



101 California Street, Suite 1000, San Francisco, CA 94111-5894

415 397-5600

October 11, 1984
84056.034

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

Subject: Communications Report Transmittal #11
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

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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*2222-Per S. Burwell
"1" See Attached*



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:	10/9/84
Subject:	Cable Tray and Conduit Support Design Status of Specific Question as of 10/9/84	Time:	2:45 p.m.
		Place:	CES-SFRO
Participants:	J. VanAmerongen	of	TUGCO (EBASCO)
	P. Huang, T. Keiss		Gibbs & Hill
	J. Russ, W. Horstman, N. Williams		Cygna

Item	Comments	Required Action By
1.	Design of Embedded Plates for SP-7 Type Cable Tray Supports. This item will be closed out via the generic discussion on SSE versus OBE. The plan for SSE is to consider the use of 7% damping.	
2.	Conduit Support Type CA-5a, Ability to Resist Loads from 5" ϕ Conduits. The calculations for 5" diameter conduit will be provided to Cygna later this week.	Gibbs & Hill
3.	Reaming of Holes in Unistrut P2558 Clamps for Conduit Supports (84056.015, Attachment A, No. 4). Sufficient calculations were provided and the item is closed.	None
4.	Design of Cable Tray Support Details "W" and "N" (2323-E1-0601-01-S) as Longitudinal Supports (84056.019, Attachment A, Nos. 1 and 2.2; and 84056.021, Attachment A, No. 5). Gibbs & Hill provided Cygna with calculations for detail W. Modifications are being made to detail N to provide longitudinal support. Gibbs & Hill provided the new calculations for modified detail N. Cygna will review as soon as possible so that TUGCO can proceed with the modification.	Cygna

Signed: *N. Williams* /ajb Page 1 of 4
Distribution: N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, W. Horstman, S. Trehy,
J. Ellis, S. Burwell, Project File



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Item	Comments	Required Action By
	Cygnal quickly reviewed detailed W calculations. Unrefined "g" values were used. Although nothing obvious is wrong, Cygnal needs to complete the review.	
5.	Transverse Span Violations - Evaluation of Cable Tray Supports (84056.019, Attachment A, No. 2.1). Transverse span violations calculations were provided to Cygnal by Gibbs & Hill. Some considerations were not included in the Gibbs & Hill response. A follow-up response is being prepared.	Gibbs & Hill
6.	Design of Cable Tray Support Detail "11" (2323-S-0905) for Longitudinal Loads (84056.019, Attachment A, No. 2.2). No discussion was held today. This will be discussed on 10/10/84.	None
7.	Design Verification for Special Cable Tray Support No. 13080 Considering As-Built Conditions (84056.019, Attachment A, No. 5). Gibbs & Hill provided a revision to the previous response. Cygnal will review this as soon as possible.	Cygnal
8.	Design Review Calculations for Conduit Support Type CSM-42a Considering Concrete Compressive Forces in Design of Bolts and Concrete. Gibbs & Hill is currently working on calculations. Scheduled to be available this week.	Gibbs & Hill
9.	Embedded Plate Edge Distance Violation on Cable Tray Support No. 2953, Detail "F" (2323-E1-0601-01-S). Requires Design Review Calculations for CMC 12105 (84056.021, Attachment A, No. 7). The necessary CVC was provided for review. Cygnal will review as soon as possible.	Cygnal
10.	Evaluation of Cable Tray Support Type B₄ Considering Correct Slenderness Ratio. Site Response Used Result of Phase 2 NASTRAN Analysis (84056.022, Attachment A, No. 4). A revised calculation was provided today. Cygnal will review as soon as possible.	Cygnal
11.	Evaluation of Cable Tray Support Type A₄ Considering Correct Slenderness Ratio. Cygnal will review the calculations as soon as they are available. Gibbs & Hill estimates completion this week.	Gibbs & Hill



