UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

February 3, 1984

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
TEXAS UTILITIES GENERATING COMPANY, et al.	)	Docket Nos. 50-445 and 50-446
	)	
(Comanche Peak Steam Electric Station, Units 1 and 2)	)	(Application for Operating License)

APPLICANTS' PLAN TO RESPOND TO MEMORANDUM AND ORDER (QUALITY ASSURANCE FOR DESIGN) 1/

I. INTRODUCTION

In its Memorandum and Order (Quality Assurance for Design) ("Memorandum and Order") issued on December 28, 1983, the Board addressed the intervenor's allegations relating to pipe supports. The Board expressed the view that certain of those allegations required further explanation on the record before the Board could determine the issues in contest. In particular, the Board cited the need for "rigorous, logical answers" to the intervenor's allegations addressed in the Memorandum and Order (Memorandum and Order at 72).

Accordingly, the Board asked Applicants to propose a Plan that would provide the Board with the information necessary to satisfy its concerns on the open items. The Board suggested that Applicants consider an independent design review, but noted that lesser measures might possibly be sufficient (Memorandum and Order at 73).

1/ On January 25, 1984, the Board Chairman granted Applicants' request for an additional week (to February 3, 1984) to file this Plan.

II. SCOPE OF PLAN

As we acknowledged in our Motion for Reconsideration, 2/ the present evidentiary record must be supplemented in order to address the concerns raised by the Board in its Memorandum and Order. Applicants propose to supplement the record through the presentation of evidence that will be produced by the performance of the Plan described below.

Applicants intend on these and all future issues in this proceeding to provide the Board with rigorous, detailed evidentiary responses so that there can be no doubt, based upon the full evidentiary record, that the issues in contest and the Board's concerns have been fully addressed and resolved, that no safety problems are involved, and that issuance of operating licenses should be authorized. It is pursuant to this litigation strategy that Applicants intend in the Plan described below to address comprehensively the substantive issues on pipe support design raised by the intervenor and the concerns raised by the Board.

In compiling the list of issues to be addressed in the Plan, we did not limit our search to the Board's Memorandum and Order. Rather, we also reviewed the SIT Report and the intervenor's proposed findings of fact to establish a comprehensive list of the important issues, the resolution of which on the record should satisfy the Board's concerns and provide the Board with the reasonable assurance it needs

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2/ Applicants' Motion for Reconsideration of Memorandum and Order (Quality Assurance for Design), January 17, 1984.

that the design and design process for pipe supports are acceptable.

Further we propose to attempt to reach a stipulation with the intervenor on these issues and the ultimate question of design adequacy for pipe supports. Toward that end, we propose to meet with Messrs. Walsh and Doyle during the latter stages of implementation of the Plan to discuss the results of Applicants' efforts. We believe that a stipulation may be possible, if the meeting is approached objectively, which could shorten the hearing time considerably. This is a result that obviously benefits all parties and the Board.

Overall, the Plan comprises the performance of several tests and analyses, the preparation of detailed testimony and documentary evidence, and the performance of an independent and reliable review of these efforts. Further, Applicants have duly noted the Board's suggestion that an independent design review be performed, and we intend to commission such a review, specifically addressing the technical issues in contest and the concerns raised by the Board.

There are 16 technical issues that Applicants will address in the Plan. Several of these issues have subsets that also will be addressed. We believe that the Plan envelops all significant issues raised by the intervenor and the concerns raised by the Board on the pipe support design matter. We also believe that in our effort to be conservative and to develop a comprehensive list of issues, we may have selected

some that may already have been adequately addressed and resolved in the Board's mind. Given the state of the record, we could not be sure of this, so we prepared a comprehensive list. If the Board in its review of the list determines that some of these issues need not be addressed, we would greatly appreciate prompt advice to that effect from the Board so that our extensive efforts to implement the Plan will not be misspent.

Implementation of the Plan will involve several organizations. In order to provide independence from the pipe support design organizations and the Engineer, we have retained Ebasco Services, Inc. to assist in the coordination of the efforts. Applicants also will call upon NPSI, ITT-Grinnel, PSE, Westinghouse and Gibbs & Hill, in addition to Ebasco, to support the efforts.

In order to provide additional independence, Applicants intend to retain the services of an expert from the academic community who will be asked to review the basic engineering principles to be addressed in the Plan and to provide testimony to the Board. Applicants are in the process of selecting an individual with the necessary academic and professional background that will qualify the person as an indisputable expert. We will provide the Board with the name and qualifications when the person is selected.

Finally, in order to provide even further independence and assurance on the adequacy of pipe support design at Comanche Peak, Applicants will adopt the Board's suggestion that an independent design review be conducted. Applicants

intend to commission Cygna Energy Services to perform that review, a selection that is in accord with the Board's recommendation (Memorandum and Order at 73). The scope of that review is described below in Part II.B.

A. Issues to be Addressed

The technical issues that we will address in the Plan are listed below. We intend to provide detailed testimony and/or documentary evidence, as appropriate, on each of these issues to assure that the record is clear and complete. The tasks and issues comprising the Plan are as follows:

(1) Provide a detailed description of the iterative design process for piping and pipe supports, including a discussion of the design control process during all stages of design, with reference to the written procedures that govern and control the design and design control process, and a discussion of the various documents employed as a part of the QA/QC process (including CMCs, NCRs, and DCAs) and justification for the use of these documents in the quality program (e.g., trending, document retention).

(2) Provide a detailed description of the evolution of the instability issue, from the design process through the resolution of the issue. Documentation will be provided on the identification of the instability as an issue and of the engineering process leading to its resolution.

