

The Light company

Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

May 8, 1992
ST-HL-AE-4094
File No.: G02
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Unit 2
Docket No. STN 50-499
Special Report Regarding A Non-Valid
Failure of Standby Diesel Generator #21 on April 8, 1992

Pursuant to the South Texas Project (STP) Technical Specifications 4.8.1.1.3 and 6.9.2, Houston Lighting & Power (HL&P) submits the attached Special Report regarding Standby Diesel Generator #21 non-valid failure which occurred on April 8, 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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Manager,
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Attachment: Special Report Regarding A Non-Valid
Failure of SDG #21 on April 8, 1992

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Houston Lighting & Power Company
South Texas Project Electric Generating Station

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South Texas Project
Unit 2
Docket No. STN 50-499
Special Report Regarding A Non-Valid
Failure of Standby Diesel Generator #21 on April 8, 1992

DESCRIPTION OF EVENT:

On April 8, 1992, Unit 2 was in Mode 1 at 100% power. While Standby Diesel Generator (SDG) #21 Operability Test was being performed, the SDG tripped when released from the emergency mode. No annunciators or relay flags, which would indicate the cause of the trip were detected. In addition, when SDG #21 was started, none of the usual starting alarms (i.e., low starting air pressure, jacket water standpipe level low) were received.

Troubleshooting of the SDG #21 electrical trip circuitry was performed with no problems found. The applicable fuses, relays and timers were verified for proper operation. Various connections were inspected which revealed a loose connector to the input side of the annunciator power supply. This connection was repaired.

A failed annunciator power supply (PS-2) was also identified. This power supply was subsequently replaced three times before the cause for the power supply failures could be determined. The failure of this power supply was originally thought to have been the cause for the trip upon release from emergency mode. However, after extensive troubleshooting, this conclusion could not be supported.

A functional check of the engine speed monitor and its associated trip setpoints were verified. No abnormalities were noted.

CAUSE OF EVENT:

The cause of the SDG #21 trip upon release from the emergency mode has not been determined at this time. Previous occurrences of both SDG #21 and #23 trips upon release from the emergency mode have been attributed to a loss of air pressure in the pneumatic shutdown header. This event is described in the attached correspondence ST-HL-AE-4065 dated April 30, 1992. In addition, undetected electrical faults could also result in unannounced trips upon release from the emergency mode.

ANALYSIS OF EVENT:

This event has been classified as a non valid failure since the SDG #21 operated satisfactorily in the emergency mode and if challenged, would have performed its safety function.

CORRECTIVE ACTIONS:

1. Further analysis and investigation will be performed on SDG #21. A supplemental report will be submitted by July 30, 1992, identifying the cause, if determined, and the necessary corrective actions.

ADDITIONAL INFORMATION:

At the time of the event, there were no valid failures in the last 20 valid tests and less than 4 valid failures in the last 100 tests for SDG #21. Therefore, the testing frequency will remain at once per 31 days.

The power supply is manufactured by Beta Products, Part No. 306930.

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Houston Lighting & Power

South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

April 30, 1992

ST-HL-AE-4065

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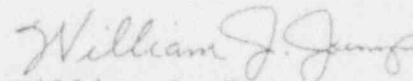
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Washington, DC 20555

South Texas Project
Unit 2
Docket No. STN 50-499
Supplemental Special Report Regarding
Two Diesel Generator Non-Valid Failures

Pursuant to the South Texas Project Electric Generating Station (STPECS) Technical Specifications 4.8.1.1.3 and 6.9.2, Houston Lighting & Power submits the attached Supplemental Special Report regarding Standby Diesel Generators (SDG) #23 and #21 non-valid failures which occurred on December 6 and 7, 1991, respectively. A Special Report regarding the failure was provided to the NRC on January 3, 1992, reference letter ST-HL-AE-3955. Please find attached a supplement to that report which provides additional information concerning investigative findings. Change bars have been added to highlight supplemental information.

A separate Special Report regarding a non-valid failure of SDG #21 on December 24, 1991 was provided to the NRC on January 23, 1992, reference letter ST-HL-AE-3985. The attached report also provides additional information for HL&P letter ST-HL-AE-3985 that was due to the NRC by July 30, 1992.