Communications Report

Item	Comments	Required Action By
12.	Evaluation of Cable Tray Support Type SP-4 (84056.022, Attachment A, No. 5). Gibbs & Hill's preliminary calculations show a 10% overstress. More refined analyses are being performed by Gibbs & Hill. No schedule established yet.	Gibbs & Hill
13.	Evaluation of Cable Tray Support Type D₁ Using Reduced Horizontal Accelerations and Neglecting End Fixity in Evaluation of Three Specific Supports (84056.022, Attachment A, No. 6). Cygnal has checked the Gibbs & Hill analysis previously provided. Cygnal had also run an analysis and found there was some difficulty with the frequency calculation. Gibbs & Hill agrees with Cygnal's comment and will perform some further analysis to address this discrepancy. One support in the Cygnal review scope contained a variation of the D ₁ design. Gibbs & Hill addressed this variation in a response but Cygnal has noted some discrepancies. The site will provide revised analyses.	Gibbs & Hill TUGCO
14.	Evaluation of Cable Tray Support Type D₂ Using Results of Phase 2 NASTRAN Analysis for Design of Wall Connection (84056.022, Attachment A, No. 7). Calculations are being design reviewed and will be provided to Cygnal on 10/10/84.	Gibbs & Hill
15.	Verification of Installation of Hilti Super-Kwik Bolts with Ultrasonic Testing (84056.026, Attachment A, No. 1). An ultrasonic testing procedure and a sample of testing results were provided. On 10/10/84 Cygnal will discuss the testing further with QC.	Cygnal
16.	Consideration of Eccentric End Conditions in the Design of Single Angle Braces Used in Cable Tray Supports (84056.027, Attachment A, No. 2). See Also Generic Issue No. 9. Cygnal believes that the working point deviation loads should be considered in this response. Gibbs & Hill will check this effect. If it is O.K. no further work is required.	Gibbs & Hill
17.	Evaluation of Cable Tray Support No. 202, type A-4. Response addresses only longitudinal loads, does not consider removal of brace in this support (84056.031, Attach. A, No. 1). Closed based on further discussion.	None



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Item	Comments	Required Action By
18.	Contact Between Cable Tray Supports and Component Cooling Water Heat Exchanger (84056.021, Attachment A Nos. 1 and 2). TUGCO agrees that the support should be notched. Cygna asked if this support had been QC verified. TUGCO will check.	TUGCO
19.	Suitability of Substituting 1 1/4" x 13 1/8" Hilti Super-Kwik Bolt for 1" Richmond Inserts (Reference DCAs 1711 and 20385). Closed based on clarifying discussion.	None
20.	Evaluation of Alternate Detail "1" Hanger Connection Drawing 2323-S-0903 (Reference DCA 2421). CPSES site will perform some analysis after further discussion with Cygna on 10/10/84.	Gibbs & Hill
21.	Installation Tolerances for Detail A-H drawing 2323-E1-0601-01-S (Reference DCA 2538). Discussion scheduled for 10/10/84.	None
<u>Summary</u> N. Williams summarized by noting that it appeared both Cygna and Gibbs & Hill had action items. It was also noted that several new calculations either had been or were going to be given to Cygna for review. Some quiet time will be required for the Cygna reviewers to evaluate these new responses but that it would be done as soon as possible.		



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:	10/4/84
Subject:	Support MS-1-002-005-S72R Local Buckling and Bending Stresses	Time:	10:30
		Place:	SF
Participants:	J. Finneran	of	TUGCO
	J. Minichiello		Cygna

Item	Comments	Required Action By
	<p>As stated in the telecon between J. Finneran and N. Williams, Cygna ran a finite element model of the tubesteel/ coverplate (items 2 and 3 of drawing) to determine the effects of warpage on tubesteel stresses. Cygna's evaluation showed that the warpage does not impact the design adequacy of the tubesteel.</p> <p>Cygna had not found any thickness sizing calculations for the cover plate. Cygna requested TUGCO perform calculations to show the thickness is adequate for localized bending in the region of the u-bolt holes. Cygna's finite element results have shown high bending stresses in the area of the cover plate near the hole. These finite element stresses consist of both peak and average effects. A sizing calculation for the thickness, done in accordance with appropriate standards, will be needed. Mr. Finneran will provide these calculations.</p>	JF (TUGCO)

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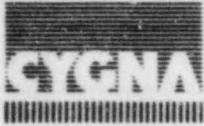


Communications Report

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:	10/1/84
Subject:	Conduit Supports	Time:	9:30 a.m.
		Place:	SFR0
Participants:	R. M. Kissinger	of	TUGCO
	E. K. Bhujang		Gibbs & Hill
	J. P. Russ, N. H. Williams		CES

