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August 27, 1984  
84056.028

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

Subject: Mechanical Review Questions  
Comanche Peak Steam Electric Station  
Independent Assessment Program - Phase 4  
Job No. 84056

Dear Mr. George:

Attachment A contains mechanical review questions raised during the Project Review Meeting. If you have any questions or require additional information, don't hesitate to call.

Very truly yours,

N. H. Williams  
Project Manager

cc: Mr. D. Wade (TUGCO)  
Ms. J. Van Amerongen (EBASCO/TUGCO)  
Mr. S. Burwell (USNRC)  
Mr. S. Treby (USNRC)  
Mrs. J. Ellis (CASE)  
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ATTACHMENT A  
MECHANICAL REVIEW QUESTIONS

1. Per the G&H calculation entitled "Instrument Setpoint Methodology," 11-2323-001, Rev. 1 Dated 11/24/82, the setpoints for flow switch 1-FB-4536A are:

Flow  $<$  12,096 GPM Valve FV-4536 Opens  
Flow  $\geq$  12,696 GPM Valve FV-4536 Closes

Valve FV-4536 is the CCW pump recirculation valve. This document also lists the set point parameter as "11,500 GPM Low Flow" and normal process operating range as 13,500 - 14,800 GPM. In addition, the system operating capability is listed as 0 - 16,600 GPM.

The pressure drop required through the CCW pump recirculation loop orifice is calculated in G&H calculation 229-13 dated 1/25/79. Based on this calculation the normal system demand during two pump operation is 10,866 GPM and the pump output is 14,700 GPM at 226 feet of head. This results in a recirculation flow of 3,834 GPM, which is the flow the restricting orifice was sized to pass with a pump discharge head of 226 feet.

The "Pipeflow" flow balance calculation for the CCW system dated 4/1/84 lists the following system and recirculation flow rates.

<u>Mode</u>	<u>Pump Flow</u>	<u>Flow Recirculation</u>	<u>System Demand Flow</u>
Two pumps 4-hour cooldown	15,005	- 0 -	15,005
Two pumps orifice sizing	15,218	- 0 -	15,218
One pump 4-hour cooldown	18,092	- 0 -	18,092
One pump normal operation	14,747	- 0 -	14,747
Two pumps normal operation	12,846	4,676	8,170
"S" Signal	15,265	4,272	10,993

As shown by the above data, various flowrates are given as "normal" system demand flow. This flowrate varies from 8,170 GPM in the "Pipeflow" calculation for two pumps, to 10,866 GPM in calculation 229-13, and a range of 13,500 GPM to 14,800 GPM given in the instrument setpoint methodology. The "normal" CCW pump recirculation flow also varies from 3,834 GPM to 4,676 GPM in these same documents. Also, based on the setpoint data and the pipeflow recirculation flowrate, the pump discharge flow for two pump normal operation would have to increase to 17,372 GPM (12,696 + 4,676) before the recirculation valve would close.

Please provide Cygna with the following information and documentation:

- What is the criteria for the CCW pump recirculation loop flowrate; pump protection, flow balance, heat exchanger flow requirement, etc.?

**ATTACHMENT A**  
**MECHANICAL REVIEW QUESTIONS**

- What criteria established the opening and closing set points for valve FV-4536?
  - What is the system startup sequence in relation to the position of valve FV-4536? Is this valve normally open during system normal operation?
  - Provide verification that valve FV-4536 will close during one pump and two pump normal operation. Since one pump system flow demand is 14,747 GPM with no recirculation flow it appears that the CCW pump will approach runout conditions prior to valve FV-4536 closing.
  - Clarify why the pipeflow data indicates a recirculation flow of 4,272 GPM with an "S" signal when the "S" signal is supposed to close valve FV-4536 per drawing 2323-M1-2229-04 Rev. CP-3.
2. TSG-068 dated 3/9/82 and the attached work package RMS-5 deleted the control function from 1 RE 4509, 4510, and 4511 which closed the surge tank and drain tanks vent valves on a high radiation signal. The justification for this change was stated as "monitor could degrade safety by pressurizing atmospheric tanks during transient. Monitor design could result in false signal due to temperature rises during accidents." No data was presented to indicate that the effect of radioactive material being released from the open tank vents was considered prior to implementation of this change. Please provide documentation of the acceptability of this change from a radiation protection standpoint.