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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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 Licenses)

APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF CERTAIN CASE ALLEGATIONS REGARDING AWS AND ASME CODE PROVISIONS RELATED TO WELDING ISSUES; REQUEST FOR EXPEDITED RESPONSE

Pursuant to 10 C.F.R. §2.749, Texas Utilities Generating Company, et al. ("Applicants") hereby move the Atomic Safety and Licensing Board ("Board") for summary disposition of the Citizens Association for Sound Energy's ("CASE") allegations regarding AWS and ASME Code provisions relating to welding issues, i.e., (1) that in general welding procedures qualified under the ASME Code are flawed in that the ASME Code may not explicitly include AWS provisions; (2) that alleged AWS Code provisions concerning "Preheat requirements for welds on plates over 3/4-inch thick," "Drag angle and work angle (which limit the space allowed for the welder to function," "Beta factor for tube-to-tube welds," "Lap joint requirements," and "Limitation on weld sizes relative to plate thickness," were not adequately considered by the ASME Code or in CPSES welding procedures; and (3) that AWS and ASME Code requirements concerning weave welding, downhill welding, preheat

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and cap welding were not adequately considered. As demonstrated in the accompanying affidavit and statement of material facts, there is no genuine issue of fact to be heard regarding these issues. Applicants urge the Board to so find, to conclude that Applicants are entitled to a favorable decision as a matter of law, and to dismiss these issues in this proceeding.

I. BACKGROUND

In August, 1982, intervenor CASE deposed Mr. Jack Doyle, a former employee of Applicants, with respect to certain allegations Mr. Doyle had regarding the design of pipe supports at Comanche Peak. Mr. Doyle's deposition was subsequently admitted into the record in this proceeding as his testimony (CASE Exhibit 669; Tr. 3631). At the September, 1982, hearing session Applicants presented a panel of witnesses to respond to Mr. Doyle's allegations (Applicants' Exhibit 142F). One allegation made by Mr. Doyle was that certain portions of the AWS Code should be employed at Comanche Peak in the design of welds on pipe supports (CASE Exhibit 669 at 111-118). Applicants' witnesses testified that welding on safety-related pipe supports at Comanche Peak was performed in accordance with the provisions of the ASME Code, and that the particular provisions of the AWS Code referenced by Mr. Doyle not only were inapplicable to the

welding of pipe supports at Comanche Peak but the effects addressed by those provisions had nonetheless been properly considered at Comanche Peak (Applicants' Exhibit 142F at 3, 7-8).

In May, 1983, the NRC Staff also presented a panel of witnesses to respond to Mr. Doyle's allegations, including the applicability of the AWS Code to welding at Comanche Peak. The Staff's witnesses testified that Mr. Doyle's allegations regarding the applicability of the provisions of the AWS Code to welding on pipe supports at Comanche Peak were in error (NRC Exhibit 207 at 49-51).

Following litigation of the pipe support design allegations, each of the parties submitted proposed findings addressing, inter alia, the issues regarding the applicability of the AWS Code (see Applicants' Proposed Findings of Fact Concerning Pipe Support Design Questions (August 5, 1983) at 68-71; NRC Staff Proposed Findings of Fact (August 30, 1983) at 77-82; and CASE Proposed Findings of Fact and Conclusions of Law (August 22, 1983), Section V.) In CASE's Proposed Findings 10 specific examples of AWS Code Provisions not included in the ASME Code were raised, i.e., (1) "Preheat requirements for welds on plates over 3/4-inch thick," (2) "Drag angle and work angles (which limit the space allowed for the welder to function," (3) "Beta factor for tube-to-tube welds," (4) "Multiplication factor and reduction factors for skewed "T" weld joints," (5) "Limitations on angularity for skewed "T" joints," (6) "Calculations for punching (actually a

