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RELATED CORRESPONDENCE

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(CITIZENS ASSN. FOR SOUND ENERGY)

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DOCKETED
USNRC

'84 APR 18 A10:55

April 11, 1984

EXPRESS MAIL

David R. Pigott, Esq.
Orrick, Herrington & Sutcliffe
600 Montgomery Street
San Francisco, California 94111

Dear Mr. Pigott:

Subject: In the Matter of
Texas Utilities Electric Company,
et al. (Comanche Peak Steam Electric
Station, Units 1 and 2)
Docket Nos. 50-445-1 and 50-446-1

Proposed Stipulations
and Other Matters

As you are aware, the Licensing Board has requested that Cygna and CASE attempt to reach agreement on stipulations, if possible, so that we can shorten the actual hearing time needed. We have already submitted some proposed stipulations (CASE Exhibit 946, submitted with our 3/19/84 letter to Cygna which was handed out at the last hearings); we understand that you have some problems with stipulating to those items.

We are attaching some additional proposed stipulations which we believe will be less controversial. Included (page 12 attached) are some proposed stipulations which were referenced in the information we provided to you on 2/22/84. Please let us know if there are items contained in those to which you might be able to stipulate, or if there is the possibility of stipulation with some slight changing in our wording. In the alternative, we anticipate that we will be cross-examining regarding these items. (Incidentally, regarding cross-examination, Mr. Walsh advises that, unlike Mr. Doyle, he probably will follow the format used by Cygna in responding to our 2/22/84 questions.)

In addition, there are some other matters which we include for your attention. Regarding CASE Exhibit 899 (which was discussed in the recent telephone conference call), we are attaching copies of pages 3-8 to be added to the Exhibit. (Some of the pages are being supplied so that you will have more complete information, and we will not necessarily be cross-examining on them.)

Since most of the numbers were changed (see our 3/19/84 letter), we are attaching a copy of the Matrix of Exhibits and Documents (originally included with our 2/22/84 information, revised 4/5/84), for your information.

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One small housekeeping kind of matter: Cygna did not include in their answer to Walsh Question #5 what was asked on top of page 2 of our original 2/22/84 questions (although you addressed it in your interpretation and response); so you might just want to add it in to your restatement of our original question.

We believe we should call to your attention one other matter. As you are aware, CASE chose only a few particular items to examine in depth. However, you should be aware that there are several other items which we will be briefly addressing in hearings and in proposed findings. We do not believe that it is necessary to go into great detail regarding these. Some of them will simply be in our findings (based on the Cygna Report itself, which is now in evidence and therefore subject to findings). We will be using these in our findings primarily to support our position that the Cygna Report, in and of itself, did not have sufficient basis for the conclusions arrived at, and that further documentation or calculations were necessary to adequately support the report. (And we will then be arguing further that, when additional documentation or calculations were reviewed, such documentation or calculations in many instances did not support the report's conclusions.)

Some of these items are as follows:

Checklist No. PS-09, Observation No. PS-09-01, Sheet 2 of 2:

In the resolution, it does not state what as-built stress analysis was reviewed by TU; it doesn't indicate whether or not it was a worst-case basis on which the decision was made. Cygna doesn't specify how small is small.

Checklist No. General, Observation PI-00-02, Sheet 1 of 1:

Cygna states that the Gibbs & Hill assumptions were based on stress indices rather than stress intensification factors. Cygna then states that this is all right because "the majority of the local attachments are on straight pipe, for which indices and SIF's produce identical stresses." However, Cygna did not indicate what the difference is between stress indices and stress intensification factors. There is no indication that either Applicants or Cygna gave any consideration to the effects on the minority of the local attachments which were not on straight pipe. Cygna did not indicate how large the majority was -- it could have been 50.0001%, which could mean that 49.9999% were not addressed in Cygna's report.

Checklist No. PI-02, Observation PI-02-02, sheet 1 of 1:

The support's being ouut of tolerance is in violation of IE Bulletin 79-14, because 79-14 requires both that the actual pipe support location be correct for the pipe stress analysis and that the direction of restraint be correct.

