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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 43 AND 29 TO

FACILITY OPERATING LICENSE NOS. NPF-87 AND NPF-89

TEXAS UTILITIES ELECTRIC COMPANY

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

By application dated December 6, 1994 (LAR 94-021, TXX-94307), Texas Utilities Electric Company (TU Electric/the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License Nos. NPF-87 and NPF-89) for the Comanche Peak Steam Electric Station, Units 1 and 2. The proposed changes would revise Technical Specifications (TSs) to allow appropriate remedial action for high particulate levels in the diesel generator fuel oil inventory and other out-of-limit properties in new diesel generator fuel oil that has been added to the existing diesel generator fuel oil storage inventory.

2.0 BACKGROUND

The Comanche Peak Steam Electric Station (CPSES) Units 1 and 2 TSs 3.8.1.1 and 3.8.1.2, in part, require declaring the diesel generator (DG) inoperable if the diesel generator fuel storage system fuel oil has a total particulate contamination greater than or equal to 10 mg/liter, or if certain properties for new fuel oil that has been added to the fuel oil storage inventory exceed their acceptance limits.

Since the presence of particulate does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is not expected to rise rapidly between surveillance frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable.

With the properties specified in 4.8.1.1.2d.2 for the new fuel oil that has been added to the fuel oil storage inventory which is not within the required limits, time is needed to evaluate the stored fuel oil to determine that it remains acceptable, or to restore the stored fuel oil properties. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the emergency diesel generators (EDG) could run at their designed capacity on fuel oil which is of poorer quality than current limits allow.

To address those subjects, the technical specification change requests propose new ACTION requirements which allows seven days to restore particulate levels and 30 days to assess the other fuel properties to determine the acceptability of the fuel oil in the storage tanks prior to declaring the associated diesel generator inoperable.

These proposed changes are improvements which are consistent with the applicable sections of NUREG-1431, the Improved Standard Technical Specifications (ISTS) for Westinghouse Plants.

3.0 EVALUATION

General Design Criteria (GDC) 17, "Electric Power Systems," of Appendix A, General Design Criteria for Nuclear power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," requires that an on-site electric power system be provided to permit functioning of structures, systems, and components important to safety. In addition GDC 17 contains requirements concerning system capacity capability, independence, redundancy, availability, testability, and reliability. Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50 establishes overall quality assurance requirements for the design, construction, and operation of structures, systems, and components important to safety. Regulatory Guide (RG) 1.137, "Fuel-Oil Systems for Standby Diesel Generators," describes a method acceptable to the NRC staff for complying with the Commission's regulations regarding fuel oil systems for standby diesel generators and assurance of adequate fuel oil quality.

The EDGs at CPSES are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to Engineering Safety Features (ESF) systems so that fuel, Reactor Coolant System and containment design limits are not exceeded.

For proper operation of the EDGs, it is necessary to ensure the proper quality of the fuel oil. RG 1.137 addresses the recommended fuel oil practices as supplemented by ANSI N195. The fuel oil properties of concern are water and sediment content, kinematic viscosity, specific gravity (or API gravity), and impurity level.

RG 1.137 states that fuel oil not meeting applicable requirements should be replaced "in a short period of time (about one week)." This RG also states that "other properties" should be analyzed (completed) within two weeks.

Diesel fuel oil supports the operation of the standby AC power sources and therefore is encompassed by Criterion 3 of the NRC "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" (58 FR 39132) for items which are required to be in TS.

STORED FUEL OIL

Currently according to CPSES TS, a diesel generator is considered "inoperable" if the fuel oil parameters are above limits even though the likelihood is very high that the diesel generator will still run and perform its function.

TU Electric proposed the addition of ACTION statements g. to TS 3.8.1.1 and b. to TS 3.8.1.2 to address the required action in the event the stored fuel oil total particulates do not meet the Diesel Fuel Oil (DFO) Testing Program limits. Fuel oil degradation during long-term storage shows up as an increase in particulate, due mostly to oxidation. This action statement requires the restoration of the fuel oil total particulates to program limits (10 mg/l) within seven days.

Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between surveillance frequency intervals, it is prudent to allow a brief period prior to declaring the associated DG inoperable. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure. The trigger value of 10mg/liter of particulate is very conservative with respect to what an EDG can actually tolerate without adversely affecting filters and attendant EDG operation. Also, the possibility that particulate contamination will increase from 10 mg/liter to some unacceptable value in seven days is not credible. The 7-day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

The CPSES diesel generator vendor (Cooper) places much more lenient restrictions on particulate contamination levels allowed in the fuel oil supply. This is based, in part, on the fact that there are duplex filters between the diesel fuel oil storage tanks and the diesel generator that filter down to five (5) microns. These filters can be changed out while the diesel generator is in operation, which might be required if extremely high particulate contamination fuel oil was used.

NEW FUEL OIL PROPERTIES

TU Electric also proposed the addition of ACTION statements h. to TS 3.8.1.1 and c. to TS 3.8.1.2 to address the required action in the event the new fuel oil properties do not meet the DFO Testing Program limits following addition of the new fuel oil to the fuel oil storage tanks.

The current CPSES Technical Specification requires new diesel fuel that has been added to the fuel oil storage inventory to have less than 0.05% volume of water and sediment in the fuel. The vendor specifies that new fuel oil that

has been added to the fuel oil storage inventory should have less than 0.5% volume of water and sediment, which is ten (10) times more water and sediment than the CPSES Technical Specifications presently allow.

The other properties specified in Table 1 of ASTM-D975-1981 are:

- Flash Point, °C
- Cloud Point, °C
- Water and Sediment, volume %
- Carbon Residue, on 10% residuum, %
- Ash Weight, %
- Distillation Temperatures, °C
- Viscosity
- Sulfur, weight %
- Copper Strip Corrosion
- Cetane Number

Based on the testing for gravity, viscosity, flash point and "clear and bright"/"water and sediment," it is highly unlikely that any of these properties will exceed their acceptance value by anything more than a small amount. The impact of the exceedance is minimized as the new fuel that has been added to the fuel oil storage inventory is diluted by the existing stored fuel.

In the event the new fuel oil properties other than those specified previously are not met, the TS changes provide an additional 30 days to meet the DFO Testing Program limits. This additional 30-day period is acceptable because the fuel oil properties of interest, even if they are not within limits, would not have an immediate effect on EDG operation. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load were required during this time interval and the fuel oil properties were outside limits for these properties, there is a very high likelihood that the DG would still be capable of performing its intended function since the DFO properties of concern do not impact DFO combustion and will only have an impact on EDG reliability over many thousands of hours of operation.

Based on the evaluations above the proposed changes to TSs 3.8.1.1 and 3.8.1.2 are consistent with the applicable sections of NUREG-1431 and RG 1.137. Therefore, the staff finds the changes to CPSES TS regarding stored and new fuel properties to be 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. 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 6311). Accordingly, the amendments meet 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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