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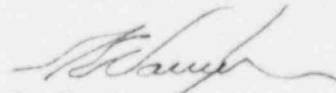
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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South Texas Project Electric Generating Station
Unit 1
Docket No. STN 50-498
Special Report Regarding
Two Diesel Generator Nonvalid Failures

Pursuant to the South Texas Project Electric Generating Station Technical Specifications 4.8.1.1.3 and 6.9.2 Houston Lighting & Power submits the attached Special Report regarding two diesel generator nonvalid failures.

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



G. E. Vaughn
Vice President
Nuclear Plant Operations

GEV/CAA/cir

Attachment: Special Report Regarding Two
Diesel Generator Nonvalid Failures

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Unit 1
Docket No. STN 50-498
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DESCRIPTION OF EVENTS:

Two independent nonvalid failures occurred while performing operability surveillance testing on Standby Diesel Generator (SDG) #11 on December 29 and December 30, 1987.

At approximately 1330 CST on December 29, 1987 a nonvalid failure occurred during loading of SDG #11 with the SDG unit operating in parallel with offsite power. Following a successful start the operator paralleled the unit with offsite power and began adding load. At approximately 90% full load the instantaneous directional overcurrent relay (67/50H) operated tripping the SDG output breaker. The SDG successfully handled the near full load rejection and continued operating at rated speed and voltage. The surveillance test was terminated and investigation of the relay actuation initiated.

The SDG output current at the time of the trip was 797 amps and no large loads had been started which could have caused system transients. Discussion between the system load dispatcher and the Unit 1 control room verified that the system grid had not experienced any transients during this period. Plant conditions at the time of the trip provided for approximately 432 amps flowing back into the system through the current transformer of the 67/50H relay. The operating setpoint of the 67/50H relay is 1008 amps. The calibration of the directional overcurrent relay was checked and the "as-found" relay was verified to be within tolerance.

Following verification of the relay setpoint, the operability surveillance test was again attempted resulting in the second nonvalid failure addressed by this Special Report. This second failure occurred at approximately 0700 CST on December 30, 1987.

After a successful SDG start the operator attempted to parallel the unit with offsite power. As the operator closed the SDG output breaker the reverse power relay (32) operated causing a SDG unit trip. An operational error is assumed to have occurred while paralleling the generator.

The SDG #11 operability surveillance was repeated and performed satisfactorily. The unit was started, paralleled with offsite power, and operated under full load conditions for one hour in accordance with the surveillance requirements.

It is noted that neither relay actuation would have prevented the diesel generator from performing its safety function. The SDG cannot be paralleled while a Safety Injection (SI) signal is present following an Engineered Safety Feature Actuation System (ESFAS) actuation. The SDGs are paralleled with offsite power during performance of the monthly operability surveillance in order to satisfy the full load test requirement. The reverse power relay trip function is blocked when the unit is operating in the emergency mode.

In both cases the SDG remained operable and was available to perform its safety function throughout the events.

ROOT CAUSES:

The first failure has been attributed to a spurious operation of the 67/50H relay. The event has been reviewed by Bechtel, the system design engineer, and Brown-Boveri, the relay manufacturer, and no history of spurious actuation of this type of relay has been reported at other facilities. The relay manufacturer did state that a transient on the D.C. supply voltage to the relay might cause an inadvertent actuation. A review of the relay application and setpoint performed prior to the event confirmed that the relay is properly applied and set.

The second failure has been attributed to operator error. The SDG attempted to pick up approximately 4000 KVAR reactive load when the SDG output breaker was closed. This would indicate that the paralleling operation was performed incorrectly.

Subsequent testing of SBDG #11 verified proper operation of diesel relays and controls.

CORRECTIVE ACTION:

The following corrective actions are being taken to prevent recurrence of the nonvalid failures:

1. An engineering evaluation has been initiated to consider potential modifications in conjunction with the 67/50H relay to avoid spurious actuations. The evaluation will be completed by June 1, 1988.
2. Instrumentation will be connected to the 67/50H relay to monitor A.C. and D.C. voltage parameters during performance of a future surveillance test. This information will be used in the evaluation described in corrective action 1. This will be completed by April 1, 1988.
3. Plant Operators are being reinstructed on the specifics of the second event to ensure proper operation of the SDGs. Reinstruction will be completed by February 10, 1988.

4. Operating Procedures, 1POP02-DG-0001, 0002, 0003, will be revised to require a Unit Supervisor to be present when the SDG is manually synchronized. This will be completed by February 1, 1988
5. Licensed operators will be given additional simulator training on manual synchronization in the first cycle of the 1988 Requalification Program. This will be completed by May 9, 1988

ADDITIONAL INFORMATION:

Per the criteria of Regulatory Guide 1.108 both of the failures described in this report have been classified as nonvalid failures. As such, the current test interval for SDG #11 remains 31 days. There have been ten (10) valid tests performed on SDG #11 since the Unit 1 license became effective and, to date, no valid failures have occurred.