were inspected and the internals were also removed as a conservative precaution. The inspection revealed that the check valve studs were not split to lock the nut in place, however, the nuts were securely holding the disks.

3. The other two similar check valves on the fuel oil feed lines on each SDGs in both units were inspected to verify proper operation. It is noted that the retaining nut on one of SDG 21 check valves was found cracked but still intact. This condition did not adversely impact operation of the disk. The nut was replaced. No other problems were found with the remaining check valves that were inspected.

CORRECTIVE ACTIONS: (Con't)

4. Cooper Bessemer was notified of the concern related to the check valves. In addition, the check valve issue was placed on Nuclear Network.

ADDITIONAL INFORMATION:

The check valve that failed is Cooper-Bessemer part number 2-01V-418-03 and it was manufactured by Stockham, Model B319.

A search of the NPRDS database for a Stockham model B319 swing check valve was conducted. There were no reported failures for this model number.