reduction factor for the weld) shear on step tube joints," (7) "Lap joint requirements," (8) "Design procedure for joint of tube to tube with Beta equal to 1.0," (9) "Limitation on weld sizes relative to plate thickness," and (10) "Calculation for effective throat of flare bevel welds." Each of the parties also filed in response to a request by the Board, briefs regarding the applicability of the AWS and ASME Codes to welding on pipe supports at Comanche Peak (see NRC Staff Response to Board Question Regarding Applicable Welding Codes at CPSES (October 28, 1983); Applicants' Brief Regarding Board Inquiry Into Applicability of AWS and ASME Codes to Welding on Pipe Supports at Comanche Peak (October 28, 1983); and CASE Response to Applicants' and Staff's Briefs (November 12, 1983)). By Memorandum and Order of December 28, 1983, at pp. 43-46, the Board left open nine of the ten items (closing out the allegation concerning "calculation for effective throat of flair bevel welds.")

In addition, by Memorandum and Order of January 4, 1984, at pp. 6-7, the Board asked for additional information on Code provisions, if any, on weave welding, downhill welding, preheat, and cap welding.

These issues were clarified by the Board's Memorandum and Order of February 8, 1984.

II. APPLICANTS' MOTION FOR SUMMARY DISPOSITION

A. General

Pursuant to 10 C.F.R. §2.749(d), upon an appropriate motion for summary disposition, "the presiding officer shall render the decision sought" where it is shown "that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law." To provide more definitive guidance in rendering such judgements, the Commission stated that Section 2.749 "has been revised to track more closely the Federal Rules of Civil Procedure." See 37 Fed. Reg. 15135 (1972).[1]

In accordance with the Federal Rules of Civil Procedure, to defeat an appropriate motion for summary disposition an opposing party must present facts in the proper form; conclusions of law will not suffice.[2] The opposing party's facts must be material,[3] and of a substantial nature,[4] not fanciful, or merely

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1 See also, Alabama Power Company (Joseph M. Farley Plant, Units 1 and 2), ALAB-182, 7 AEC 210, 217 (1974); Gulf States Utilities Co. (River Bend Station, Units 1 and 2), LBP-75-10, 1 NRC 246, 247 (1975); Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), LBP-74-36, 7 AEC 877, 878 (1974).

2 Pittsburg Hotels Association, Inc. v. Urban Redevelopment Authority of Pittsburg, 202 F. Supp. 486 (W.D. Pa. 1962), aff'd, 309 F.2d 186 (3rd Cir. 1962), cert. denied, 376 U.S. 916 (1963).

3 Egyes v. Magyar Nemzeti Bank, 165 F.2d 539 (2nd Cir. 1948).

4 Beidler and Bookmeyer v. Universal Ins. Co., 134 F.2d 828, 831 (2nd Cir. 1943).

suspicious.[5] One cannot avoid summary disposition

> on the mere hope that at trial he will be able to discredit movant's evidence; he must...be able to point out to the court something indicating the existence of a triable issue of material fact. [6 Moore's Federal Practice 56.15(4). (Emphasis added.)]

One cannot "go to trial on the vague supposition that something may turn up." 6 Moore's Federal Practice 56.15(3). See Radio City Music Hall v. United States, 136 F.2d 715 (2nd Cir. 1943). See also Orvis v. Brickman, 95 F. Supp. 605 (D.D.C. 1951), where the Court in granting the defendant's motion for summary judgement under the Federal Rules stated:

> All that plaintiff has in this case is the hope that on cross-examination...the defendants...will contradict their respective affidavits. This is purely speculative, and to permit trial on such basis would nullify the purpose of Rule 56, which provides summary judgement as a means of putting an end to useless and expensive litigation and permitting expeditious disposal of cases in which there is no genuine issue to any material facts.

Fundamental precepts of the administrative process mandate that CASE be required in response to this motion to present material and disputed facts in affidavit form supporting its position at this stage of litigation or that the Board rule favorably on Applicants' motion, in whole or in part. To permit otherwise would be to countenance unnecessary litigation and unwarranted delay. In this regard, see 10 C.F.R. §2.749(b), where it is stated that:

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[5] Griffin v. Griffin, 327 U.S. 220, 236 (1946); Banco de Espana v. Federal Reserve Bank, 28 F. Supp. 958, 973 (S.D.N.Y. 1939) aff'd, 144 F.2d 433 (2nd Cir. 1940).

