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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF RESPONSE TO APPLICANTS' MOTION FOR SUMMARY DISPOSITION ON AWS AND ASME CODE PROVISIONS ON WELD DESIGN

I. INTRODUCTION

Applicants have submitted their "Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Design Issues" (May 17, 1984) ("Applicants' Motion"), together with the attached "Affidavit of J. C. Finneran, R. C. Iotti and J. D. Stevenson Regarding Allegations Involving AWS vs. ASME Code Provisions" ("Applicants' Affidavit"). CASE responded to Applicants' Motion in its "Answer to Applicants' Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Relating to Design Issues" (August 6, 1984) ("CASE's Answer"), together with the "Affidavit of CASE Witness Mark Walsh" ("Walsh Affidavit"). The NRC Staff ("Staff") hereby responds to Applicants' Motion and CASE's Answer. 1/

1/ The Board previously requested that the Staff respond to CASE's replies to Applicants' summary disposition motions on piping design and design QA issues.

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II. BACKGROUND

During the September 1982 hearing session, CASE witness Jack Doyle identified many concerns with the design of pipe supports. One concern raised by Mr. Doyle was that the AWS Code, as opposed to the ASME Code, was applicable to the design of pipe supports. CASE Exhibit 669, pp. 111-118. Applicants' responded to Mr. Doyle's concern by stating that the 1975 ASME Code, not the AWS Code, was applicable to the design of pipe supports at CPSES. Applicants' Exhibit 142F, pp. 3, 7-8. The Staff also concluded that the ASME Code was the applicable standard for designing pipe supports at CPSES. SIT Report (Staff Exhibit 207), p. 49.

Following the conclusion of litigation on the pipe support design concerns raised by Messrs. Walsh and Doyle, the parties submitted proposed findings on their concerns. 2/ In its proposed findings, CASE raised new concerns regarding the adequacy of the ASME Code for the design of pipe supports. In particular, CASE listed ten parameters which it contended were "included in the AWS Code but not included in ASME Appendix XVII or Subsection NF. . .":

(1) pre-heat requirements for welds on plates over 3/4 inch thick.

(2) drag angles and work angles.

(3) Beta factor for tube-to-tube welds.

(4) Multiplication factor and reduction factors for skewed "T" weld joints.

2/ Applicants' Proposed Findings of Fact Concerning Pipe Supports Design Questions (August 5, 1983); NRC Staff Proposed Findings of Fact (August 30, 1983); CASE's Proposed Findings of Fact and Conclusions of Law (August 22, 1983).

(5) angularity limits for skewed "T" joints.

(6) calculations for punching shear on step tube joints.

(7) lap joint requirements.

(8) design procedure for tube-to-tube joints with Betas equal to 1.0.

(9) calculation for effective threat of flair bevel welds.

(10) limitations on weld sizes relative to plate thickness.

CASE's argument apparently prompted the Board to inquire again into the applicable codes for welding of pipe supports at CPSES. In response to the Board's questions, the parties filed briefs regarding the applicability of the ASME and AWS Codes to the design of pipe supports at CPSES and the adequacy of the ASME Code with regard to the ten factors indentified by CASE.

The Board closed one item relating to the calculations of effective throat for flare bevel welds, but left the remaining nine items unresolved. Memorandum and Order (Quality Assurance for Design) (December 28, 1984), pp. 43-46. The Board subsequently issued a January 4, 1984 Memorandum and Order (Additional Schedule Matters), which requested additional information on the ASME and AWS Codes' provisions for weave welding, downhill welding, preheat, and cap welding. Memorandum and Order, pp. 6-7.

On April 6, 1984, the NRC Staff ("Staff") received the "Applicants' Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Welding Issues; Request for Expedited

Response" (April 5, 1984) ("Applicants' First Motion"). Applicants' First Motion requested summary disposition on, inter alia, parameters 1, 2, 7 and 9 above. These items were resolved by the Board in Applicants' favor. Memorandum and Order (Written-Filing Decisions, #1: Some AWS/ASME Issues) (June 9, 1984).

Applicants' Motion now requests summary disposition on the five remaining parameters concerning weld design.

