



ENERGY
SERVICES

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November 28, 1984
84056.039

Mrs. Juanita Ellis
President, CASE
1426 S. Polk
Dallas, Texas 75224

Subject: Communications Report Transmittal #13
Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4
Texas Utilities Generating Company
Job. No. 84056

Dear Mrs. Ellis:

Enclosed please find communications reports associated with the Phase 4 Independent Assessment Program.

If you have any questions or desire to discuss any of these documents, please do not hesitate to call.

Very truly yours,

D. Oldag
Administrative Assistant

50-445/446

Attachments

cc: Mr. D. Wade (TUGCO) w/attachments
Mr. S. Treby (USNRC) w/attachments
Ms. J. van Amerongen (TUGCO/EBASCO) w/attachments
Mr. D. Pigott (Orrick, Herrington & Sutcliffe) w/o attachments
Mr. S. Burwell (USNRC) w/attachments

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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/26/84
Subject:	Cable Tray Support Design Review Usage of Design Drawings	Time:	11:30 AM
		Place:	CPSES Site
Participants:	R. M. Kissinger	of	TUGCO
	Praven Patel		TUGCO
	Bill Horstman		Cygna

Item	Comments	Required Action By
	<p>Cygna asked Mr. Patel to describe the procedures and drawings used in the cable tray support installation and review process.</p> <p>The following information was provided by Mssrs Patel and Kissinger and from procedure ECP-10.</p> <ol style="list-style-type: none">1. The only places that hanger numbers are found are in the FSE-MAPS and the FSE-159 assembly drawings. <p>These numbers are assigned by site engineering when the FSE-MAP's are created based on the Gibbs and Hill support layout drawings.</p> <ol style="list-style-type: none">2. The FSE-159 sheets, one for each support number, are considered fabrication or assembly drawings. These are supplied to the craft for construction purposes but were typically only used to determine the dimensions of the materials needed for the support. It was the crafts' responsibility to fabricate the supports in accordance with the applicable Gibbs and Hill drawings (ie S-900 series or E1-xxx-xx-S). FSE-159 drawings only provide basic dimensions and a bill of materials, no information on connection details, fit-up, working points, etc., is included.3. The FSE-MAPs, as generated by site engineering are "for reference only". Q.C. is required to inspect a support per the corresponding Gibbs and Hill support layout drawing.	



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4. Mr. Patel said that site engineering is currently in the process of revising all FSE-159 drawings to incorporate any significant effects of CMC's/DCA's. This includes items such as changes in member sizes, support location or dimensions, etc., but does not include any modifications to connection details, since these are not shown on FSE-159 drawings. Mr. Kissinger added that in some cases, the changes are only incorporated in FSE-159 drawings if the hanger has to be re-fabricated, and the revised FSE-159 is issued to the craft. In other cases, if the changes are significant, the support number may be voided (and thus the corresponding FSE-159 sheet is voided) and a new number is assigned for re-fabrication.
5. FSE-MAP's are revised to incorporate any hanger deletions, additions or relocations, but need not be revised to reflect a change in the detail reference for a specific support (ie if a CMC changes Support No. 1062 from a Case A₂ to a Case B₂, and is relocated, the new location will be shown, but the description block will still indicate that the support is a Case A₂). It is also likely that the same would apply to the Gibbs and Hill support layout drawings since these are no longer controlled by Gibbs and Hill, but have been turned over to TNE for revision control.
6. Mr. Kissinger, paraphrasing from procedure ECP-10, stated that an "FSE-MAP should be used strictly for determining the location of a support and for the assignment of the support number." and should not be used for other purposes. In cases where a hanger is deleted, that support number shall be voided on the support log (it cannot be re-used), the FSE-159 sheet shall be voided, and the reason for the support deletion indicated (ie. CMC/DCA number) on the voided sheet, and the FSE-MAP should be revised to reflect the change.
7. Cygna asked what process would be necessary for a generic study of a specific hanger type to locate all occurrences of that type. Mr. Patel responded that you could not rely on a review of the support layout drawings or the FSE-MAP's since they do not indicate the actual support type used. (See earlier comment on revisions to FSE-MAPs.)

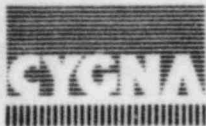
In order to locate all occurrences of one type of support, he felt that you would have to review all changes (CMC's/DCA's) against each specific layout drawing to determine if any of the supports had been modified or replaced with a different support type. He said that instead of "generic support type reviews", it would be more meaningful to consider actual field conditions for supports, since "generic" reviews would have to consider all allowed extremes in the design

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	<p>tolerances. Since the field may not have used the extremes, the review may not need to be as conservative as when considering the design extremes.</p>	



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Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/11/84
Subject:	Cable Tray/Conduit Support Review Questions	Time:	9:30 AM
		Place:	CPSES Site
Participants:	T. Keiss, R.M. Kissinger	of	TUGCO
	J. Van Amerongen		EBASCO (TUGCO)
	B.K. Bhujang, S.C. Chang, P.T. Huang		Gibbs & Hill
	W.R. Horstman, J.P. Russ, N.H. Williams (Part-time)		CES

Item	Comments	Required Action By
1.	<p>Reference: Conference Report dated 10 October 1984, 9:30 am, "Cable Tray/Conduit Review Questions," Keiss, Kissinger, et. al. participating.</p> <p>Cygna discussed the following items with the personnel listed above.</p> <p>Design of Cable Tray Support Detail "11" (Drawing 2323-S-0905) for Longitudinal Loads.</p> <p>Reference: Calculation Binders SCS-105C, Set 1 and SCS-212C, Set 7.</p> <p>The original design calculations and the design review calculations for CMC 8278, revision 4 appear in the above calculation sets. These calculations did not correctly calculate the tributary span for longitudinal loads. The calculations also considered fixity of the beam at the wall connection but did not apply moments to the connection. Eccentric brace loadings were not considered. Gibbs & Hill agreed with the above and will evaluate the support based on Cygna's recommendations. Cygna was also concerned about beam member stresses due to applied loads. Gibbs & Hill made several comparisons to support type SP-7 with brace and showed that Detail "11" beam member stresses were below allowables. These comparisons will be included in the calculations by Gibbs & Hill. Gibbs & Hill will evaluate the worst case support for Detail "11" within Cygna's scope.</p> <p>Status: Gibbs & Hill to evaluate Detail "11", incorporating the above comments, for its ability to resist applied loads.</p>	

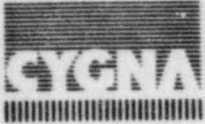
Signed: N.H. Williams /rr Page 1 of 5

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J. Ellis, S. Burwell, Project File



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2.	<p>Alternate Detail 1 (Drawing 2323-S-0903).</p> <p>Cygna, TUGCO and Gibbs & Hill discussed various aspects of the analysis for Alternate Detail 1. Gibbs & Hill will analyze the connection detail using a finite element technique. Loads from support type A₄ analysis, assuming pinned bases, will be applied to the base angle.</p> <p>Status: Gibbs & Hill to analyze Alternate Detail 1.</p>	
3.	<p>Design of Base Angles for Multiple SP-7 Type Supports.</p> <p>Cygna received calculations for multiple SP-7 base angles from Gibbs & Hill.</p> <p>Status: Cygna to review calculations.</p>	
4.	<p>Evaluation of Cable Tray Support Type SP-4.</p> <p>Cygna received calculations from Gibbs & Hill on the generic design of support type SP-4.</p> <p>Status: Cygna to review calculations.</p>	
5.	<p>Controlling Load Case for Design of Cable Tray Supports.</p> <p>Cygna asked when copies of the charts of spectral peaks for SSE loadings at 7% damping would be delivered. Gibbs & Hill replied that those tables were being sent from their New York office.</p> <p>Per the discussions of 10 October 1984, (Reference 1) Cygna had reviewed the material for the acceptance of original allowable values of Hilti Kwik Bolts for 1" diameter by 7" or greater embedments. Cygna's reviewers were concerned that those designs which used the original allowable values would have factors of safety less than 3.0 for SSE loadings. Cygna will continue to discuss this issue internally.</p> <p>Mr. Kissinger noted that Cygna should consider the locations where the increase from OBE to SSE is the largest (23%). He stated that these locations are at the lower elevations which have lower accelerations and hence, lower support loads. Original anchor bolt designs were based on the higher elevations which have larger accelerations. Cygna acknowledged this fact, but stated that for supports which were modified by CMC or DCA, analyzed by elevation specific accelerations and the bolt designed to interactions levels close to unity, the concern with anchor bolts factors of safety falling below 3.0 for SSE loads would still be valid.</p> <p>Status: Cygna to internally discuss anchor bolt factors of safety.</p>	



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6.	<p data-bbox="302 366 971 395">Method of Combination of Seismic Response.</p> <p data-bbox="302 429 1292 493">Cygnal distributed the paper written by R.P. Kennedy, "Position Paper on Response Combinations."</p> <p data-bbox="302 527 1341 1008">Cygnal asked if the 10% method for the combination of closely spaced modes was used by Gibbs & Hill in any response spectrum analysis. Mr. Kissinger noted that the original designs were pseudo-static using the peak acceleration from the response spectrum curves. Cygnal acknowledged this, but noted that several analysis, such as the working point study, employed response spectrum analysis. Mr. Huang asked if this question had been discussed with Mr. Jong Pier of Gibbs & Hill's Special Analysis group. Cygnal stated that the type of combination had been discussed with Mr. Pier during the review of the working point analysis in New York. Cygnal also noted that Mr. Kissinger had been asked if TUGCO had committed to the 10% method and that he had replied negatively during the New York meetings. At that time, Cygnal had noted Mr. Kissinger's response and decided to research the topic further.</p> <p data-bbox="302 1042 1341 1204">A check of FSAR commitments showed that the 10% method was required. Gibbs & Hill will review their response spectrum analyses to see which method had been employed. Within the cable tray review scope, this included the working point and any subsequent analyses.</p> <p data-bbox="302 1238 1312 1332">Cygnal presented various methods of combining the spatial components of earthquake response. This presentation listed the methods as:</p> <ul data-bbox="393 1366 1331 1578" style="list-style-type: none">(a) The square root of the sum of the squares (SRSS) of the directional member component loads or stresses;(b) the SRSS of the directional component interactions;(c) the Gupta method; and(d) the Newmark 100-40-40 method. <p data-bbox="302 1613 1331 1676">In general, Gibbs & Hill used method (b) listed above. Mr. Kissinger stated that this method has been used in the industry.</p> <p data-bbox="302 1710 1351 1902">Mr. Kissinger reviewed the appropriate FSAR sections which stated that the member component loads due to the direction of earthquake are to be combined by the SRSS method. NRC Regulatory Guide 1.92 was checked and section 2.1 was interpreted as requiring the SRSS of the component member loads due to 3 directions of earthquake loading.</p>	



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To assess the impact of the use of the combination method upon designs within scope, Cygna will attempt to identify the instances where combination method (b) was employed. This "review" is subject to approval by Cygna project management and schedule. TUGCO and Gibbs & Hill will research the interaction combination method and respond to Cygna with their position.

Cygna stated that the review of conduit supports noted the inclusion of dead load in the SRSS combination of seismic loads. Gibbs & Hill said a study of the impact of the use of this combination appears in calculation binder 109C. This study's results show the impact of this combination as a 5% decrease in design loads. Cygna will review these calculations to determine the range of the margins.

Status: 1. Gibbs & Hill to review response spectrum analyses to determine if the 10% method for combination of closely spaced modes was used.
2. Cygna to check acceptability of reviewing calculations for interaction methods.
3. Gibbs & Hill and TUGCO to research interaction combination methods and respond to Cygna.
4. Cygna to review study of SRSS of dead load with seismic loads for conduit supports.

7. Prying Effects on Richmond Inserts.

Based on results of testing of Richmond Inserts at CPSES and a manufacturers recommended factor of safety of 3.0, Gibbs & Hill calculated allowable load values for tension and shear for 1" diameter inserts. The values were increased beyond the original design values and those reported in Gibbs & Hill specification 2323-SS-30. The increase in allowable values over original allowable values, Gibbs & Hill stated, will account for not considering any prying action in the design of Richmond Inserts.

The results of the calculation indicate that with the exception of tension for 1 1/4" diameter by 13-1/8" embedments Hilti Super Kwik bolts, Hilti expansion anchors govern the design of anchorages. Gibbs & Hill prepared calculations which show the above and these were given to Cygna. Cygna will review these calculations.

Cygna noted that the comparisons of the new allowable values to original design values appears to compensate for the increase in bolt loads due to prying action for Richmond Inserts. It is Cygna's experience that prying action has never been considered in the design of Richmond Inserts. Gibbs & Hill stated that their engineers were instructed to include a 50% increase in



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	<p>loads for prying action after the implementation of the 79-02 bulletin. Cygna noted however, that in the design verification for CMC and DCA modifications where the inserts were designed to allowable values from Gibbs & Hill specification 2323-SS-30, prying action was not considered and tension controlled in the design, the increase in Richmond Insert allowables would not account for neglecting prying action.</p> <p>TUGCO and Gibbs & Hill presented an insert analysis based on a support type B₄ considered to be the worst case loading. Cygna will consider this analysis in the evaluation of this issue.</p> <p>Status: Cygna to review calculations for new allowable loads on Richmond Inserts.</p>													
8.	<p>Factors of Safety for Hilti Bolts and Richmond Inserts</p> <p>TUGCO and Gibbs & Hill presented the factors of safety for Richmond Inserts and Hilti expansion anchors as below:</p> <table><tr><th colspan="3"><u>Factor of Safety</u></th></tr><tr><th><u>LOADING CASE</u></th><th><u>RICHMOND INSERT</u></th><th><u>HILTI BOLTS</u></th></tr><tr><td>OBE</td><td>3.0</td><td>4.0</td></tr><tr><td>SSE</td><td>1.8</td><td>3.0</td></tr></table> <p>Cygna requested assurances that the factors of safety will not fall below the values listed for SSE loads when the spectrum for SSE loads at 7% damping are developed. Gibbs & Hill will provide Cygna with the charts of peak spectral accelerations and discuss the issue at that time.</p> <p>Status: Open.</p>	<u>Factor of Safety</u>			<u>LOADING CASE</u>	<u>RICHMOND INSERT</u>	<u>HILTI BOLTS</u>	OBE	3.0	4.0	SSE	1.8	3.0	
<u>Factor of Safety</u>														
<u>LOADING CASE</u>	<u>RICHMOND INSERT</u>	<u>HILTI BOLTS</u>												
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Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/26/84
Subject:	Cable Tray/Conduit Review Questions	Time:	9:30 a.m.
		Place:	CPSES Site
Participants:	J. Van Amerongen	of	TUGCO (EBASCO)
	S. Chang, P. Huang		Gibbs & Hill
	J. Russ		Cygna

Item	Comments	Required Action By
1.	<p>Controlling Load Case.</p> <p>Gibbs & Hill provided Cygna with copies of the charts of spectral acceleration peaks for OBE loads at 4% damping, SSE loads at 5% damping and SSE loads at 7% damping.</p> <p>Status: Cygna to review spectral peaks.</p>	
2.	<p>Effect of CMC 6187, Revision D, on SP-7 with Brace Type Supports.</p> <p>Gibbs & Hill provided calculations for the effect of CMC 6187 on SP-7 with brace type supports. Cygna wanted to know if the CMC would have any effect on the working point deviation calculations. Gibbs & Hill will provide documentation to show that there is no effect on the working point analysis conclusions.</p> <p>Status: 1. Cygna to review calculations; and 2. Gibbs & Hill to provide documentation to show that CMC 6187 has no effect on working point analysis results.</p>	
3.	<p>Evaluation of Specific SP-4 Type Supports.</p> <p>Gibbs & Hill provided Cygna with calculations for the specific SP-4 support as discussed on October 24, 1984.</p> <p>Status: Cygna to review calculations.</p>	

Signed: *N. Williams* /ajb Page 1 of 2

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4.	<p>Evaluation of Details A-H (Drawing 2323-E1-0601-01-S) (Reference: DCA 2538).</p> <p>Cygna noted that the tolerances shown in DCA 2538 provide for a more critical case of anchor bolt and base plate loading than considered in the design. Detail "E", with and without brace, was evaluated and found to be adequate as far as the anchor bolts and baseplate are concerned.</p>	



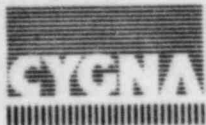
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Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	10/26/84
Subject:	Cable Tray Support Design Review Usage of Design Drawings	Time:	9:30 AM
		Place:	CPSES Site
Participants:	Tom Keiss	of	TUGCO
	Bill Horstman		CES

Item	Comments	Required Action By
	<p>Cygna ask Mr. Keiss to describe the procedures and drawings used in the cable tray support installation and review process. Mr. Keiss supplied the following discussion.</p> <p>1. <u>Procedures Used:</u></p> <ol style="list-style-type: none">1. Brown & Root Instruction ECP-10 governs the engineering effort in terms of drawings revisions and change paper.2. TUGCO Instruction QI-QP-11.10-2 is the Q.C. inspection requirements for support fabrication and modification.3. TUGCO Instruction QI-QP-11.10-5 is the Q.E. inspection requirements for the "backfit inspection program" of existing supports. <p>2. <u>Governing Drawings</u></p> <p>2323-S-0900 series drawings are the Gibbs & Hill support detail design drawings for generic support types and connection details.</p> <p>FSE-00179 is a Brown and Root drawing which is based on the S-900 series drawings, it is intended as a reference drawing for the installation (Craft) and for Q.C. This drawing is referenced by FSE-00159 sheets for connection details.</p> <p>FSE-00159 is a series of Brown & Root drawings with one sheet for each support number. They show the specific dimensions for a support and a bill of materials. (Support Assembly Drawing).</p> <p>Originally this was used as the fabrication drawing by</p>	

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	<p>the craft, but in 1981 procedures were changed so it was only to be used to determine the location coordinates and elevation of the support, the support type and size is now determined from the electrical support layout drawings (E1-xxx-xx-S) or the FSE-MAP. Connection details are taken from the S-900 drawings.</p> <p>2323-E1-xxx-xx-S are the Gibbs & Hill cable tray support plans. These show tray routing, support locations and the support reference type and dimensions. Some of these also show the support details which are specifically designed for a certain application.</p> <p>FSE-XXX are the Brown and Root support location MAPs. These are copies of the 2323-E1-xxx-xx-S drawings with field assigned support numbers added. These drawings are currently maintained by TUGCO Site Engineering Group.</p> <ol style="list-style-type: none">3. Change documentation (ie CMCs and DCAs) are issued against a Cable Tray Support Plan (E1-xxx-xx-s). Gibbs & Hill may or may not incorporate these changes in the drawing (Mr. Keiss was unsure). However, TUGCO will incorporate the changes in the corresponding FSE-MAP if the change involves a change in hanger type, location or the addition or deletion of a hanger. New FSE-159 drawings are issued by TUGCO if needed. Mr. Keiss feels that the FSE-MAPS are keep current and more accurately reflect support layout then the E1-xxx-xx-S drawings.4. FSE-MAPS are not used by Gibbs & Hill in their review process, they rely on their support plans, which do not have hanger numbers on them, and thus must identify supports by their column line coordinates.5. In the TUGCO support review and modification process, Mr. Keiss uses both the FSE-MAPS and the support plans, depending on which one is more convenient.6. The method by which a support is modified or a new support is added, due to a cable tray re-route or addition of new tray segments, depends on who initiates the change (tray routing changed by DCA). For site generated DCA's, TUGCO will locate new supports on the FSE-MAP's, and individually design these supports rather than relying on Gibbs & Hill generic designs. Details and limitations of 2323-S-0901-01 drawing are rarely used. (Tom noted that this drawing is used by the design engineers, it is not supplied to the craft or Q.C.). CMC's for the new or modified supports are sent to Gibbs & Hill for design review and approval.	



