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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF RESPONSE TO APPLICANTS' AND
CASE'S FINDINGS OF FACT ON WELD FABRICATION

I. Introduction

On September 7, 1984, the NRC Staff and Applicants filed Proposed Findings of Fact relating to weld fabrication at Comanche Peak Steam Electric Station (CPSES). Intervenor Citizens Association for Sound Energy (CASE) filed its findings of fact on September 9, 1984. These findings were submitted in connection with the hearings convened by the Board in September 1982 and February and March 1984, to consider CASE's welding concerns. In general, CASE alleged that the widespread but improper use of weave welds, downhill welds, and plug welds, and the poor weld rod distribution system employed by Applicants at CPSES poses significant threats to the safety of the plant and the public.

The Staff has reviewed the Applicants' proposed findings of fact and, except as noted herein, is in substantial agreement with them. The

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findings of fact proposed by CASE, on the other hand, present several matters which warrant brief response by the Staff.^{1/}

II. Weave Welding

1. The evidence does not support the proposition advanced by CASE that unauthorized weave welding is a common practice at CPSES. See generally, CASE Findings of Fact, Part I. As the Staff noted in its proposed findings, the Applicants' procedures employed at CPSES permit welders to use an oscillating or "weaving" motion when making a weld. The amount of oscillation, however, is limited to four times the diameter of the weld rod used to make the weld. E.g., Tr. 12,154 (Collins); Tr. 11,227 (Brandt); Tr. 9994 (Baker); Applicants' Ex. 186, ff. Tr. 11,239. The evidence does not establish that welders routinely weld in excess of four core diameters. In fact, only one confirmed use of excessive weave welding was presented to the Board. See Staff Testimony at 12 (Taylor, Gilbert); Tr. 4153-54 (D.Stiner). Evidence of a single instance of excessive weave welding hardly warrants an inference that the practice was pervasive. See Union Electric Co. (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343 (1983).

2. CASE also suggests that "the existence of weave welds [is] both an indication that the existing weld is weaker and that there has been a failure to follow procedures." CASE Findings of Fact, Part I at 5. Testimony presented by the Staff and Applicants, however, indicates

^{1/} Neither Applicants nor CASE has set forth its proposed findings in numbered paragraphs. Accordingly, the Staff will refer to the parties' proposed findings by page number.

that this is not so. Although the Staff does not dispute CASE's contention that fabrication of an "excessive" weave would represent a "failure to follow procedures" CASE Findings of Fact, Part I at 5, such failure does not in itself present a significant safety concern. Moreover, there is no evidence to show that welding in violation of the maximum specified oscillation is done at CPSES. The consequence of "excessive" weave welding alleged by CASE -- damage to the base metal caused by excessive heat input -- is not a problem at CPSES. This is because the low carbon steel used at CPSES to fabricate pipe and cable tray supports is not affected adversely by the amount of heat generated in making an excessive weave weld. See Tr. 9998-1000 (Muscente); Staff Testimony at 7 (Collins, Smith). There is ample evidence in the record supporting a finding that because low carbon steel is used in the fabrication of pipe supports and other structural supports at CPSES, an excessive weave weld will not affect adversely the structural integrity of the welded component. See Tr. 10,000 (Muscente); Staff Testimony at 7. At CPSES, however, excessive weave welds are required to be repaired unless the welding engineering department makes an independent determination that the weld is acceptable "as is." Tr. 10,001 (Baker). An excessive weave weld that is not repaired by the welder himself will in all likelihood be detected by either his foreman, a welding technician, or a quality control (QC) inspector. See Applicants' Ex. 177 at 12 (Baker), ff. Tr. 9976; Tr. 11,322 (Brandt).

3. In its proposed findings, CASE states erroneously that the difference between a weave bead weld and a stringer bead weld is one of kind, not one of degree. CASE Findings of Fact, Part I at 10. The expert testimony presented by the Staff indicates the opposite. Staff Testimony at 4-5 (Collins, Smith).

