



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20556-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 47 AND 33 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 19, 1994 (TXX-94274), as supplemented by letter dated January 25, 1996 (TXX-96026), 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 testing of Reactor Protection System (RPS) and Engineered Safety Features Actuation System (ESFAS) instrument channels with the channel under test in bypass. Currently at CPSES, Units 1 and 2, when an instrument channel is placed in test, a trip condition for that instrument channel is inserted into the RPS and ESFAS. This trip condition decreases a two-out-of-four trip logic to a one-out-of-three, and a two-out-of-three trip logic to a one-out-of-two, thereby increasing the vulnerability of the affected unit to inadvertent or spurious trips. In order to reduce the vulnerability to spurious trips, TU Electric proposes to change the TSs to allow surveillance testing with channels in bypass rather than in trip.

On January 11, 1996, a conference call was held with the licensee and Westinghouse. By letter dated January 23, 1996, the staff requested additional information (RAI) on the design of the channel bypass capability in order to complete its review. By letter dated January 25, 1996, the licensee submitted the Revision 1 of Westinghouse topical report WCAP-14096, "Bypass Test Instrumentation for Comanche Peak Units 1 and 2" (proprietary version) and Revision 0 of WCAP-14569 (non-proprietary version) containing the information requested by the staff. The January 25, 1996, supplemental letter was clarifying in nature and did not change the initial no significant hazards consideration determination.

2.0 BACKGROUND

In a previous safety evaluation dated February 21, 1985, for Westinghouse topical report WCAP-10271, "Evaluation of Surveillance Frequencies and Out Of Service Times for the Reactor Protection Instrumentation Systems," the staff concluded that testing of analog channels in a bypassed condition is acceptable as long as the channel did not fail to the bypass position and did

not require lifting of leads or installing jumpers. Although placing a RPS or ESFAS channel in bypass at CPSES currently requires, in many cases, the use of jumpers or lifted leads, TU Electric will modify the circuitry to facilitate placing these channels in bypass. This modification will allow the licensee to test or maintain a channel without placing it in a tripped state. Presently, when a channel is in a trip condition, a redundant channel cannot be maintained or tested without risking a spurious reactor trip or safeguard actuation. Thus, with the bypass test instrumentation (BTI), the spurious reactor trip or safeguards actuation will be avoided since the partial trip condition is eliminated and the coincident logic is maintained. Thus, signals from two other channels are required in order to initiate a protective action. Until these modifications are made, TU Electric will continue the current trip-to-test practice. When a channel is determined to be inoperable, the inoperable channel will be bypassed for testing (except for those functions covered by Action Statement 17 where the current TSs allow the channel being tested to be bypassed).

In order to allow for testing in bypass, the licensee has proposed the following changes to the TSs:

- TS Table 3.3-1: Revise Action Statements 2b, 6b, and 12b to allow for testing in bypass.
- TS Table 3.3-2: Revise Action Statement 17b to allow for testing in bypass.

The licensee submitted Westinghouse Topical Reports WCAP-14096, Revision 1 (proprietary version), and WCAP-14569, Revision 0 (non-proprietary version) in support of the BTI design. The BTI can only be enabled by a key lock switch on the Nuclear Instrumentation System (NIS) bypass panel and by the keylock on the door for the 7300 Process Protection System. When the BTI is enabled, the channel bypass is annunciated in the control room. An individual signal in a channel is bypassed by a toggle switch and a bypass indication light for that signal is displayed on the BTI panel. Administrative controls will ensure that failed channels are placed in the tripped condition following completion of surveillance testing. The staff finds that sufficient controls are provided as stated above for placing and indication of a channel in bypass.

WCAP-14096 discusses conformance of the BTI to the applicable NRC design criteria. In this BTI design, a limiting single failure could cause a channel to remain in bypass while the control room indication shows the channel has been removed from bypass. Therefore, a later test in bypass of another channel could place two channels in bypass simultaneously. This condition in a two-out-of-three logic could prevent reactor trip from being generated. For this failure to occur, however, one contact would have to be stuck closed in the relay associated with the key lock switch. This relay failure would be detected by observation of the bistable or the bypass panel status light. Such a failure is, therefore, detectable and is acceptable in accordance with IEEE-279. Also for the NIS BIT, the toggle switch is a three position switch in order to facilitate make-before-break action. The middle position of the switch is not marked. If the operator leaves the switch in the middle

position, the channel will remain in bypass even though the keylock switch has been returned to the normal position. This will be indicated to the operator by the control room annunciator and local status indication lights. TU Electric will modify this circuit during next refueling outage to ensure that a channel will not remain in bypass once the keylock switch is returned to normal position. Because the BTI panel is under administrative control during channel testing, local status indicating lights and the control room annunciator will warn the operator of this failure, the staff finds the current design acceptable for one refueling outage until the circuit modification is completed.

Each NIS channel has its own associated BTI panel. The NIS BTI panels contain both safety (class 1E) and non-safety (non-class 1E) 118 vac circuits. The part of the BTI panel which is non-class 1E is isolated from class 1E circuits by qualified isolators, and separation is maintained by placing a ground layer between these circuits. Thus, there is no credible control system fault which can propagate to all the bypass panels and simultaneously adversely affect all protection channels. The BTI panels and the components of the BTI are environmentally and seismically qualified for the CPSES site. BTI panels for the NIS have been evaluated for seismic qualification with respect to the effect on the instrument rack where they will be installed. The licensee determined that the instrumentation rack will maintain structural integrity and electrical isolation capability in event of an earthquake. The BTI for the 7300 Process Protection System utilizes the same hardware that was originally designed for surveillance testing with annunciator signals provided through the qualified isolators. Therefore the BTI for the 7300 Process Protection System has no new panels and only wiring changes have been performed to the existing hardware to provide channel bypass capability.

In its previous review of WCAP-10271 and its various revisions and supplements, the staff established that bypass testing was an acceptable method for conducting periodic surveillance of the RPS and ESFAS. In WCAP-0271, the effects of testing were analyzed in a bypass-to-test configuration as well as a trip-to-test configuration. The results indicated only a slight increase in core damage frequency and public health risk for testing in bypass when compared to testing in trip configuration. The CPSES Individual Plant Examination confirms the above results and concludes that the slight increase is within acceptable limits. The staff agrees with this determination.

### 3.0 EVALUATION

Based on the review of Westinghouse Topical Reports WCAP-14096, Revision 1 (proprietary version) and WCAP-14569, Revision 0 (non-proprietary version), the staff concludes that the BTI design meets applicable NRC criteria and sufficient controls are provided to preclude improper bypass. Also, the proposed plant configuration of bypass testing and decreased test frequency is consistent with the previously accepted WCAP-10271. The staff, therefore, finds the proposed changes to the RPS and ESFAS TSs to permit bypass testing to be acceptable. The staff notes that the licensee will modify the circuit for the NIS BIT at the next refueling outage to ensure that a channel will not remain in bypass once the keylock switch is returned to normal position.

#### 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 6312). 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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