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7. 8. 9. 10.	In cases where tray addition/re-routing is initiated by Gibbs & Hill Electrical Group, tray segment drawings are revised and submitted to the G&H structural group for new support design. These results are then sent to the field for implementation.	
	The assembly drawings (FSE-00159 sheets) do not necessarily reflect all change to a support. They are only revised if so requested for a specific reason. If they are revised, they go through the standard review processes, and may be field verified if necessary.	
	TUGCO is currently working with EBASCO to develop a plan for doing "As-Building" of all existing cable tray supports. They may incorporate all field changes and CMC's into the FSE-159 drawings or create new as-built drawings. This effort may be needed to answer an NRC concern on the lack of control on cable tray supports - the NRC feels that TUGCO has no way to document the actual field configuration of a cable tray support.	
	Cygna asked if the weight of cable tray covers was included in the weight calculations used to evaluate cable trays with fire protection added.	
	Mr. Keiss said that he believed the cover weight was not included because it was considered negligible. The documentation used in these studies does not indicate when covers are present, and the only way to determine this would be to refer to the electrical group for the segment drawings which indicate the use of covers.	



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Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10 Oct. 1984
Subject:	Cable Tray/Conduit Support Review Questions	Time:	9:30 a.m.
		Place:	CPSES Site
Participants:	T. Keiss, R. M. Kissinger	of	TUGCO
	J. Van Amerongen		EBASCO (TUGCO)
	B. K. Bhujang, S. C. Chang, P. T. Huang		Gibbs & Hill
	W. R. Horstman, J. P. Russ		CES

Item	Comments	Required Action By
	<p>Reference: 1. Conference Report dated 9 October 1984, 9:30 a.m., "Cable Tray/Conduit Support Review Questions," Keiss, Kissinger, et al., participating.</p> <p>Cygna discussed the following items with the personnel listed above.</p> <p>1. Detail "W" (Drawing 2323-E1-0601-01-S).</p> <p>Cygna's review of the STRUDL output noted that the global X-axis rotations at the support points of the W8 x 31 member were approximately 5 degrees. Cygna reviewers felt that these rotations were excessive and that the clip angles, which had not been checked for stress levels, would fail. Mr. Bhujang responded by stating that it was not appropriate to consider the clip angles as fixed. Cygna stated that the clip angle configuration is appropriate as a pinned connection for the vertical (Y-axis) loads but were not appropriate to resist X-axis moments. Mr. Kissinger will check on the acceptability of the clip angles to resist torsion of the W8 x 31 member or design a modification to provide such resistance.</p> <p>Status: Gibbs & Hill will evaluate the W8 x 31 connections for the effects of torsion.</p> <p>2. Detail "N" (Drawing 2323-E1-0601-01-S).</p> <p>Cygna reviewed the Gibbs & Hill calculations for the proposed modification of a Detail "N" support to provide longitudinal restraint for several cable tray segments within the review</p>	



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	<p>scope. These calculations did not consider torsion of the beam due to longitudinal loads. Gibbs & Hill replied that the loads used in the analysis and design of the modification were conservative but still enveloped by the design loads for support type SP-7 with brace. Cygna also noted that the brace was eccentrically loaded but was not checked for this condition. Gibbs & Hill will check the brace for the effects of the eccentricity.</p> <p>Status: Gibbs & Hill will check the brace for eccentrically applied loading effects.</p>	
3.	<p>In-plane Angle Braces for Trapeze Type Cable Tray Supports.</p> <p>Per Reference 1, Gibbs & Hill checked on the working point analysis of the C₃ type supports and found that the largest axial load for a single angle brace was 7.46 K. The evaluation of the brace appears in Attachment 1. The results of the evaluation show the brace to be acceptable.</p> <p>Status: Closed.</p>	
4.	<p>Alternate Detail 1 (Drawing 2323-S-0903).</p> <p>Per the discussions of 9 October 1984 (Reference 1), Cygna discussed internally the analysis procedures Gibbs & Hill might employ in their evaluation of Alternate Detail 1. Cygna suggested that due to the fixity provided by the base angle, some moments should be considered. Gibbs & Hill felt that this approach might be too conservative. Cygna also suggested that evaluation of the base angle might be controlled by the stiffness of the outstanding leg of the base angle. Two cases were recommended for analysis: (1) A rigid body for short bolt spacings; and, (2) a flexible system for large support widths where the base angle might behave as a beam on an elastic foundation. Cygna also recommended consideration of rotations about the bolt axis centerlines.</p> <p>Status: Gibbs & Hill to analyze Alternative Detail 1.</p>	
5.	<p>Embedded Plate Edge Distance Violation for Cable Tray Support 2953.</p> <p>Cygna had reviewed the CVC for CMC 12105 and found the conclusions acceptable.</p> <p>Status: Closed.</p>	



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6. Evaluation of Cable Tray Support Type D₁ Using Reduced Horizontal Accelerations.

Gibbs & Hill evaluated the wall connection using frequencies that Cygna had calculated and original Hilti Kwik Bolt allowables for 1" diameter by 7" embedment anchor bolts. The interaction ratio for the bolts was 1.01 using the above data.

Cygna stated that Gibbs & Hill should not rely on Cygna's analysis to justify the connection adequacy but should perform a revised analysis. Gibbs & Hill agreed to revise the analysis to reflect their in-house calculations.

Gibbs & Hill used the original allowable values for the 1" diameter by 7" embedment Hilti Kwik Bolts because the original design of the D₁ supports were performed prior to the issuance of revised bolt allowables. A study by Hilti, Inc. showed that for designs based on the original allowable values, there would be no impact on support integrity provided that the anchor bolts were properly designed. This study was sent to the Nuclear Regulatory Commission (NRC). The NRC has not responded on a general basis on the acceptability of the Hilti study.

Mr. Kissinger stated that TUGCO had noted the change in allowable bolt values and filed SDAR CP-80-12. The resident NRC inspector had closed out the SDAR based on information provided by Hilti, Inc. The closure of the SDAR noted that the reduction in the factor of safety of the bolts due to the change in bolt allowables was acceptable. The documentation for the bolt allowable issue is Inspection Report IR 81-14 and Reports 50-445 and 50-446. After an internal discussion, Cygna advised the participants that the use of old allowable values for 1" diameter Hilti Kwik Bolts was acceptable.

Status: Gibbs & Hill to reanalyze type D₁ supports using in-house programs and provide Cygna with a revised response.

7. Installation Tolerances for Details A-H (Drawing 2323-E1-0601-01-S) per DCA 2421.

Cygna requested verification of the tolerances for Details A through H shown in DCA 2421. An examination of the actual configurations which may occur when the tolerances are used indicated that Gibbs & Hill's original analysis may be acceptable. Cygna will review calculations for a Detail "E" type support subjected to 3 directions of loading to verify the adequacy of the anchor



Communications Report

Item	Comments	Required Action By
	<p>bolts and the base plate. Cygna later received sheets 65-69 of the calculation binder SCS-146C, Set 8 for review.</p> <p>Status: Cygna to review above calculations for applicability to supports in question.</p>	
8.	<p>Ability of Conduit Support CA-5a to Resist Loads from 5" diameter Conduits.</p> <p>Cygna received sheets 154-160 of calculation binder SCS-153C, Set 1.</p> <p>Status: Cygna to review above calculations.</p>	
9.	<p>Design of Base Angles for Multiple SP-7 Type Supports.</p> <p>Cygna and Gibbs & Hill discussed the analysis to be used in determining the adequacy of the multiple SP-7 support base angles. Gibbs & Hill will evaluate the connection based on worst case beam placement and loadings. Cygna asked whether rotation of the base angle about the bolt centerline would be considered. Gibbs & Hill replied that it would not.</p> <p>Status: Gibbs & Hill to evaluate the base angle connection.</p>	
10.	<p>Design Review Calculations for Conduit Support Type CSM-42a Considering Concrete Compressive Forces.</p> <p>Cygna received calculations for conduit support type CSM-42a.</p> <p>Status: Cygna will review above calculations.</p>	
11.	<p>Evaluation of Cable Tray Support Type B₄ Using Appropriate Slenderness Ratio.</p> <p>The calculations given to Cygna on 9 October 1984 included a reduction factor of 1.26 to account for distributed axial loads. Cygna noted the use of the factor as incorrect. Gibbs & Hill showed that without the factor the hanger member was adequate to resist the design loads.</p> <p>Status: Closed.</p>	
12.	<p>Evaluation of Cable Tray Support Type A₄ Using Appropriate Slenderness Ratio.</p> <p>Cygna received calculations for A₄ supports.</p> <p>Status: Cygna to review above calculations.</p>	



Communications Report

Item	Comments	Required Action By
13.	<p>Design of Cable Tray Support Detail "11" (Drawing 2323-S-0905) for Longitudinal Loads.</p> <p>Cygna questioned the acceptability of the equal distribution of longitudinal loads based on a comparison of cable tray and support stiffness. Gibbs & Hill suggested comparing the actual tray loads and tributary spans to the design loads to qualify the supports. If this approach fails, the stiffness of the support will be considered to reduce the applied loads. Cygna and Gibbs & Hill will review the existing calculations for areas of possible disagreement prior to the above evaluations.</p> <p>Status: Cygna and Gibbs & Hill to review calculations. Gibbs & Hill to evaluate Detail "11" based on discussion results.</p>	
14.	<p>Controlling Load Case for Design of Cable Tray Supports.</p> <p>Mr. Kissinger provided Cygna with a copy of TSG-6542 dated 21 September 1984. He also suggested that Cygna obtain a copy of TXX-4316, a letter from TUGCO to the NRC in response to questions regarding anchor bolt factors of safety, allowable loads and damping values. The responses by TUGCO in these documents are based on unrefined spectra for 4% and 7% damping for OBE and SSE loadings, respectively. The differences between the OBE and SSE peak spectral values over all buildings and elevations ranged from 5 to 23%.</p> <p>Mr. Kissinger reviewed TUGCO's response to the question regarding allowable material stress values for the SSE loading case. In regard to the response to the question on anchor bolt factors of safety, Mr. Kissinger noted that the term "maximum working loads" referred to the OBE loadings. The response noted that factors of safety of 4 and 3 were used for OBE and SSE, respectively. He noted that with a change in loading from OBE to SSE of 23% that no Hilti Bolt would have a factor of safety below 3.0.</p> <p>Cygna asked about those designs which used original allowable values for 1" diameter Hilti Bolts. (See item 6 above.) These designs were accepted by the NRC site inspector based on a reduced factor of safety in response to SDAR 80-12. Mr. Kissinger stated that Cygna should review the response to SDAR 80-12.</p> <p>Gibbs & Hill is to provide Cygna with a peak spectral values for SSE loads at 7% damping.</p> <p>Status: 1. Cygna to review NRC response to SDAR 80-12; and 2. Gibbs & Hill to provide Cygna with peak spectral values for SSE loads at 7% damping.</p>	



Communications Report

Item	Comments	Required Action By
	<p style="text-align: center;"><u>Attachment 1</u></p> <p>For a frame type C₃ with L = 3'-0", the maximum axial brace load is 7.46 k. (Reference Computer Binder DMI-18p5.)</p> $\begin{array}{lll} l = 89 \text{ in} & r_w = 1.15 \text{ in} & S_w = 1.317 \text{ in}^3 \\ k = 1.0 & r_z = 0.587 \text{ in} & S_z = 0.839 \text{ in}^3 \end{array}$ $\begin{array}{ll} kl/r_w = 89/1.15 = 77.39 & \\ kl/r_z = 89/0.587 = 151.6 & F_a = 6.49 \text{ ksi} \end{array}$ $\begin{array}{l} F'e_w = 24.94 \text{ ksi} \\ F'e_z = 6.49 \text{ ksi} \end{array}$ $f_a = 7.46/2.11 = 3.54 \text{ ksi}$ $\begin{array}{l} M_w = (7.46) (1.06) = 7.91 \text{ in-k} \\ M_z = (7.46) (0.195) = 1.46 \text{ in-k} \end{array}$ <p>To properly evaluate the stress interaction ratio, the point of maximum stress must be chosen. At point 1 of Figure A-1, no contribution to compressive stresses is made by M_w, because the point lies along the neutral axis. At point 2 where M_w causes the maximum compressive load, the contribution from M_z is tensile. Therefore, the worst case combinations are shown below:</p> $I_1 = \frac{3.54}{6.49} + \frac{1.46}{(0.839) (22) (1 - \frac{3.54}{6.49})} = 0.719$ $I_2 = \frac{3.54}{6.49} + \frac{7.91}{(1.317) (22) (1 - \frac{3.54}{24.94})} - \frac{1.46}{(0.839) (22) (1 - \frac{3.54}{6.49})} =$ $I_2 = .690$	

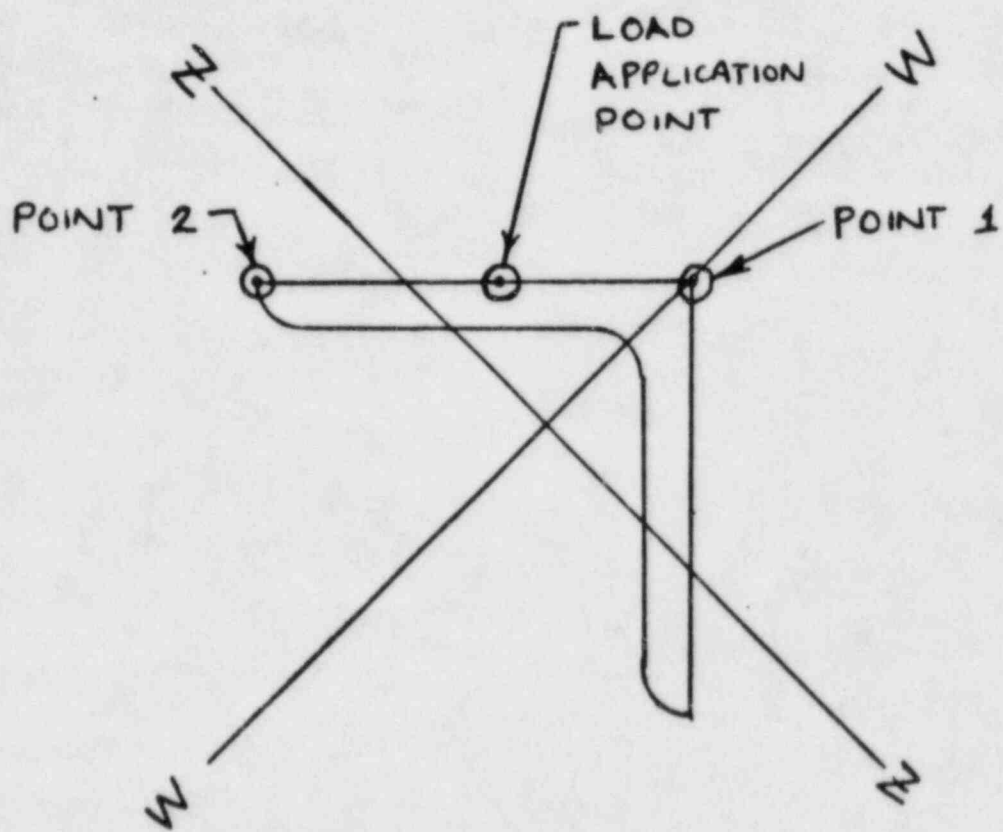


Figure A-1



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	11/2/84
Subject:	Cable Tray Support Questions	Time:	9:00 a.m.
		Place:	SFR0
Participants:	T. Keiss	of	TUGCO (Site)
	W. Horstman		Cygna

Item	Comments	Required Action By
	<p>I asked Mr. Keiss to arrange for a field inspection of two cable tray support base plates:</p> <p style="padding-left: 40px;">No. 2998 in Auxiliary Building No. 13080 in Safeguard Building</p> <p>He will determine Hilti bolt length code and thickness of grout between base plate and floor.</p>	

Signed:

W. Williams

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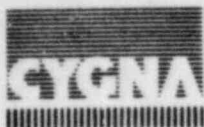


Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/25/84
Subject:	Cable Tray Support Design Review Verification of Installation of Hilti Bolts	Time:	4:45 PM
		Place:	CPSES Site
Participants:	Mike Warner	of	TUGCO QE
	Jeanne Van Amerongen		EBASCO
	Bill Horstman		Cygn

Item	Comments	Required Action By
	Mr. Warner provided copies of Ultrasonic Test reports for Hilti Expansion Anchors from the testing performed on Cable Tray Supports as requested by Cygna on 10/17/84. Mr. Warner stated that these reports will be placed in the Q.C. file for the corresponding cable tray support to ease in future location of this documentation.	

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Communications Report

Company: Texas Utilities

☒ Telecon

☐ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056 *

Date: 11/5/84

Subject: Cable Tray Support Design Review
Anchor Bolt Embedment

Time: 11:45 a.m.

Place: SFRU

Participants: T. Keiss

of TUGCO (Site)

W. Horstman

Cygna

Item	Comments	Required Action By
1.	Mr. Keiss provided answers to the questions asked in telecon of 11/2/84, 9:00 a.m. Support No. 13080. Hilti Super Kwik Bolt Length: "X" Grout Thickness: 3/4" Maximum Bolt Projection: 4 1/4" from slab to end of bolt	
2.	Support No. 2998. Hilti Super Kwik bolt length: "U" Grout Thickness: 3/4" Maximum Bolt Projection: 4 3/8" from slab to end of bolt	

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W. Williams

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Communications Report

Company: Texas Utilities

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Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056 *

Date: 10/24/84

Subject: Cable Tray Support Design Reviews

Time: 9:30 A.M.

Place: CPSES Site

Participants: J. Burkeen

of DCTG

W. Horstman

Cynga

Item	Comments	Required Action By
	Requested and received Gibbs & Hill calculation SCS-1240, Set #1, sheets 65 and 66.	