> When a motion for summary decision is made and supported as provided in this section, a party opposing the motion may not rest upon the mere allegations or denials of this answer; his answer by affidavits or as otherwise provided in this section must set forth specific facts showing that there is a genuine issue of fact. If no such answer is filed, the decision sought, if appropriate, shall be rendered.

Further, the Appeal Board has emphasized that admission of a contention does not "carry with it any implication that...the contention [is] meritorious." Houston Lighting and Power Company (Allens Creek Nuclear Generating Station, Unit 1) ALAB-590, 11 NRC 542, 549 (1980). Thus, even though a contention or issue might be admitted to a proceeding it does not perforce follow that the contention or issue must be taken up at an evidentiary hearing. See Allens Creek, ALAB-629, 13 NRC 75, 76 (1981). In this regard the Commission's summary disposition procedures set forth in 10 C.F.R. §2.749 "provide in reality as well as theory, an efficacious means of avoiding unnecessary and possibly time-consuming hearings on demonstrably insubstantial issues." Allens Creek, supra, ALAB-590, 11 NRC at 550.

Finally, in the Commission's Statement of Policy on Conduct of Licensing Proceedings, CLI-81-8, 13 NRC 452 (May 20, 1981), the Commission recognized the difficult problems facing the NRC in meeting its responsibilities in the licensing area and noted that it will seek to avoid delays in the licensing process by utilizing existing procedures consistent with the Commission's commitment to a fair and thorough hearing process. In this regard the Commission urged both its Licensing and Appeal Boards

to employ procedural tools available to expedite the hearing process. Id. at 453. Among the tools which the Commission urged to be used by the Boards are the summary disposition procedures, so that where there is indeed no genuine issue of material fact to be heard, evidentiary hearing time is not devoted to such issues. Id. at 457. Accordingly, upon a finding of no genuine issue of material fact with respect to these issues, the Board should grant the instant motion for summary disposition.

B. CASE's Allegations Regarding the Inadequacy of Welding Procedures Qualified in Accordance with the ASME Code Should Be Summarily Dismissed

CASE alleges that the ASME Code (and welding procedures qualified therto) are inadequate in that the ASME Code does not take into consideration certain provisions of the AWS Code, specifically AWS Code provisions related to (1) "Preheat requirements for welds on plates over 3/4-inch thick," (2) "Drag angle and work angles (which limit the space allowed for the welder to function," (3) "Beta factor for tube-to-tube welds," (4) "Multiplication factor and reduction factor for skewed "T" weld joints," (5) "Limitations on angularity for skewed "T" joints," (6) "Calculations for punching (acutally a reduction factor for the weld) shear on step tube joints," (7) "Lap joint requirements," (8) "Design procedure for joint of tube to tube with Beta equal to 1.0," (9) "Limitation on weld sizes relative to plate thickness," and (10) "Calculation for effective throat of flare bevel welds" (Board Memorandum and Order of December 28,

1983 at pp. 43-46). (This last item was closed out by the Board's Memorandum and Order of December 28, 1983 at p. 46.) Of the nine items noted above which are still open, four items (4, 5, 6 and 8) deal primarily with weld joint design and will be addressed by Applicants, as appropriate, in another motion for summary disposition or in testimony regarding design which will be filed at a later date.

The instant motion relates to the five remaining open items (1, 2, 3, 7 and 9). As to those items, Applicants have conducted an evaluation of each item which includes (1) examination of the applicable AWS Code to determine if there were any AWS Code provisions related to the item, (2) an examination of the applicable ASME Code provisions to determine if and how the corresponding AWS Code provision (if any) had been taken into consideration, and (3) a check to assure that the applicable procedures at CPSES took into consideration the relevant provisions. The results of these evaluations are set forth in the Attached Affidavit of W.E. Baker, M.D. Muscente, J.D. Stevenson, and R.E. Lorentz, Jr. Regarding Allegations Involving AWS and ASME Code Provisions ("Code Affidavit").