4. CASE suggests that an excessive weave weld contains entrapped slag deposits which cannot be detected by visual examination if the weld is ground down. CASE Findings of Fact, Part I at 12-13. This is significant, in CASE's view, because of an undocumented assertion that estimated 10-15% of the welds at CPSES are ground down to the point where it cannot be detected whether the welder utilized a stringer bead or weave bead to make the weld. Id. at 12. CASE's concern is unfounded. First, the presence of small amounts of slag in a weld is not indicative of a poorly made weld. See Tr. 12,170 (Collins); Tr. 11,215 (Brandt). Moreover, the absence of slag deposits on the surface of the weld is adequate assurance that the amount of slag, if any, entrapped inside the weld does not exceed the amount permitted by the 1974 ASME Code or the 1975 AWS Code. Tr. 12,186 (Collins).

III. Preheating Temperature

1. In its proposed findings, Applicants take the position that the record supports the conclusion that the failure of welders as CPSES to comply with preheat requirements does not present a significant safety concern. Applicants' Findings of Fact, Part II-(C)(5)(6) at 75. The Staff, however, does not share Applicants' view.^{2/}

2. As the Staff noted in its proposed findings, Weld Procedures 10046 (non-ASME) require minimum preheat temperatures of 70°F for

^{2/} Paragraph B.8.1 of the Staff's Findings of Fact on Weld Fabrication incorrectly noted that Mr. Stiner's allegation on welding when temperatures below freezing was struck by the Board. However, the Board did request that the Staff look into this allegation. Tr. 9950.

materials ranging in thickness; 150°F for materials ranging in thickness between 1 1/2-2 inches; and 225°F for materials more than 2 inches thick. Joint Affidavit at 9-10 (Gilbert, Taylor); see Applicants Ex. 187, ff. Tr. 11,241. Weld Procedure 11032 (ASME) specifies minimum preheat temperatures of 60°F for material less than 1 1/4 inches thick and 200°F for materials greater than 1 1/4 inches thick. Id.: Tr. 10,026 (Baker); see Applicants Ex. 186, ff. Tr. 11,239. Although the record indicates that welders at CPSES use propane torches to preheat, see, e.g., Tr. 11,665 (Fernandez, Braumullier); Tr. 11,615 (Pickett), it does not indicate that welders at CPSES used any objective measuring device to verify that the temperature of the metal after preheating satisfies the minimum requirements of procedures 10046 and 11032. Rather, a welder merely "takes his torch and plays it over this material until he gets it up to what [is] referr[ed] to as hand warm." Tr. 10,028 (Muscente). The Staff, at the Board's request, has required Applicants to assess the safety significance of permitting welders to make subjective determinations as to whether preheat requirements have been satisfied. The Staff has received Applicants' response but has not yet completed its evaluation of this matter. Consequently, until this process is complete, the Staff is not in a position to offer its technical judgment as to whether the failure of welders at CPSES to preheat in accordance with the requirements of applicable procedure represents a significant safety or QA/QC concern.

IV. Downhill Welding

1. CASE devotes a significant portion of its proposed findings on downhill welding to a discussion of the circumstances surrounding the alleged unlawful termination of Henry Stiner. CASE Finding of Fact, Part II at 1. The Staff notes, however, that while the circumstances of Mr. Stiner's termination may be considered in the "intimidation" portion of this proceeding, this matter is not at issue in this portion of the proceeding and thus evidence relating to that matter is irrelevant in this portion of the proceeding.

2. While the Staff does not disagree with CASE that slag deposits may be entrapped in downhill welds, the Staff notes that according to Staff witness Collins, the danger of entrapping slag is not measurably greater for a downhill weld as opposed to an uphill one. See Tr. 12,227 (Collins). Staff's and Applicants' expert witnesses also testified that if a downhill weld was made well enough to pass visual inspection, it is not likely to contain an unacceptable amount of entrapped slag deposits. Staff Testimony at 21; Tr. 12,227 (Collins); Applicants' Ex. 177 at 19-20 (Baker).

