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

Docket Nos. 50-445
and 50-446

AUG 14 1980

Mr. R. J. Gary
Executive Vice President and
General Manager
Texas Utilities Generating Company
2001 Bryan Towers
Dallas, Texas 75201

Dear Mr. Gary:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

Enclosed is a request for additional information which we require to complete our evaluation of your application for operating licenses for Comanche Peak Steam Electric Station, Units 1 and 2. This request for additional information is the result of our review by the Instrumentation & Control Systems Branch and their consultants at Argonne National Laboratory. We anticipate that a limited number of additional questions will be forthcoming as the review continues. Please amend your FSAR to include the information requested in the Enclosure.

Your schedule for responding to the enclosed request for additional information should be submitted within three weeks. Should you have questions concerning this request for additional information, please contact us.

Sincerely,

A. Schwencer for

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

Mr. R. J. Gary
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2001 Bryan Towers
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AUG 14 1980

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ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 & 2

032.0 INSTRUMENTATION & CONTROL SYSTEMS

Q032.75 Subsection 7.2.1.2.2 lists generating station variables required to be monitored in order to provide the reactor trips described. The list is incomplete. After an audit is performed to determine the required variables, modify the FSAR to provide the complete list.

Q032.76 Subsections 7.2.1.2.3 and 7.3.1.2.3 refer to spatially dependent variables and specifically to reactor coolant temperature. The discussions presented do not seem to apply to the Comanche Peak Steam Electric Station Design. After an audit is performed to determine whether these discussions on reactor coolant temperature are applicable, modify the FSAR to reflect the results of the audit.

Q032.77 Subsection 7.2.1.1.2 items 2.a and 2.b give equations for the calculation of the Overtemperature and Overpower N-16 setpoints. Provide a reference to or a detailed discussion for the bases by which these equations were derived and how these trip settings are equivalent to the normal Overtemperature and Overpower ΔT trip setpoints.

Q032.78 Subsection 7.2.1.1.2 item 5 states that the low-low steam generator water level is actuated on two out of three logic. The functional logic diagrams, Figure 7.2-1 Sheet 7 shows a two out of four logic. This subsection also refers to a low feedwater flow reactor trip that cannot be found on the functional logic diagrams. After an audit is performed to determine the correct Reactor Trip System logic, modify the FSAR to provide the consistent description.

Q032.79 The instrumentation operating conditions for engineered safety features given in tables 7.3-1 and 7.3-2 do not agree with the logic diagrams of figures 7.2-1 and the logic diagrams do not agree with the descriptive text found in Chapters 6, 7 and 10. After an audit is performed to determine the correct configuration of the engineered safety features actuation system, correct the FSAR to provide a consistent description and configuration throughout including a significant reorganization and rewrite of Section 7.3 to reflect the responses to all of the questions related to this section.

Q032.80 Figure 7.6-1 appears to disagree with other single line drawings submitted for review. The alternate Class 1E A.C. power sources supply three instrumentation panels from source 1 and one from source 2. After an audit is performed to check the accuracy of the figure, justify the present arrangement or correct the figure to present the correct configuration.

Q032.81 The description of the conditions required for a steam line isolation signal to be generated in subsection 10.3.2.3.1 does not agree with the information in either the logic diagrams of figures 7.3-1 or the information in Table 7.3.1. After an audit is performed to determine which description is correct, modify the FSAR to consistently reflect the design.

Q032.82 Subsection 7.3.1.1 states "The Engineered Safety Features Actuation System (ESFAS) is a functionally defined system described in this section". Sufficient detail is not presented, however, to allow a safety evaluation to be performed. Define such terms as steam break protection signal and provide greater detail of the ESFAS design.

Q032.83 Manual reset and block functions for the Engineered Safety Features Actuation System are shown on figure 7.2-1 sheet 8. Describe all of these functions and provide a discussion on how they are used and why they are necessary for the system operation.