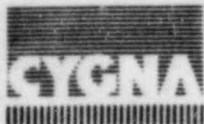
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/27/84
Subject:	Cable Tray/Conduit Review Scope	Time:	1:50 p.m.
		Place:	CPSES Site
Participants:	S. Chang, P. Huang	of	Gibbs & Hill
	W. Horstman, J. Russ, N. Williams		Cygna

Item	Comments	Required Action By
1.	<p>Reference: Conference Report dated October 27, 1984, 9:30 a.m., "Cable Tray/Conduit Review Questions", Keiss, Van Amerongen et al. participating.</p> <p>Per the discussion in Reference 1, Cygna reviewed specification 2323-ES-100 and procedure QI-QP-11.3-29, "Verify Electrical Separation". The later procedure notes in Section 3.1.6, paragraph b, "Tray horizontal separation of different trains or channels may be reduced to a minimum of one inch clear air space provided the trays are covered."</p> <p>Cygna noted that Gibbs & Hill used a 6-inch spacing between trays and 3-inch clearance to hangers. Cygna is concerned that by not considering the minimum tray spacing, the generic designs may not be adequate to predict the most critical support loads. Gibbs & Hill replied that when laying out the tray supports, the engineer would use the generic support width for a specified maximum tray width if the trays were spaced at less than six inches apart. The engineers who determined the support maps were familiar with the support design and used drawing 2323-S-0901-01 which lists the support dimensions for limiting tray widths. Gibbs & Hill stated that drawing 2323-S-0901-01 was not a controlled drawing.</p>	
2.	<p>Welds for Specific Detail E-H Supports.</p> <p>Cygna noted that cable tray supports 734, 735, 2953, 3016, 3022, 3023, 3034, 3501, 3504, 3112, 5616 and 5608 have a 3/16-inch fillet weld specified for the beam-baseplate connection on the FSE-00159 fabrication drawings. The design drawing requires a larger fillet weld. Gibbs & Hill will evaluate the effect of the</p>	

Signed: *N. Williams* /ajb Page 1 of 2

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Communications Report

Item	Comments	Required Action By
	<p>FSE-00159 fabrication drawings. The design drawing requires a larger fillet weld. Gibbs & Hill will evaluate the effect of the reduced weld size on the support capacity and the reason for the fabrication drawing deviation.</p> <p>Status: Gibbs & Hill to evaluate the effect of the reduced weld size and the reason for deviation.</p>	



Communications Report

Company: Texas Utilities ☒ Telecon ☐ Conference Report

Project: Comanche Peak Steam Electric Station Job No. 84056
Independent Assessment Program - Phase 4 Date: 10/2/84

Subject: Responses to Cygna Questions Time: 1:00 P.M.
Place: SERO

Participants: J. Van Amerongen of TUGCO (EBASCO)
B. Bhujang, P. Huang Gibbs & Hill
T. Keiss TUGCO
J. Russ Cygna

Item	Comments	Required Action By
1.	<p>Cygna spoke to the above TUGCO and Gibbs & Hill personnel to discuss status and responses to questions on conduit supports.</p> <p>The calculations for IN-CSM-15a did not include concrete compressive forces on anchor bolts. This calculation was to be performed to verify support CSM-42a. Mr. Bhujang stated that for support IN-CSM-15a, the bolt interaction values were small and that the compressive forces would not affect the results. Cygna concurred but asked for an evaluation of CSM-42a. Mr. Huang asked if it would be sufficient to show that the present calculations were conservative. Cygna concurred and stated that the concrete at the bottom of the beam or wall which the tube extends over should be checked for failure. Gibbs & Hill will prepare calculations evaluating the above items for Cygna review at site.</p>	
2.	<p>The response to question 1 of letter 84056.20 did not address torsion of the section P1001C3 for support CSM-6b. This torsion will introduce bending moments into the P5000 member. Gibbs & Hill agreed to reevaluate the response.</p> <p>Cygna noted that the site visit scheduled for October 8 through 10, would be used to discuss open items such as those described above. Mr. Bhujang asked if the meeting was necessary if Cygna wasn't closing out all items. Cygna reminded the TUGCO personnel that R.M. Kissinger had requested the meeting during the previous discussions in New York at Gibbs & Hill. Cygna noted that every effort would be made to cover all topics for which TUGCO and Gibbs & Hill had made sufficient preparation, such as responses to the open items discussed on September 20, 1984 at Gibbs & Hill, New York.</p>	

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Company: Texas Utilities ☐ Telecon ☐ Conference Report

Project: Comanche Peak Steam Election Station
Independent Assessment Program - Phase 4

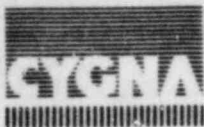
Subject: Cable Tray Support Calculations for Change
Documentation

Participants: Janelle Burkeen
Bill Horstman

Job No. 84056
Date: 7/20/84
Time: 11:00 a.m.
Place: CPSES Site
of Gibbs & Hill
Cygna

Item	Comments	Required Action By
	<p>Please provide copies of the following cable tray support calculations.</p> <p>SCS-133C Set 1 Sheets 7-10 SCS-213C Set 5 Sheets 11-23 SCS-210C Set 6 Sheets 10-13 SCS-210C Set 8 Sheets 17-18 SCS-1240 Set 1 Sheets 61-62</p> <p>Received 7/20/84, 1:45 p.m.</p>	

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Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/20/84
Subject:	Cable Tray Support Review Document Request	Time:	8:45 a.m.
		Place:	CPSES Site
Participants:		of	
	Diane Overton		Brown & Root (DCC)
	John Russ		Cygna

Item	Comments	Required Action By
	Cygna requested and received copies of sheets 86 and 93 of drawing FSE-00159.	



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Communications
Report

Company:

Texas Utilities

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☒ Conference Report

Project:

Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No.

84056

Date:

10/18/84

Subject:

Cable Tray Support Design Review

Time:

1:00 P.M.

Place:

CPSES Site

Participants:

N. Munoz

of

DCC

W. Horstman

Cygna

Item

Comments

Required
Action By

Requested and received cable tray support assembly drawing
FSE-00159, sheet 3136, revision 3.

Signed:

N. Williams

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J. Ellis, S. Burwell, Project File, R. Kissinger



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	10/24/84
Subject:	Cable Tray Support Design Reviews	Time:	9:30 A.M.
		Place:	CPSES Site
Participants:	J. Burkeen	of	DCTG
	W. Horstman		Cygna

Item	Comments	Required Action By
	Requested and received Gibbs & Hill calculation SCS-1240, Set #1, sheets 65 and 66.	



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	8/14/84
Subject:	(1) Fouling Factors for CCW Heat Exchangers (2) Maximum Flows through Heat Exchangers	Time:	
		Place:	CES-BAO
Participants:	J. Foley	of	Cygn
	N. Cristali		Gibbs & Hill

Item	Comments	Required Action By
1	<p>I asked Wanda to provide the fouling factors specified to the CCW Heat Exchanger manufacturer.</p> <p><u>Response:</u></p> <p>W. Cristali telecopied Struthers-Wells specification sheets showing cleanliness factors of 80 percent. Cygna will convert to fouling factor to determine if TEMA recommendations are met.</p>	
2	<p>I asked Wanda to provide manufacturers' flow rates for the following heat exchangers:</p> <p>RHR Containment Spray Chilled Water (nuclear) Condenser Control Room A/C Chiller Condenser</p> <p><u>Response:</u></p> <p>W. Cristali telecopied manufacturers' data on 8/16/84. Cygna will check G&H flow calculations to be sure manufacturer flow rates are not exceeded.</p>	

Signed:

W. Williams

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Communications Report

Company: Texas Utilities ☐ Telecon ☒ Conference Report

Project: Comanche Peak Steam Electric Station Job No. 84056
Independent Assessment Program - Phase 4 Date: 10/18/84

Subject: Cable Tray/Conduit Review Questions Time: 9:00 a.m.
Place: CPSES site

Participants: R.M. Kissinger, T. Keiss (part-time) of TUGCO
J. Van Amerongen TUGCO (EBASCO)
B.K. Bhujang, S.C. Chang, P.T. Huang Gibbs & Hill
W.R. Horstman, J.P. Russ, N.H. Williams CES

Item	Comments	Required Action By
1.	<p>Cygna discussed the items below with the personnel listed above.</p> <p>Design of Cable Tray Support Detail "11" (Drawing 2323-S-0905)</p> <p>Gibbs & Hill provided Cygna with calculations for Detail "11"</p> <p>Status: Cygna to review above calculations</p>	
2.	<p>Evaluation of Cable Tray Supports 2861, 3025 and 3028 (Type D₁) Considering Wall Attachment Fixity.</p> <p>Gibbs & Hill provided Cygna with calculations for supports 3025 and 3028.</p> <p>Status: Cygna to review above calculations.</p>	
3.	<p>Evaluation of Cable Tray Support Type D₂</p> <p>Gibbs & Hill provided Cygna with calculations for Detail D₂.</p> <p>Status: Cygna to review above calculations.</p>	
4.	<p>Ability of Conduit Support Type CA-5a to Resist Loads from 5 inch Diameter Conduits.</p> <p>Cygna had reviewed the calculations received on 10/10/84. It was noted that the calculations did not consider the installation tolerances for the support which would provide a more critical case for the anchor bolts. The maximum plate thickness, maximum clamp offset and the minimum bolt spacing were not considered.</p>	

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J. Ellis, S. Burwell, Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
5.	<p>The effect of these tolerances though will not change the final result given the low interaction ratios on the anchor bolts. Gibbs & Hill will revise the calculations but will not provide Cygna with copies of the revision.</p> <p>Status: Closed.</p> <p>Design of Cable Tray Support Detail "W" (Drawing 2323-E1-0601-01-S)</p>	
	<p>Cygna found Gibbs & Hill's calculations for Detail "W" acceptable. Closure of this issue is contingent upon verification of existence of heavy-duty tray clamps by Gibbs & Hill.</p> <p>Status: Closed with exception noted above.</p>	
6.	<p>Transverse Span Violations - Evaluation of Cable Tray Supports.</p> <p>Cygna had discussed the preliminary calculations with Mr. Keiss on 10/16/84. It was noted then that the support evaluations referenced the original designs and had not considered any new analysis. Cygna asked how new or the most current analysis were located and used by an analyst. Mr. Kissinger stated that a program exists to develop and implement a system to reference calculations to specific support details.</p> <p>Cygna received the checked and final copy of the cable tray support evaluations for fire protection loads from Mr. Keiss.</p> <p>Status: Cygna to review above calculations.</p>	
7.	<p>Evaluation of Specific SP-4 Type Supports.</p> <p>Cygna had reviewed the analysis previously delivered by Gibbs & Hill. Cygna inquired as to what spectra was used for design review calculations. Mr. Bhujang replied that the unrefined spectra was generally used but the refined would be used if a specific support failed using the unrefined.</p> <p>Mr. Bhujang provided Cygna with another calculation for a specific SP-4 support where $L > 4'-0"$.</p> <p>Status: Cygna to review the above calculation. Cygna will also review the determination process for critical SP-4 supports where $L > 4'-0"$.</p>	



Communications Report

Item	Comments	Required Action By
8.	<p>Evaluation of Detail "V" (Drawing 2323-E1-0601-01-S)</p> <p>As part of the evaluation of Detail "W," (see item 5, above) Cygna noted that a specific Detail "V" type support was evaluated for its ability to resist loads due to axial accelerations of a cable tray. This calculation referenced Gibbs & Hill calculation sets 1 and 2 of binder SCS-1301 which notes the additional weights of fire protection to be added to cable tray support members. Cygna requested and received copies of the applicable calculations.</p> <p>Status: Cygna to review above calculations.</p>	
9.	<p>Installation Tolerances for Detail A-H. (Drawing 2323-E1-0601-01-S) (Reference DCA 2538).</p> <p>Cygna had reviewed the calculations previously provided by Gibbs & Hill. Additional information was required to assure that cantilever lengths were below design lengths. Gibbs & Hill recommended review of a list of Detail E-H type supports contained in calculation binder SCS-146C.</p> <p>Status: Cygna to review above calculations.</p>	



Communications Report

Company: Texas Utilities

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☐ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056 *

Date: 8/29/84

Subject: Document Request - Electrical Review

Time: 11:10 A.M.

Place:

Participants: J. van Amerongen

of TUSI

T. Martin

Cygn

Item	Comments	Required Action By
	Requested the latest revision of drawing 2323-E1-0144 and any associated DCA's and CMC's.	

Signed:

N. Williams

ajb

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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/15/84
Subject:	Cable Tray/Conduit Review Questions	Time:	1:15 p.m.
		Place:	CPSES Site
Participants:	T. Keiss, R.M. Kissinger	of	TUGCO
	J. Van Amerongen		TUGCO (EBASCO)
	B.K. Bhujang, S.C. Chang, P.T. Huang		Gibbs & Hill
	W.R. Horstman, J.P. Russ, N.H. Williams		Cygn

Item	Comments	Required Action By				
	<p>Reference: Conference Report dated 15 October 1984, 9:00 a.m., "Cable Tray/Conduit Review Questions," Keiss, Kissinger, et al., participating.</p>					
1.	<p>SP-7 with Brace Working Point Analysis</p> <p>Cygn continued the discussion of this topic initiated in Reference 1. It was stated by Cygn that the longitudinal frequency of the SP-7 support-tray system will be greatly affected by the torsional rigidity of the composite beam member. By considering the torsional rigidity, the frequency will be lowered such that the peak spectral accelerations must be used in the evaluation of the brace anchor bolts. Gibbs & Hill and TUGCO will consider the above points and respond to Cygn at a later time.</p> <p>Status: Gibbs & Hill and TUGCO to evaluate the working point analysis results considering the torsional stiffness of beam member of the SP-7 with brace support.</p>					
2.	<p>Status of Open Items</p> <p>The following status of discussion items was noted:</p> <table><tr><td><u>Item</u></td><td><u>Action</u></td></tr><tr><td>Design of Embedded Plates for SP-7 Type Cable Tray Supports.</td><td>Closure contingent upon Cygn review of new spectra for SSE at 7% damping.</td></tr></table>	<u>Item</u>	<u>Action</u>	Design of Embedded Plates for SP-7 Type Cable Tray Supports.	Closure contingent upon Cygn review of new spectra for SSE at 7% damping.	
<u>Item</u>	<u>Action</u>					
Design of Embedded Plates for SP-7 Type Cable Tray Supports.	Closure contingent upon Cygn review of new spectra for SSE at 7% damping.					



Communications Report

Item	Comments	Required Action By
<u>Item</u>	<u>Action</u>	
Ability of Conduct Support Type CA-5a to Resist Loads from 5" Diameter Conduits.	Cygna to review calculations.	
Design of Cable Tray Support Detail "W" (Drawing 02323-E1-0602-01-S) as a Longitudinal Support.	Cygna to review calculations provided by Gibbs & Hill.	
Transverse Span Violations - Evaluation of Cable Tray Supports.	TUGCO to provide calculations.	
Design of Cable Tray Support Detail "11" (Drawing 2323-S-0905) for Longitudinal Loads.	Gibbs & Hill to provide Cygna with calculations.	
Evaluation of Cable Tray Support Type A ₄ Considering Correct Slenderness Ratio.	Closed contingent upon resolution of generic issues.	
Evaluation of Specific Type SP-4 Supports where L > 4'-0".	Cygna to review calculations.	
Evaluation of Cable Tray Support Type D ₁ , Using Reduced Horizontal Accelerations	Calculations acceptable based on resolution of issue on 10% method of modal combination. Gibbs & Hill had stated that the 10% method was not used in the D ₁ analysis.	
Evaluation of Cable Tray Supports 2861, 3025 and 3028 (Type D ₁) Considering Wall Attachment Fixity.	Gibbs & Hill to provide Cygna with calculations.	
Evaluation of Cable Tray Support Type D ₂ -Analysis of Wall Connection.	Gibbs & Hill to provide Cygna with calculations.	
Verification of Hilti Super-Kwik Bolts with Ultrasonic Testing.	Cygna to discuss with Quality Control.	



Communications Report

Item	Comments	Required Action By
<u>Item</u>	<u>Action</u>	
Consideration of Eccentric End Conditions in the Design of Single Angle Braces Used in Cable Tray Supports.	Gibbs & Hill to evaluate effect of frequency on support type SP-7 with brace.	
Contact Between Cable Tray Supports and CCW Heat Exchanger.	CMC's for modification have been issued. Cygna to receive CVC's and review.	
Evaluation of Alternate Detail "1" Hanger Connection (Drawing 2323-S-0903) (Reference DCA 2421)	Analysis by Gibbs & Hill in progress.	
Installation Tolerances for Details A-H (Drawing 2323-E1-0601-02-S) (Reference DCA 2538)	Cygna to review calculations.	
Design of Base Angles for Multiple SP-7 Supports.	Closed contingent upon resolution of generic issue of base angle rotation.	
Review of Fire Protection Calculations for Tray Segments.	Cygna to review calculations.	



23-C-1014

Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	14 October 1984
Subject:	Cable Tray/Conduit Review Questions	Time:	2:00 p.m.
		Place:	CPSES site
Participants:	J. Van Amerongen	of	TUGCO (EBASCO)
	B.K. Bhujang, S.C. Chang, P.T. Huang		Gibbs & Hill
	W.R. Horstman, J.P. Russ, N.H. Williams		C.S.

Item	Comments	Required Action By
1.	<p>Cygna discussed the following items with the personnel listed above.</p> <p>Evaluation of Cable Tray Supports 2861, 3025 and 3028 (Type D₁) Considering Wall Attachment Fixity.</p> <p>Cygna noted that the Gibbs & Hill's calculations for support 2861 received on October 12, 1984 did not consider an additional 18 inch tray. Mr. Bhujang will field verify the existence of this tray.</p> <p>Cygna also suggested moment distribution to analyze the frame rather than fixed-fixed end assumptions assumed in the analysis. Mr. Bhujang stated that this will also be done in the support reevaluation. Correct seismic input will also be used.</p> <p>Cygna questioned the use of a single as-built bolt spacing configuration to qualify all three supports. The bolt spacing installation tolerances should be used unless all three wall connections are field verified. Gibbs & Hill will field verify all connections and consider the enveloping case of the three. The original allowable load values for 1" diameter by 7" embedment Hilti Kwik Bolts will be considered in the analysis by Gibbs & Hill. Actual system frequencies may also be considered.</p>	

Signed: N.H. Williams /cwK Page 1 of 2

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1020.01a



Communications Report

Item	Comments	Required Action By
	<p>Cygna noted its concern on the use of the original design to envelope the design for these three supports in light of the analyses being performed to qualify the supports for the actual loads. Cygna feels that the additional work required to qualify the supports indicates a lack of consistency in the application of design assumptions.</p> <p>Status: Gibbs & Hill to evaluate the three supports based on the comments above.</p>	
2.	<p>Design of Cable Tray Support Detail "W" (Drawing 2323-E1-0601-01-S).</p> <p>Gibbs & Hill supplied Cygna with revised calculations for Detail "W."</p> <p>Status: Cygna to review above calculations.</p>	
3.	<p>Evaluation of Specific Type SP-4 Supports.</p> <p>Gibbs & Hill provided Cygna with calculations for cable tray supports 7223, 3362, 1356 and 1348 for which $L > 4'-0"$.</p> <p>Status: Cygna to review above calculations.</p>	
4.	<p>Cable Tray Fire Protection Reevaluations.</p> <p>Calculations for cable tray support 726 were received from Mr. Keiss on October 12, 1984. Cygna will review these calculations.</p> <p>Status: Cygna to review above calculations.</p>	
5.	<p>Evaluation of Cable Tray Support Types A₄ and B₄ Using Appropriate Slenderness Ratio.</p> <p>The slenderness ratios for A₄ and B₄ supports will be investigated by Cygna as part of a discussion on generic issues. Otherwise the calculations are considered closed.</p> <p>Status: Closed except as noted above.</p>	
6.	<p>Prying Action on Richmond Inserts.</p> <p>Cygna had reviewed the calculations received from Gibbs & Hill on October 12, 1984 and found the form acceptable. Final resolution will be affected by resolution of issue on consistent application of design assumptions tentatively scheduled for October 15, 1984.</p> <p>Status: Closed with the exception noted above.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/17/84
Subject:	Cable Tray Support Design Review	Time:	4:00 PM
		Place:	CPSES Site
Participants:	Billie Wylie	of	DCTG
	Bill Horstman		CES

Item	Comments	Required Action By
	<p>Requested and received copies of the following CVC's for the following:</p> <p>CMC 8229 rev. 0-13 CMC 16410 current rev. only CMC 16412 current rev. only DCA 3701 current rev. only DCA 20177 current rev. only DCA 19167 current rev. only DCA 18675 current rev. only</p> <p>These pertain to cable tray support no. 3136.</p>	

