CYGNA
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July 30, 1984
84056.010

Mr. J. B. George
Project Manager
Texas Utilities Generating Company
Comanche Peak Steam Electric Company
Highway FM 201
Glen Rose, Texas 76043

Subject: Mechanical and Electrical/I&C Review Questions
Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4
Texas Utilities Generating Company
Job No. 84056

Dear Mr. George:

Attachments A and B contain mechanical and electrical/I&C review questions which require response from TUGCO in order for Cygna to complete the reviews. These questions pertain to the technical reviews performed in the Gibbs & Hill offices, as well as discrepancies noted during the walkdowns.

If you have any questions or require additional information, don't hesitate to call.

Very truly yours,

N. H. Williams

N. H. Williams
Project Manager

cc: Mr. G. Grace (EBASCO/TUGCO)
Mr. D. Wade (TUGCO)
Mr. R. Ballard (G&H)
Mr. S. Treby
Mr. S. Burwell
Mrs. J. Ellis

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ATTACHMENT A
MECHANICAL QUESTIONS

1) The Westinghouse design basis document for the component cooling water system, BOP-FR-1, states that the maximum permissible heat exchanger outlet temperature is 120°F and that the design capacity is usually determined by the heat load associated with RCS cooldown to 140°F in 20 hours. However, Gibbs & Hill specification MS-48 and calculations 229-14 and 233-16 indicate higher CCW heat exchanger outlet temperatures ranging from 121.8° (which is also listed in the FSAR) to 135°F. Please provide documentation that these higher temperatures are acceptable for Westinghouse and owner supplied equipment. Also, please clarify what the maximum CCW temperature is and under what conditions it occurs.

2) CCW temperature may reach 135°F during recirculation. Is this an acceptable cooling water temperature according to the manufacturer of the containment spray pumps?

3) Since the ventilation chillers, CPX-CHCICE-01 to -04 are non-safety class and non-seismic, they are assumed to fail during a seismic event. This could result in leakage from the CCW system in excess of 10,000 GPM (10" line break). This leakage flowrate would be detected by flow element FE-4650 and isolated within 17 seconds by valve FV-4650. However, if a single failure occurrs with either of these components or their power supplies it appears that both CCW pumps will become airbound due to the surge tank being drained. This is due to the fact that the non-safeguards loop isolation valves take 30 seconds to close after receipt of a surge tank empty signal and the makeup to the surge tank is not sufficient to meet the break demand. Even if valve FV-4650 closes, the makeup rate from the surge tank to the CCW pump may not be sufficient to prevent damage to the pumps (10,000 gpm versus approximately 3600 gpm makeup through two 6" surge tank pipes). Please provide justification for the acceptability of this failure condition or information that verifies that the safety function of the CCW system will not be impaired.

4) Westinghouse BOP FR-1, page 12 requires that the component cooling water return piping be isolated at the containment boundary on receipt of a high flow signal from the thermal barrier outlet. This signal indicates reactor coolant leakage from the thermal barrier. The current design of the CCW system at CPSES does not appear to function in this manner. A single temperature controlled valve at the outlet of each thermal barrier is used to isolate a ruptured thermal barrier. If a single failure occurs in the temperature element, valve or their associated power supplies, the ruptured thermal barrier will not be isolated and reactor coolant will flow outside containment and into the CCW system surge tank. If the break is not isolated the surge tank will go solid and low pressure portions of the CCW

ATTACHMENT A (continued)
MECHANICAL QUESTIONS

system will be overpressurized and could rupture. Please provide justification for this isolation system and documentation of its licensing acceptability.

5) A water hammer analysis was not performed on the CCW system. Please provide data on the fastest actuating valve in the system and justification for not performing an analysis.

6) Flow element FE-4536A does not meet the requirement for straight pipe length upstream and downstream of an orifice. Flow element FE-4556 and FE-4560 do not meet the downstream straight pipe requirements. Please provide information on the effect of these installations on accuracy and justification for the present installation.