V. "Plug Welding"

Applicants take the position that uninspected and undocumented welds made to repair misdrilled holes do not pose significant safety problems so long as the surface of such repair welds do not contain visible defects. Applicants' Findings of Fact, Part II-(C)(4) at 71. The Staff agrees that if a repair weld is made properly, "there is little concern for the structural adequacy of the repaired material."

Staff Testimony at 25 (Collins). However, the Staff has not made a determination as to whether the unauthorized, undocumented, and uninspected repair welds discovered by the Staff during the course of its inspection of CPSES' north cable spreading room, see Staff Addendum to Page 27 of Staff Testimony, calls into question the adequacy of Applicants' QA/QC program. Consequently, the Staff directed Applicants to (i) determine the structural soundness of the subject repair welds; (ii) explain why those repair welds escaped inspection by QC; and (iii) provide satisfactory assurance that there are no remaining undocumented repair welds in the north cable spreading room. The Staff has received and is evaluating Applicants' response to these inquiries. An affidavit will be filed with the Board when the Staff has completed its evaluation.

VI. Weld Rod Control

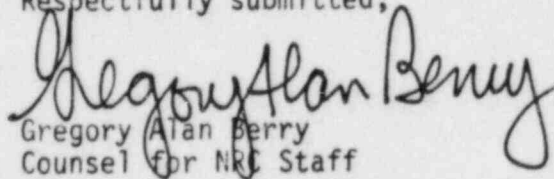
CASE did not address the issue of weld rod control in its proposed findings; its failure to do so "constitutes abandonment of this portion of its case." Texas Utilities Generating Co. (Comanche Peak Steam Electric Station, Units 1 and 2), LBP-83-43, 18 NRC 122, 130 (1983); see Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 1 and 2), ALAB-717, 17 NRC 346, 371-72 (1983); 10 C.F.R. § 2.754(b).

VII. CONCLUSION

In view of the foregoing, the Staff submits that Applicants' weld fabrication and weld rod control procedures comply with applicable NRC regulations; are consistent with the 1974 ASME Code and the 1975 AWS Code; and comport with generally accepted welding practices. In addi-

tion, the Staff maintains, with the possible exception of the open items noted in its "Proposed Findings of Fact on Weld Fabrication,"^{3/} that Applicants' weld fabrication and weld rod control program has been implemented in such a manner as to assure that the public safety is not threatened. Accordingly, with the exception of the open items listed in note 9 of the Staff's Findings of Fact on Weld Fabrication, the Board should find that the Applicants' have adhered to the quality assurance/quality control provisions required by the construction permits for Comanche Peak, Units 1 and 2, and the requirements of Appendix B of 10 C.F.R. Part 50 with regard to weld fabrication and weld rod control activities.

Respectfully submitted,


Gregory Alan Berry
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 28th day of September, 1984

^{3/} These "open" items are the significance of (i) welders making subjective determinations as to whether the preheat requirement of Procedure 11032 has been satisfied, (ii) the significance of the alleged failure of welders at CPSES to use temperature indicating equipment to verify interpass temperatures; (iii) undocumented repair welds on two hangers in the north cable spread room discovered by the Staff; and (v) pipe support H-CC-1-SB-038-010-3, alleged by Mr. Stiner to contain a downhill weld. The Staff has subsequently determined that Item (vi), the alleged failure of QC to verify welder symbols on Class 5 hangers, has been struck from the testimony of Mr. and Mrs. Stiner. Tr. 10494.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF RESPONSE TO APPLICANTS' AND CASE'S FINDINGS OF FACT ON WELD FABRICATION" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 28th day of September, 1984:

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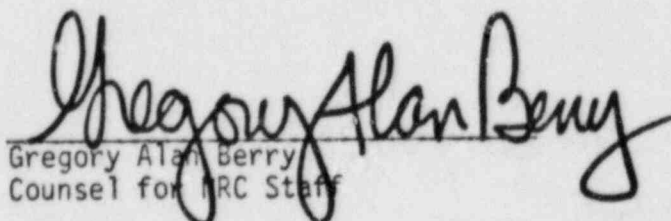
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