III. DISCUSSION

A. Legal Standards Governing Summary Disposition

The Staff previously discussed the legal standards governing summary disposition in its "Response to Applicants' Motion for Summary Disposition on AWS and ASME Code Provisions on Welding" (May 11, 1984). However, the Board has adopted a somewhat more lenient standard for granting summary disposition. The Board stated that it would "ask questions, request briefs, or otherwise seek to clarify matters fairly," and would schedule a hearing only if a hearing is "necessary for [the Board] to make a reasoned decision." Memorandum and Order (Written-Filing Decisions, "1: Some AWS/ASME Issues) (June 29, 1984), pp. 2-3.

B. AWS and ASME Codes' Provisions on Weld Design

As set forth in the attached "Affidavit of David Terao on AWS and ASME Code Provisions on Weld Design," ("Terao Affidavit"), the Staff concluded that while the ASME Code contains provisions regarding multiplication and reduction factors for skewed T-joint welds which are equivalent to the AWS Code, Applicants had not shown that their design

practices were consistent with the ASME Code, which is the relevant code for the design of pipe supports at CPSES. Terao Affidavit, Answer 8. Applicants should demonstrate that they comply with ASME Code, Section III, Appendix XVII, Paragraphs 2452.4 and 2452.5, and provide assurance that reduced effective throats for skewed T-joint welds are appropriately considered. Id.

With regard to angularity limits for skewed T-joint welds, the Staff agrees with Applicants (and disagrees with CASE) that AWS angularity limits are necessary to supplement the ASME Code. The AWS angularity limits are required only if prequalified joints are used. The AWS Code specifically provides that if the weld procedures for the joints are qualified by test, then the AWS angularity limits do not apply. Terao Affidavit, Answers 11, 13. Under ASME, all weld procedures are qualified. Thus the ASME Code is identical to the AWS Code in this regard, since both codes do not set forth angularity limits when the weld procedures are qualified by test. Id.

The Staff agrees with CASE that the ASME Code does not explicitly address punching shear. Accordingly, the Staff contends that the pipe support designer must recognize that appropriate consideration should be given to punching shear when using tube steel. Terao Affidavit, Answer 16. CASE is incorrect in its assertion that the AWS Code provides the only appropriate methods for evaluation of punching shear. Id., Answer 16, and note 4.

Applicants submitted some analyses of 12 pipe supports that show no problem with punching shear. Terao Affidavit, Answer 17. The Staff did not believe that this was sufficient evidence to show that Applicants

appropriately considered punching shear at CPSES. Therefore, the Staff requested Applicants to identify joint configurations where punching shear could be a concern, and provide evidence showing that these configurations had an acceptable margin of safety for punching shear. Terao Affidavit, Answer 18. Applicants have submitted such a study, where they identified all supports in CPSES Unit 1 with chord thinness ratio of 10 or more. Out of 171 identified supports with chord thinness ratios of ten or more, one support exceeded the AWS load failure allowable, and Applicants have committed to modifying this support. Id. A similar effort is being conducted for Unit 2. Id. CASE points out that 6 supports identified in Applicants' summary disposition motion had chord thinness ratios greater than 7. However, CASE does not indicate whether punching shear is, in fact, a problem for these 6 supports. If Applicants can show that the 6 supports were included in the 171 support sample, the Staff can conclude that punching shear is not a safety concern at CPSES. Id.

Finally, the Staff agrees with Applicants that the ASME Code contains a provision for consideration of web crippling which is similar to that in the AWS Code. Terao Affidavit, Answer 22. Applicants explained that they modified the ASME Code equation to account for web crippling in tube steel. The Staff believes that Applicants have appropriately modified the ASME Code equation to account for tube steel web crippling. Id. However, Applicants have shown only one instance where the modified equation was actually employed. Applicants should submit further evidence showing that the their modified ASME Code web crippling equation is used in all cases where web crippling could be a significant design concern.

IV. CONCLUSION

The Board should grant Applicants' Motion in accordance with the Staff's discussion above, and defer ruling on those issues where the Staff contends that Applicants should submit additional information specifically addressing the Staff's concerns.

Respectfully submitted,

Geary S. Mizuno
Counsel for NRC Staff

Dated in Bethesda, Maryland
this 2nd day of November, 1984