As set forth more fully below, each of the five open items related to welding as noted above (i.e., items 1, 2, 3, 7 and 9) is adequately addressed in either the ASME Code and/or applicable welding procedures and practices used at CPSES. Accordingly, no

genuine issue of material fact exists with respect to these issues, and the Board should find that the Applicants are entitled to judgement as a matter of law.

1. General

The ASME Code requires that all welding procedures used for the fabrication and installation of components and their supports be qualified by test pursuant to the requirements of Section IX of the ASME Code. In order to satisfy these ASME requirements, each manufacturer or installer performing Code welding must conduct tests necessary to qualify each welding procedure. Code Affidavit at p. 4.

On the other hand, the AWS Code provides for the use of either prequalified welding procedures (i.e., not requiring qualification testing prior to their use) or welding procedures which are qualified by test. In short, the ASME Code allows welding only with procedures based on qualification testing, while the AWS Code allows welding with welding procedures qualified by testing or with prequalified procedures. Id. at pp. 4-5.

The difference in philosophy between the AWS Code and ASME Code stems from the fact that the AWS Code covers structural welding in general along with specific requirements for use in the construction of buildings, bridges and architectural tubular structures. Thus, although its provisions for prequalification are generally applicable to any steel structure, the drafters of

the AWS Code have acknowledged the limitations of that Code in stating that "when using the Code for other structures, owners, architects and engineers should recognize that not all of its provisions may be applicable or suitable to their particular structure." (AWS D1.2, Commentary on Structural Welding Code, Section 1.1.) (It should be noted that the AWS Code is not applicable to pressure retaining boundaries such as pressure vessels or piping systems (AWS D1.1, Section 1.1.1).) Id. at p. 5.

Thus, with the prequalified procedures in the AWS Code, welding may be performed without qualification testing. However, the AWS Code recognizes that if prequalified procedures are not applicable, or if the user prefers not to use prequalified procedures, then the user must qualify procedures by test. Id. at p. 5.

In qualifying welding procedures in accordance with the requirements of Section IX of the ASME Code (as well as Section 5 of the AWS D1.1 Code), a draft welding procedure is first written describing the precise status of certain variables specified in Section IX of the ASME Code (essentially the same specified in the procedure qualification section of the AWS Code). A test plate or pipe is prepared and welded in strict accordance with the draft welding procedures. Mechanical tests are then performed in accordance with the requirements of Section IX of

the ASME Code to determine if the welding process and parameters are acceptable and adequate to produce welds that will withstand design and operating loads. Id. at p. 6.

The tests are performed using specimens removed from the test plate or pipe. Each test has a separate purpose in determining whether the weld produced using the welding procedure is structurally sound and capable of withstanding design and operating loads. The tests required by the ASME Code, Section IX (which are essentially the same as endorsed by AWS) are as follows:

1. Tension tests, used to determine ultimate tensile strength, yield strength and ductility (reported as % elongation and/or % reduction of area);

2. Guided bend tests, used to determine the degree of soundness and ductility of groove weld joints;

3. Charpy V-Notch Impact or Drop Weight tests, used to determine the notch-toughness of the weldment (these tests are only performed when fracture toughness is specified in NF-2311, or for integral attachments, when required by other sections of the ASME Code); and

4. Fillet-weld tests, used to determine the size, contour, and degree of soundness of fillet welds (This test is used to qualify welding procedures when only fillet welds are to be produced using that procedure). Id. at pp. 6-7.

If acceptable results are obtained from the testing, the procedure has been qualified and a Procedure Qualification Record (PQR) is prepared listing the specified parameters used for the welding. Id. at p. 7.

