UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CASE'S FOURTH ROUND ANSWER

TO

APPLICANTS' REPLY TO CASE'S ANSWER TO APPLICANTS' MOTION FOR SUMMARY DISPOSITION REGARDING THE EFFECTS OF GAPS

in the form of

AFFIDAVIT OF CASE WITNESS MARK WALSH

MR. WALSH:

I am not going to address everything which Applicants have said, because I consider that most of what they have said is arguable; I have limited myself to addressing only those portions of Applicants' Reply which I consider the most important.

CASE'S REASONS FOR THIS FILING:

(1) Relevance: The relevance is obvious, since it has been addressed by the Applicants; CASE is merely responding to Applicants' own statements, as discussed in the following. If Applicants' statements are relevant, then CASE's responses are relevant also. (If Applicants' statements are not

relevant, Applicants should never have filed them, they should be stricken, and the Board should not consider them.)

(2) What new material in the last round filing is being responded to: The material in Applicants' Affidavit beginning with the last paragraph, bottom of page 3, continuing through the top of page 5, the first full paragraph on page 8 continuing on page 9, pages 9, 10 and 11, page 13, and Attachments A through D. (See each individual portion of the following.)

(3) Why CASE was unable to anticipate this material in its last filing: In regards to the item beginning on page 3, it is a new position and argument which the Applicants are now using to fog the issue. In regards to the item beginning on page 8, the Applicants discredit their own position which they had originally taken. In regards to the item beginning on page 9, Applicants have incorrected restated what was contained in CASE's Answer and introduced irrelevant information which was not addressed in CASE's Answer. In regards to the item on page 13, Applicants have made statements which are contradicted by their own documents. Obviously, CASE could not have anticipated that Applicants would do these things.

(4) The safety significance of the point that is being made: CASE considers that anytime Applicants make statements which are misleading to the Board, this has safety significance. Further, the safety significance of each of these items (in this case, gaps) has already been well established, since (a) only items which have safety significance have been allowed to be litigated (and CASE has dropped some items which in and of themselves do not have great safety significance, although we still believe the cumulative effects do have safety significance), and (b) Applicants have chosen to address this particular issue as one of the issues with which they hope to convince the Board that the entire plant has been designed

adequately; this increases the importance of any and all statements made by Applicants which may tend to (or are designed to) mislead the Board.

MR. WALSH:

Beginning at the end of page 3 and continuing through page 5, Applicants create a new argument in regards to the connection under discussion. The Applicants claim that the AISC code has classified connections for bearing and friction only for steel-to-steel members as opposed to steel-to-base plates. This is false and the Applicants' statements and related documents to support their position fall short of substantiating their claim.

The Applicants refer to Attachment A (Table 1-D of the AISC Code) as one item to support their position. This table does not indicate that it is only used for steel-to-steel connections which the Applicants attempt to utilize to support their position.

Attachment B to Applicants' Affidavit (Table 1-C of ASTM) is completely illogical as support of the Applicants' position, since it is clearly indicated in the title that it is the "MATERIAL FOR ANCHOR BOLTS AND TIE RODS" (emphasis added). This table does not state how the material is being used (i.e., bearing type or friction type connection). It just lists the material which can be used. How it is used is not discussed in Attachment B.

Attachment C does not state that the anchor bolts have got to be designed either as bearing or friction type connections in the portion which is referenced by Applicants; but referring to Applicants' Attachment D, the commentary for that section which was referenced in Attachment C discusses the frictional resistance which is commonly occurring at a column base. This frictional resistance due to the column axial load creates a friction

type connection, and the connection does not go into bearing. The Applicants' claim that base plate connections need not be designed as friction type connections is contrary to the commentary of the code, as illustrated in their own Attachment D.