Signed: W.H. Williams /RR Page 1 of 1

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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/24/84
Subject:	Cable Tray Support Design Review	Time:	9:00 AM
		Place:	CPSES
Participants:	Billie Wylie	of	DCTG
	Bill Horstman		CES

Item	Comments	Required Action By
	Requested and received CVC's for the following: CMC 4469, rev. 0 CMC 11062, rev. 3 CMC 6155, rev. 1,2	

Signed: *N. Williams* /RR Page 1 of 1
Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, W. Horstman, S. Treby,
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056 *
		Date:	10/12/84
Subject:	Cable Tray Fire Protection Reevaluations	Time:	4:30 p.m.
		Place:	CPSES Site
Participants:	T. Keiss, S. Desai	of	TUGCO
	W. R. Horstman, J. P. Russ		CES

Item	Comments	Required Action By
	<p>Cygna contacted Mr. Keiss regarding reevaluation of cable trays and their supports for the additional load due to fire protection. Mr. Keiss took Cygna to see Mr. Desai who had performed the evaluations of trays and supports.</p> <p>Cygna questioned Mr. Desai on the evaluation process. He stated that he checked the actual tray loads including Thermolag fire protection along with the effects of other trays and CMCs and DCAs against the original design parameters. Cygna asked Messrs. Keiss and Desai if a document existed which listed the limiting support and tray parameters. Such a document, Cygna noted, would assure a uniform and up-to-date reference and would assure that the intent of the support design was met. Messrs. Keiss and Desai stated that no such document existed.</p> <p>Cygna requested that Mr. Keiss supply the Thermolag evaluations for the following tray segments and any affected supports:</p> <p style="margin-left: 40px;">T12ØSBC25 T12ØSBC26 T12ØSBC27 T13ØSCA44 T13ØSCA45 T13ØSCA46 T13ØSCA47</p> <p>Mr. Keiss provided Cygna with the requested evaluations. Cygna will review these calculations.</p> <p>Status: Cygna to review calculations for fire protection reevaluation for the tray segments and supports listed above.</p>	



28-C-1101

Communications
Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phases 4	Job No.	84056
		Date:	11-1-84
Subject:	Cable Tray Support Design Review Ultrasonic Testing of Hilti Bolts	Time:	10:00 a.m.
		Place:	Cygna SFAO
Participants:	Mike Warner	of	TUGCO QE - SITE
	Bill Horstman		CES - SFAO

Item	Comments	Required Action By
1	<p>Cygna noted that UT report No. T-1605 provided by Mr. Warner only specifies the type and size of 8 Hilti bolts for support No. 481. The support actually used 12 bolts.</p> <p>Mr. Warner said he would check with the test operator to see why the other 4 bolts were not tested.</p>	

Signed:	<i>N. Williams</i>	Page	1	of	1
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telerun	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 3	Job No.	84056
		Date:	10/12/84
Subject:	Cable Tray and Conduit Support Questions Combination of Spatial Components in Seismic Analysis	Time:	3:00 P.M.
		Place:	CPSES
Participants:	D. Kissinger	of	TUGCO
	N. Williams		Cygna

Item	Comments	Required Action By
	<p>Mr. Kissinger had reviewed Regulatory Guide 1.92 dated December 1974. Referring to section C, "Regulatory Position", paragraph 3, which states:</p> <p>"... simultaneous action of three spatial components of an earthquake should be obtained by taking the square root of the sum of the squares of corresponding maximum or representative maximum values of the response of the element to each of the three components calculated independently."</p> <p>Mr. Kissinger believes that this can be interpreted as follows:</p> <ol style="list-style-type: none">1. The purpose of using an SRSS methodology in the first place is to account for the fact that the horizontal and vertical components do not occur simultaneously.2. Each horizontal or vertical earthquake component causes two bending and one axial response in the structure.3. It is, therefore, reasonable to establish the maximum structural response due to each of the directional earthquake input motions and combine these using the SRSS methodology.4. Regulatory Guide 1.92, December 1974, may be interpreted in this manner.	

Signed: *N. Williams* /ajb Page 1 of 2
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Communications Report

Item	Comments	Required Action By
	<p>Cygnal is still evaluating whether the combination should be done on the basis of structural response due to all directions of seismic loadings before calculating the AISC stress interaction values or calculating the interaction values for each direction of loading and then performing an SRSS of the interaction values. Cygnal believes that use of TUGCO's interpretation may not be consistently conservative.</p> <p>Mr. Kissinger is researching the PSAR and FSAR revisions to determine what commitments the Comanche Peak project has made in their licensing documents. The PSAR was issued prior to Revision 1 to Regulatory Guide 1.92. Revision 1 wording is much more specific and may not allow for an interpretation which supports the method sometimes used by Gibbs & Hill. (Calculation of interaction ratios for each direction of loading and then performing SRSS on the interaction ratios.) The current version of the CPSES FSAR does adopt Revision 1 to Regulatory Guide 1.92. Mr. Kissinger believes that the FSAR change request may explain the basis for adopting the revision and its impact on methods being currently employed by Gibbs & Hill.</p> <p>Cygnal is currently reviewing the methods available and the differences between them in order to better assess the technical basis of the Gibbs & Hill methodology.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84055

Date: 10/15/84

Subject: Cable Tray/Conduit Review Questions

Time: 9:00 a.m.

Place: CPSES Site

Participants: T. Keiss, R.M. Kissinger

of TUGCO

J. Van Amerongen

TUGCO (EBASCO)

B.K. Bhujang, S.C. Chang, P.T. Huang

Gibbs & Hill

W.R. Horstman, J.P. Russ, N.H. Williams

Cygna

Item	Comments	Required Action By
1.	<p>Cygna discussed the following items with the personnel listed above.</p> <p>Evaluation of Alternate Detail "1" Hanger Connection.</p> <p>Mr. Bhujang discussed the assumptions to be used in the evaluation of Alternate Detail "1". The assumptions included modeling the frame or applying reactions from a hand analysis to the base angle finite element model. Cygna requested to review the model prior to the analysis being performed.</p> <p>Status: Gibbs & Hill to analyze Alternate Detail 1.</p>	
2.	<p>Effect of CMC 6187 on SP-7 with Brace Type Supports.</p> <p>Cygna asked whether CMC 6187 had been incorporated in the generic designs of SP-7 with brace type supports. Calculations appear in Attachment 1 which show an overstress in the brace for one possible support configuration.</p> <p>Gibbs & Hill suggested that the calculation was conservative because the axial rigidity of the support-tray system would lower the frequency and hence the accelerations. They also stated that the tray load is applied at two points along the beam which will reduce the brace axial load. Employing reduced accelerations due to support tray frequency and a distribution of the load along the beam, the interaction was calculated as 0.8. (Calculations shown in Attachment 1). Though these hand calculations appear to show no technical problem, Cygna still feels that because the conditions shown in the CMC weren't considered in the original</p>	

Signed:

N.H. Williams

/cwk Page 1 of 4

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Barwell, Project File, R. Kissinger



Communications Report

Required
Action By

Item

Comments

3.

design calculations, there was a lack of consistency in the evaluation of the effects of design changes.

Status: Gibbs & Hill to evaluate the effect of CMC 6187 on SP-7 with brace type supports.

Effect of CMC 1970 on Anchor Bolt Designs.

CMC 1970, dated October, 1978, provided reduced allowable edge distances for the ends of two-bolt base angles. As an example, Cygna noted generic design calculations for Detail SP-7 (calculation binder SCS-101C, Set 3, Sheet 136, dated 1 June 1979) which did not consider the reduced edge distances in calculating bolt loads. The calculations for multiple SP-7 prepared by Gibbs & Hill site and given to Cygna on 10 October 1984 do consider the reduced edge distances. Gibbs & Hill stated that the CMC has no effect on bolt load calculations where the distance between bolt centerlines was used to calculate the bolt loads. Cygna added that this was true only if the centroid of the compressive block did not occur between the bolt centerlines. Cygna noted that the working point calculations could also be affected by the CMC.

Gibbs & Hill stated that the CMC does not affect specific designs where the bolt spacing was used, but would affect the bolt calculations where a compressive block was assumed. Additionally, for the SP-7 supports, a 16 inch bolt spacing was assumed for 1 1/4 inch diameter Hilti Super Kwik Bolt designs and not the 15 inches required by the drawing. Cygna replied that the 16 inch spacing would affect Richmond Inserts and that if 15 inches had not been considered for the Hilti anchors, the calculations had not considered the worst case spacing. Gibbs & Hill noted that the case of SP-7 with brace used in the working point analysis (tray width = 2'-0" and L = 7'-0") was conservative. A table of SP-7 supports was developed for the under-run, under-cut analysis which showed that no supports had a cantilever length greater than 6'-0" for a 2'-0" tray.

Gibbs & Hill noted that in the 1978 time period, CMC's were being designed reviewed at the site. Gibbs & Hill in New York was not informed of these changes so if any CMC's, such as CMC 1970, were issued they wouldn't have been incorporated into the generic calculations. In the particular case of CMC 1970, Gibbs & Hill speculated that the design reviewer probably had concluded that the CMC would not affect the design.

Cygna feels that the effect of the CMC may require a reevaluation of all 2-bolt connections which were designed using a compression block. Cygna believes that as a minimum, all SP-7 supports with L = 7'-0" must be reevaluated. It appears that any installations prior to October, 1978 will not need to be evaluated since they



Communications Report

Item	Comments	Required Action By
	<p>had to adhere to the 3 inch edge distance requirement. Cygna and TUGCO will discuss this issue at a later time to form an action plan for reevaluation.</p> <p>Status: TUGCO to formulate an action plan for reevaluation of two-bolt base angles.</p>	
4.	<p>SP-7 with Brace Working Point Analysis.</p> <p>Cygna noted that the working point analysis considered the eccentricity of the load application from the long-axis bolt centerline. The consideration is inconsistent with previous analyses. Cygna was concerned about the moment arm used in the analysis for rotation about the bolt centerline and the lack of consideration of prying effects. It was decided to discuss these issues as part of any discussions on generic items. Cygna inquired why the smallest bolt spacings weren't used in determining the loads on the bolts. These appeared to be the most critical spacing. Gibbs & Hill demonstrated that for those cases where the critical bolt spacing wasn't considered, the effect on the final interaction was negligible.</p> <p>Finally, Cygna noted that the calculations for the working point analysis had considered a reduced acceleration based on the frequency of the tray-support system. Cygna felt that the calculation of the stiffness was incorrect because the brace stiffness was not considered. Consideration of the brace stiffness will lower the stiffness and the frequency of the support and increase the accelerations. Gibbs & Hill will evaluate the effect of the brace stiffness on the analysis results.</p> <p>Status: 1. Prying action and rotation about the bolt centerline to be discussed as part of generic issue.</p> <p>2. Gibbs & Hill to evaluate the effect of brace angle stiffness on the results of the working point analysis.</p>	



Communications Report

Item	Comments	Required Action By
	<p style="text-align: center;"><u>Attachment 1</u></p> <p>Evaluation of SP-7 with Brace Configuration allowed by CMC 6187.</p> <p>$L = 5'-0"$ $W = 2'-6"$ Brace slope = 1:1.5 $g_h = 2.07$ (elev. 873'-6")</p> <p>$P_1 = (40)(2.07)(2.5)(.035) = 7.25 \text{ k}$ $P_{br} = (9/7.5)P_1 = 8.69 \text{ k}$ $M_w = (8.69)(1.06) = 9.21 \text{ in-k}$ $M_z = (8.69)(0.195) = 1.69 \text{ in-k}$</p> <p>$kl/r_w = 88.7$ $kl/r_z = 174.0$</p> <p>$F_a = 4.93 \text{ ksi}$ $f_a = 8.69/2.11 = 4.12 \text{ ksi}$ $F'_{ew} = 19.0 \text{ ksi}$ $F'_{ez} = 4.93 \text{ ksi}$</p> <p>$I = \frac{4.12}{4.93} + \frac{9.22}{(1.317)(22)(1 - \frac{4.12}{19.0})} + \frac{1.69}{(.839)(22)(1 - \frac{4.12}{4.93})}$</p> <p>$I = 1.80 > 1.0$ <u>N.G.</u></p> <p>Gibbs & Hill had previously calculated the frequency of the SP-7 support as 16.7 hz. The following reduction in the interaction is based on reduced accelerations and the transfer of the axial tray load to two points along the beam which will reduce the axial brace load.</p> <p>Revised Acceleration = 1.3 g</p> <p>Reduction for Brace Load Due to Beam Attachment = $(3.5/5.0)$ = 0.70</p> <p>Revised Interaction = $(1.8)(0.70)(1.3/2.07)$ = 0.80</p>	



23-01011A

Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 10/11/84

Subject: Conduit Support Design Review Questions
AISC versus AISI

Time: 10:00 A.M.

Place: CPSES

Participants: D. Kissinger

of TUGCO

N. Williams

Cygna

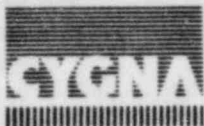
Item	Comments	Required Action By
	<p>Cygna had previously asked TUGCO/Gibbs & Hill to evaluate the differences between AISI and AISC for use in the design of cold-formed steel design such as Unistrut. After some review, TUGCO decided that such a comparison would be extremely difficult. They had, however, identified some obvious differences. For example, torsion in members due to eccentrically applied loads is not addressed in AISI. There was some discussion on whether it is appropriate to apply eccentric longitudinal loads to Unistrut sections. Gibbs & Hill designed the conduit supports in accordance with AISC and in some cases checked torsion using AISC as guidance.</p> <p>The CPSES FSAR, Table 17A, shows that cable tray and conduit support design shall comply with AISC. AISC recommends the use of AISI for cold-formed steel design but does not require it. TUGCO, therefore, believes that it is appropriate to use AISC for the conduit support design regardless of the differences between the codes.</p> <p>Ms. Williams stated that it didn't appear necessary to continue with a comparison of the codes. The question pertains more to whether it is appropriate to load Unistrut in torsion.</p>	

Signed:

N. Williams

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/ajb

Distribution: N. Williams, D. Wade, J. VanAmerongen, S. Burwell, S. Treby, J. Ellis, Project



Communications Report

Company:

Texas Utilities

☐ Telecon☒ Conference Report

Project:

Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No.

84056

Date:

10/9/84

Subject:

Cable Tray/Conduit Support Review Questions

Time:

9:30 A.M.

Place:

CPSES Site

Participants:

T. Keiss, R.M. Kissinger

of

TUGCO

J. Van Amerongen

EBASCO (TUGCO)

B. Bhujang, S. Chang, P. Huang

Gibbs & Hill

W. Horstman, J. Russ

Cygn

Item

Comments

Required
Action By

Cygn discussed the following items with the personnel listed above.

1. Design of Embedded Plates for SP-7 Supports.

Cygn had noted that the stress levels in the plates were incorrectly calculated by assuming a moment arm to the centerline of the plate. When considering tray spans of 8'-6", the stress level in the plate was approximately 24 KSI. Cygn was concerned that when SSE loads were considered, the plate stresses would exceed allowable levels.

Gibbs & Hill replied that SSE loads will not control. Verification of this will be provided when the peak acceleration values from the SSE loads at 7% damping are given to Cygn.

Status: Gibbs & Hill to provide Cygn with peak acceleration values for SSE spectra at 7% damping.

2. Capability of CA-5a Conduit Supports to Resist Loads from 5" Diameter Conduits.

As discussed in New York, Gibbs & Hill was to provide calculations to demonstrate CA-5a type conduit supports to resist loadings from 5" diameter conduits.

Status: Gibbs & Hill to provide Cygn with calculations for 5" diameter conduit loadings.

Signed:

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of

/ajb

1

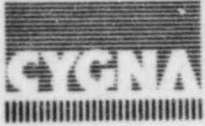
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Distribution:

N. Williams, D. Wade, J. Van Amerongen, W. Horstman, J. Russ, R. Hess, S. Treby,

1020.01a

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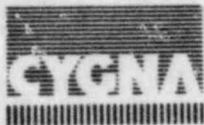
Communications Report

Item	Comments	Required Action By
3.	<p>Reaming of Unistrut P2558 Clamps. (Reference Question 4, Attachment A of letter 84056.015).</p> <p>TUGCO stated that no test program had been performed on P2558 clamps but their response to Cygna had showed that the P2558 clamps when used with Nelson studs were acceptable. The acceptability is based on the greater strength and pretensioning of the Nelson studs versus the bolts normally used in Unistrut connections. Cygna considered this item closed.</p> <p>Status: Closed.</p>	
4.	<p>Design of Cable Tray Support Details "W" and "N" (Drawing 2323-E1-0601-01-S) as Longitudinal Supports.</p> <p>Gibbs & Hill noted that Detail "W" and Detail "N" were field examined for the types of tray hold-down clamps and feasibility of support modifications. Mr. Bhujang noted that all the trays on the top flange of the W8 x 31 beam for Detail "W" were attached by heavy duty clamps. This conclusion was based on a visual field inspection. All other trays on this support used regular clamps. An analysis of the support was provided to Cygna for review.</p> <p>Several tray segments within Cygna's review scope are also supported by a series of Detail "N" supports. To provide longitudinal bracing for these trays, a braced frame will be constructed using a Detail "N" support. Cygna was provided with calculations for review on the modification of the Detail "N" supports.</p> <p>Status: Cygna to review calculations and respond to TUGCO/Gibbs & Hill.</p>	
5.	<p>Evaluation of Cable Tray Supports for Transverse Span Violations.</p> <p>Mr. Keiss provided Cygna with calculations for the review of the existing cable tray supports for transverse span violations and fire protection weights. Cygna noted that all trays on the supports were not considered. Mr. Keiss acknowledged this and will provide Cygna with revised calculations including the effects of all supported trays.</p> <p>Status: TUGCO to provide Cygna with revised calculations.</p>	
6.	<p>Design Verification of Cable Tray Support 13080.</p> <p>Cygna was provided with a revised set of calculations for review.</p> <p>Status: Cygna to review calculations and respond to TUGCO/Gibbs & Hill.</p>	



Communications Report

Item	Comments	Required Action By
7.	<p>Calculations for Conduit Support CSM-42a Considering Concrete Compressive Forces in Design of Bolts and Concrete.</p> <p>Per previous discussions, Gibbs & Hill was to evaluate the effects of the concrete compressive force on the concrete and support anchor bolts.</p> <p>Status: Gibbs & Hill will provide calculations to Cygna.</p>	
8.	<p>Embedded Plate Edge Distance Violation for Cable Tray Support 2953.</p> <p>TUGCO gave Cygna the CVC for CMC 12105.</p> <p>Status: Cygna to review CVC and respond to TUGCO.</p>	
9.	<p>Evaluation of Cable Tray Support Type B₄ Using Appropriate Slenderness Ratio.</p> <p>Cygna had noted that the slenderness ratio calculations for the B₄ hangers incorrectly used a reduction factor for distributed axial loads. A revised response was provided by Gibbs & Hill.</p> <p>Status: Cygna to review calculations and respond to Gibbs & Hill.</p>	
10.	<p>Evaluation of Cable Tray Support Type A₄ Using Appropriate Slenderness Ratio.</p> <p>Cygna had noted that the slenderness ratio calculations for the hanger member for A₄ supports may exceed 200. Gibbs & Hill provided Cygna with calculations for review.</p> <p>Status: Cygna to review calculations and respond to Gibbs & Hill.</p>	
11.	<p>Evaluation of Cable Tray Support Type SP-4.</p> <p>Preliminary calculations by Gibbs & Hill for SP-4 supports show a potential overstress of 10%. These calculations, however, do not consider the stiffness of the support in the longitudinal direction. Gibbs & Hill will provide Cygna with a generic resolution for all SP-4 supports. For those supports where $L > 4'-0"$, a check will be made to assure that the supports are adequate to resist the actual design loads.</p> <p>Status: Gibbs & Hill to provide Cygna with calculations.</p>	
12.	<p>Evaluation of Cable Tray Support Type D₁ Using Reduced Horizontal Accelerations.</p> <p>Cygna had noted that Gibbs & Hill had calculated a frequency for the transverse direction of D₁ type supports using a static deflected shape and calculated an average frequency based on</p>	