All welding procedures qualified by test pursuant to the ASME Code for use at CPSES follow the requirements of Section IX of the ASME Code. This includes following requirements regarding test procedures, testing of specimens, and all other aspects which could affect the procedure qualification process. Id. at p. 8.

If a welding procedure is qualified by test in accordance with each provision of Section IX of the ASME Code, use of that procedure will produce welds that are structurally sound and as adequate for their intended use as welds produced using either prequalified procedures of the AWS Code or procedures qualified by test in accordance with the AWS Code.[6] Id. at p. 8.

Accordingly, CASE's generalized concerns regarding the acceptability of welding procedures qualified by test pursuant to the ASME Code are without merit, and should be summarily dismissed.

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[6] The ASME Code and its qualification test procedures were developed only after thorough, rigorous and complete review, testing, analyses and study by literally thousands of engineers, scientists and other highly skilled and qualified professionals. Further, prior to its adoption this qualification test process set forth in Section IX of the ASME Code received significant and extensive peer review and critique. Finally, the qualification test procedure has withstood the test of time and has proven time and time again that using it will produce welds which are adequate for their intended purpose and every bit as sound as welds produced pursuant to prequalified AWS procedures or procedures qualified by test pursuant to the AWS Code. Id. at p. 9.

2. Preheat Requirements for Welds Over 3/4-inch Thick

The AWS D1.1 Code addresses preheat requirements for prequalified procedures in Subsection 4.2, "Preheat and Interpass Temperature Requirements." (If procedures are to be qualified by test pursuant to the AWS Code, the preheat requirements specified in subsection 4.2 need not be used.) For these prequalified procedures, Table 4.2 establishes preheat requirements based on the type of material and the welding process used. Subsection NF-4611 of the ASME Code also addresses preheat requirements based on various properties, as follows:

> The need for and temperature of preheat are dependent on a number of factors, such as the chemical analysis, degree of restraint of the parts being joined, elevated temperature, physical properties and material thickness. Some practices used for preheating are given in Appendix D as a general guide for the materials listed by P-Numbers of Section IX. It is cautioned that preheating suggested in Appendix D does not necessarily ensure satisfactory completion of the welded joint and that the preheat requirements for individual materials within the P-Number listing may be more or less restrictive. The Welding Procedure Specification for the material being welded shall specify the minimum preheating requirements under the welding procedure qualification requirements of Section IX. [Emphasis supplied.]

Id. at pp. 10-11.

In short, while Appendix D of the ASME Code, Section III, provides guidance for preheat requirements (very similar to that provided in the corresponding sections of AWS), the Code states that during welding procedure qualification, the preheat

requirements which have been actually tested and produce acceptable welds are the ones to be specified in the applicable procedures. Id. at p. 11.

Qualification of procedures in accordance with the ASME Code has resulted in preheat requirements in the applicable CPSES welding procedures that in all cases either meet or exceed those preheat requirements set forth in the AWS Code. Id. at p. 12. In sum, CASE's allegation that preheat requirements set forth in the AWS Code are not adequately considered at CPSES is without merit.

3. Drag Angle and Work Angle

Contrary to CASE's allegation, neither the AWS nor ASME Codes refer to, or in any way mention "drag angle" or "work angle" requirements or restrictions. Id. at p. 12. Accordingly, CASE's allegation that AWS Code provisions regarding this item were not adequately considered is without merit.

In its February 1, 1984, Answer to Applicants' Motion for Reconsideration, CASE provides some clarification of its concern and states in the attached Affidavit of Jack Doyle that the weld designer must take into consideration the welder's drag and work angles. For support, CASE references the Welding Handbook, Seventh Edition, Volume 2. It should be noted that this Handbook does not state or imply that the drag angle or work angle of a welder should be an explicit design consideration. Regardless of the weld design, the skilled welder assumes the proper drag and

work angle for the job. Indeed, that very portion of the Welding Handbook referenced by CASE and attached to the Doyle Affidavit states that proper work orientation of the weld rod (e.g., drag and work angle) are "automatically taken into account" by the trained welder. In short, the welder's very basic training provides this information as well as the precautions a welder has to take to make successful welds. Id. at pp. 12-13.

