



Log # TXX-95250  
File # 10130  
Ref. # 10CFR2.201

October 6, 1995

C. Lance Terry  
Group Vice President

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NOS. 50-445 AND 50-446  
NRC INSPECTION REPORT NOS. 50-445/95-12; 50-446/95-12  
RESPONSE TO NOTICE OF VIOLATION

Gentlemen:

TU Electric has reviewed the NRC's letter dated September 8, 1995, concerning the inspections conducted by Ms. L.J. Smith and other inspectors during the period of June 26 through July 20, 1995.

TU Electric hereby responds to the Notice of Violation in the attachment to this letter. The response provided in the attachment is a summary of actions taken by TU Electric. Please do not hesitate to contact me or contact Alan Quam at (817) 897-8621 to coordinate any additional information you may need to facilitate closure of this item.

Sincerely,

C.L. Terry

ADQ/adq  
Attachment

cc: Mr. L. J. Callan, Region IV  
Mr. D. F. Kirsch, Region IV  
Mr. T. J. Polich, NRR  
Resident Inspectors, CPSES

Bureau of Radiation Control  
Texas Department of Public Health  
1100 West 49th Street  
Austin, Texas 78756

9510110299 951006  
PDR ADOCK 05000445  
Q PDR

P. O. Box 1002 Glen Rose, Texas 76043

TE01

REPLY TO NOTICE OF VIOLATION

RESTATEMENT OF VIOLATION  
(445/9512-01; 446/9512-01)

Technical Specification 6.8.1 requires "...written procedures be established, implemented and maintained..." covering a list of activities including the applicable procedures recommended in Appendix A of Regulatory Guide 1.33. Section 8 of Appendix A lists safety-related activities such as the calibration, testing and adjustment of equipment that provides interlock permissive or prohibit functions.

Regulatory Guide 1.33 endorses ANSI N18.7-1976/ANS-3.2. Section 5.2.16 of ANSI N18.7 requires that the "method and interval of calibration for each installed instrument and control device shall be defined and shall be based on the type of equipment, stability and reliability characteristics, required accuracies and other conditions affecting calibration."

Contrary to the above, licensee personnel failed to define an interval for calibration of the low battery voltage shutdown device in each of the following Class 1E safety-related Elgar inverters; IV1EC1, IV1EC2, IV1EC3, IV1EC4, IV2EC1, IV2EC2, IV2EC3 and IV2EC4.

RESPONSE TO VIOLATION  
(445/9512-01; 446/9512-01)

TU Electric accepts this Violation with clarification as described below.

1. Reason for the Violation

Although procedure development had been previously initiated, due to the priorities originally assigned to these calibrations (based on industry experience and application), the procedures were not completed and periodic calibration of these low battery voltage shutdown devices had not been established. As a result, no calibration interval had been defined and the calibrations of the low battery voltage shutdown devices had not been performed for eight (8) safety-related, Class 1E Elgar inverters since initial start-up. These inverters were; IV1EC1, IV1EC2, IV1EC3, IV1EC4, IV2EC1, IV2EC2, IV2EC3, IV2EC4.

Discussion

The low battery voltage shutdown device in the Class 1E inverters provides for shutdown of the inverter when the low battery voltage set point is reached. The solid-state circuitry utilized in these devices may be subject to minor drifts due to temperature variations and aging. CPSES meter and relay experience with calibration of solid-

state devices is that, generally, they do not drift. Also, drift, if any, is so small that it can not be distinguished from the accuracy of the calibration procedure. Discussions with Elgar (the equipment vendor) indicate that circuit variations caused by temperature and aging have been accounted for in the inverter design. The Class 1E inverters at CPSES are located in air-conditioned rooms, thereby, further reducing the impact of drift due to temperature variations. Therefore, the minor drift caused by temperature variations and circuit component aging can be considered negligible. A review of vendor manuals for these inverters revealed that Elgar does not recommend any preventive maintenance for the low battery voltage shutdown feature.

The inverters are designed to function adequately with a DC input voltage of 100 VDC. Calculation EE(B)-053 indicates that, presently, minimum end-of-duty cycle voltage for batteries feeding Class 1E inverters is 111 VDC. The low battery voltage shutdown device is set at 105 VDC. These devices were calibrated initially at equipment startup. Afterwards, they were calibrated whenever the device printed-circuit card was replaced. As described above, the low battery voltage shutdown device drift would be negligible. As an example, assume a very conservative drift of 1% over an 18 month period. Also, assume a time span of 5 periods, or  $7 \frac{1}{2}$  years. Using the square-root-of-the-sum-of-the-squares method, the calculated drift would be 2.23%. This drift could cause the low battery voltage shutdown device to actuate at an upper value of 107.34 VDC. This would not be of concern because the battery voltage at the end-of-duty cycle is higher (111 VDC). Drift could also cause the low battery voltage shutdown device to actuate at a lower value of 102.65 VDC. This would also not be of concern because the inverters are designed to function with a minimum input voltage of 100 VDC.

From the above, it can be concluded that the inverter's low battery voltage shutdown feature has little safety significance to CPSES. The feature's set-point would not be reached at the end of the battery duty-cycle even when conservative drift is taken into account. Also, the methods and intervals for calibration of these devices are required to be based on conditions that affect the calibration. As indicated above, the characteristics of solid-state devices and the controlled environment suggest little need for calibration or, at a minimum, for a long time interval between calibrations.

## 2. Corrective Steps Taken and Results Achieved

Technical Evaluation (TE) 95-767 was performed to analyze the effect of waiting until the next refuel outage before calibrating these low battery voltage shutdown devices. The TE concludes that waiting until 1RF05 and 2RF02 to perform the calibrations would be acceptable.

3. Corrective Steps Taken to Avoid Further Violation

The following action has been taken;

Procedure MSE-CO-5810 has been approved to perform calibration of the low battery voltage shutdown device for safety-related inverters. The calibrations will be performed during 1RF05 and 2RF02. The need for, and the interval of, ongoing calibrations will be determined after review of calibration data taken during the outages.

4. Date of Full Compliance

TU Electric is in full compliance.