(3) Provide evidence that the use of U-bolt cinching is appropriate to eliminate potential local instability without introducing adverse effects in the piping and the U-bolt itself. This evidence will be generated by a combination of tests and analyses.

(4) Provide evidence that there are no adverse long-term effects from U-bolts caused by heatup and cooldown and related friction on the pipe. This evidence

will be generated by the tests and analyses noted in item (3) above.

(5) Provide evidence of the acceptability of stresses on pipes caused by thermal expansion in local areas around cinched U-bolts. This evidence will be generated by the tests and analyses noted in item (3) above, supplemented by a field sampling of torque values.

(6) Provide a description of the modifications of procedures that were made in response to the NRC audit regarding weld design, and a description of the review of weld design that was conducted during the Code certification (N-5) process.

(7) Provide a description of the relationship between the ASME Code and AWS welding criteria, including a discussion of the applicability of particular AWS criteria to welding at Comanche Peak. [Most aspects of this issue will be addressed in the evidentiary hearings scheduled for February 20.]

(8) Provide evidence that the design for the upper lateral restraint and adjacent walls is adequate to withstand mechanical and thermal loads in a LOCA environment. This will include the performance of an analysis to confirm that the forces transmitted to the concrete by the expanding restraint are well within the capacity of the concrete to permit the continued performance by the concrete and the support of their intended functions. This also will include the performance of analyses of the time differential between the peak mechanical and thermal loads and of realistic stiffness values for the walls.

(9) Provide evidence in the form of sensitivity studies and other reference material that stresses and displacements in the piping system, and support loads, are not significantly affected by differences between assumed generic stiffness and actual stiffnesses which do not exceed approximately two orders of magnitude. Further, provide evidence in the form of the same studies and reference material that the effects of

support gaps or other non-linearities will likewise not result in different behavior of the piping system and its supports when they are within the anticipated dimensions.

(10) Provide evidence of the capability of Richmond inserts to accept the maximum loads to which they will be subjected in tension, shear, and combined tension and shear, with ample margins of safety. This evidence will be generated by a combination of tests and analyses.

(11) Provide evidence of the tension in the bolt employed with Richmond inserts and the correct load distributions in the concrete, washer, tube steel, and bolt occurring when a torque is applied to the tube steel. This evidence will be generated through the performance of finite-element analyses.

(12) Provide evidence of a reevaluation of each individual support identified by Messrs. Doyle and Walsh to determine the acceptability of the design of each support.

(13) Provide evidence of all floor-to-ceiling and wall-to-wall supports identified in the plant, and where slip joints are not employed, provide evidence in the form of analyses that the design is adequate without slip joints.

(14) Provide evidence of the capability of U-bolts to accept simultaneous normal and lateral loadings. This evidence will be generated by tests.

(15) Provide evidence of how the design has accounted for the torsional resistance of axial restraints. This evidence will be generated through the performance of analyses.

(16) Provide a description of the proper damping factors used in piping analyses for OBE and SSE.

B. Independent Design Review

In accordance with the Board's suggestion that an independent design review be conducted, Applicants intend to commission Cygna Energy Services to perform such a review. This review will be accomplished by expanding the scope of the Independent Assessment Program issued by Cygna on November 5, 1983. Copies of that Program Report were transmitted to the Board and the parties. Cygna will be requested to employ the same methodology and to retain the same independence and reliability that it utilized for the prior effort.

This next effort to be performed by Cygna will involve segments of two important safety systems. Cygna will assess the piping and pipe support systems on a segment of the component cooling water system, and will also assess the piping and pipe support systems on a main steam line from the steam generator to the main steam isolation valve. The component cooling water system and main steam line system were selected because they represent systems which contain most configurations alleged to be inadequate or improper. Thus, a review by Cygna of these systems should provide a "worst case" conservative evaluation of the allegations as they relate to hardware installed in the plant.

III. SCHEDULE

We are hopeful that the activities described in Applicants' Plan (including the Cygna review) can be fully implemented and completed within approximately two months. While this is an ambitious schedule, Applicants have

committed substantial resources to the efforts and believe that the schedule can be met. As noted above, we intend to seek stipulations with Messrs. Walsh and Doyle regarding the results of the tests and analyses being performed as the work on discrete issues is completed. This should shorten substantially the time needed by the intervenor upon completion of the Plan to prepare for hearings. We also intend to keep the NRC Staff apprised of our progress and to provide similar input to the Staff as work on discrete issues is completed. This should allow the Staff to expedite its review and to support the proposed hearing schedule suggested below.

Accordingly, we request the Board to designate the hearings scheduled for April 23-27 and May 1-3 for the litigation of the matters encompassed by the Plan. We believe that all parties will have ample opportunity prior to that time to be prepared for the hearings.

IV. EXPEDITED RESPONSES

In its Memorandum and Order issued on December 28, 1983, the Board allowed the intervenor twenty days from the date of filing of this Plan in which to respond to it, and allowed the Staff five additional days within which to respond. We ask the Board to shorten the time allowed so that responses from the intervenor and the Staff are filed by February 10 (by overnight delivery). [We are serving this Plan on the Board and parties by overnight delivery.] We ask the Board to adopt this schedule because Applicants are anxious to receive input from the Board on this Plan at the earliest

possible time. Because time is of the essence, we are already in the process of implementing the Plan. We therefore urge that the Board expedite the filing of comments by the other parties, and provide prompt Board endorsement of the Plan.

Respectfully submitted,

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	)	(Application for
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	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "Applicants' Plan to Respond to Memorandum and Order (Quality Assurance for Design)," in the above-captioned matter were served upon the following persons by overnight delivery (*), or deposit in the United States mail, first class, postage prepaid, this 3rd day of February, 1984, or by hand delivery (**) on the 6th day of February, 1984.

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