UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-445 and
TEXAS UTILITIES ELECTRIC COMPANY, ET AL.	)	50-446
	)	
	)	(Application for
(Comanche Peak Steam Electric Station, Units 1 and 2)	)	Operating Licenses)
	)	

APPLICANTS' STATEMENT OF MATERIAL FACTS
AS TO WHICH THERE IS NO GENUINE ISSUE
REGARDING CONSIDERATION OF
LOCAL DISPLACEMENTS AND STRESSES

I. Zero Clearance Box Frames

1. In the absence of quantitative code guidance, Applicants employed a conservative methodology for selecting allowables for assessing the localized pipe stresses. These allowables are approximately 60% of allowables which normally would be applied, i.e., three times S_m. (Finneran Affidavit at 4.)

2. There are 51 zero clearance box frame supports at Comanche Peak. (Finneran Affidavit at 4.)

3. Only one zero clearance box frame is located on a piping run with a maximum water temperature greater than 200°F. This is support ST-325-002-S32R. The maximum temperature of the pipe in this case is 350°F. (Finneran Affidavit at 4.)

4. Even when including the local stress induced in the frame from the thermal expansion of the pipe with other loads, all stresses in the frame on support SI-325-002-S32R are less than Code allowables. The loads and stresses in this support would be greater than those encountered in the other supports of this type because of the higher temperature of this pipe and the fact that the pipe is stainless steel (resulting in greater pipe expansion), and the greater thickness of the pipe (affording less flexibility and, thus, imparting greater loads). (Finneran Affidavit at 4-5.)

5. All stresses in the pipe are also less than the conservative allowables Applicants employ for assessing localized pipe stresses. (Finneran Affidavit at 5.)

6. Cygna also performed an analysis (finite element) of the frame on this support. Their analysis demonstrated that the stresses in both the pipe and the box frame remained well below allowables even when both thermal and mechanical loads were combined. (Finneran Affidavit at 5-6.)

7. Applicants conservatively calculated the loads between the frame and the pipe for the support cited by CASE in its Proposed Findings (page IV-17) on this topic. That analysis demonstrates that the resulting force between the pipe and the frame will be 454 lbs. CASE had estimated, using a very simplified calculational technique (CASE Proposed Findings at IV-17), that the load created between the pipe and the box frame was 27,280 lbs. (Finneran Affidavit at 6.)

II. Anchors

8. Applicants performed a conservative analysis of the anchor supports referenced in Section 14 of CASE Exhibit 669B for which CASE claimed the radial thermal expansion of the pipe should have been calculated. Inclusion of the thermal expansion effects of the pipe with other loads in the assessment of the anchors led to no overstressed conditions. (Finneran Affidavit at 8.)

9. Cygna analyzed a similar support for these same effects in their response to Doyle Question 15 (see Testimony of Nancy H. Williams, Board April 1984 Ex. 1 at 33.) Their results demonstrate that all stresses in the frame and baseplate were far below the allowables used by Cygna. (Finneran Affidavit at 7-8.)

III. Tube Steel Walls

10. Applicants' practice regarding the assessment of local stresses in tube steel walls is for each support design organization to assess the effects on a case-by-case basis, when deemed appropriate by the engineer. The NRC Staff reviewed Applicants' practices in this regard and had no concern regarding the adequacy of Applicants' approach. The Staff reviewed a random sample of 100 vendor certified supports selected by the Staff and found Applicants had considered these local effects. (Finneran Affidavit at 9.)

11. CASE performed no calculations to substantiate its assertions on this issue. Rather, CASE premises its position on certain factors it believed indicated that analyses should be performed. First, CASE incorrectly implies that the minimum width ratio of tube steel to tube steel connections that Applicants used (until September of 1982) was 0.8. Next, with respect to CASE's assessment of the local stresses in the support referenced in its Proposed Findings, CASE claims that the tube to tube ratio was less than .4. The connection ratio is actually .5625. Finally, the actual stress for this connection is 2261 psi, or 57% of the applicable allowable. Thus, contrary to CASE's assertion the design of this connection is clearly adequate. (Finneran Affidavit at 10-11.)

12. Applicants selected several worst case supports from CASE Exhibit 669B with tube steel connection ratios less than 1.0, and included three additional supports claimed by CASE to have been inadequately designed with respect to local effects of welded attachments to tube steel, for detailed local failure analysis. In all cases the local stresses were less than allowables. (Finneran Affidavit at 11-12.)

IV. Local Deflections and Deformations

13. Applicants' practice regarding consideration of local deflections and deformations is standard industry practice which is premised on sound engineering principles that result in adequate support designs. Applicants' practice is to consider

the deflections of the structural portions of each support in calculating deflections for comparison to the 1/16" deflection guideline. (Finneran Affidavit at 13.)

14. To assess these effects, Applicants selected the 15 supports from CASE Exhibit 669B which present worst case conditions, and a support used by CASE in the cross-examination of the Staff on this subject. Applicants' analyses demonstrate that even when local and component effects are accounted for in deflection calculations, their deflection criterion is still satisfied in the vast majority of cases. In those cases where the deflection does exceed 1/16" (and none greatly exceeded the criterion), the support stiffnesses remained in the acceptable range. Thus, although these local effects may result in potential deflections slightly greater than 1/16" there is no safety significance to this fact. (Finneran Affidavit at 13-16).

15. CASE incorrectly alleges that Applicants' support designs will have "large deformations" and, thus, Applicants have not satisfied the guidance contained in the Regulatory Guide 1.124. However, Applicants' practice regarding Class 1 supports (to which the Regulatory Guide applies) is to perform complete stiffness calculations, including consideration of local effects. (Finneran Affidavit at 16.)

16. Irrespective of the support classification, the discussion in Regulatory Guide 1.124 regarding large deformations is related to the use of plastic analysis methods. With respect

to support design using elastic analysis, as Applicants use, Regulatory Guide 1.124 recognizes that deformations will, in fact, be small. (Finneran Affidavit at 17.)