Q032.84 The description of the Component Cooling Water System operation following a safety injection signal ("S") and containment spray signal ("P") in subsection 9.2.2.5.3 items 9 and 10 and the description of the same operations in subsection 7.3.1.1.4 item 4 do not agree. After an audit is performed to determine the correct operations of the component cooling water system operation following a generation of "S" and "P" signals, modify the FSAR to reflect the correct configuration. Also provide an analysis that shows that the system meets the criteria of IEEE Standard 279 as requested by Q032.50.

Q032.85 Subsection 6.2.5.2.1 states:

(1) That Table 6.2.6-2 gives the hydrogen recombiner design parameters. Table 6.2.6-2 cannot be found. Provide a correct table reference.

(2) That the electric heater section of the hydrogen recombiner must heat the warmed air to a temperature between 1150 and 1400°F before recombination occurs. Yet it goes on to state that a single thermocouple is used to monitor the temperature. Also Table 6.2.5-1 gives the applicable codes and standards used in the design of the hydrogen recombiners. Justify why the hydrogen recombiners are not designed to meet the criteria of IEEE Standard 279, since it is an Engineered Safety Feature, how the single thermocouple used meets the single failure criteria, and provide an analysis of how the hydrogen recombiners meet the applicable safety criteria.

(3) That Figure 6.2.5-2 shows a schematic diagram of the hydrogen recombiners. This figure appears to be more of a block diagram of the total system. Provide a detailed description and electrical schematics of the hydrogen recombiners.

Q032.86 A detailed description of the design of the hydrogen analyzers could not be found. Provide this description and an analysis of how these instruments meet the applicable safety criteria.

Q032.87 Subsections 9.4A.2.5 item 2 and 9.4A.2.6 state that purge and containment pressure relief isolation valves are designed to close automatically on the detection of high radiation levels by the exhaust monitor or on a phase A isolation by a "T" signal as discussed in subsections 6.2.4 and 7.3. A detailed discussion of the purge and containment pressure relief isolation valves or the radiation detection instrumentation cannot be found in either subsection 6.2.4 or 7.3. Provide a detailed description and discussion of this part of the Engineered Safety Feature Actuation system.

Q032.88 A list of generating station variables required to be monitored for the automatic initiation of safety injection is given in subsection 7.3.12. The list is incomplete and should include all generating station variables, such as radiation levels, monitored by the Engineered Safety Features Actuation System (ESFAS) and should include all actuations produced by the ESFAS. Correct the list to be consistent with the ESFAS.

Q032.89 In subsection 6.5.1.5, it is stated that the detailed design and system logic for the Engineered Safety Features (ESF) atmospheric cleanup systems instrumentation are shown on drawings listed in

subsection 1.7. Provide the specific drawing numbers that show the detailed design and system logic for this ESF instrumentation.

Q032.90 Subsection 10.4.7.5 item 2 states that the Feedwater Preheater Bypass Valves (FPBV) are automatically opened whenever the Feedwater Isolation Valves (FIV) are closed due to the absence of the water hammer permissive signal described. It also goes on to state that the FIVs are provided with three position close-auto-open control switches on the control board. Are these switches for the FIVs or the FPBVs being described? Also provide a description and discussion including functional logic diagrams of how the FPBVs operate for isolation on a feedwater isolation actuation signal.

Q032.91 In subsection 6.5.1, it is stated that the Engineered Safety Features (ESF) Fuel Building exhaust units are designed to service the Fuel Building during refueling or a fuel handling accident, and to maintain the primary plant at a slightly negative pressure during a loss of offsite power or a LOCA. Justify why the ESF Fuel Building exhaust units are not listed as Balance of Plant (BOP) Engineered Safety Features in subsection 7.3.1.1.4. Provide a detailed description and discussion on this ESF in subsection 7.3.

Q032.92 Subsection 7.4.1.2.1 item 6 indicates by Amendment 10 that the first sentence is in response to Q032.30. Indicate how this subsection and answer relates to a question on steam line break accidents.

Q032.93 Detailed layout drawings and a description of the hot shutdown panel cannot be found in subsection 7.4. Provide the description of the hot shutdown panel in enough detail to allow a safety evaluation to be performed.