7) The "Westinghouse Instruction and Operating Book for Reactor Coolant Pump Model W-11010-A1 (93-AS)" gives the following requirements for cooling water to the thermal barrier.

	Minimum	Normal	Maximum
Flow	35 GPM	40 GPM	60 GPM
Temp	60° F	80° F	105° F*

* Can go as high as 130°F if reactor coolant temperature is below 400°F.

Based on the latest "PIPEFLOW" computer output and CCW heat exchanger data these limits are not met for all operating conditions. Please provide justification for the nonconformances.

8) Many valves in the CCW system which are supposed to be ASME Class 3 do not have ASME code class tags (N stamp) attached to them. Please provide justification for this lack of identification.

9) CCW surge tank relief valve I.D. tags are inconsistent. The ASME tag gives the code class as 3 but the CPSES metal tag lists the code class as 2. Please provide clarification.

10) Valve HV-4574 ID tags are inconsistent. The CPSES tag gives the valve ID as 1-HV-4574, but the manufacturer's tag gives the ID as 2-HV-4574. Please provide clarification.

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ATTACHMENT A (continued)
MECHANICAL QUESTIONS

11) The double doors separating the two chilled water system condensers/ nuclear (CPI-CHCICE-05 and 06), Rooms 115A and 115B, do not have U.L. 3 hr fire rating ID plates attached to them but the single personnel door does. Please provide criteria used for determining need for fire doors and smoke detectors in these rooms and justification for the ID tag not being attached to this door.

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ATTACHMENT B
ELECTRICAL QUESTIONS

1) In Specification 2323-ES-16, "Radiation Monitors," DCA 15,309 Monitor RC-4509 was identified as having a 100 psig design pressure and a 122°F design temperature. This DCA was incorporated into the specification to identify as-built temperatures. It is not apparent how the original design data was transmitted to the vendor. In the "PIPEFLOW" calculation, the design and operating temperatures and pressures for the pipe in which the monitors are mounted are given as:

   Design: 150 psig at 225° F
   Operating: 132 psig at 199° F

   This indicates that the calculated operating pressure and temperature both exceed the design parameters of the procured equipment. Please provide clarification and documentation of the acceptability of this instrument for its intended service.

2) In specification 2323-MS-611B "Differential Pressure Transmitters," PT-4520 is specified as requiring a maximum design temperature of 135°F. The "PIPEFLOW" calculation for this segment of pipe indicates the design temperature should be 225°F and the maximum operating temperature as 199°F. This indicates the design temperature of the transmitter could be exeeeded. Please provide documentation of the acceptability of this instrument for its intended service.

3) Please provide information as to why conduit stub C13009421 on MCC 1EB3-1 is identified on a pull card, installation drawing, and installed in field but is not on the latest revision of the cable and raceway schedule 2323-E1-1700. (This is for cable number E0107008.)

4) Please provide information as to what procedures exist and who is responsible for ensuring cable ampacities are not exceeded due to the reduced heat dissipation resulting from the application of the fire protection thermal lag to the cable trays.

5) A discrepancy was noted with Phase A overcurrent relay model No. for Switchgear 1EA1 cubicle 3. Phase A had number 223S-3542 and Phase B and C had number 223S-8542. It appears that the model number on the Phase B and C relays have been modified, possibly Phase A was just missed. In checking additional relays we did not note a similar discrepancy; however, it did appear that their original model numbers had been changed also. All relay settings agreed with design documentation. Please clarify model number of Phase A overcurrent relay and provide documentation.

ATTACHMENT B (continued)
ELECTRICAL QUESTIONS

6) Please provide a list of remaining open work items, if any, for the following cable routing points:

   a) Raceway T130ACA43 on Elev. 790'6" of Auxiliary Building.
   b) Raceway TBGCCM98 on Elev. 810' of Auxiliary Building.