Communications Report

Item	Comments	Required Action By
	<p>interior and exterior spans. It was noted that calculated frequencies based on an assumed deflected shape were only appropriate when that shape reasonably approximated the mode of interest. Cygna presented the results of an eigensolution of Gibbs & Hill's configuration which showed that the first frequency of interest was 3 hz. below Gibbs & Hill's calculated frequency. Cygna also noted the lack of documentation for the acceptability of Gibbs & Hill's technique of averaging frequencies. Gibbs & Hill stated that a response spectrum analysis would be run for the configuration in question.</p> <p>Status: Gibbs & Hill to provide Cygna with additional calculations.</p>	
13.	<p>Evaluation of Cable Tray Supports 2861, 3025 and 3028 Considering Wall Attachment Fixity.</p> <p>Cygna stated that for the noted supports, an assumption of a pinned wall connection was adequate for beam member design. Cygna showed Gibbs & Hill calculations that indicated a possible bolt failure if a fixed condition was assumed. Gibbs & Hill stated that they would investigate the actual end connections and loadings and prepare calculations based on these conditions.</p> <p>Status: Gibbs & Hill to provide Cygna with calculations.</p>	
14.	<p>Evaluation of Cable Tray Support Type D₂.</p> <p>Gibbs & Hill stated that an analysis of a series of D₄ supports was being design reviewed and would be given to Cygna on October 10, 1984. This analysis will envelope all D_i type supports.</p> <p>Status: Gibbs & Hill to provide Cygna with calculations on October 10, 1984.</p>	
15.	<p>Verification of Installation of Hilti Super Kwik Bolts with Ultrasonic Testing.</p> <p>Ms. Van Amerongen gave Cygna a copy of QI-QP-11.18-4 and the results of bolt testing for conduit supports for Elevation 790'-0" in the Auxiliary Building. Cygna noted the form of the test results and asked how the reported results were correlated to the specific support requirements. Cygna was referred to Mr. Mike Warner, Q.C. department head.</p> <p>Status: Cygna to discuss the issue with Mr. Warner.</p>	



Communications Report

Item	Comments	Required Action By
16.	<p>Consideration of Eccentric End Conditions for the Design of Single Angle Braces.</p> <p>Cygna was concerned that the appropriate loads be used to check the adequacy of eccentrically loaded single angle braces. Gibbs & Hill will review their working point calculations to assure that the appropriate axial loads were used. Cygna will also investigate the acceptability of a k value of less than unity.</p> <p>Status: Gibbs & Hill to investigate the brace axial loads, Cygna to investigate the appropriate end condition factors.</p>	
17.	<p>Contact Between Cable Tray Supports and the Component Cooling Water Heat Exchanger.</p> <p>Cygna noted that the previous discussions with TUGCO had not provided a definitive resolution to this issue. TUGCO stated that the cable tray supports would be notched. When the CMCs for this action are issued, Cygna will be provided with the CMCs and CVCs for review.</p> <p>Status: TUGCO to perform corrective action and provide Cygna with documentation for review.</p>	
18.	<p>Evaluation of Cable Tray Support 202 for Longitudinal Loads and Brace Removal.</p> <p>Cygna asked why the effect of the brace removal was not considered in the response to this issue. Gibbs & Hill noted that the removal was considered in the CVC for CMC 4450, Revision 2.</p> <p>Status: Closed.</p>	
19.	<p>Suitability of 1 1/4" x 13 1/8" Hilti Super Kwik Bolts for 1" Diameter Richmond Inserts.</p> <p>Cygna asked about the acceptability of this substitution. TUGCO/Gibbs & Hill noted the effect of the issuing DCAs was superseded through the issuance of 2323-S-0908, -0909.</p> <p>Status: Closed.</p>	
20.	<p>Evaluation of Alternate Detail "1" Hanger Connection.</p> <p>Prior discussion on this connection had not provided any resolution on the acceptability of this connection. Gibbs & Hill/TUGCO decided to analyze the connection. Cygna will internally discuss the approach to be used by Gibbs & Hill in the analysis to avoid iterations in the review process.</p> <p>Status: Cygna to discuss analysis approach and respond to Gibbs & Hill.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 12 October 1984

Subject: Cable Tray/Conduit Review Questions

Time: 1:00 p.m.

Place: CPSES Site

Participants: R. M. Kissinger

of TUGCO

J. Van Amerongen

TUGCO (EBASCO)

B. K. Bhujang, S. C. Chang, P. T. Huang

Gibbs & Hill

W. R. Horstman, J. P. Russ, N. H. Williams

CES

Item	Comments	Required Action By
1.	<p>Cygna discussed the following items with the personnel listed above.</p> <p>Design Review Calculations for Conduit Support Type CSM-42a Considering Concrete Compressive Faces.</p> <p>Cygna reviewed the calculations received on 10 October 1984 and found them acceptable.</p> <p>Status: Closed.</p>	
2.	<p>Evaluation of Cable Tray Support Type SP-4.</p> <p>Gibbs & Hill provided Cygna with a revised sheet 3 of the calculations given to Cygna on 11 October 1984. On sheet 1 of those calculations, the moment diagram for vertical loads showed end-moments which indicates fixed ends. Cygna feels that the assumption of fixed ends is incorrect. On sheet 4, the longitudinal frequency is calculated for a fixed-end beam which Cygna also believes is incorrect.</p> <p>Gibbs & Hill explained that the increase in bending stress from vertical loads due to a change to pinned-end assumptions will be small, less than 1 KSI. Gibbs & Hill also demonstrated that the change in frequency due to a relaxation of end-fixity will not affect the value of the acceleration used in the design. Gibbs & Hill will provide the calculations on the specific SP-4 supports where $L > 4'-0"$ when completed.</p> <p>Status: Gibbs & Hill to provide calculations for specific SP-4 supports.</p>	

Signed:

N. Williams

/dmm Page 1 of 2

Distribution: N. Williams, D. Wade, J. Van Amerongen, R. Hess, J. Russ, S. Treby, J. Ellis,

Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
3.	<p>Design of Cable Tray Support Type Detail "W" (Drawing 2323-E1-0601-01-S).</p> <p>Preliminary calculations for the analysis of Detail "W" show a potential overstress when design loads (35 psf) are used. Gibbs & Hill requested to use actual tray loads in the support evaluation and perform a ratio of actual loads to design loads. Cygna replied that since the structure was linear-elastic, a proper ratio of the loads would be acceptable.</p> <p>Status: Gibbs & Hill to complete analysis of Detail "W."</p>	
4.	<p>Design of Base Angles for Multiple SP-7 type Supports.</p> <p>Cygna had reviewed the calculations received on 10 October 1984 and found them acceptable.</p> <p>Status: Closed.</p>	
5.	<p>Design of Cable Tray Support Type Detail "N" (Drawing 2323-E1-0601-01-S).</p> <p>Cygna had received calculations by Gibbs & Hill from TUGCO in a letter dated 11 September 1984. These calculations for Detail "N" which were performed by Gibbs & Hill, New York, used weights of 35 psf for the two supported trays. In subsequent calculations performed by Gibbs & Hill's site group, the actual tray weights of 28.67 and 46.5 psf for the 18 and 24 inch trays, respectively, were used.</p> <p>Cygna is concerned that proper control was not exercised when the 24 inch tray and any supports were loaded beyond the design load of 35 psf. Cygna believes that the fire protection reevaluation effort should have detected this load value and that Gibbs & Hill, New York should have been aware of any such evaluation. Cygna will contact Tom Keiss regarding this issue.</p> <p>Status: Cygna to address fire protection reevaluation issue with Tom Keiss.</p>	
6.	<p>Evaluation of Cable Tray Supports 2861, 3025 and 3028 (Type D₁) Considering Wall Attachment Fixity.</p> <p>Cygna received calculations for support 2861, considered by Gibbs & Hill to be the controlling load case. Cygna will review these calculations.</p> <p>Status: Cygna to review calculations for support 2861.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	10/19/84
Subject:	Cable Tray/Conduit Review Questions	Time:	9:30 A.M.
		Place:	CPSES Site
Participants:	T. Keiss, R.M. Kissinger	of	TUGCO
	B.K. Bhujang, S.C. Chang, P.T. Huang		Gibbs & Hill
	J. Van Amerongen		TUGCO (EBASCO)
	W.R. Horstman, J.P. Russ, N.H. Williams		Cynga

Item	Comments	Required Action By
1.	<p>Cynga discussed the following items with the personnel listed above.</p> <p>Evaluation of Specific D₁ Type Supports.</p> <p>One of the specific D₁ supports under review by Gibbs & Hill has a base angle attached to the wall by two 1-inch Hilti Kwik bolts with the common bolt centerline oriented vertically. The top bolt, by Gibbs & Hill calculations, is 22% overstressed. Gibbs & Hill stated that if one now considers that top bolt no longer effective, with the nut and washer removed, the connection will act as a pin connection. By considering this behavior of the connection, the bottom bolt can be shown to be adequate.</p> <p>Cynga suggested that this support be left open for evaluation based on resolution of discussions on input accelerations.</p> <p>Status: Open.</p>	
2.	<p>Design of Cable Tray Support Detail "W" (Drawing 2323-E1-0601-01-S).</p> <p>Mr. Bhujang showed Cynga the inspection report ME-1-0004098 which showed that heavy duty clamps were installed for the trays supported at the top of the W8x31 member.</p> <p>Status: Closed.</p>	

Signed:

N.H. Williams

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/ajb

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Communications Report

Item	Comments	Required Action By
3.	<p>Installation Tolerances for Details E-H (Drawing 2323-E1-0601-01-S) (Reference: DCA 2538).</p> <p>Cygna reviewed Set 8 of calculation binder SCS-146C and found the loads and cantilevers within acceptable limits.</p> <p>Status: Closed.</p>	
4.	<p>Effect of Weld Size on SP-7 Type Supports.</p> <p>Cygna noted the FSE-00159 fabrication drawings for several SP-7 type supports within the review scope specified 1/4-inch fillet welds to attach the beam member to the base angle. This is in apparent contradiction with the design drawing 2323-S-0903 which specifies 5/16-inch fillet welds. These supports then were not covered by Gibbs & Hill's undersize-underrun analysis which considered a fillet weld size of 5/16 inches minus a 1/32-inch underrun.</p> <p>Mr. Kissinger stated that the weld size was revised based on DCA 3265, revision 2. The FSE-00159 drawings for all supports were revised under a five month effort.</p> <p>Cygna stated that these weld revisions also pointed out several deficiencies in the generic undercut-underrun analysis by Gibbs & Hill. Primarily, the maximum cantilever length for some SP-7 supports will be reduced since these lengths were governed by the weld size. Second, the Gibbs & Hill analysis is deficit because the as-built conditions of the supports were not considered in the analysis, but rather the specified design configuration. This type of evaluation would not assure the adequacy of the installed supports.</p> <p>Gibbs & Hill will reevaluate the limiting cases for SP-7 type supports based on a 1/4-inch fillet weld size. Mr. Kissinger will check the issuance date of the DCA and the revision to the weld inspection procedure to determine if the underrun problem occurred with the 1/4-inch fillet welds.</p> <p>Status: 1. Gibbs & Hill to evaluate SP-7 supports for effect of 1/4-inch fillet welds; and 2. TUGCO to determine if 1/4-inch fillet weld are affected by underrun problem.</p>	



Communications Report

Item	Comments	Required Action By
5.	<p>Effect of CMC 68386, Revision 1 on Cable Tray Supports 714 and 7128.</p> <p>CMC 68386, revision 1 added an additional 12-inch tray to support 714 (an SP-7 support) and increased the total cantilever length to 66 inches. Cygna noted that the as-built configuration of a total tray width of 30 inches with a cantilever length of 66 inches was outside the allowable parameters of SP-7 supports and was not noted in the underrun review. Sample calculations showed the support member and the anchor bolts to be adequate.</p> <p>The additional 12-inch tray is also supported by support 7128, a B₂ type support. The loadings induced into support by the tray were not adequately considered in the design review of the CMC.</p> <p>TUGCO will investigate this support.</p> <p>Status: TUGCO to evaluate support 7128.</p>	
6.	<p>Effect of CMC 93232, Revision 1 on Cable Tray Support 1483.</p> <p>CMC 93232, revision 1 indicates that the bottom bolt of this multiple SP-7 support could not be torqued. The design verification did not consider the critical case of uplift. TUGCO will evaluate this support considering actual bolt spacing, uplift and bending of the base angle.</p> <p>Status: TUGCO to evaluate support 1483.</p>	
7.	<p>Effect of CMC 56315 on Cable Tray Support 624.</p> <p>CMC 56315 called for a 1 1/4-inch Hilti Super Kwik bolt with a 9-inch embedment. Cygna asked how the allowable load for this nonstandard embedment was calculated. Gibbs & Hill replied that the allowables were based upon interpolation.</p> <p>The CMC moved the lower beam of this multiple SP-7 support, originally four beams, to another location. The bottom beam on the remaining multiple support was below the bottom anchor bolt. This configuration was not evaluated considering all three beams on the support. Hand calculations performed during the discussion showed the support to be adequate.</p> <p>Status: Closed.</p>	
8.	<p>Effect of CMC 30285 on Cable Tray Supports 710 and 711.</p> <p>The CMC required a multiple SP-7 support with two beams attached to a single base angle. The beams were located within the centerlines of two anchor bolts spaced 39 inches on center. The</p>	



Communications Report

Item	Comments	Required Action By
9.	<p>normal multiple SP-7 support requires at least one bolt between each beam. The bolts were analyzed considering the base angle to be a rigid plate, which Cygna disagrees with. Cygna asked Gibbs & Hill if any documentation or instructions existed which specify the limits of the rigid plate assumptions for such an analysis. Gibbs & Hill replied that none existed. Hand calculations considering flexible action of the base angle were performed during the discussion which showed the anchor bolts to be adequate.</p> <p>Status: Closed</p> <p>Evaluation of P2558 and C708-S Clamps Considering Fire Protection Loads.</p> <p>TUGCO provided calculations to Cygna.</p> <p>Status: Cygna to review above calculations.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 9/6/84

Subject: Cable Tray/Conduit Supports - Open Items

Time: 11:00 AM

Place: Gibbs & Hill, NYC

Participants: D. Wade, M. Strange

of TUGCO

N. Williams

Cygna

R. Ballard

G&H

Item	Comments	Required Action By
	<p>A brief discussion was held to summarize what the larger generic issues were relating to the cable tray and conduit support reviews. N. Williams provided the following list but stressed that it was not necessarily complete:</p> <ol style="list-style-type: none">1. Load combinations: G&H has included the dead load in the SRSS combination of dead loads.2. Computer modeling: Cygna believes that use of a modeling approach similar to that used in the Phase 2 NASTRAN analysis is not appropriate for responding to many of the Phase 4 questions since the dynamic effects of the tray are not evaluated.3. Application of eccentric loads: Cygna is not able, at this time, to globally assess the effect since no calculations were performed by G&H in the original analysis.4. <u>Dynamic Amplification</u>: G. Bjorkman is still assessing what is a reasonable factor.5. <u>Bolt holes in beam members</u>: This may pose a problem with high moment regions.6. <u>Richmond Inserts</u>: Cygna is reviewing the allowables and the effects of plate bending when Richmond Inserts are used.7. <u>DCA's/CMC's</u>: Cygna has been told that DCA's and CMC's which are important to the generic studies being conducted by G&H (NYC) are considered. Cygna is concerned that changes may be	

Signed:

N. Williams

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Project File, G. Bjorkman



Communications Report

Item	Comments	Required Action By
	<p>made in the field which have not been considered in the generic evaluations.</p> <p>8. <u>Span Violations</u>: It appears that some examples of span requirements being exceeded may exist. This is being investigated further.</p> <p>9. <u>Fire Protection Reviews</u>: Cygna is still observing the manner in which fire protection weights are evaluated for impact on support loads.</p> <p>N. Williams summarized by saying that this is the current list of generic issues only. There are still questions associated with specific support details. It is to soon to tell whether all of these items, when considered together will result in any design impact, Cygna is aware that certain conservatism do exist in the building spectra and the support designs.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056*

Date: 7/20/84

Subject: CCW Tank Partition

Time: 9:30 a.m.

Place: CPSES SITE

Participants: J. Foley

of CYGNA

C. Cavanagh

G&H

Item	Comments	Required Action By
	<p>Asked Cavanagh for documentation that partition in CCW tank had been designed and fabricated to meet the "one side empty criteria".</p> <p>He provided copy of APCO (Applied Engineering Co's) Drawing N-2640-359, REV CP-1. Note 8 clearly states the requirement.</p>	

Signed:

N. Williams

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S. Treby, J. Ellis, S. Burwell, Project File



Communications Report

Company: Texas Utilities

☒ Telecon

☐ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056*

Date: 7/20/84

Subject: Control Room Air Conditioning Chiller Consensers

Time: 11:50 a.m.

Place:

Participants: Ken MacDonald

of TUGCO

J. Foley

CYGNA

Item

Comments

Required
Action By

Asked MacDonald length required for pulling C.R. A.C. condenser tubes.

He said 8'-6" is required per manufacturer's equipment manual.

Signed:

NH Williams

/ms

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S. Treby, J. Ellis, S. Burwell, Project File



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056 *

Date: 7/20/84

Subject: Walkdowns

Time: P.M.

Place: CPSES

Participants: J. Foley

of CYGNA

Mike Sopko

IMPELL

Item	Comments	Required Action By
	<p>Asked Mike what steps would be taken to assure that throttling valves would be maintained in proper position after CCW system is balanced and taken over by TUGCO.</p> <p>He said that all manual valves would be chained and locked in their throttled position. Valves which must throttle for changing conditions are indicated in control room and will be positioned to maintain required flow by plant operators.</p>	

Signed:

N. Williams

/ms

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S. Treby, J. Ellis, S. Burwell, Project FITE



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 7/20/84

Subject: Document Request

Time: 2:35 p.m.