On page 8, the Applicants claim that A307 bolts and A36 material are different and that the distinction etween the two materials supports Applicants' position. It must be remembered that CASE's concern in this regard is the connection under discussion is a bearing-type connection, and the Applicants have not made designs for a friction-type connection, which would eliminate the adverse effects due to a gap between the bolt and the connected part. Applicants have stated that they utilize A36 material on all supports, with one exception. The Applicants believe that, since A36 material has a specified yield point, they can design their connections as friction-type -- but they have not. Contrary to the implications given by the Applicants in their third-round reply, A36 material cannot be used as a friction-type connection, as recognized in Applicants' Attachment A.

To further demonstrate this, referring to Applicants' Attachment A, the Table lists the type of bolts and threaded parts, etc., and the type of connection under consideration. As can be seen, A325 bolts (for example) can be designed as a friction (F) or bearing type (N or X) connection. A36 threaded rods, on the other hand, are only listed as a bearing-type connection (N or X). It should be noted that nothing is shown for A307 under "Connection Type;" but it has been stated by Applicants repeatedly that A307 bolts cannot be used as friction-type connections.

On page 9, continuing on pages 10 and 11, of Applicants' Affidavit, Applicants insinuate that I have incorrectly equated seismic loads with fatigue. I never discussed fatigue, one way or the other (and Applicants

have not, and cannot, quote where I did). Applicants' statements are therefore irrelevant to anything contained in CASE's Answer, and I am not attempting at this time to thoroughly discuss everything they have stated.

It is the Applicants who have incorrectly equated any stress reversal as a fatigue type loading; they do not state how this equality comes about. If the AISC Code considered all stress reversals as fatigue type loadings, Table B1 of Appendix B of the AISC Code would start with 1 to 20,000 as a fatigue-type load. It does not; it starts with a minimum of 20,000 cycles. For an item to be categorized under a fatigued loading condition would require at least a stress reversal of two applications every day for twenty-five years, as indicated in Appendix B of 7th Edition of the AISC Code, page 5-107 (copy attached). When this minimum cyclic loading does occur, there is no allowable increase in stress due to the cyclic loading, and in fact there is a decrease in the allowable stress. Since the seismic loads which Applicants are referencing will not equal the minimum for a fatigue type load, they would not be categorized as fatigue loads; thus, Applicants are allowed an increase in the allowable stress when there is stress reversal, an increase which they are utilizing. But the fact that fatigue loads are not being experienced does not allow Applicants to be in non-compliance with Section 1.15.12 of the AISC Code, since there is a stress reversal; I do not agree with Applicants' interpretation of the Code in this regard.

The Code requires a high strength bolt when there is a reversal in stress. When there is less than 20,000 cycles, there is no decrease in the allowable stress when the high strength bolt is used. Above 20,000 cycles, even when a high strength bolt is used, there is a decrease in allowable stress, as indicated in Formula B1 on page 5-107 (copy attached). Applicants are misinterpretting the Code.

On page 13 of Applicants' Affidavit, the Applicants make a ridiculous statement: "In any event, as we previously noted, even the AISC Code provisions concerning anchor bolt sizes do not address anchor connections loaded in shear." Referring to Applicants' Attachment C, Section 1.22 of the AISC Code, it is readily apparent that the code requires that anchor bolts be designed to resist the shear loads. It is unfortunate that the Applicants make statements (as they have done here) just to prove their position, when their own documents do not support their statements. This is an example of the manner in which Applicants have designed Comanche Peak. This is just one of many examples where this has occurred, and it is a waste of my time to have to continue refuting them.

I am not going to address each and every other statement made by the Applicants, because their statements are based on the erroneous belief that the items discussed in the steel code (AISC) which CASE has relied on are only for steel-to-steel connections and not connections for anchor bolts. CASE's premise is that a friction type connection is needed, and this philosophy is demonstrated in previous CASE filings. The AISC code does recognize the frictional effects, as indicated in Applicants' Attachment D. The remaining portions of Applicants' Affidavit are based on the premise that friction type connections are not considered in the design of base plates, which is erroneous.