Item	Comments	Required Action By
	<p>Cygna spoke to Mr. Kissinger regarding anchor bolts and controlling load cases for conduit supports. Cygna's review has noted that the Hilti expansion anchors for conduit supports are designed to a factor of safety of 4.0 at OBE levels. When subjected to SSE loadings, the anchors would have a factor of safety less than 4.0. Mr. Kissinger stated that he was aware of the conduit bolt design practices.</p> <p>Cygna has also noted that the controlling load case for the conduit was the OBE level. This was verified through calculations by Gibbs & Hill. These calculations did not consider the aspect ratio of the frames. Mr. Kissinger felt that the calculations reflected the fact that the aspect ratio would not enter into the equations or the results.</p> <p>Cygna also discussed loading combinations with Mr. Kissinger and asked him if he had reached a conclusion on the appropriateness of combining the interaction ratios for separate earthquake components by the square root of the sum of the squares (SRSS). Mr. Kissinger stated that he had not but still felt that the FSAR could be interpreted to allow combination as performed by Gibbs & Hill.</p>	

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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:	10/1/84
Subject:	Systems Review Questions	Time:	2:00 p.m.
		Place:	SFRO
Participants:	D. Wade, J. Van Amerongen	of	TUGCO
	R. Hess, N. Williams		CES

Item	Comments	Required Action By
	<p>TUGCO called to review the status of open questions with Cygna. All Cygna mechanical and electrical systems questions are closed except for the following:</p> <ol style="list-style-type: none">1. Maximum CCW water temperature -- TUGCO sent a letter with a new calculation today.2. Non-seismic pipe break/non-seismic vent chillers -- TUGCO is to forward G&H calculation on maximum flow from ruptured vent chiller. Jeanne asked if Cygna was satisfied with the seismic analysis of the Class 5 piping. The analysis for the specific piping questioned is acceptable, but Cygna expressed some concern on generic implications. What is Class 5 piping in relation to seismic design? How do you tell what is seismically designed and what piping is only seismically supported? Dave explained that there was a very complex program associated with Class 5. In this case, a seismic analysis was performed. Dave referred Cygna to the FSAR (Section 3.7?) for more definition on Class 5.3. Lack of water hammer analysis -- Dave Wade stated there was no criteria for doing water hammer analysis. The feedwater system was the only system analyzed for water hammer. Jeanne will confirm this.4. Minimum flow to R.C. pump thermal barrier -- Cygna is still reviewing the revised calculation submitted by TUGCO.5. CCW surge relief valve I.D. tag -- Cygna will confirm in the field that the correct tag is installed.	

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Item	Comments	Required Action By
6. 7. 8. 9. 10.	Radiation monitor design conditions -- Cygna's electrical engineer is still reviewing the TUGCO response.	
	Thermo-lag installation -- Cygna will verify the installation in the field. Jeanne will look into question of last week of why only one (not both) raceways were addressed in the TUGCO response.	
	Valve motor H.P. rating -- TUGCO still owes Cygna a follow-up response.	
	CCW surge tank vent radiation -- Cygna is still reviewing the TUGCO response.	
	Reactor coolant pump thermal barrier rupture -- Dave stated that since TUGCO had notified the NRC of a potential 50.55(e) on this subject and since TUGCO considers this a generic issue, Cygna should close this question. Cygna did not agree since present TUGCO responses do not address all the specific or generic implications of the question. TUGCO reiterated that they felt the question was answered and that the final resolution of the problem should be between them and the NRC. The relationship between the Westinghouse Part 21 and the Cygna question was discussed with Cygna maintaining that the Westinghouse fix would not necessarily resolve the TUGCO problem. This is due to the fact that with the rupture pressure and flowrate from the thermal barrier, piping outside containment in the return loop to the surge tank may be overpressurized and rupture. Dave stated that TUGCO was looking at this fix and its implications. Cygna also expressed concern that TUGCO was not addressing the question of the rupture of tubes in other heat exchangers containing reactor coolant such as the letdown heat exchangers. TUGCO stated that they would issue a clarification response that covered the questions generic implications for other heat exchangers. Cygna stated that they will issue a letter stating the question, its background and implications, and its present status for closeout by the NRC and TUGCO. Dave also stated that TUGCO was re-evaluating the entire issue as to whether they actually had to postulate a thermal barrier break as a small break LOCA and what the postulated flowrate must be. Cygna told TUGCO that the break size of 275 gpm was given in the B.O.P. FR-1 document of Westinghouse.	