Place: CPSES

Participants: T. R. Martin

of CYGNA

DCC

CPSES

Item	Comments	Required Action By
	<p>Please provide the following drawings with their associated DDC's and CMC's.</p> <p>2323-E1-0716 2323-E1-0716-12</p>	

Signed:

N. Williams

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Distribution: N. Williams, D. Wade, J. Van Amerongen, R. Hess, E. van Stijgeren, S. Treby,



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 7/20/84

Subject: Drawing Request

Time:

Place: CPSES

Participants: T. Martin

of CYGNA

DCC

CPSES

Item	Comments	Required Action By
	<p>Please provide the following drawings with their associated change paper:</p> <p>2323-M1-2103 SH 5 2323-M1-2104 SH 6 2323-M1-2106 SH 14</p>	

Signed: *W. Williams* /ms Page 1 of 1

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J. Ellis, S. Burwell, Project File



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/27/84
Subject:	Document Request	Time:	9:00 AM
		Place:	CPSES
Participants:	Tom Keiss	of	TUGCO
	John Russ		CES

Item	Comments	Required Action By
	<p>Reference: Telecon dated July 24, 1984, "Document Request," T. Keiss and J. Russ participating.</p> <p>Cygna received a copy of Item 3 listed in referenced telecon.</p>	

Signed: W. Williams /ceh Page 1 of 1

Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis,

1020 01a S. Burwell, Project File



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	8/15/84
Subject:	Mechanical Systems Questions	Time:	p.m.
		Place:	SFRO
Participants:	D. Wade	of	TUSI
	R. Hess		CES

Item	Comments	Required Action By
	Dave called concerning Cygna's question on reaction coolant pump thermal barrier leakage into the CCW System. He requested that we supply him with the criteria we based our question on concerning single-failure. I told him we would get back to him with the requirements.	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	24 July 1984
Subject:	Document Request	Time:	2:05 PM
		Place:	CPSES
Participants:	Diane Overton	of	B&R (DCC)
	John Russ		CES

Item	Comments	Required Action By						
	<p>Cynga requested and received the following Westinghouse drawings and any associated change notices.</p> <table><tr><td><u>Drawing</u></td><td><u>Sheets</u></td></tr><tr><td>8815D31</td><td>19,20,39,40</td></tr><tr><td>8823D18</td><td>12</td></tr></table> <p>The DCA's received are:</p> <p>DCA-15855 DCA-17649 DCA-20031 DCA-17214</p>	<u>Drawing</u>	<u>Sheets</u>	8815D31	19,20,39,40	8823D18	12	
<u>Drawing</u>	<u>Sheets</u>							
8815D31	19,20,39,40							
8823D18	12							

Signed:	<i>N.H. Williams</i>	Page	1	of	1
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23-C-711A

Communications Report

Company: Texas Utilities

☒ Telecon

☐ Conference Report

Project: Comanche Peak Steak Electric Station
Independent Assessment Program - Phase 4

Job No. 84056 -

Date: 7/19/84

Subject: Certified Pump Curve

Time: 3:30 p.m.

Place: CPSES SITE

Participants: J. Foley

of CYGNA

Chris Cavanagh

GIBBS & HILL

Item	Comments	Required Action By
	<p>Asked Cavanagh for certified pumps curves. He delivered 3 pump curves derived from Bingham-Willamette tests of the CCW pumps performed in July and August 1977. None was for CP1-CCAPCC-01. The curves were attached to a letter from R. E. Hersperger of Gibbs & Hill to Homer C. Schmidt of TUGCO. (Letter No. GTN-21776), dated October 11, 1977.</p> <p>Cavanagh said there was a later transmittal letter, but the curves transmitted were the same.</p>	

Signed: *N. Williams*

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S. Darwell, Project File



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	8/27/84
Subject:	Document Request - Electrical Review	Time:	2:30 P.M.
		Place:	
Participants:	P. Lalaji	of	Gibbs & Hill
	T. Martin		Cygna

Item	Comments	Required Action By
	<p>Requested the latest revision of the Cable and Raceway Schedule pages (2323-EI-1700) for the following cables:</p> <p>E0135030 E0135033 E0135040 E0135063 E0135077</p> <p>Received the above cables via telecopy on August 27, 1984.</p>	

Signed:	<i>W. Williams</i>	Page	1	of	1
Distribution:	N. Williams, D. Wade, J. VanAmerongen, T. Martin, R. Hess, S. Treby, J. Ellis, S. Burwell, Project File				



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/24/84
Subject:	Cable Tray Support Design Review	Time:	9:30 AM
		Place:	CPSES Site
Participants:	Janelle Burkeen	of	DCTG
	William Horstman		CES

Item	Comments	Required Action By
	Requested and received Gibbs & Hill calculation SCS-1240C, Set #1, Sheets 65 and 66.	

Signed: W.A. Williams /RR Page 1 of 1
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J. Ellis, S. Burwell, Project file



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/23/84
Subject:	Cable Tray Support Review Document Request	Time:	8:00 a.m.
		Place:	CPSES
Participants:	Diane Bleeker	of	DCC
	Craig McClung		Cygn

Item	Comments	Required Action By
1.	Cygn requested a copy of the following cable tray support drawings: FSE-00179, all sheets.	AM 7/23/84

Signed: *N. Williams* /jm Page 1 of 1
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056 *
		Date:	7/23/84
Subject:	Cable Tray Support Review Document Request	Time:	8:30 A.M.
		Place:	CPSES
Participants:	Carole Crowe	of	Brown & Root (DCC)
	John Russ		Cygn

Item	Comments	Required Action By
	<p>Reference: Conference report dated 7/21/84, "Document Request," D. Webb and J. Russ participating.</p> <p>Cygn received the documents requested in the referenced conference report except:</p> <p>GTN-47958 GHF-2243 DAX-699 IM-14183</p> <p>These documents will be supplied to Cygn at a later late.</p>	Brown & Root

Signed: *W. Williams* /jm Page 1 of 1

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1020 014



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/23/84
Subject:	NCR Request	Time:	
		Place:	CPSES
Participants:	Chester Raffin	of	B&R - QA Vault
	John Russ		Cygna

Item	Comments	Required Action By
	Cygna requested and received copies of the following NCR's: NCR-E-80-00160 NCR-E-80-00210	



Communications Report

Company:	<u>Texas Utilities</u>	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	<u>Comanche Peak Steam Election Station</u> <u>Independent Assessment Program - Phase 4</u>	Job No.	<u>84056</u>
		Date:	<u>7/24/84</u>
Subject:	<u>Document Request</u>	Time:	<u>9:30 a.m.</u>
		Place:	<u>CPSES</u>
Participants:	<u>Carol Crowe</u>	of	<u>Brown & Root (DCC)</u>
	<u>John Russ</u>		<u>Cygn</u>

Item	Comments	Required Action By
	Cygn requested and received a copy of CP-CPM-10.3.	

Signed:	<u>W.H. Williams</u>	Page	<u>1</u>	of	<u>1</u>
Distribution:	<u>N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis,</u> <u>S. Burwell, Project File</u>				



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/21/84
Subject:	Document Request	Time:	11:00 a.m.
		Place:	CPSES Site
Participants:	Cindy Green	of	Brown & Root (DCC)
	John Russ		Cygn

Item	Comments	Required Action By
	<p>Reference: Conference Report dated 7/21/84, "Document Request," C. Green and J. Russ participating.</p> <p>Cygn received all documents listed in the referenced conference report except:</p> <p style="padding-left: 40px;">FDCR-530 DE/CD-S-1000</p> <p>Cygn will receive these documents at a later date.</p>	Brown & Root

Signed W. Williams /jm Page 1 of 1

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Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Election Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 7/21/84

Subject: Document Request

Time: 10:25 a.m.

Place: CPSES

Participants: Darla Webb

of Brown & Root (DCC)

John Russ

Cygn

Item	Comments	Required Action By
	<p>Cygn requested the documents listed:</p> <ul style="list-style-type: none">GTN-47958GTN-48515GTN-50557GTN-68812GTN-68925GTT-1868GHF-2243CPPA-260CPPA-401DAX-105DAX-699IOM-485IM-14183IM-16429IM-16462TUF-4598	Brown & Root

Signed:

N. Williams

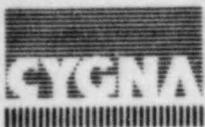
/jm

Page 1

of 1

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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/19/84
Subject:	Document Request	Time:	2:00 p.m.
		Place:	CPSES
Participants:	Diana Overton	of	Brown & Root (DCC)
	John Russ		Cygna

Item	Comments	Required Action By
	<p>Cygna requested and received the following drawings:</p> <p>2323-S-0919 2323-S-0920</p> <p>Cygna also received the following CMC's and DCA's:</p> <p>CMC 11045 CMC 11058 CMC 11060 DCA 3423 (two copies) DCA 5847</p>	

Signed: *NH Williams* /jm Page 1 of 1

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1020 01a S. Burwell, Project File



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/21/84
Subject:	Document Request	Time:	10:20 a.m.
		Place:	CPSES
Participants:	Cindy Green	of	Brown & Root (DCC)
	John Russ		Cygna

Item	Comments	Required Action By
	Cygna requested the documents listed below: FDCR-497 FDCR-530 DCA-1479 DCA-9738 DE/CD-S-483 DE/CD-S-775 DE/CD-S-814 DE/CD-S-844 DE/CD-S-900 DE/CD-S-976 DE/CD-S-1000 DE/CD-S-1086 DE/CD-S-1107	Brown & Root

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Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis,
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/21/84
Subject:	Document Request	Time:	11:45 a.m.
		Place:	CPSES Site
Participants:	Bonnie Vaughan	of	Brown & Root (DCC)
	John Russ		Cygna

Item	Comments	Required Action By															
	<p>Cygna requested and received the following calculations.</p> <table><tr><th><u>Binder</u></th><th><u>Set</u></th><th><u>Sheets</u></th></tr><tr><td>SCS-111C</td><td>7</td><td>1-23, 52-55, 71-75</td></tr><tr><td>SCS-113C</td><td>1</td><td>42-57, 76-78, 86-94</td></tr><tr><td>SCS-113C</td><td>2</td><td>18-19, 24-25, 36-37, 40-41</td></tr><tr><td>SCS-113C</td><td>5</td><td>1-41</td></tr></table>	<u>Binder</u>	<u>Set</u>	<u>Sheets</u>	SCS-111C	7	1-23, 52-55, 71-75	SCS-113C	1	42-57, 76-78, 86-94	SCS-113C	2	18-19, 24-25, 36-37, 40-41	SCS-113C	5	1-41	
<u>Binder</u>	<u>Set</u>	<u>Sheets</u>															
SCS-111C	7	1-23, 52-55, 71-75															
SCS-113C	1	42-57, 76-78, 86-94															
SCS-113C	2	18-19, 24-25, 36-37, 40-41															
SCS-113C	5	1-41															

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Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	August 29, 1984
Subject:	Cable Tray Support Questions	Time:	8:40
		Place:	Cygna - San Francisco
Participants:	Mukher Je (x585)	of	Gibbs & Hill (Site)
	Nancy Williams		Cygna

Item	Comments	Required Action By
	<p>Referring to Attachment A of Cygna letter 84056.022, question 4, Mr. Je asked where Cygna found the 130" dimension.</p> <p>I responded that the question is based on the Reference (1) calculation 101C Set 1, page 2. Sketch (4) shows that the unbraced length for standard detail B₄ is 130". CMC 9916 Revision 1 which modifies the B₄ detail to a shorter unbraced length pertains to a specific support in the Cygna review scope (#408). Cygna is concerned with the generic application of detail B₄ anywhere in the plant. We understand support 408 may be acceptable as modified but if detail B₄ is installed as shown on the detail drawing, there maybe a problem with the generic design.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Election Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 7/26/84

Subject: Fire Protection Calculations

Time: 10:45 AM

Place: CPSES

Participants: Tom Keiss

of TUGCO

John Russ

CES

Item	Comments	Required Action By
	<p>Reference: Telecon dated July 24, 1984, "Document Request," T. Keiss and J. Russ participating.</p> <p>Cygna received a copy of Item 1 listed in referenced telecon.</p>	

Signed:

N. Williams

/ceh Page 1 of 1

Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis,



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/26/84
Subject:	Fire Protection Calculations	Time:	10:35
		Place:	CPSES
Participants:	Tom Keiss	of	TUGCO
	Craig McClung		

Item	Comments	Required Action By
1	Cygna requested calculations showing increased weight from fire protection covering junction boxes. Support in question is found on drawings 2323-S-0910 - Sh. JA-1 Type 1B.	

Signed: *N. Williams* /ceh Page 1 of 1

Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis,



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056*
		Date:	8/17/84
Subject:	Mechanical Systems Questions	Time:	8:30 AM
		Place:	SFNO
Participants:	D. Wade	of	TUSI
	R. Hess		CES

Item	Comments	Required Action By
	Dave called to inform us that the thermal barrier leak was considered a small break LOCA and that single failure criteria did apply. He stated that Westinghouse had submitted a 10CFR21 report on this issue on July 12, 1984 and that it applied to many plants.	

Signed:	<i>N. Williams</i>	Page	1	of	1
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	7/20/84
Subject:	Document Request	Time:	4:15 p.m.
		Place:	CPSES Site
Participants:	Tina Cooper	of	Brown & Root (DCC)
	John Russ		Cygn

Item	Comments	Required Action By
	Cygn requested the CVC's and any supporting calculations attached to the CVC's for the CMC's and DCA's listed on the attached sheets.	

Signed: N. Williams /jm Page 1 of 1
Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis,
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Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By J.P.R. Date 20 July 1984
Subject DESIGN DRAWING CMC's & DCA's Checked By Date
System DRAWING 2323-5-0901 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 1

CMC	DCA	REFERENCE DOCUMENTS
1886		
30252		
311 73		
36522		
	1481	
	1594	IDM - 485
	2365	
	2618	FDCK - 530
	3013	DCA 9738
	3423	



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By: J.P.N. Date
Subject DESIGN DRAWING CMC's & DCA's Checked By: Date
System DRAWING 2323-5-0901 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 2/2

CMC	DCA	REFERENCE DOCUMENTS
	3947	
	5347	
	7043	
	18313	
	20228	
	20278	
	20418	GTN - 68925
	20433	



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By J.P.R. Date 7/20/84
Subject DESIGN DRAWING CMC's & DCA's Checked By . Date
System DRAWING 2323- S-0902 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 3 /

CMC	DCA	REFERENCE DOCUMENTS
32456		
32503		NCR E2092
38677		
93450		
97135		
		GTT - 1868 DE/CD- S-814, DCA 1479 IM-16429, CAPP - 401
	2901	
	3063	
	3318	
	3464	VS-58, GTN - 50557, GTN-48515



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By: J.P.R. Date 7/10/88
Subject DESIGN DRAWING CMC's & DCA's Checked By: _____ Date _____
System DRAWING 2323-S-0902 Job No. 84056 File No. _____
Analysis No. _____ Rev. No. 0 Sheet No. 4/

CMC	DCA	REFERENCE DOCUMENTS
	4135	
	4854	SDAR - 0015
	6299	
	17729	
	17838	
	17842	
	19947	



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By J.P.R. Date 7/20/89
Subject DESIGN DRAWING CMC's & DCA's Checked By . Date
System DRAWING 2323-S-0903 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 51

CMC	DCA	REFERENCE DOCUMENTS
0156		
1893		
1969		
1970		
1971		
2055		
2187		
2646		
3422		
4529		



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By: J.P.R. Date 7/20/81
Subject DESIGN DRAWING CMC's & DCA's Checked By: Date
System DRAWING 2323-S-0903 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 61

CMC	DCA	REFERENCE DOCUMENTS
6187		
12152		
16980		
17858		
31167		
32473		
58338		
77652		
80253		
80254		



Calculation Sheet

Project TEXAS UTILITIES - CPSES JAP Prepared By J.P.R. Date 7/20/84
Subject DESIGN DRAWING CMC's & DCA's Checked By Date
System DRAWING 2323-S-0903 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 7/

CMC	DCA	REFERENCE DOCUMENTS
82988		
83011		RFIC EH-1841
90821		
93418		RFIC EH-2425
	575	DE/CD-S-483, FDLR 497
	753	GHF-2243, DAX-105
	1564	RFIC EF-1017/EE-1272
	1585	IM-16462, CPPA-260
	1596	
	1674	TUF-4598, IM-14183



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By: J.P.R. Date 7/20/84
Subject DESIGN DRAWING CMC's & DCA's Checked By: _____ Date _____
System DRAWING 2323-S-0903 Job No. B4056 File No. _____
Analysis No. _____ Rev. No. 0 Sheet No. 8/

CMC	DCA	REFERENCE DOCUMENTS
	1711	DE/CD - S-844
	2071	RFIC - C-2466
	2079	
	2084	
	2103	RFIC - C-2385
	2182	RFIC - C-2493
	2362	RFIC - C-2547
	2396	DE/CD - S-900 RFIC - C-2502
	2421	DE/CD S-976
	2687	



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By: J.P.R. Date 7/20/84
Subject DESIGN DRAWING CMC's & DCA's Checked By: _____ Date _____
System DRAWING 2323-S-0903 Job No. 84056 File No. _____
Analysis No. _____ Rev. No. _____ Sheet No. 9/

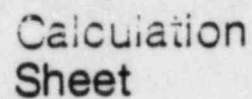
CMC	DCA	REFERENCE DOCUMENTS
	2769	
	2803	DE/CD S-1086 DAX-699
	2904	DE/CD S-1107 G.TN-4795B
	2915	DE/CD - S-1153
	3654	
	4134	
	4301	
	4735	
	4897	
	5672	



Calculation Sheet

Project TEXAS UTILITIES - CPSOS IAP Prepared By J.P.R. Date 7/20/84
Subject DESIGN DRAWING CMC's & DCA's Checked By: Date
System DRAWING 2323-S-0903 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 101

CMC	DCA	REFERENCE DOCUMENTS
	5677	
	19973	
	20278	GTN - 68812
	20385	



Sheet No. 121

1006 50



Calculation Sheet

Project TEXAS UTILITIES - CPSES IAP Prepared By J.P.R. Date 7/20/82
Subject DESIGN DRAWING CMC's & DCA's Checked By Date
System DRAWING 2523-S-0919 Job No. 84056 File No.
Analysis No. Rev. No. 0 Sheet No. 141

CMC	DCA	REFERENCE DOCUMENTS
8292		
11045		
11058		
11060		
	3 423	
	4684	
	5098	
	5847	
	6564	
	6867	V.S. 38



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Election Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	8/14/84
Subject:	Seismic Support of Large Lights Over Nuclear Chilled Water Condensers	Time:	
		Place:	CES-BA0
Participants:	J. Foley	of	Cygna
	George Grace		Tugco

Item	Comments	Required Action By
	<p>I asked G. Grace if large parabolic lights over nuclear chilled water system condensers were seismically supported.</p> <p>G. Grace field verified that there are two tethers attached to the light fixtures: one to the parabolic globe, and one to the cage over the light bulb.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	6/12/84
Subject:	Document Receipt	Time:	2:00 pm
		Place:	G&H
Participants:	B. Czarnoqorski	of	G&H
	T. R. Martin		Cygna

Item	Comments	Required Action By
	<p>Received Gibbs & Hills final issue of the following documents for use in the review:</p> <ul style="list-style-type: none">• Reliance Custom Controls Drawing No. W-ILV152861-F Sheet 1 - 6• STP Local Override Common Alarm ICD No. 2323-M1-2200-25	

Signed: MA Williams /ss Page 1 of 1

Distribution: N. Williams, D. Wade, G. Grace, R. Hess, T. Martin, S. Treby, J. Ellis, S.