Where the area which surrounds the weld of concern is limited so as to potentially adversely impact a welder's ability to maintain proper weld orientation, as a matter of practice at CPSES welders are used who have practiced and been tested in these configurations. For example, on piping where space limitations may require welding using a mirror without directly seeing the weld, welders are trained and tested in this configuration to assure that the weld is performed correctly. Many times mock-ups of the configuration (including simulating the limited space) are constructed to provide precise conditions the welder will encounter. A qualification listing and matrix of the "specially" qualified welders is maintained. Id. at p. 13.

In any event, CASE's stated concern regarding improper work angle and drag angle is that it may cause slag entrapment, porosity and undercut. These defects are no different than potential concerns regarding any other weld. Id. at pp. 13-14. Because of welder training and qualification, coupled with inspections and surveillance of the Welding Engineering

Department and QA/QC, there is reasonable assurance that any problems regarding slag entrapment, porosity and undercut will be detected and corrected, as necessary.

In sum, CASE's allegations concerning drag angle and work angle are without merit.

4. Beta Factor for Tube-to-Tube Welds

The Beta Factor (the ratio of the diameters of two adjoining tubes) is referenced in Section 10 of AWS D1.1 Code, subsection 10.12.5, 10.13.5 and Figure 10.13.5. In essence, these references provide that if the Beta Factor is greater than 1/3 for tube-to-tube (circular) connections and greater than 0.8 for box (rectangular) connections, the weld procedure used must be qualified by test (the greater the Beta factor, the more likely that stresses at the joint will be higher). In short, where the likelihood of greater stresses is present, the Beta Factor is used in the AWS Code to indicate that qualification of a procedure by test is required. Significantly, the ASME Code requires that all weld procedures be qualified, without consideration of the likelihood of greater stresses. Id. at p. 14.

In any event, in Mr. Doyle's testimony (CASE Exhibit 669, Vol. I, p. 112), he states as his concern that the Beta factor limit of 1/3 should apply to shielded metal arc fillet welds used when welding trunions to pressure boundary piping. Since such a trunion would be an "integral attachment" to the piping, the AWS

Code does not apply and the weld must be designed to the applicable pressure boundary subsection in ASME, i.e., NB, NC, or ND. AWS D1.1 (as stated in paragraph 1.1.1) clearly does not apply to this case (i.e., pressure boundary piping) and Mr. Doyle's concerns are unfounded. Id. at pp. 14-15.

It should be noted that in addition to the qualification of these procedures by testing, CPSES also has performed additional generic testing on equal sized box connections (B=1.0) to assure that penetration depth and minimum throat requirements (the major concerns for these welds) are adequate for rectangular beam welds. Id. at p. 15. From the foregoing, CASE's concerns regarding AWS Code requirements concerning Beta Factor are without merit.

5. Lap Joint Requirements

Subsection 8.8 of the AWS D1.1 Code provides lap joint requirements for building structures. These requirements are the same as those set forth in Paragraphs XVII-2431, 2452.3(c), 2453.1, 2452.9 and 2283.1(c) of Appendix XVII of the ASME Code (mandatory to CPSES welding in conformance to ASME requirements). (Subsection 9.10 of the AWS D1.1 Code provides corresponding lap joint requirements for bridges, subjected to continuous dynamic loading.) Id. at p. 15.

In short, the ASME Code requirements for lap joints (with which applicable welding at CPSES complies) are the same as related requirements in the AWS Code. Accordingly, CASE is not

correct in stating that the ASME Code and applicable welding at CPSES does not adequately consider lap joint requirements as noted in the AWS Code.