Q032.94 One of the subsystems displayed on the Bypassed and Inoperable Status Lights is identified on a list of subsystems in subsection 7.1.2.6 as Isolation Override Containment Sample/Purge. A description of this subsystem cannot be found. Provide a table that indicates for each of the inoperable status lights on the list those components comprising the inoperable or bypassed subsystem. Also justify why the Reactor Trip System is not included in the Bypassed and Inoperable Status Lights system.

Q032.95 Drawings 2323-E1-0067 sheets 51 to 90 represent light monitor boxes. A description of these light monitor boxes, their purpose and safety function cannot be found. Provide a detailed description and discussion of the light monitor boxes.

Q032.96 Subsection 7.7.1.1 provides an equation showing how the T_{avg} for the Reactor Control System is calculated using the N-16 power and cold leg temperature signals. Justify and provide an analysis that shows that the T_{avg} signal produced by this calculation is equivalent to the T_{avg} calculated from actual T_{hot} and T_{cold} measurements in the reference plant design. Also justify how the use of the N-16 power measurement for a temperature calculation meets the intent of IEEE Standard 279 section 4.8 since the T_{avg} signal is also used in the protection system.

Q032.97 A list of balance of plant control systems that are not required for safety but interface with the protective system is given in subsection 7.7.1.11. The list did not include the N-16 transit time flow meter or the ex-core neutron detector axial flux distribution surveillance system. After an audit is performed to determine all systems in this

class, correct the list and provide detailed descriptions of all these systems, including the plant computer, N-16 transit time flow meter and ex-core axial flux distribution surveillance systems. In addition, discuss how the protective system function is assured, such as the isolation of signals, from these systems.

Q032.98 A response to Q032.47 has not yet been provided. Provide a schedule as to when a response will be received.

Q032.99 Subsection 6.3.5 discusses Emergency Core Cooling System (ECCS) instrumentation requirements and states that the Boron Injection Tank is supplied with duplicate temperature control channels for the tank electric strip heaters while the Boron Injection Surge Tank is supplied with only one temperature detector and heater. The trace heating and temperature control is not described at all. Since it is necessary to prevent precipitation of the boric acid in all parts of the ECCS, provide a discussion of how the entire ECCS boron recirculation-injection system meets the criteria of IEEE Standard 279 and provide a detailed description of all of the heating tracing instrumentation and control including electrical schematic diagrams.

Q032.100 Subsection 8.3.1.1.5 discusses briefly the safety injection and blackout only mode sequencers. Provide a detailed description including layout, functional logic, and electrical schematic diagrams of the two sequencers so that a safety evaluation of the system can be performed.

Q032.101 The design of the Comanche Peak Steam Electric Station inoperable and bypass status light circuits uses a set of contacts on the control panel hand switches when in the "pull out" position to indicate an inoperable condition of the component within the subsystem. For

example, contact 1-HS/5672A on drawing 2323-E1-0071 sheet 48 in the Safety Injection System (SIS) Inoperable light circuit indicates an inoperable SIS Pump Room Fan. If, however, the power for the fan and control circuit is unavailable by opening the breaker (J2) shown on drawing 2323-E1-0053 sheet 43, the fan would still be inoperable even when the hand switch is used to try to actuate the component. Justify that this design is in conformance with the recommendations of Regulatory Guide 1.47 position C.3 and Branch Technical Position ICSB 21.

Q032.102 The following referenced topical reports have not been reviewed and accepted by NRC and cannot be used as a generic bases for approval of any portion of the FSAR.

1. Reid, J. B., "Process Instrumentation for Westinghouse Nuclear Steam Supply Systems", WCAP-7913, January 1973.
2. Lipchak, J. B., "Nuclear Instrumentation System", WCAP-8255, January 1974.
3. Swogger, J. W., "Testing of Engineered Safety Features Actuation System", WCAP-7705, Revision 2, January 1976.
4. Gangloff, W. C. and Loftus, W. D., "An Evaluation of Solid State Logic Reactor Protection In Anticipated Transients", WCAP-7706-L (Proprietary) and WCAP-7706 (Non-Proprietary), February 1971.

Provide references in the FSAR of those pages of the topical reports which are necessary to provide the basis for your design or submit appropriate material in lieu of the topical reports as amendments to the FSAR.