Checklist No. PI-02, Observation PI-02-03, sheet 1 of 1:

Cygna states that the Root Cause was "Possible misunderstanding the Gibbs and Hill procedure." Yet Cygna does not indicate in what way it

misunderstood the Gibbs & Hill procedure, or what the correct understanding of the procedure should have been, or whether and how the wording of the procedure has been changed to avoid such misunderstandings.

On PI-02, PI-02-03, Attachment A, Cygna stated that the error was isolated; however, on the Observation Record itself, it was indicated to be "Extensive."

Cygna stated that they looked at two pipe stress analyses and found in stress problem 1-70 that the analysis used the maximum thermal expansion loads for the equation 11 check, rather than the range of the loads. Yet Cygna only looked at problems 1-70 and 1-69. Problem 1-69 did not have this. Cygna concluded that this was an isolated instance, even though they only looked at two problems, one of which was in error. This is 50%, not an isolated instance. There is not sufficient basis for concluding that it was isolated.

Checklist No. Various, Observation No. CTS-00-01, Attachment A, sheet 1 of 1:

Cygna indicated that the probably cause was "Inadequate design procedures." However, there is no indication that Applicants have changed their procedures so that they are now adequate.

And finally, we are attaching copies of the following two CASE Exhibits, which we expect to use in cross-examination:

CASE Exhibit 975 - 3/30/84 letter from Darrell Eisenhut to Messrs. Spence and Kammerzell
CASE Exhibit 976 - AISC Manual of Steel Construction, 7th Edition, pages 5-25 and 5-26

Please give me a call if you have any questions.

Sincerely,

CASE (Citizens Association for Sound Energy)

Juanita Ellis

(Mrs.) Juanita Ellis
President

Attachments

cc: Service List (with Exhibits to Board and parties only)

PROPOSED STIPULATIONS -- CASE TO CYGNA 4/11/84

Walsh #3:

At the time of the Cygna report, there had been no detailed computer analysis performed to consider the concentrated loads (valves, etc.) due to the thin wall pipe and its effect on dead weight, seismic, or thermal.

Neither Cygna nor the Applicants considered the effects of oversized (with respect to the thickness of the pipe wall) elbows and tees on pipe supports. (See CASE's 2/29/84 Motion Regarding CASE's Summary of Cross-Examination Areas Supplied to Cygna on February 22, 1984, and attachments.)

Walsh #4:

There was a typographical error in Cygna's calculated table in the Observation Record Review, Attachment A, Checklist No. PI-02, Observation No. PI-02-03. The allowable for restraint RH-1-064-007-S22R should be "44000," rather than "4400."

Walsh #5:

Cygna was not aware of, and did not consider in its review or its report, NRC Inspection Report 50-445/83-52, page 4 of the Appendix, item 4. Discussion, second paragraph (CASE Exhibit 926 attached to CASE's 3/13/84 letter to Cygna) regarding the July 19, 1983, 10 CFR Part 50.55(e) construction deficiency report identifying a generic problem with cable tray clamps.

A307 bolts cannot be depended upon to prevent slippage.

(1):

There is no allowable increase for Hilti bolts for the SEE condition according to Cygna's design criteria (see Cygna Report, DC-3 from Appendix

Walsh #5 (continued):

E, paragraph 4.4.2, item c, page 7 of 8).

Applicants and Cygna did not consider SSE.

The loads will increase when SSE is included.

The SSE load will be greater than the 1/2 SSE load.

(2):

The cable tray support is a welded structure, rather than bolted.

The cable tray is a bolted structure, rather than welded.

The containment building is a concrete structure.

(3):

Applicants' FSAR states that if no determination of natural frequency is made, the response is assumed to be the peak acceleration of the response spectra curve multiplied by a factor of 1.5. (See Applicants' Exhibit 3 and CASE Exhibit 944.)

Applicants did not increase the peak acceleration value by 1.5 in the original analysis.

Cygna did not review any calculations verifying the seismic capability of the cable tray itself.

Cygna did not review calculations verifying that the cable trays can be considered rigid. (See CASE Exhibit 890, item 3.)

