

TEXAS UTILITIES GENERATING COMPANY  
SKYWAY TOWER • 400 NORTH OLIVE STREET, L.B. 81 • DALLAS, TEXAS 75201

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WILLIAM G. COUNSIL  
EXECUTIVE VICE PRESIDENT

August 5, 1985

Director of Nuclear Reactor Regulation  
Attention: Mr. Vincent S. Noonan, Director  
Comanche Peak Project  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION  
DOCKET NOS. 50-445 AND 50-446  
BREAKER COORDINATION STUDY

Dear Mr. Noonan:

As requested in NRC question 010.33, CPSES has performed a study to verify proper coordination and selective tripping of the breakers and fuses required for safe shutdown circuits and their power supplies. The following is a summary of our findings:

1. 6.9 kV Power Distribution System

All breakers of the 6.9 kV power distribution system are fully coordinated except for the diesel-generator (D-G) breaker for a ground fault on the system when the D-G operates in non-emergency mode.

Resolution: This uncoordination is acceptable for safe shutdown since the ground fault trip of the D-G breaker is bypassed in the emergency mode used during fires.

2. 480 Volt Class 1E Switchgear Buses

All load-side breakers are fully coordinated with all of their associated line-side breakers except for the breaker feeding the electric motor driven fire pump. Only an instantaneous trip feature has been provided for the fire pump breaker in order to meet U.L. requirements. For some fault conditions (less than the instantaneous trip set point of the fire pump breaker) on the fire pump branch circuit, the line side breaker of the 480V switchgear bus may trip prior to the fire pump breaker. The fire pump is fed from a train "A" 480V switchgear.

Resolution: The fire pump power cable will be treated as an associated circuit and protection provided accordingly (i.e., one-hour barriers, 20 feet separation, etc.).

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3. 480 Volt Class 1E Unitized MCC Buses

MCC's 1EB1-1, 1EB2-1, 1EB3-1, 1EB4-1, 1EB3-2, 1EB4-2, 1EB3-4, 1EB4-4, 1EB3-3 and 1EB4-3 are not fully coordinated.

Resolution: Trip settings of the 480V switchgear breakers feeding MCC's 1EB1-1, 1EB2-1, 1EB3-1, 1EB4-1, 1EB3-2, 1EB4-2, 1EB3-4, and 1EB4-4 will be adjusted to provide full coordination.

A safe shutdown load analysis has determined that coordination is not required for MCC's 1EB3-3 and 1EB4-3.

4. 480 Volt Class 1E Common MCC Buses

All branch circuits of these MCC's are fully coordinated with all of their associated line-side protection devices except as follows:

- a) A severe fault on any MCC branch circuit may cause instantaneous trip of both the branch circuit breaker and the MCC supply breaker at the Automatic Transfer Switch (ATS).

Resolution: The MCC supply breaker of the ATS will be removed. The automatic transfer function will be accomplished at the 480V switchgear buses.

- b) For certain ranges of overcurrent on the branch circuits of MCC's XEB1-1, XEB2-1, XEB1-2 and XEB2-2 feeding the Control Room A/C units, the 480V switchgear breakers feeding these MCC's may trip prior to the MCC branch circuit breakers feeding the Control Room A/C units.

Resolution: The above described lack of coordination is acceptable for MCC's XEB2-1 and XEB2-2 since the Control Room A/C units are the only safe shutdown loads fed by these two MCC's (one per MCC).

MCC XEB1-1, located in the Auxiliary Building, provides power to two safe shutdown loads, a Control Room A/C unit and the emergency source range detection. Emergency source range detection is provided to the HSP via manual operator action. The procedure for providing this source range detection will be modified to require the manual tripping of the Control Room A/C Breaker and resetting the MCC breaker (if necessary) to preclude loss of power to the HSP source range detection due to an uncoordinated trip of the Control Room A/C unit.

Like MCC XEB1-1, MCC XEB1-2 also provides power to two safe shutdown loads, a Control Room A/C Unit and an UPS Room A/C Unit. The resolution for MCC XEB1-2 is to either replace the Control Room A/C unit breaker with a coordinated breaker or to relocate one of the safe shutdown loads.

- c) MCC's XEB3-2 and XEB4-2 each have one branch circuit which is not fully coordinated.

Resolution: The thermal overload relay settings for these MCC branch circuits, and the trip setting for the 480V switchgear breakers feeding these MCC's will be adjusted to provide full coordination.

5. 125 Volt DC Class 1E Power Distribution System

All switchboard branch circuit protective devices are fully coordinated with all source side fuses and/or circuit breakers.

For panelboards, a severe fault on a panelboard branch circuit (within a minimum distance from the panel) may cause a simultaneous trip of the branch circuit breaker and the panelboard supply breaker.

Resolution: Due to the small cable sizes for these branch circuits, relatively short cable lengths provide the required circuit impedance for coordination. Thus, for most cables, the length of cable where an uncoordinated fault can occur, is contained entirely in the fire area of the affected panel. This uncoordinated fault is an analyzed event since loss of this panelboard is already assumed for a fire in this area and is therefore acceptable.

Those cables whose minimum impedance length exceeds the fire area boundaries of the affected panel have unacceptable coordination and protection must be provided. Cables requiring protection are as follows:

Panel 1ED2-2: cables EG102911 and EG102913

Panel 1ED1-2: cable E0102751

6. 118, 120 and 208/120 Volt AC Class 1E Panel Board Buses

The branch circuit breakers of these panelboards are not fully coordinated.

Resolution: Each panelboard required for safe shutdown has been identified and resolution provided as described below:

- a) Coordination for safe shutdown for the branch circuits of panels 1EC3 and 1EC4 is not required except for feeders to 1EC3-1 and 1EC4-1 for which appropriate separation will be provided (i.e., one-hour barriers etc.).
- b) Coordination for safe shutdown for the branch circuits of panels 1PC1, 1PC2, 1PC3 and 1PC4 is not required except for branch circuit number 4 on each panel. These branch circuits will be provided with coordinated fuses.
- c) The branch circuits for panels 1EC3-1 and 1EC4-1 are entirely contained in the same fire area as their respective panels. The loss of each panel is an analyzed event and thus coordination is not required.

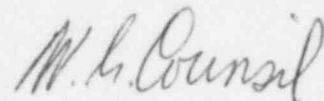
7. Non-Class 1E Safe Shutdown AC & DC Distribution Equipment

This distribution equipment is fully coordinated with the exception of panel 1D2-2.

Resolution: All loads from panel 1D2-2 required for safe shutdown have been analyzed to verify that alternate safe shutdown components are available for a fire in the affected area.

Should you have any questions in this matter, please contact this office.

Very truly yours,

A handwritten signature in cursive script, appearing to read "W. G. Council".

W. G. Council

BSD/grr