6. Limitation on Weld Size Relative to Plate Thickness

Limitations on weld size relative to plate thickness are addressed by AWS D1.1 Code in Subsections 2.7 (fillet welds) and 2.10 (partial penetration groove welds). These subsections basically provide that with regard to fillet and groove welds, welds to be made without qualifying the applicable procedure by test shall conform to the minimum size requirements of Tables 2.7 and 2.10.3, respectively. These requirements are identical to or less stringent than those required at CPSES by the ASME Code in Appendix XVII, Table XVII-2452.1-1. Id. at p. 16.

In sum, the limitations on weld size relative to plate thickness set forth in the AWS Code are considered in the ASME Code and factored into applicable procedures at CPSES. Accordingly, CASE's allegation that this AWS Code provision was not adequately considered is incorrect.

C. Allegations Regarding Code Provisions Related to Weave Welding, Downhill Welding, Preheat and Cap Welding Should Be Summarily Dismissed

In its January 3, 1984, Memorandum and Order at pp. 6-7, the Board requested additional information as to the requirements of both the AWS and ASME Codes concerning weave welding, downhill welding, preheat and cap welding. As set forth more fully below any Code requirements regarding these issues are adequately

considered by CPSES in its welding procedures. Accordingly, no genuine issue of material fact exists with respect to these issues, and the Board should find that the Applicants are entitled to judgement as a matter of law. The specific requirements, if any, in each Code regarding these issues and how CPSES factors these requirements into its procedures are set forth below:

1. Weave Welding

Neither the AWS nor ASME Code establishes specific requirements limiting weave or oscillating pattern welding. Accordingly, there are no specific Code requirements regarding this issue. Id. at p. 17.

It should be noted, however, that for shielded metal arc welding (the welding of concern) bead width is listed as a supplementary essential variable in Section IX of the ASME Code when impact properties are specified, and a nonessential variable when not specified. In either case, while applicable CPSES welding procedures set an upper limit on bead width, the bead width can vary below that limit without impacting the procedure. Id.

CPSES welding procedures have limited bead width to four times the core diameter of the weld rod being used. Other industries which comply with the Codes and perform qualification tests of procedures generally use bead widths in excess of four times the rod core diameter, up to and including eight times the

rod core diameter. Id. at pp. 17-18. In sum, although there are no specific Code requirements regarding bead width (other than considering it as a supplementary essential or non-essential variable, as stated above), procedures at CPSES adequately consider bead width, and thus weave welding.

2. Downhill Welding

Neither the ASME nor AWS Codes exclude use of downhill or uphill welding. However, the ASME Code and the AWS Code specify that the direction of travel must be listed. Id. at p. 18.

At CPSES, Brown & Root welding procedures state that in all instances the direction of progression will be upward. Other contractors, in a few instances use an acceptable downward progression in conformance with applicable Code requirements, and downhill welding by those contractors is thus permissible. Id. In short, direction of travel is considered at CPSES and is appropriately factored into welding procedures.

3. Preheat Requirements

Code requirements concerning this area and how they are adequately addressed at CPSES are discussed above in relation to CASE's concern regarding "preheat requirements for welds on plates over 3/4 inch thick." See Section II.B.2, supra.

4. Cap Welding

Cap welding is not terminology common to welding. The usual reference is a cover pass or a reinforcement pass. Code requirements for other welding apply equally to cap welding. Indeed, the AWS Code (1975 Revision) specifically endorses it as follows:

> Additional weld material to compensate for any deficiency in size shall be deposited using an electrode preferably smaller than that used for making the original weld, and preferably not more than 5/32 in. (4.0 mm) in diameter. The surfaces shall be cleaned thoroughly before welding. [Section D1.1, subsections 3.7.1].

Id. at p. 19.

To the extent that CASE is concerned that new weld material cannot be placed on an old weld without some adverse structural impact, CASE's concern is without merit. Neither Code provides any restrictions in this area, or even requires its consideration as an essential or non-essential variable. Such practice occurs daily when a welder takes a lunch break during a weld, or stops in the middle of a weld due to crew change or even to change a weld rod. In all such instances the welder simply follows his procedure to complete the weld. This would require actions such as cleaning the weld surface and assuring that preheat requirements, if any, are met (in most instances 60°F). Id.