Cygna did not review the capacity of the cable tray to transmit axial loads. (See CASE Exhibit 890.)

The reanalysis performed by Gibbs & Hill referenced in Cygna's Potential Finding Report, Appendix G, page 5 of 6, does not take into account the peak of the response spectra curve. In addition, the reanalysis performed by Gibbs & Hill did not take into account the seismic

Walsh #5 (continued):

effects from the cable tray itself.

The reanalysis by Gibbs & Hill consisted of only five cable tray supports (see CASE Exhibit 890):

Case B-1

Case C-2 (loading 1, loading 2, loading 3)

Case C-4 (loading 1 and loading 2)

Case D-1

Case D-4

(4):

On drawing 2323 EI-0601-01 (see CASE Exhibit 957), the cable tray that is spanning North/South, approximately 5' West of Column Line D-5, between column lines 7S and 8S, contains no axial restraints.

Applicants do not require an axial cable tray support restraint when cable trays are less than 30' long.

Cygna did not review any documents or calculations provided by Applicants which verified that the cable tray has the capacity to transfer the load from the cable tray segment with no axial restraints to the cable tray support that can resist a lateral load.

In its report, Cygna did not consider whether or not the cable tray has the capacity to transfer the load from the cable tray segment with no axial restraints to the cable tray support that can resist a lateral load.

(5):

On drawing 2323 EI-0601-01 (CASE Exhibit 957), the first cable tray support around a corner will receive a lateral load and resist the

Walsh #5 (continued):

axial load from the cable tray segment that contains no axial restraints.

Cygna did not review any documents or calculations provided by Applicants which indicate that Applicants considered that the first cable tray support around a corner will receive a lateral load and resist the axial load from the cable tray segment that contains no axial restraints.

In its report, Cygna did not take into consideration that the first cable tray support around a corner will receive a lateral load and resist the axial load from the cable tray segment that contains no axial restraints.

Cygna did not review any documents or calculations by Applicants which verified that a cable tray support has the capacity to withstand receiving a lateral load from the cable tray segment that contains no axial restraints.

In its report, Cygna did not consider whether or not a cable tray support has the capacity to withstand receiving a lateral load from the cable tray segment that contains no axial restraints.

(6):

In CASE Exhibit 902, the center of compression is located .054 inches from the edge of the base plate.

Gibbs & Hill's analysis considered the base plate to be rigid and did not take flexibility into account. By making the plate rigid, the internal moment arm created in the plate by the compressive force in the concrete and the tensile force in the bolts becomes maximum. Therefore, to resist a given applied external moment, the maximum bolt tension will be smaller in a rigid plate than in a flexible plate. (See Cygna's answer to Doyle #8.)

Walsh #5 (continued):

The reanalysis also considered the base plate to be rigid. (See CASE Exhibit 902.)

Use of a rigid base plate as shown in CASE Exhibit 902 is not consistent with Cygna's design criteria (see Cygna Report, DC-3, Appendix E, paragraph 4.4.1, item b, page 6 of 8).

Walsh #6:

b.: Cygna's engineers who reviewed the design of cable tray supports and pipe supports did not consider the applicability of ANSI N42.2.11 while reviewing the design calculations.

Walsh #7:

The further analyses by Gibbs & Hill includes CASE Exhibits 889, 890, and 902.

The following items were not included in Gibbs & Hill's analyses:

weight of the fire protection application,

weight of the cover plates which are applied over the fire protection application,

hardware (bolts, etc.),

weight of doublers (plates which are put on where the butt connections are made between cable tray segments before the bolts are put in),

the torsional stresses within the channel due to the cable tray's not being loaded through the channel's shear center,

the reduction in the section modulus for the hole where the bolts go through the channel's flange (the bolt which is utilized to hold the cable tray to the cable tray

Walsh #7 (continued):

support), which is required by the AISC Manual of Steel Construction, 7th Edition, Section 1.10, page 5-26 (CASE Exhibit 976, copy attached),

dead weight of cable tray support,

seismic self-weight excitation of the support,

weight of grounding cable.