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



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Attachment: Supplemental Special Report Regarding
Two SDG Non-Valid Failures

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South Texas Project Electric Generating Station

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Supplemental Special Report Regarding
Two Diesel Generator Non-Valid Failures

DESCRIPTION OF EVENT:

On December 6, 1991, at 2301 hours, Standby Diesel Generator #23 was started in the emergency mode following release of Equipment Clearance Order 2-91- '61 which was associated with a work document. Unit 2 was in Mode 4 during a refueling outage. SDG #23 came up to rated speed, voltage, and frequency within 10 seconds. When the engine was released from emergency mode, SDG #23 tripped with no test mode trips indicated. The engine was then restarted at 0030 hours on December 7 in the test mode with I&C, Electrical, and Mechanical Maintenance personnel present. The engine came up to rated speed, voltage, and frequency within the 10 second limit and was running satisfactorily. The engine was then started a third time at 0059 hours in the emergency mode. The diesel generator was released from the emergency mode to the test mode without a trip. The Control Room then commenced the Standby Diesel Generator #23 Operability Test. The diesel performed satisfactorily during the one hour surveillance run and SDG #23 was declared operable at 0250 hours.

Standby Diesel Generator #21 was started on December 7, 1991, at 0313 hours in the emergency mode to verify operability in accordance with Technical Specification Action Statement 3.8.1.1 and came up to rated speed, voltage, and frequency within 10 seconds. When the engine was released from the emergency mode, SDG #21 tripped with no test mode trips indicated. SDG #21 was restarted in the emergency mode a second time at 0323 hours, released from the emergency mode to the test mode, and the engine functioned properly. At 0603 hours, the Control Room commenced SDG #21 operability test and declared SDG #21 operable at 0820 hours.

Subsequent troubleshooting was performed on SDG #23 and SDG #21 on February 28, 1992, and January 15, 1992 respectively. All electrical circuitry pertaining to the 86S relay trip circuit was verified for termination tightness, condition of lugs, and proper termination. In addition, a chart recorder was set up to monitor the 86S trip circuit loop voltages. No abnormal indications were observed. I&C personnel also inspected the pneumatic control system by monitoring performance with test gauges, but did not disassemble any piping or components. Again, no problems were noted on either diesel.

DESCRIPTION OF EVENT: (Continued)

The 86S relay on SDG #21 was again tested on March 3, 1992. The voltages were monitored with a chart recorder during operation of the generator. One set of contacts were found to have a slightly out of tolerance resistance measurement. The relay was subsequently replaced. Evaluation of the 86S relay shows that the chance of circuit malfunction would be unlikely with the as-found value of resistance. The conservative approach was to replace the relay, as a considerably higher value of contact resistance (leading to contact failure) could cause this mode of diesel trip.

Inspection of the pneumatic control circuits on both engines revealed foreign material in check valves SD-3207 (#21) and SD-3209 (#23). These check valves prevent reverse airflow from the shutdown control air line into the reset air line. Foreign material under the seat of these check valves causes a decrease in air line pressure and at 20 psig, a shuttle valve will change state and cause the engine to trip with no indications.

CAUSE OF EVENT

The cause of these events can reasonably be attributed to foreign material under the seat of the check valves allowing a decrease in air pressure, and ultimately causing the trips with no apparent indication.

ANALYSIS OF EVENT:

These two events have been classified as non-valid failures since the diesel generators operated satisfactorily in the emergency mode and if challenged, would have performed their safety function. SDGs #21 and #23 were started in test mode on December 15, 1991 and both engines operated satisfactorily. Diesel generator #21 also successfully completed a valid test on December 19, 1991. SDGs #21 and #23 started and ran in the emergency mode when responding to a recent reactor trip and Safety Injection signal on December 24, 1991. SDG #21 tripped when released from the emergency mode during the run on December 24. Subsequently, a separate report for this apparent non-valid failure was submitted addressing the cause of the SDG trip, reference letter ST-HL-AE-3985. Since these SDGs have operated correctly in the emergency mode, the diesel generators are considered capable of fulfilling their required safety functions.

CORRECTIVE ACTIONS:

1. Troubleshooting for SDG #23 and SDG #21 have been completed.
2. Preventive maintenance instructions will be developed to clean the subject check valves periodically. This activity will be complete^d by July 15, 1992.

ADDITIONAL INFORMATION:

At the time of the event, there were no valid failures in the last 20 valid tests and less than 4 valid failures in the last 100 tests for SDG #21. The testing frequency remained at once per 31 days.

At the time of the event, there were no valid failures in the last 20 valid tests and less than 4 valid failures in the last 100 tests for SDG #23. The testing frequency remained at once per 31 days.