It should be noted that CASE's concern (and the apparent reason for the Board's request for information) stems from the fact that some fillet welds in the plant were found to be

approximately 1/16 inch below the minimum size specified in the ASME Code. These welds were subsequently corrected by following appropriate welding procedures that consisted of, among other things, cleaning the weld, assuring preheat requirements were being met, welding the additional pass and obtaining a final QC visual inspection. It should be noted that in no instance did any welder or QC inspector report a crack in any of the welds. Id. at p. 20.

Specifically, CASE's concerns appear to be that the minimum size of the weld may have resulted in miscellaneous cracks (caused by external loading on the undersized weld), internal cracking or underbead cracking which would be aggravated when additional material is used to build up the weld.

In the first instance, the welds were designed to resist extensive and substantial seismic loading well in excess of any external loading that likely did occur from the time that the welds were made until they were built up. In this regard, it should be noted that even with undersized welds, the AWS Code states that the weld is still acceptable even if undersized 1/16 of an inch for 10 percent of the weld length (AWS Code, Sections 8.15.1.6 and 9.25.1.6). The ASME Code added this provision to Subsection NF in the winter 1983 addenda. Accordingly, CASE's speculation that miscellaneous weld cracks may have formed due to external loading on these welds is without merit. Id. at pp. 20-21.

CASE's concerns that internal cracks may have formed because the welds were undersized in the first instance is also without a supporting basis. It is a very basic principle of welding that the primary reason for internal cracking is not an undersized pass, but rather a weld pass that is too thick. Id. at p. 21.

As to CASE's concerns that because the welds may have been slightly undersized there is a substantial problem with underbead cracking, this position is again without any supporting basis. To prevent underbead cracking, only low hydrogen type electrodes are utilized for the welding of any low or mild carbon steels or high strength low alloy structural steels. Further, the bulk of the pipe support fabrication employs low carbon steels not susceptible to underbead cracking problems. For those special items utilizing steels which may be subject to underbead cracking, welding procedures are utilized which contain the necessary preheat or post weld heat treatment requirements to eliminate the metallurgical conditions which are necessary for underbead cracking to occur. Id. at pp. 21-22. In short, CASE's concerns regarding underbead cracking are totally without merit.

In sum, the concerns regarding cracking raised by CASE are without technical merit. In any event, it must be remembered that no cracks were identified by either the welders or QC inspectors for any of the undersized welds. If cracks had been a problem, at least some of them would likely have been detected

and reported. Id. at p. 23. In short, to the extent that CASE is concerned with welding over previously welded joints, such concerns are completely groundless.

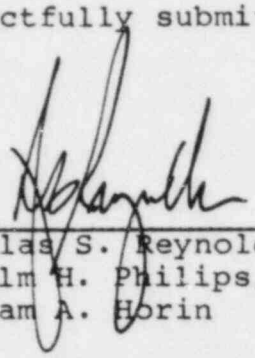
III. REQUEST FOR EXPEDITED RESPONSE

Applicants' Motion for Summary Disposition is based on prefiled testimony (placed in affidavit form and attached hereto) provided to all parties by letter of February 15, 1984. All parties have been prepared to litigate the issues raised in this motion during the past two hearing sessions. Accordingly, positions advanced by Applicants in this motion are not new. In view of the foregoing, Applicants request that the Board direct all parties to respond to this motion on an expedited schedule so that issues which can be resolved by summary disposition need not be taken up in the upcoming hearings beginning on April 25, 1984. We suggest that all parties be given 12 days to respond, such that all responses must be filed by express mail (as is this document) by April 18, 1984.

IV. CONCLUSION

For the reasons set forth above, Applicants request that the Board grant Applicants' motion for summary disposition.

Respectfully submitted,



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April 5, 1984