Referring to CASE Exhibit 889, sheet 138: Utilizing a K value of 1 will put the Kl/r ratio equal to 216. The AISC code does not allow a Kl/r ratio greater than 200 for this member (element 22, bottom of page). See AISC Manual of Steel Construction, 7th Edition, Section 1.8.4, page 5-25 (CASE Exhibit 976, copy attached).

It is standard industry practice to use a K value of 1 for a member such as this.

The AISC code permits a K value of less than 1 for a member such as this only if it can be shown to have an analytical basis. See AISC Manual of Steel Construction, 7th Edition, Section 1.8.2, page 5-25 (CASE Exhibit 976, copy attached).

Referring to sheet 140 (as indicated on sheet 138): an analysis is performed to modify the K value from 1 to 1.263 (bottom of page). Referring to sheet 141 (as indicated on sheet 138): Yet Applicants decided to use a K value of 0.8, without a rational analytical basis for doing so.

Referring to sheet 141: In the last paragraph, the designer is assuming that the hanger at top (point A) is not a pin connection and has the capability of resisting rotation.

However, if this is not a pin connection, a moment exists at point A and this moment has not been included in the analysis in determining moments and forces within the frame.

Walsh #7 (continued):

Cygna used an average to arrive at their 6% safety margin for the design of cable trays.

Referring to CASE Exhibit 889, second page, sheet 129, Gibbs & Hill Calculation No. SCS-101C, set #1: As shown at the bottom of the page, 1.074 is greater than 1.0 by 7%. Thus, this support is overstressed by 7%, rather than having a 6% safety margin.

Walsh #8:

Referring to Cygna's prefiled testimony, Walsh #8: The use of the 5/3 exponent is not consistent with Cygna's design criteria (Cygna Report, Appendix E, DC-3, page 7 of 8).

The use of the 5/3 exponent is not consistent with Gibbs & Hill's design criteria.

The use of the 5/3 exponent is not consistent with the Applicants' design criteria.

The use of the 5/3 exponent is not consistent with the manufacturer's (Hilti's) design criteria.

The loads shown in Cygna's answer (page 1) do not consider the effects from SSE.

On the third page of Cygna's answer (sheet 1), the bolts in question are 1" diameter Hilti's at 4-1/2" embedment. However, the allowables used are for a 10" embedment.

In the Cygna Report, Appendix E, Exhibit 4.4-1, page 3, it lists the allowable for a 1" diameter Hilti, 4-1/2" embedment, as 4 kips in tension and 6.719 kips in shear. This does not agree with the tension allowable and shear allowable shown in the middle of sheet 2 (the fourth page of Cygna's prefiled testimony on Walsh #8), which shows tension as

Walsh #8 (continued):

5.86 kips and shear as 6.8 kips.

Utilizing the correct allowable values, the interaction ratio (shown at the bottom of sheet 2, the fourth page of Cygna's prefiled testimony on Walsh #8) would be greater than 1 for bolt No. 2 and bolt No. 5.

Utilizing an interaction ratio with exponents equal to 1 and the allowables for 1" diameter Hilti bolts with 10" embedment, the interaction ratio for bolt No. 2 is roughly equal to 1. (And this does not consider the SSE load.)

Prior to the analysis performed on 2/28/84, attached to Cygna's answer, Cygna had no calculations against which it could have checked the anchor bolts' interaction values.

On the top of page 2 of Cygna's response to Walsh #8, it is stated that "these results contain the same conservatisms as the original Gibbs & Hill analyses, i.e., lumped tray masses, enveloped response spectra, higher than actual tray weights (35 psf vs 28 psf)." However, the original analysis utilized peak response spectra values and the reanalysis used less conservative response spectra values.

The Applicants did not consider the self-weight of the support in the original design, and this is not conservative.

Lumped masses are not conservative when considering self-weight excitation of a support.

Lumped masses are appropriate only when considering items that are infinitely rigid and are attached to the frame.

Walsh #9:

The phase of Cygna's review regarding this item was not a

Walsh #9 (continued):

technical evaluation from an analytical or design standpoint.