23-C-159
Communications
Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/9/84
Subject:	Cable Tray Support Design Review Verification of Expansion Anchor Type	Time:	9:00 A.M.
		Place:	CPSES Site
Participants:	J. Van Amerongen	of	EBASCO
	W. Horstman		Cygna

Item	Comments	Required Action By
	<p>In response to Cygna's question on the testing procedure used to determine the type of Hilti Expansion Anchor which is embedded in concrete, Jeanne Van Amerongen supplied a copy of TUGCO Instruction QI-QP-11.18-4, Rev. 0, "Ultrasonic Examination of Hilti Bolts."</p> <p>She also provided several samples of the "Hilti Bolt Ultrasonic Test Reports" for conduit supports located at elevation 790'-6" in the Auxiliary Building.</p> <p>Cygna asked if it was possible to relate any of these test reports to supports within Cygna's scope.</p> <p>Jeanne said that she was not familiar with the test program, but would arrange a meeting for Cygna with Mike Warner of TUGCO QA.</p>	

Signed:	<i>N.H. Williams</i>	Page	1	of	1
Distribution:	N. Williams, D. Wade, J. Van Amerongen, R. Hess, J. Russ, W. Horstman, S. Treby, J. Ellis, S. Burwell, Project File				

1020 01a



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/24/84
Subject:	Electrical Review Question	Time:	7:45 AM
		Place:	SFRU
Participants:	R. Hess	of	Cygna
	J. Van Amerongen		TUGCO

Item	Comments	Required Action By
1.	Called Jeanne to find out when we would received TUGCO's response to our question on value motor horsepower rating.	
2.	Jeanne stated that they were still waiting on a letter from the vendor (Fisher Controls). They should have the letter today or tomorrow and would Federal Express it to us.	



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/29/84
Subject:	Limiterque Motor Operator Information	Time:	10:00 a.m.
		Place:	
Participants:	T. Wisler	of	Limiterque
	T. R. Martin		Cygn

Item	Comments	Required Action By
	<p>Requested information concerning the size of motor operators on Limitorque SMB-00/10 valve actuators.</p> <p>Tom informed me that the size of the motor operator varies with the type and speed of the motor used. However, the SMB-00/10 means that the actuator develops 10 ft.-lbs. of torque for valve movement. Therefore, the specific motor characteristics depend on the type of motor supplied and they will vary, but no matter which type of motor is used SMB-00/10 actuators will provide 10 ft.-lbs. of torque for valve movement.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phases 4

Job No. 84056.

Date: 10/10/84

Subject: Cable Tray Support Design Review Verification
of Installation of Hilti Super Kwik Bolts

Time: 10:00 a.m.

Place: CPSES Site

Participants: Mike Warner

of TUGCO QE

Curtis Biggs

TUGCO QC

Bill Horstman

Cygna

Item	Comments	Required Action By
1.	<p>A meeting was arranged to discuss the method used by Quality Control ("Q.C.") to verify the type and length of Hilti expansion anchors installed in cable tray supports before procedures required the marking of the bolts with a "star."</p> <p>Cygna requested a copy of the references used in TUGCO Instruction No. QI-QP-11.18-4 Rev. 0 "Ultrasonic Examination of Hilti Bolts." Mr. Warner stated the reference "1-A" CP-CPM-13.1 "General Calibration Procedure" is a general laboratory/test equipment calibration procedure, and should have no significance to Cygna in understanding the Ultrasonic Testing ("U.T.") procedure, reference "1-B" (paragraph 2.3.1c) does not exist, this is a typographical error in the procedure, and should be listed as "1-A."</p>	
2.	<p>The sample U.T. reports provided to Cygna were dated in May 1981, yet the procedure QI-QP-11.18-4, Rev. 0, was dated July 1982. Cygna asked what procedure was in effect at the time of these tests. Mr. Warner said that prior to 1982, the testing was performed by Brown & Root ASME NTE group, based on a B&R procedure. When TUGCO took over the effort, this procedure was re-issued to change it to one with a TUGCO designation.</p>	
3.	<p>The testing documented in the sample U.T. reports was done as a general sampling process. A number of bolts in a specific room were tested to verify that the letter code stamped on the bolt head was correct, i.e., that the bolts was of the proper length. The testing was done on a room-by-room basis throughout the plant for each type of support (i.e., Pipe, Conduit, Cable Tray, etc.). The sample bolts were selected by the operator of</p>	

Signed

NH Williams

/dmm Page 1 of 2

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J. Ellis, S. Burwell, Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
	<p>the test. The number chosen was deemed necessary to establish a certain confidence level for installed anchor bolts in the plant. NCR's were written against a support if a discrepancy was found. There was no traceability between these tests and the specific support number.</p>	
4.	<p>A separate series of U.T. examinations of Hilti bolts was performed as part of the "Backfit Inspection" program. Based on a review of the cable tray support documentation packages in the QA vault, U.T. examination was requested if existing documentation did not indicate that bolts were satisfactory. Tests were not performed for all supports, but based on the list of supports in Cygna's scope, Mr. Warner will attempt to locate samples of these test reports.</p>	
5.	<p>The original inspection travelers for cable tray support installations did not indicate what size, length or type of bolt was used, it only indicated if the bolt was satisfactory based on Q.C. witnessing of installation. Each Q.C. inspector maintained a notebook listing the bolts he had inspected, but these were not official documents, and have not been retained by TUGCO.</p>	
6.	<p>Cygna asked for a description of the U.T. technique used to differentiate between Hilti Kwik Bolts (HKB) and Hilti Super Kwik Bolts (HSKB).</p> <p>Mr. Warner stated that the U.T. operator is trained by Q.C. on the method used. In his understanding, the wave reflection pattern is different for an HKB and an HSKB. By comparing the reflection pattern for an unknown bolt with the patterns for an HKB and an HSKB of the same diameter and length, the operator can identify the bolt by determining which known pattern matches.</p> <p>Mr. Warner will arrange a demonstration of the test process for Cygna, or provide photos of the U.T. patterns for HSKB and HKB to illustrate the characteristic differences.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/11/84
Subject:	Cable Tray Support Design Review	Time:	1:00 P.M.
		Place:	CPSES Site
Participants:	J. Van Amerongen	of	EBASCO
	M. Warner		TUGCO
	J. Russ, W. Horstman		Cygn

Item	Comments	Required Action By
	<p>Cygn requested that Mr. Warner provide more information on the "backfit" inspection program of cable tray supports as it related to verification of Hilti Bolt types.</p> <p>Mr. Warner stated that the backfit verification was performed to update or complete the documentation packages for cable tray supports. This program covered all of the supports in the C-TRAIN, B-TRAIN and many of those in the A-TRAIN. TUGCO instruction number QI-QP-11.10-5 (Rev. 10, June 1984) was used. Support documentation packages were reviewed to locate incomplete installation travellers or determine if any documentation was lacking. Field verification was only performed if it was needed to fill in missing information. If a field inspection was required for the anchor bolts, testing was performed to determine bolt diameter, length and type. This was compared with the design requirements to determine if bolts were satisfactory. Corrective action would be taken if necessary.</p> <p>A more extensive backfit inspection program is being performed for Unit 2 supports, in which actual as-built support connection details are being documented.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/18/84
Subject:	Cable Tray Support - Hilti Super Kwik Bolt Ultrasonic Testing	Time:	8:30 A.M.
		Place:	CPSES Site
Participants:	T. Webb, M. Hamburg	of	TUGCO (EBASCO)
	W. Horstman		Cygna

Item	Comments	Required Action By
	<p>Mr. Webb demonstrated the Ultrasonic Test (UT) process used to identify the length and type of Hilti Expansion anchors installed in the plant.</p> <p>A UT apparatus was used which displayed a plot of response vs. distance (calibrated in inches of thickness of material being tested). He demonstrated the test on a selection of Hilti Kwik Bolts ("HKB") and Hilti Super Kwik Bolts ("HSKB") obtained from the supply room. For a given length and diameter bolt, the UT pattern was distinctly different for the regular and Super Kwik bolts. He explained that a reflection of the sound waves occurs at each discontinuity in the bolt, so the shoulder at the top of the taper for the second set of wedges on the Super Kwik bolt produces an extra reflection at a shorter distance out than is seen for a regular Kwik bolt with only one set of wedges. The primary (largest magnitude) reflection for both types of bolts will occur at the end of the bolt, giving an indication of total length.</p> <p>To perform the test in the field on installed bolts, a bolt of the same type and length is taken to use as a "Control" specimen for comparison of the characteristic reflection pattern.</p> <p>Cygna indicated to Mssrs. Webb and Hamburg the locations of approximately 20 cable tray supports within scope that required HSKB but were not so marked in the installations.</p>	



Communications Report

Item	Comments	Required Action By
	<p>Cygnat personnel witnessed the testing of six bolts out of the sample, and determined that the UT was apparently satisfactory to identify installed bolts. After testing, these bolts were stamped with a "STAR". Mr. Webb, within the next two days, will supply test reports for as many of the bolts in the sample as are accessible.</p>	

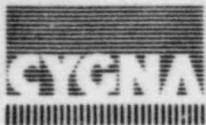


Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/17/84
Subject:	Cable Tray Support Design Review Verification Installation of Hilti Super Kwik Bolts	Time:	9:00 A.M.
		Place:	CPSES Site
Participants:	M. Warner	of	TUGCO QC
	N. Williams, W. Horstman		Cygna

Item	Comments	Required Action By
	<p>Cygna asked Mr. Warner to clarify some of the information given on Hilti Super Kwik Bolts ("HSKB") in the 10/10/84 communication report.</p> <p>Cygna asked what the reasons were for the two Ultrasonic Test ("UT") programs which were conducted to examine Hilti bolts.</p> <p>Mr. Warner stated that:</p> <ol style="list-style-type: none">1. The UT program in 1980 was done to establish the actual installed lengths of all Hilti bolts in the plant. Determination of bolt type (i.e, regular or super) was not the goal of this program, but only a by-product of it. No markings were made on the bolts to indicate the type. The tests were performed based on a statement by a craftsperson that he had in some cases cut-off Hilti bolts because of installation difficulty and welded it to the base plate to give the appearance of a correctly installed bolt. <p>All bolts in the rooms where this person had worked and a sampling of bolts throughout the plant were tested for correct length. Appropriate corrective action was taken to repair any incorrect length bolts. No correlation between the bolts inspected and the requirements for a specific support type or number were made at this time, so there is no way to tie these test results back to any supports in Cygna's review scope.</p>	

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Communications Report

Item	Comments	Required Action By
	<p>2. The "Backfit Inspection Program" was started to fill in any information missing from the QC documentation packages for individual cable tray supports. Basically, it involved a review of existing inspection reports for each support to determine what information was missing. Only in cases where the inspection traveller was not marked "satisfactory" for an expansion anchor was a UT examination requested to determine anchor length and type. The results of the test would be compared with what was required for this hanger type and the "Backfit" report was marked to indicate acceptance.</p> <p>Cygna asked how the UT reports from this program were stored, and if they could be located for the specific supports within the review scope.</p> <p>Mr. Warner stated that the report form is in triplicate, one copy stored in the Q.A. vault, one copy is retained by the craft and he maintains a file of the remaining copy. The reports are filed by date, not by support number, so a manual search through the files would be needed to locate the report for a specific support. This effort would require a great deal of time, since there are several thousand test reports in his file. Mr. Warner suggested that the most expedient means for verification of the anchor bolts within Cygna's scope was to have a QC inspector perform and document new UT examinations on these bolts.</p> <p>Cygna accepted this suggestion and agreed to have Mr. Horstman accompany the QC inspector on 10/18/84 to observe the UT procedure in the plant.</p> <p>Cygna asked how the original QC inspection report ("IR") for a hanger installation documented the type of expansion anchor used.</p> <p>Mr. Warner showed Cygna several examples of inspection reports, indicating that the bolt type was not explicitly called out, but instead, the inspector only checks off the bolts as satisfactory or unsatisfactory as per the design. Thus, if an IR shows the bolts are satisfactory, the bolt type is adequately documented. During the time period when the Super Kwik bolts were not marked with a "STAR", it was customary to have a QC inspector witness the installation of Super Kwik bolts to assure the correct type was installed, since no visual evidence exists on installed bolts, however, this was not an established "hold point" in the inspection procedure.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/27/84
Subject:	Cable Tray/Conduit Review Questions	Time:	9:15 A.M.
		Place:	CPSES Site
Participants:	T. Keiss	of	TUGCO
	J. Van Amerongen		TUGCO (EBASCO)
	S. Chang, P. Huang		Gibbs & Hill
	J. Russ, N. Williams		Cyqna

Item	Comments	Required Action By
1.	<p>Cyqna discussed the following items with the personnel listed above.</p> <p>Evaluation of Details A-H (Drawing 2323-E1-0601-01-S) (Reference: DCA 2538).</p> <p>Cyqna noted additional concerns regarding Details A-H baseplates when evaluated in light of DCA 2538. These concerns were also applicable to multiple SP-7 and multiple SP-7 with brace type supports. Gibbs & Hill will evaluate the above details, except Details A-D, in light of the allowed tolerances. Gibbs & Hill will examine the generic situation and if necessary the as-built conditions of the above supports considering all CMC's and DCA's.</p> <p>Status: Gibbs & Hill to evaluate the details listed above.</p>	
2.	<p>Base Plate Thickness for Cable Tray Supports 734, 735, 3023, 3112, 3501 and 3504.</p> <p>Cyqna noted the FSE-00159 fabrication drawings call out a 3/4" plate for the base plate rather than a 1 1/4" plate as shown on the generic design drawing. TUGCO/Gibbs & Hill will determine what size plate was actually used and evaluate accordingly. Cyqna stated that they would check if the write-off by Quality Control (QC) was made on the original FSE-00159 drawing. This might indicate what size of plate was actually used.</p> <p>Status: 1. TUGCO/Gibbs & Hill to determine actual plate thickness and evaluate accordingly; and</p>	

Signed: NH Williams Page 1 of 2 /ajb

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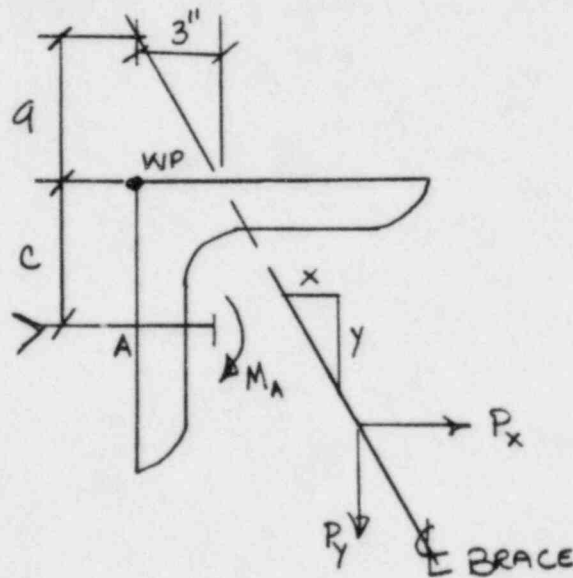
Communications Report

Item	Comments	Required Action By
	2. Cygna to determine what QC sign-off noted.	
3.	<p>Cable Tray Support 734 (Reference: CMC's 00164 and 88240).</p> <p>Cygna noted that the tray at Elevation 803'-5" was connected to the beam using heavy duty tray clamps. However, the support was not analyzed for longitudinal loads. The original revision of CMC 00164 also analyzed the baseplate for a 1 1/4" thickness, yet the FSE-00159 fabrication drawing specified a 3/4" baseplate. TUGCO will evaluate this support utilizing a field verified baseplate thickness and considering longitudinal loads.</p> <p>Status: TUGCO to evaluate cable tray support 734.</p>	
4.	<p>Cable Tray Spacing Criteria.</p> <p>TUGCO had provided a copy of specification 2323-ES-100 for Cygna's review. Cygna was referenced to sections 2.28.2 and 4.11. These sections were discussed for their applicability to the tray spacing used in the design of generic cable tray supports. It was Gibbs & Hill's interpretation that the specifications would not allow a spacing of less than six inches. Cygna feels that the distance can be less. Cygna stated that they will internally discuss the referenced sections.</p> <p>Status: Cygna to consider referenced sections of 2323-ES-100.</p>	
5.	<p>Effect of CMC 6187 on Design of Support Type SP-7 with Brace - Working Point Calculations.</p> <p>Per discussion of October 26, 1984, Gibbs & Hill offered the calculations shown in Attachment A to show that CMC 6187 did not affect the results of the working point analysis.</p> <p>Cygna accepted the results shown in Attachment A.</p> <p>Cygna asked Mr. Keiss how the results of the working point analysis were used by TUGCO. He replied that the analysis output was a maximum brace tolerance. Quality Control sampled the supports for exceedence of this maximum tolerance and found the results within a 95% confidence level. Mr. Keiss was not aware of the sampling procedure used.</p> <p>Status: Cygna to investigate the sampling procedure for the working point analysis.</p>	



Calculation Sheet

Project	TEXAS UTILITIES	Prepared By	J.P.R.	Date	27 OCT 84
Subject	ATTACHMENT A	Checked By	-	Date	
System		Job No.	84056	File No.	
Analysis No.		Rev. No.		Sheet No.	



$$P_y = \text{CONSTANT}$$

$$c = 2.25'$$

$$\frac{Y}{a} = \frac{x}{3} \rightarrow a = \frac{3Y}{x}$$

$$M_a = P_x (a + c)$$

x	Y	a	$a + c$	P_x	M_a
1.5	1	2	4.25	$1.5 P_y$	$6.38 P_y$
1.0	1	3	5.25	P_y	$5.25 P_y$
0.67	1	4.5	6.75	$.67 P_y$	$4.50 P_y$



23-C-1017
Communications
Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/17/84
Subject:	Cable Tray Support Design Review	Time:	4:00 P.M.
		Place:	CPSES Site
Participants:	J. Burkeen	of	DCTG
	W. Horstman		Cygna

Item	Comments	Required Action By														
	<p>Requested and received copies of CVC's for the following:</p> <table><tr><td>CMC 8229</td><td>Revision 0-13</td></tr><tr><td>CMC 16410</td><td>Current Revision Only</td></tr><tr><td>CMC 16412</td><td>Current Revision Only</td></tr><tr><td>DCA 3701</td><td>Current Revision Only</td></tr><tr><td>DCA 20177</td><td>Current Revision Only</td></tr><tr><td>DCA 19167</td><td>Current Revision Only</td></tr><tr><td>DCA 18675</td><td>Current Revision Only</td></tr></table> <p>These pertain to Support No. 3136.</p>	CMC 8229	Revision 0-13	CMC 16410	Current Revision Only	CMC 16412	Current Revision Only	DCA 3701	Current Revision Only	DCA 20177	Current Revision Only	DCA 19167	Current Revision Only	DCA 18675	Current Revision Only	
CMC 8229	Revision 0-13															
CMC 16410	Current Revision Only															
CMC 16412	Current Revision Only															
DCA 3701	Current Revision Only															
DCA 20177	Current Revision Only															
DCA 19167	Current Revision Only															
DCA 18675	Current Revision Only															

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1020 01a



23- C - 10 - A

Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/17/84
Subject:	Cable Tray Support Design Review	Time:	3:00 P.M.
		Place:	CPSES
Participants:	T. Keiss	of	TUGCO
	W. Horstman		Cygna

Item	Comments	Required Action By
	<p>Cygna requested information regarding Cable Tray Hanger 3136 located at elevation 790'-6" in the Auxiliary Building/Safeguards Building common wall. This is support Detail "5" on 2323-S-0905.</p> <p>Tom Keiss said that this support had been significantly modified from the original design when it was decided that a fire barrier was necessary between the two buildings. This hanger now supports one of the cable trays in the scope of Cygna's review. Cygna could not have observed it during the field walkdowns since it also serves as framing for the fire wall and is covered on both sides with Gypsum wall board. Tom provided a copy of CMC 8229, Rev. 13, detailing the modification to this support.</p>	

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1020 01a



23-0-1016
Communications
Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	10/16/84
Subject:	Cable Tray/Conduit Review Questions	Time:	1:00 p.m.
		Place:	CPSES site
Participants:	T. Keiss	of	TUGCO
	J. Van Amerongen		TUGCO (EBASCO)
	W.R. Horstman, J.P. Russ, N.H. Williams		CES