I have read the foregoing affidavit, which was prepared under my personal direction, and it is true and correct to the best of my knowledge and belief.

Mark Walsh
(Signed)

Date: Dec 16, 1984

STATE OF TEXAS

COUNTY OF DALLAS

On this, the 16 day of Dec, 1984 personally appeared Mark Walsh, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes therein expressed.

Subscribed and sworn before me on the 16 day of Dec, 1984.

NOTARY PUBLIC · COUNTY OF DALLAS, TEXAS ·

Samuel W. Nestor
Notary Public in and for the
State of TEXAS

My Commission Expires: SAMUEL W. NESTOR
My Commission Expires
1-31-85

Manual of

STEEL CONSTRUCTION

SEVENTH EDITION
First Revised Printing

American Institute of Steel Construction, Inc.
1221 Avenue of the Americas
New York, N.Y. 10020

APPENDIX B

Fatigue

0.46 (min.)

SECTION B1 LOADING CONDITIONS AND TYPE AND LOCATION OF MATERIAL

In the design of members and connections subject to repeated variation of live load stress, consideration shall be given to the number of stress cycles, the expected range of stress, and type and location of member or detail.

Loading conditions shall be classified as shown in Table B1.

TABLE B1

Loading Condition	Number of Loading Cycles	
	From	To
1	20,000[1]	100,000[2]
2	100,000	500,000[3]
3	500,000	2,000,000[4]
4	Over 2,000,000	

[1] Approximately equivalent to two applications every day for 25 years.
[2] Approximately equivalent to ten applications every day for 25 years.
[3] Approximately equivalent to fifty applications every day for 25 years.
[4] Approximately equivalent to two hundred applications every day for 25 years.

The type and location of material shall be categorized as shown in Table B2.

SECTION B2 ALLOWABLE STRESSES

The maximum stress shall not exceed the basic allowable stress provided in Sects. 1.5 and 1.6 of this Specification, and the maximum range of stress shall not exceed that given in Table B3 except that, in the case of stress reversal only, the value F'_r given by Formula (B1) may be used as the stress range for those categories marked with an asterisk in Table B2.

$$F'_r = \left(\frac{f_t + f_c}{f_t + 0.6f_c}\right) F_r \qquad \text{(B1)}$$

where f_t and f_c are, respectively, calculated tensile and compressive stresses considered as positive quantities, and F_r is the allowable stress range given in Table B3.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CERTIFICATE OF SERVICE

By my signature below, I hereby certify that true and correct copies of CASE'S Fourth Round Answer to Applicants' Reply to CASE's Answer to Applicants' Motion for Summary Disposition Regarding the Effects of Gaps have been sent to the names listed below this 19th day of December, 1984, by: Express Mail where indicated by * and First Class Mail elsewhere.

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Docketing and Service Section
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Office of the Secretary
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Washington, D. C. 20555

Juanita Ellis

(Mrs.) Juanita Ellis, President
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C A S E

(CITIZENS ASSN. FOR SOUND ENERGY)

1426 S. Polk
Dallas, Texas 75224

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December 19, 1984

Docketing and Service Section
Office of the Secretary
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Subject: In the Matter of
Application of Texas Utilities Electric
Company, et al. for An Operating License
for Comanche Peak Steam Electric Station
Units #1 and #2 (CPSES)
Docket Nos. 50-445 and 50-446
Affidavit of CASE Witness Mark Walsh

We are attaching the original signed and notarized affidavit of CASE Witness Mark Walsh, which is attached to CASE's 12/19/84 Fourth Round Answer to Applicants' Reply to CASE's Answer to Applicants' Motion for Summary Disposition Regarding the Effects of Gaps.

Thank you.

Respectfully submitted,

CASE (Citizens Association for Sound Energy)

Juanita Ellis
(Mrs.) Juanita Ellis
President

cc: Service List

Attachment