Cygna did not check:

why there was no engineering action required;

the effects of the pipe's being restrained and the effect of seismic loads imposed on the support and seismic stress within the pipe wall;

whether or not the pipe stress analysis group was notified of this condition;

whether or not the individual whose initials (DMR) were shown on the as-built reverification report has exprience or qualifications as a structural engineer or pipe stress analyst (and therefore qualified to make the judgement that no engineering action was required).

Cygna did not see any calculations indicating that the lack of a gap was acceptable.

Cygna did not pursue what the effects would be due to the zero inch gap.

Walsh #10:

Regarding Cygna's answer to Walsh #10, page 1, Applicants supplied Cygna with a Q-list which indicated that the temperature indicator in question was not safety-related. Cygna construes this to mean that:

(a) the item is not safety-related but is important to safety;

(b) Cygna initially believed the item to be safety-related but when Applicants told Cygna it wasn't safety-related, Cygna accepted Applicants' word that it was not, based on Applicants' Q-list;

(c) the item is neither safety-related nor important to safety.

Walsh #11:

On page 1 of Cygna's answer, under 2.0 Cygna Interpretation, the support number for item 3.a. should be RH-1-010-003-S22R.

Referring to CASE Exhibit 939: The load for normal upset in the horizontal direction is 15% of the vertical load; i.e., 490/3242 = .151.

IE Bulletin 79-14 requires that the direction of restraint of a support must be taken into consideration.

The pipe stress analysis group is required to take into account all "kick-loads" when the support's as-built misalignment is 5 degrees or more. (See SIT Report, Staff Exhibit 207, page 44, item 1.)

Cygna did not review any documents from the pipe support group to the pipe stress analysis group asking what the value for the kick load was in the horizontal direction.

When reviewing the pipe support calculations, Cygna did not ask what the value for the kick load was in the horizontal direction.

The actual alignment of the direction of restraint of support RH-1-010-003-S22R could vary from 3.6 degrees to 13.6 degrees.

It was Cygna's understanding that the residual heat removal system which Cygna reviewed for the Cygna report was a finished system.

The kick load is the load in the North/South direction on support RH-1-010-003-S22R.

The support loads on the bottom of page 2 of Cygna's answer do not show the load in the North/South direction.

Cygna did not consider the loads in the North/South direction on support RH-1-010-003-S22R.

Page 2 of Cygna's answer, under Maximum System Stress (psi), ASME Equation 9 (upset), lists a value of 21103 under New; this value of 21103 exceeds the allowable for the ASME code of record (according to the

computer output supplied by Cygna).

Walsh #12:

Walsh #12 is included with Walsh #8.

PROPOSED STIPULATIONS -- CASE TO CYNGA
AS DISCUSSED IN INFORMATION SUPPLIED TO CYGNA ON 2/22/84 (CASE'S REQUEST FOR DOCUMENTS -- OUTSTANDING ITEMS 2/22/84):

Observation PI-02-04: There were no calculations performed by Cygna on the reinforcing pad.

PI-02-05: There were no drawings considered by, and no calculations performed by, Cygna in arriving at their calculated value of .98.

CTS-00-07: There were no calculations checked by Cygna of the initial base plate analysis or of the second check referenced in description 1.0.

WD-02-01: Cygna did not review any calculations by Applicants showing no interference (other than the information contained in the Cygna Report).

WD-02-01: There was no separate documentation of the originator that performed the original analysis or documentation at present that will assure relative moments will be considered in the design and final design analysis.

It is Cygna's understanding that Applicants checked the interferences in the 79-14 and hot functional test walkdowns.

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UNITED STATES OF AMERICA '84 APR 18 A10:55
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
DOCKETING & SERVICE
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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 4/11/84 Letter to Cygna with: Revised CASE Ex. 899; CASE Ex. 975; Revised 4/5/84 (2/22/84 Matrix of Exhibits & Documents); Proposed Stipulations have been sent to the names lilsted below this 11th day of April, 1984, by: Express Mail where indicated by * and First Class Mail elsewhere.

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