



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 81 AND 70 TO  
FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80  
HOUSTON LIGHTING & POWER COMPANY  
CITY PUBLIC SERVICE BOARD OF SAN ANTONIO  
CENTRAL POWER AND LIGHT COMPANY  
CITY OF AUSTIN, TEXAS  
DOCKET NOS. 50-498 AND 50-499  
SOUTH TEXAS PROJECT, UNITS 1 AND 2

### 1.0 INTRODUCTION

By application dated May 22, 1995, as supplemented by letter dated October 9, 1995, Houston Lighting & Power Company, et.al., (the licensee) requested changes to the Technical Specifications (TSs) (Appendix A to Facility Operating License Nos. NPF-76 and NPF-80) for the South Texas Project, Units 1 and 2 (STP). The proposed changes would revise TS 4.8.1.1.2.e.7 to allow the performance of the 24-hour surveillance test of the diesel generators during power operation.

The October 9, 1995, supplement provided clarifying information and did not change the initial no significant hazards consideration determination.

### 2.0 BACKGROUND

The standby diesel generator (SDG) system for STP consists of three identical 5500 kW SDGs with associated controls and support systems. Each SDG unit is completely separate and independent from the others, including its power sources for controls and support systems. Each unit provides 4.16 kV power to its respective Class 1E switchgear bus. During a loss-of-offsite power (LOOP), each SDG automatically starts and energizes its associated 4.16 kV bus. In the case of unavailability of any one SDG, the remaining two SDGs are capable of feeding the loads necessary for safe shutdown of the plant in the event of a design-basis accident (DBA) or LOOP.

### 3.0 EVALUATION

The licensee is proposing to perform the SDG 24-hour endurance test during any mode of operation. TS 4.8.1.1.2.e.7 currently requires that a 24-hour SDG endurance test be performed once every 18 months during shutdown conditions.

The proposed change will provide flexibility in scheduling surveillance testing activities.

The staff has always expressed concern regarding performance of the 24-hour SDG endurance test with a unit at power. When an SDG is operated in parallel with offsite power, the emergency power system is not independent of disturbances on offsite power systems that can adversely affect emergency power availability. In this condition, a disturbance in the non-emergency power system could result in both a LOOP and disabling of the emergency power source.

If a fault develops while the SDG is connected to non-emergency buses, SDG availability for subsequent emergency demands may be affected. In some design configurations, the SDG would trip as a result of overcurrent or reverse power, actuate a lockout device, and require local operator action to reset the lockout. In such cases, the SDG is recoverable, but the timeliness of its availability is not comparable to that of having the SDG in its normal standby service.

The design of SDGs at STP incorporates features that enable an SDG to automatically switch from the test mode to the emergency mode. As such, if an SDG is running in the test mode and an emergency demand SDG start signal is received, the SDG controls will automatically trip the SDG output breaker, thus disconnecting it from the offsite power system, and return the SDG to standby condition. This function is tested once per refueling cycle in accordance with TS 4.8.1.1.2.e.10. If offsite power is unavailable, the SDG will be ready to supply the emergency loads within the required time. In addition, the STP design provides the following features:

1. During surveillance tests, no more than one SDG is operated in parallel with the offsite power grid, and the remaining safety buses are aligned to the alternate offsite power source (the licensee will make procedure changes to align the redundant safety buses to a separate auxiliary or standby transformer). In this configuration, only one SDG is susceptible to perturbations in the offsite power grid. In this scenario alone, or coincident with a DBA, a shutdown can be achieved with any two of the three SDGs.
2. If a fault develops while the SDG is in the test mode and the SDG output circuit breaker does not trip, then that safety bus will not respond to a LOOP condition since this bus has not experienced a LOOP. However, the remaining two safety buses will respond if a LOOP condition exists.
3. In the event of a LOOP to the bus while the SDG is in the test mode, the ESF transformer directional overcurrent relay will trip the SDG output circuit breaker. This protection scheme functions to trip the SDG output circuit breaker upon detection of an overcurrent but allows the SDG to continue running. When the bus undervoltage relays detect the loss of voltage, they will trip the offsite source feeder breaker to the bus and

initiate SDG load sequencing. Thus, the timely availability of the SDG is not compromised even in this situation.

In addition to the above, the licensee will not perform planned maintenance on required components of the other redundant trains or the auxiliary feedwater system while the 24-hour SDG run is underway, to provide assurance that cross-train components are available in the unlikely case of an event while the SDG is running. Also, the procedure for testing the SDG will include a requirement to assess the potential for unstable grid conditions, including local severe weather conditions.

Based on the above, the staff finds that although performance of the 24-hour endurance test during power operation is contrary to the Standard Technical Specifications, the performance of this test during power operation is acceptable because of the unique SDG design features provided at STP. This conclusion is based on: 1) inclusion of an emergency override of the test mode to permit response to bona fide safety injection signals while the test SDG is paralleled with the offsite power source; 2) alignment of the remaining safety buses to a separate auxiliary or standby transformer, when one SDG is paralleled with the one offsite source for testing, so that a perturbation in offsite power affects only one SDG; 3) the excess capacity provided by three SDGs is such that any two out of three SDGs can supply adequate power to mitigate the consequences of a DBA; and 4) the SDGs will not be paralleled to the offsite systems during severe weather or unstable grid conditions. Therefore, the proposed amendment to add a footnote that would permit the 24-hour test of the SDG during power operation is acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Texas State official was notified of the proposed issuance of the amendments. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (60 FR 37091). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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