Item	Comments	Required Action By
1.	<p>Transverse Span Violations - Evaluation of Cable Tray Supports.</p> <p>Mr. Keiss had provided Cygna with preliminary calculations earlier on this date. Cygna reviewed those calculations.</p> <p>The preliminary calculations showed support 2993 as a Detail "N" type support. Cygna noted that this support was a Detail "11" which Gibbs & Hill was evaluating for other Cygna concerns. For support #764, a Detail "K" support, reference was made to the original design calculations. Mr. Keiss was shown a more recent evaluation performed by Gibbs & Hill, New York to answer other Cygna concerns. Cygna asked Mr. Keiss why he hadn't referenced this calculation. He replied that due to the short time between the calculation's origination and the time of fire protection question response was written, the Detail "K" calculations by Gibbs & Hill, New York had not been processed through TNE. Cygna asked if the supports were checked for CMC's by using a controlled list. Mr. Keiss replied that TNE's uncontrolled log was used. Cygna will contact Mike Strange if further questions on CMC retrieval for cable tray supports are required.</p> <p>Cygna asked if the FSE drawings were ever updated. Mr. Keiss replied that the FSE drawings are updated to show added trays and changes in supports. The indicator blocks which show the support type are not changed. Minor tray reroutings are not shown on the revised FSE drawings.</p> <p>Cygna noted the CMC 6114 showed a 6'-5" span for cable tray support 2998, yet Mr. Keiss's calculations used 6'-0". Mr. Keiss stated that 6'-0" was used based on judgment and the fact that the design weight of 35 psi was used as the design weight.</p>	

Signed: W. Williams /cwk Page 1 of 3
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J. Ellis, S. Burwell, Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
2.	<p>Cygna asked how the site reevaluation group determined what the limitations of the generic designs were. Mr. Keiss was also asked if a procedure or table existed which showed these limitations. Mr. Keiss replied that the original design calculations were used as a comparison in the fire protection reevaluations.</p> <p>Revaluation of Conduit Spans for Thermolog Fire Protection</p> <p>Cygna asked Mr. Keiss to describe the reevaluation procedure for conduits covered with Thermolog fire protection. He listed the following steps:</p> <ul style="list-style-type: none">i) An isometric drawing of the conduit line in question is prepared;ii) The conduit spans and supports are evaluated based on these walkdowns.iii) Completed evaluations are sent to Gibbs & Hill, New York for design review. Should the design reviewer have any comments, the calculations are returned to site for additional work. <p>Mr. Keiss was asked if square or rectangular cross-sections of fireproofing had been used in the plant. He stated that these sections were sometimes used to coat two or more closely-spaced conduits. In general, round pre-formed sections were used to cover conduits. Cygna asked if the square cross-sections were considered in the analysis for coated span lengths for conduits. Mr. Keiss stated that he would investigate this matter. He also noted that the analyst performing a reevaluation would not be aware of the type of Thermolog cross-section used on a conduit because the isometric drawings were developed prior to installation of the Thermolog.</p> <p>Cygna asked if the Thermolog was rigidly attached to the conduit so as to make the assembly a composite cross-section. He replied that it wasn't. He added that the type of fireproofing installation was selected after testing various methods in the site fabrication shop.</p> <p>Mr. Keiss noted that in the reevaluations of conduit supports for fire protection, the method of analysis was generally to compare actual spans, weights and accelerations to the design values of these parameters for a support. In cases where this method wasn't successful in qualifying a support, the support was completely reanalyzed. If the support could not pass after this analysis, an additional support was added to reduce the span lengths and hence, the conduit loads applied to the support.</p>	



Communications Report

Item	Comments	Required Action By
	<p>Cygna asked Mr. Keiss why the fire protected loads and spans shown in procedure CP-EI-4.0-49 weren't used in evaluating the effects of reaming P2558 clamps. (Reference letter from L.M. Popplewell to N.H. Williams, dated 8/30/84). He replied that he would review the calculation and respond to Cygna. Cygna also asked how the fire-protected conduit spans reported in CP-EI-4.0-49 which have additional mass can be longer than the spans for unprotected spans. Mr. Keiss stated that he would look into the question, but it would be best to speak to Pravin Patel who had developed the referenced procedure.</p>	

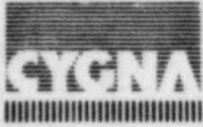


Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056 *
		Date:	10/24/84
Subject:	Cable Tray/Conduit Review Questions	Time:	1:15 p.m.
		Place:	CPSES Site
Participants:	J. Van Amerongen	of	TUGCO (EBASCO)
	S.C. Chang, P.T. Huang, B.K. Bhujang (Part-time)		Gibbs & Hill
	W.R. Horstman, J.P. Russ		Cygn

Item	Comments	Required Action By
1.	<p>Cygn discussed the following items with the personnel listed above.</p> <p>Evaluation of Specific SP-4 Type Supports.</p> <p>Cygn had reviewed the calculations for the support at Elevation 787'-4" previously provided by Gibbs & Hill. The review noted the following:</p> <ul style="list-style-type: none">a. The calculation used g-values that were interpolated between floor elevations. Accelerations should have been based on the floor elevation above;b. The calculation considered fixed-ends for the vertical loads. Simple ends are more appropriate;c. Torsion appeared to have been improperly combined with weak-axis bending of the cantilever members; andd. No consideration was given to the controlling load case. <p>Status: Gibbs & Hill will provide revised calculations.</p>	
2.	<p>Evaluation of Detail "11" (Drawing 2323-S-0905).</p> <p>Cygn noted that two trays on the support selected as the worst case for analysis were spaced 2 inches apart horizontally. This tray arrangement indicated that the generic support designs may not have considered the worst case support configuration because Gibbs & Hill always used a minimum 6 inch spacing between trays.</p>	

Signed: *N. Williams* Page 1 of 2
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J. Ellis, S. Burwell, Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
	<p>The revised calculations also reference a "frictional shear" calculation. This relates to the calculations for CMC 8278, revision 4. Cygna noted that the effect of working point deviations on the brace anchor bolts was not considered. Gibbs & Hill will evaluate the effect. In the calculation of the bolt interactions for the beam connection, Cygna noted that the Richmond Insert allowables from specification 2323-SS-30 were used and prying action was not considered. Gibbs & Hill will evaluate this situation.</p> <p>Status: Gibbs & Hill to perform calculations as noted above.</p>	
3.	<p>Fire Protection Evaluation for Cable Tray Supports.</p> <p>Cygna had reviewed the calculations previously received from TUGCO and found them acceptable.</p> <p>Status: Closed.</p>	
4.	<p>Evaluation of Cable Tray Supports 2861,3025 and 3028 (Type D₁).</p> <p>Cygna had reviewed the previously received calculations for supports 3025 and 3028 and found them acceptable.</p> <p>Cygna received calculations for support 2861 from Gibbs & Hill. Mr. Bhujang noted that the tray frequency was conservatively calculated.</p> <p>Status: 1. Calculations for supports 3025 and 3028 closed; and 2. Cygna to review calculations for support 2861.</p>	



Communications Report

Company: Texas Utilities ☐ Telecon ☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Subject: Fire Protection Evaluations

Participants: T. Keiss

J. P. Russ, N. H. Williams (Part-time)

Job No. 84056

Date: 10/27/84

Time: 11:45 a.m.

Place: CPSES Site

of TUGCO

CES

Item	Comments	Required Action By
	<p>Reference: Conference Report dated 10/16/84, 1:00 p.m., "Cable Tray/Conduit Review Questions," Keiss, Van Amerongen, Horstman, et al, participating.</p> <p>Cygna asked Mr. Keiss if cable tray covers were used at Comanche Peak. He replied that they were. He stated that if the tray clearances were below a specified minimum, the contractor could opt to use tray covers for fire protection. The contractor was not required to report whether tray covers had been used or not. Mr. Keiss was asked if any trays which had covers had been covered with Thermolog. Mr. Keiss stated that situation was present in the field. Cygna asked what the gage of the tray covers was and if their weight was included in the revaluation of trays and supports for the additional weight of fire protection. Mr. Keiss stated that he was not sure of the gage of the covers but thought it might be 16 gage. He also stated that the weight of the covers was not considered in the fire protection revaluation.</p> <p>Previous discussions with Mr. Keiss (referenced conference report) noted some discrepancies in the allowable spans for fire coated conduits. For LS type supports, the firecoated spans for S₁ shown in Attachment 3, Table 9 of procedure CP-EI-4.0-49 are greater than the uncoated spans shown on sheet LS-5a of drawing 2323-S-0910 for the same conduit diameters.</p> <p>Cygna and Mr. Keiss reviewed Set 1 of calculation binder SCS-1017C and noted discrepancies in calculations for the S₁ spans for LS type supports and in the moments of inertia for the S₄ calculations for LA type supports. Mr. Keiss will investigate these issues.</p>	

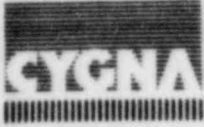
Signed: *NH Williams* /dmm Page 1 of 2

Distribution: N. Williams D. Wade, J. Van Amerongen, R. Hess, J. Russ, W. Horstman, S. Treby,
J. Ellis, S. Burwell, Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
	<p>Cygna had previously asked Mr. Keiss (see referenced conference report) if square or rectangular sections had been used in the field and if such sections were considered in the analysis of the allowable spans for coated conduits. Mr. Keiss replied that square cross-sections had been used. The analysts would not have been aware of their usage he stated.</p> <p>Cygna also requested a copy of SCS-1017C, Set 1.</p> <p>Status: Mr. Keiss to investigate coated conduit spans.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phases 4

Job No. 84056

Date: 10/11/84

Subject: Mechanical Systems Review
Thermal Barrier Rupture

Time: 5:00 P.M.

Place: CPSES

Participants: D. Wade

of TUGCO

N. Williams

Cygn

Item	Comments	Required Action By
	<p>Reference: N.H. Williams (Cygn) letter to S. Burwell (NRC) and J.B. George (TUGCO), 84056.032, "Reactor Coolant Thermal Barrier Rupture", dated October 9, 1984.</p> <p>D. Wade, having received the above-referenced letter, expressed concern that Cygn was misinterpreting TUGCO's position and Westinghouse's baseline assumptions on this matter. D. Wade believed that through extensive discussions with R. Hess (Cygn Mechanical Systems Project Engineer), it was made clear that in order to initiate the Cygn or Westinghouse senario, the same event must occur - failure to isolate the reactor coolant pump thermal barrier rupture. The referenced letter leaves the reader with the impression that there is a world of difference between the Cygn concern and Westinghouse 10CFR 21 concern. It should be obvious that the central issue of the initiating event is the same in both cases. Further, D. Wade stated that TUGCO was still evaluating the potential deficiency to determine if it was necessary to postulate in thermal barrier rupture. It was agreed that there is no clear guidance available on this matter.</p> <p>N. Williams agreed that if the letter appeared ambiguous or unclear on the differences between the senarios that Cygn would issue a clarifying letter next week after discussing the matter with R. Hess.</p>	

Signed:

N.H. Williams

/ajb Page 1 of 1

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S. Burwell, J. Ellis, Project File



23-1-11 A
Communications
Report

Company: Texas Utilities ☒ Telecon ☐ Conference Report
Project: Comanche Peak Steam Electric Station Job No. 84056
Independent Assessment Program - Phase 4 Date: 11-1-84
Subject: Cable Tray Support Design Review Time: 10:45 a.m.
Hilti Bolt Embedment Length Place: CYGNA SFAO
Participants: Tom Keiss of TUGCO - SITE
Bill Horstman CES - SFAO

Item	Comments	Required Action By
	Ref: CTH 481, Type L-A ₄ , letter 84056.026, Question 4.	
1.	TUGCO's response to referenced question supplied CMC 2635, rev. 0 as justification for the use of a 1 1/4" (T) Hilti Super Kwik Bolt. Overall length is 12". I asked Tom to provide the design review calculations for this CMC to determine what embedment length was used.	
2.	Is it possible to obtain 10 5/8" min. embed with a 12" bolt? Tom said that it would be awfully "tight" to attempt that with a 3/4" base plate. It would only work if partial nut engagement was used before torquing. He referred to CEI-20 for installation requirements.	
3.	How does the craft determine what length bolt to use? Tom said that the drawings specify minimum embedment, so the craft would need to add on the base plate thickness and nut engagement to get the overall bolt length. He wasn't sure how the nut engagement required before bolt torquing was determined.	

Signed: *N. Williams* Page 1 of 1
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Communications Report

Company: Texas Utilities

☒ Telecon

☐ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No: 84056

Date: 6/15

Subject: MS Relief Valve Seismic Qualification
Pipe Stress Review

Time: 10:30

Place: Site

Participants: R. Manvelyan (EQ)

of TNE (G&H)

J. Minichiello

Cygna

Item	Comments	Required Action By
	<p>Cygna called to determine what snubber loads, if any, had been transmitted to Fisher to qualify the MS relief valve. Mr. Manvelyan stated he was not aware of any loads transmittal, but he had not worked in that area for a year. He suggested we contact Gibbs & Hill in New York. Cygna has noted that DCA 15,870 to Specification MS-600 (the other Fisher valves) does require the vendor to qualify the valves including the effect of seismic restraints.</p>	

Signed:

N. Williams

/ss

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Distribution: N. Williams, D. Wade, G. Grace, L. Weingart, S. Treby, J. Ellis, S. Burwell,

COMANCHE PEAK STEAM ELECTRIC STATION
DESIGN CHANGE AUTHORIZATION

CHANGE INDEX: CFI #082
: II
: III

(WILL) (WILL/NOT) BE INCORPORATED IN DESIGN DOCUMENT DCA NO. 15,870

1. SAFETY RELATED DOCUMENT: ☒ YES ☐ NO
2. ORIGINATOR: CPPE ☐ ORIGINAL DESIGNER ☒
3. DESCRIPTION:

A. APPLICABLE SPEC/ENG/DRAWING 2323-MS-600 REV. 3

B. DETAILS Description of change: (1) Add the following at end of para. 3.7.1: Operability requirements of para. 3.7.1.1 and 3.7.1.2 are not required for passive valves.

2) 3.7 after last para., add attachment #1.

ENGINEERING JUSTIFICATION: Valve restraints required to meet seismic stress criteria.

4. SUPPORTING DOCUMENTATION:

DECD 2323-S-2702, Rev. 0

5. APPROVAL SIGNATURES: HAH: ^{DMH} DMH:ch 1-24-83

A. ORIGINATOR: David M. Headrick DATE 1-24-83

B. DESIGN REPRESENTATIVE: John R. Hines DATE 1-25-83

6. VENDOR TRANSMITTAL REQUIRED: YES ☒ (2) NO ☐
CP-600 (Fisher Controls)

7. STANDARD DISTRIBUTION:

AFMS (Original)	(1)	B.F. Jones-Procurement (2)	DCA FORM 11-80
Quality Engineering	(1)		Admin. Rev 7-82
TS for Orig. Design	(1)		
Westinghouse-Site	(1)		

ATTACHMENT #1

DECD 2323-S-2702, Rev. 0

For all valves which have not been qualified with seismic restraints, or where seismic restraints could not be installed at the vendor designed location, the proposed attached location of the restraint shall be forwarded to the vendor for his approval both for active and passive valves. In addition, for active valves the vendor shall demonstrate operability, including the effect of the seismic restraints.

"Passive" (non-active) valves are required to maintain the pressure boundary integrity intact during and after the prescribed seismic events, including the effect of the seismic restraints.



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 2	Job No:	84056
		Date:	10/9/84
Subject:	Drawing Request	Time:	8:15 A.M.
		Place:	CPSES
Participants:	N. Munoz	of	DCC
	W. Horstman		Cygn

Item	Comments	Required Action By
	Cygn requested and received copies of the following drawings: 2323-S-0800 2323-S-0801 2323-S-0825	

Signed: *W. Williams* /ajb Page 1 of 1
Distribution: N. Williams, D. Wade, J. VanAmerongen, W. Horstman, R. Hess, J. Russ, S. Treby,
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Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056 *
		Date:	10/9/84
Subject:	Applicability of Procedure CP-EI-4.0-4	Time:	8:45 A.M.
		Place:	CPSES
Participants:	P. Patel	of	TUGCO
	W. Horstman		Cygna
	J. Russ		Cygna

Item	Comments	Required Action By
	<p>Cygna asked Mr. Patel if procedure CP-EI-4.0-4 was applicable to any drawing other than 2323-S-0910. Mr. Patel stated that it was not. The reason for the procedure was to control distribution of conduit support drawings which were prepared per FSEG calculations. Cygna asked if the procedure was applicable to the following drawings: 2323-S-0800, -0801, and -0825. Mr. Patel stated that these drawings were prepared by Gibbs & Hill in New York and were not covered by the above procedure.</p>	

Signed: *W. Williams* Page 1 of 1
Distribution: N. Williams, D. Wade, J. VanAmerongen, W. Horstman, J. Russ, R. Hess, S. Treby,
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Communications Report

Company: Texas Utilities

☒ Telecon

☐ Conference Report

Project: Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4

Job No. 84056

Date: 10/4/84

Subject: Factor Used in Equivalent
State Load Method

Time: 4:00 p.m.

Place: Cygna

Participants: C. M. Jan

of Gibbs & Hill

G. Bjorkman

Cygna

Item	Comments	Required Action By
	<p>The purpose of the conversation was to reiterate Cygna's position, which had been stated during the September 13, 1984 meeting at Gibbs and Hill, regarding the Gibbs & Hill justification study for the use of a 1.0 factor in the equivalent static analysis of cable tray supports, and to respond to the additional information (normalized horizontal ARS) Cygna had received subsequent to the meeting.</p> <p>Cygna stated its position as follows:</p> <p>As determined in the Gibbs and Hill study, the appropriate generic factor for plant-wide use for cable tray supports which are flexible (i.e., frequency within the amplified region) in the horizontal direction is 1.12, and the appropriate factor for supports which are stiff (i.e., frequency not within amplified region) in the vertical direction is 0.75.</p> <p>Cygna does not agree with the methodology by which these two factors were combined to obtain the "combined (any direction) factor" of 1.0 since the actual factor is dependent on support geometry (i.e., for higher aspect ratio supports the horizontal factor would dominate support reactions).</p> <p>For cable trays which have supports that are flexible vertically (i.e., cantilever type supports) the generic "horizontal" factor of 1.12 is appropriate in the vertical direction provided that each of the vertical floor response spectra is enveloped by one of the horizontal floor response spectrum used in the development of the 1.12 factor. Based on the normalized horizontal response spectra received subsequent to the September 13, 1984 meeting,</p>	

Signed:

W.H. Williams

/dmn Page 1 of 2

Distribution:

N. Williams, D. Wade, J. van Amerongen, G. Bjorkman, S. Treby, J. Ellis, J. Russ,
Project File, R. Kissinger



Communications Report

Item	Comments	Required Action By
	<p>Cygnat confirmed that this was the case and therefore the generic 1.12 factor is appropriate for supports which are flexible in the vertical direction and the 0.75 factor is appropriate for supports which are stiff in the horizontal direction.</p> <p>Cygnat recognizes that the actual factor will vary from elevation to elevation with the shape of the individual floor response spectrum and that the higher factors are generally applicable to lower elevations which have smaller peaks. However, as a generic multiplier to be applied on a plant-wide basis, 1.12 is the appropriate factor to be applied in the flexible direction of the cable tray supports and 0.75 in the stiff direction. Whether or not the use of a factor less than 1.0 in one of the support directions satisfies the intent of the SRP or the SAR is not clear.</p>	