

# The Light company

Houston Lighting & Power

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

January 23, 1992  
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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 Nonvalid Failure of  
Standby Diesel Generator 21 on December 24, 1991

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 nonvalid failure of Standby Diesel Generator 21 which occurred on December 24, 1991.

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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William J. Jump  
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JMP/lf

Attachment: Special Report Regarding a Nonvalid  
Failure of SDG 21 on December 24, 1991

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South Texas Project  
Unit 2  
Docket No. STN 50-499  
Special Report Regarding a Nonvalid Failure of  
Standby Diesel Generator 21 on December 24, 1991

DESCRIPTION OF EVENT:

On December 24, 1991, Unit 2 was in Mode 1 at 30% reactor power, during power ascension from a recent refueling outage, when a control valve failed open causing a reduction of Reactor Coolant System pressure. The low pressurizer pressure caused a reactor trip and a safety injection signal. All three Standby Diesel Generators (SDGs) automatically started in the emergency mode, as designed, on the safety injection signal. Utilizing the performance of the Reactor Trip or Safety Injection Emergency Operating Procedure, the SDGs were released from the emergency mode after the verification of availability of offsite power. The SDG 21 tripped instantly when it was released from the emergency mode. There were no alarms or trip indications received on the SDG 21 trip.

On January 15, 1992, a chart recorder was set up at the local engine control panel to monitor the trip circuit loop voltages during a test run of the SDG 21 in an attempt to duplicate the event. No fluctuations were recorded by the chart recorder. A fluctuation would have indicated an interruption in the voltage due to a faulty contact, a loose connection or a component malfunction.

During the same test run of SDG 21 the pneumatic shutdown system was monitored using permanent instrumentation and a test instrument. The pneumatic regulators were found to be performing satisfactorily. However, one of the pneumatic regulators was found to be set low. The as found setting should not have resulted in pressures low enough to cause a trip. The regulator was adjusted to the correct pressure.

CAUSE OF EVENT:

The cause of the event cannot be determined at this time. Further investigation is ongoing to troubleshoot the SDG 21 trip. Potential causes include the following:

- trip circuit relay malfunction
- pneumatic controls malfunction
- failure to reset the trip circuit prior to starting the diesel.

CAUSE OF EVENT: (Continued)

SDG 23 and SDG 21 also tripped instantly when released from the emergency mode on December 6, 1991 and December 7, 1991, respectively. These SDG events were classified as nonvalid failures. These events were documented in an NRC Special Report submitted on January 3, 1992 (Reference: ST-HL-AE-3955). The cause(s) of these events have not been determined but their investigations are ongoing.

ANALYSIS OF EVENT:

The SDG 21 automatically started in the emergency mode on a safety injection signal. The SDG 21 accelerated to rated speed, voltage, and frequency within the required ten seconds but was not loaded because offsite power had not been interrupted. The SDG 21 failure occurred when it was released from the emergency mode. This indicates that the cause of the failure is in a non-emergency component and/or circuit. This SDG 21 start was classified as a nonvalid failure. The SDG 21 operated satisfactorily in the emergency mode and, if challenged, would have performed its design function.

CORRECTIVE ACTIONS:

1. Initial troubleshooting was performed and verified that no loose connections, high resistant contacts, or voltage fluctuations were present. Initial troubleshooting also verified that the pneumatic regulators, although one was found to be set low, were operating satisfactorily and that the pneumatic header was maintaining adequate pressure.
2. Troubleshooting will continue during the scheduled train outage work weeks for SDG 21 until a final resolution is determined. The results will be provided in a supplemental report which will include the necessary corrective actions. This report will be submitted to the NRC by July 30, 1992.

ADDITIONAL INFORMATION:

There have been no valid failures in the last 20 valid tests of SDG 21. The number of valid failures in the last 100 valid tests is less than four. Therefore, the testing frequency for SDG 21 remains at once per 31 days.