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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 48 AND 34 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 November 21, 1995 (TXX-95-95289), as supplemented by letters dated February 22 (TXX-96061 and TXX-96062) and 28, (TXX-96068), and March 13, 1996 (TXX-96090), Texas Utilities Electric Company (TU Electric/the licensee) requested changes to the Technical Specifications (TSs) (Appendix A to Facility Operating License Nos. NPF-87 and NPF-89) for the Comanche Peak Steam Electric Station (CPSES), Units 1 and 2. The proposed changes would allow both doors of the containment personnel airlock (PAL) to be open during fuel movement and core alterations, providing one airlock door is capable of being closed and the water level in the refueling pool is maintained. The February 22 and 28, and March 13, 1996, supplemental letters were clarifying in nature and did not change the initial no significant hazards consideration determination.

2.0 BACKGROUND

CPSES, Units 1 and 2 are each equipped with three (3) containment access penetrations; the equipment hatch, the emergency airlock, and the PAL. The PAL consists of a cylinder breaching the containment wall, opening into the Safeguards Building at elevation 832 ft. The PAL is the normal means for personnel to access containment. Each end of the airlock has a 9 ft diameter door. The doors are held closed by hydraulically operated locking rings. Interlocks are provided to prevent inadvertent simultaneous opening of both doors. Currently, TS 3/4.9.4 requires that one personnel airlock door be closed during core alterations and movement of irradiated fuel within the containment. Because of the ongoing work in containment, a large number of personnel enter and exit through the PAL and the PAL doors are cycled frequently.

The frequent use of the PAL during outages has challenged the ability of the PAL doors to open and close in a reliable manner. This is due to the size and weight of the PAL doors and the complexity of the hydraulic system. The demands of outage entries into the containment have caused failures of the door and subsequent delays in containment egress. The recorded failures are primarily associated with components that have come out of adjustment or degraded due to the demands of outage service. Allowing the airlock to remain open rather than frequently cycling the components for the duration of Mode 6 will improve the availability of the system.

3.0 EVALUATION

The current CPSES TS 3/4.9.4, "Containment Building Penetrations," requires that a minimum of one PAL door, as well as other containment penetrations, be closed during fuel movement and core alterations. This requirement is to prevent the release of radioactive material in the event of a fuel handling accident. The proposed TS changes would allow both doors of the containment PAL to be open during fuel movement and core alterations, provided one airlock door is capable of being closed and the water level in the refueling pool is maintained as required. The TS will also ensure that one airlock door is operable, that at least 23 feet of water is maintained over the fuel (TS 3.9.9.1), and that fuel is not moved until at least 100 hours after shutdown (TS 3.9.3). As indicated in the TS 3/4.9.4, administrative controls will insure (1) that appropriate personnel will be readily available to close the airlock in the event of a fuel handling accident (FHA) and (2) that any cables or hoses running through the open airlock will be designed for quick removal.

The licensee recalculated the doses and revised the design basis for the fuel handling accident analysis to be consistent with Regulatory Guide (RG) 1.25, "Assumption Used for Evaluating the Potential Radiological Consequences of a Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors." Neither the current nor the revised design basis FHA analysis takes credit for the containment building barriers. The licensee's analysis calculated the doses for the 0-2 hour period at the exclusion area boundary. Those calculated doses are within the Standard Review Plan (SRP) criteria. The licensee also calculated the doses to the control room personnel, and these doses are within the dose acceptance criteria of General Design Criterion 19.

The NRC staff has completed its evaluation of the potential radiological consequences of a fuel handling accident at CPSES based upon the conditions of the proposed TS changes. In addition to reviewing the licensee's submittal the staff performed an independent analysis to determine conformance with the requirements of 10 CFR Part 100 and General Design Criteria (GDC) 19 of Appendix A to 10 CFR Part 50. The staff analysis utilized the accident source term given in RG 1.4, the assumptions contained in RG 1.25, and the review procedures specified in SRP Sections 15.7.4 and 6.4. The staff assumed an instantaneous puff release of noble gases and radioiodine from the gap and plenum of the broken fuel rods. These gas bubbles will pass through at least 23 feet of water covering the fuel prior to reaching the containment atmosphere. All airborne activity reaching the containment atmosphere is assumed to exhaust to the environment within 2 hours. As stipulated in the plant TSs, the gap activity is assumed to have decayed for a period of 100 hours.

The NRC staff computed the offsite doses for CPSES using the assumptions described above and NRC's ACTICODE computer code. Control room operator doses were determined using the methodology in SRP Section 6.4, including use of the Murphy-Campe methodology for calculations of the meteorological factors. The computed offsite doses and control room operator doses are within the

acceptance criteria given in SRP Section 15.7.4 and GDC 19. The resulting calculated values and the assumptions used in calculating those doses are attached in Tables 1 and 2, respectively.

The NRC staff's dose calculation was based on the assumption that all of the radioactive material released to the containment escapes the containment within 2 hours. However, the NRC has historically required plant TSs to maintain containment closure during core alterations and fuel handling as a defense-in-depth measure to further limit releases. Recently the staff has allowed changes to plant TSs to keep both doors to a containment air lock open during core alterations and fuel handling with the provisions in place to close one door quickly, thereby reestablishing containment closure. The provisions described in this safety evaluation provide reasonable assurance that containment closure as a defense-in-depth measure can be reestablished quickly to limit releases much lower than assumed in the dose calculations.

The NRC staff has reviewed the licensee's analysis and has performed an independent assessment of the radiological consequences resulting from a fuel handling accident during refueling operations with the containment airlocks open. The staff concludes that the radiological consequences associated with this accident are within the acceptance criteria set forth in 10 CFR Part 100 and the control room operator dose criteria specified in GDC 19 of Appendix A to 10 CFR Part 50 and are acceptable.

TABLE 1

CALCULATED RADIOLOGICAL CONSEQUENCES
(rem)

Exclusion Area Boundary	Dose	SRP 15.7.4 Guidelines
Whole Body	0.15	6
Thyroid	51.	75
Control Room Operator	**Dose**	**GDC-19 Guidelines**
Whole Body	0.07	5
Thyroid	1.1	Equivalent to 5 rem whole body*

* Guideline doses provided in Standard Review Plan Section 6.4 define the dose-equivalent as 30 rem to the thyroid.

TABLE 2

ASSUMPTIONS USED FOR CALCULATING RADIOLOGICAL CONSEQUENCES

Parameters	Quantity
Power Level (Mwt)	3565
Number of Fuel Rods Damaged	264
Total Number of Fuel Rods	50,913
Shutdown time, hours	100
Power Peaking Factor*	1.65
Fission Product Release Duration	2 hours
Release Fractions*	
Iodine	12%
Noble Gases	10%
Krypton Gas	30%
Iodine Forms*	
Elemental	75%
Organic	25%
Core Fission Product Inventories per TID-14844	
Receptor Point Variables	
Exclusion Area Boundary**	
Atmospheric Relative Concentration, X/Q (sec/m^3)	
0-2 hours	1.5×10^{-4}
Control Room	
Atmospheric Relative Concentration, X/Q (sec/m^3)	1.6×10^{-3}
Control Room Volume, cubic feet	4.2×10^{5}
Filter Recirculation rate, ft^3/min	7200

* Regulatory Guide 1.25
** CPSES SER

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 changes 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 (61 FR 185). 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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