

**TEXAS UTILITIES GENERATING COMPANY**

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

October 12, 1984

Director of Nuclear Reactor Regulation  
Attention: Mr. B. J. Youngblood, Chief  
Licensing Branch No. 1  
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  
CONTAINMENT SUMP PERFORMANCE

Dear Mr. Youngblood:

As a result of your continuing review of the CPSES containment sump performance and associated phenomenon the following question was asked by the NRC reviewer.

Question:

During cold leg recirculation following hot leg break, the maximum debris particle size that can be carried into the core by the RHR flow is calculated to be 0.036 inches. This value is close to the 0.040 inch dimension at which blockage may begin within the core. How conservative is the calculated 0.036 inch maximum debris particle size?

Answer:

The analysis performed to predict maximum debris size that could be transported from the lower plenum up into the core during cold leg recirculation following either a hot leg or cold leg break was based on fluid velocities in the core, not in the lower plenum. In the core region, approximately 43 percent of the cross-sectional area formed by the baffles is taken by fuel. In comparison, the lower plenum just below the core is open, containing only several support columns. It follows that, for a given flow, the fluid velocity in the lower plenum just below the core is significantly less than the fluid velocity in the core itself. Recalling that maximum debris size carried by a fluid increases with increasing fluid velocity, it is seen that use of core fluid velocities rather than lower plenum fluid velocities is indeed conservative.

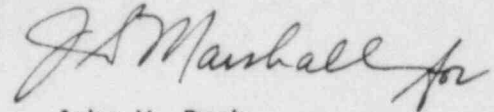
To assess the magnitude of the conservatism of the original analysis, maximum debris particle sizes were reevaluated using lower plenum fluid velocities. The results of the reevaluation are listed in Table 1, as are

8410180220 841012  
PDR ADOCK 05000445  
A PDR

the results of the original analysis. Reviewing the data of Table 1, it is seen that, based on fluid velocity in the lower plenum, the maximum debris size that can be carried into the core is 0.019 inches. Thus, it is concluded that for the postulated scenarios considering the transport of paint debris in the RHR flow during cold leg recirculation, core blockage will not occur.

Should you have any further questions, please contact this office.

Respectfully,

A handwritten signature in cursive script, appearing to read "J W Beck", followed by a small flourish.

John W. Beck  
Manager, Licensing

JSM/grr  
Attachment

cc - S. B. Burwell  
John Stefano

TABLE 1

COMANCHE PEAK  
MAXIMUM PAINT DEBRIS SIZE COMPARISON  
COLD LEG RECIRCULATION

Events/Conditions	Fluid Velocity (FT/SEC)		Max. Dia. of Debris Passing Through Core (inches)	
	Conservative Analysis (Core)	Best Est. Analysis (Lower Plenum)	Conservative Analysis	Best Estimate Analysis
Cold Leg Break 1 or 2 RHR Pumps Operating	.10	.06	.011	.007
Hot Leg Break 1 RHR Pump Operating	.15	.09	.023	.010
Hot Leg Break 2 RHR Pump Operating	.30	.18	.036	.019