Communications Report

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Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No:	84056
		Date:	9/29/84
Subject:	Cable Tray Support Questions	Time:	10:00 a.m.
	Response for SP-4	Place:	SFR0
Participants:	B. K. Bhujang, E. Kukowzer	of	Gibbs & Hill
	J. P. Russ		CES

Item	Comments	Required Action By
	<p>I spoke to Messrs. Bhujang and Kukowzer regarding the site prepared responses for cable tray support type Detail SP-4. Mr. Kukowzer had prepared calculations which placed the largest flexural moment at the center span of the beam member of the support. Using the "simplified method" of load combination and the SRSS of the interaction values, Mr. Kukowzer calculated an interaction value of approximately 1.01. This interaction was calculated for the Case I of the original calculations. I noted that the "simplified method" of the loading calculations was incorrect and Mr. Bhujang stated that revised calculations using the exact method would be performed.</p>	

Signed:	<i>W.H. Williams</i>	/rb	Page 1	of 1
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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:	9/28/84
Subject:	Cable Tray Support NASTRAN Analysis and Conduit Support Calculations	Time:	10:00 p.m.
		Place:	SFR0
Participants:	P. T. Huang	of	Gibbs & Hill
	J. P. Russ		CES

Item	Comments	Required Action By
	<p>I spoke to Mr. Huang regarding the types of supports that were being or have been analyzed as part of a cable tray system subjected to a response spectrum input using NASTRAN. He replied that the regular case trapeze supports had been analyzed as part of the working point deviation analysis. The regular case Detail D₄ type supports were being analyzed as part of a response to questions raised in Cygna letter 84056.031. Supports types such as SP-7 and regular case Detail D₁ were being analyzed by hand.</p> <p>I asked Mr. Huang if he would be providing a response on the capability of conduit support type CA-5a to support 5" diameter conduits. I stated that due to an oversight this subject did not appear on the list of topics presented during the exit meeting on Thursday, 20 September 1984. Mr. Huang stated that a response to my concerns would be provided and requested a copy of the conference report from the exit meeting so that he could assure that responses to all open items would be provided. I stated that a copy would be forwarded to him as soon as possible.</p>	

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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:	9/28/84
Subject:	Factors of Safety for Conduit Supports	Time:	2:00 p.m.
		Place:	SFRO
Participants:	B. K. Bhujang	of	Gibbs & Hill
	J. P. Russ		CES

Item	Comments	Required Action By
	<p>I spoke to Mr. Bhujang regarding the factors of safety for Hilti expansion anchors and the material allowables for conduit supports. I noted that conduit supports, which exclusively use Hilti expansion anchors, were designed to the 1/2 SSE load levels. Therefore, the same concerns that were raised for Hilti expansion anchors on cable tray supports, i.e. that the factor of safety will fall to some value less than 4.0 when the supports are subjected to SSE loadings, would apply to conduit supports also. I also noted that the conduit supports were checked by Gibbs & Hill to assure that the load increase from 1/2 SSE to SSE did not exceed the allowed increases in the material allowables. I noted that the calculations performed did not consider the aspect ratios of the structures and had used the "simplified method" of load combination. These factors had to be considered when verifying the adequacy of the supports for SSE loadings.</p> <p>Mr. Bhujang and I also spoke about cable tray support detail SP-4. I told Mr. Bhujang that the support calculations should consider the maximum moment causing loading situations. He stated that calculations would be performed and that he would speak to me on Saturday, 29 September 1984 regarding these calculations.</p>	

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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:	9/27/84
Subject:	Status of Cable Tray and Conduit Support Questions	Time:	11:00 a.m.
		Place:	CES, San Francisco
Participants:	B. K. Bhujang	of	Gibbs & Hill
	J. Van Amerongen		Ebasco (TUGCO)
	T. Keiss		TUGCO
	W. R. Horstman, J. P. Russ		CES

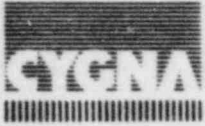
Item	Comments	Required Action By
	<p>Cygna spoke to the listed site personnel to status the responses to Cygna questions on cable tray and conduit supports.</p> <p><u>Question 2.1, Letter 84056.019</u></p> <p>Cygna noted that the TUGCO response only addressed the capability of the tray sections to resist the applied loads for the increased spans and did not evaluate the supports. Cygna requested an evaluation of the supports and noted that they must be checked for the as-built condition. A site response will be provided.</p> <p><u>Question 5, Letter 84056.019</u></p> <p>The response provided to Cygna did not consider the proper orientation of the tee-joint of the cable tray, did not consider the correct tray widths and did not consider the level of SSE loading. A revised response will be provided by the site.</p> <p><u>Question 4, Letter 84056.019</u></p> <p>The calculations provided in the response were acceptable, but lack consideration of the SSE load levels. Site will provide a response.</p>	

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Item	Comments	Required Action By
	<p><u>Question 4, Letter 84056.015</u></p> <p>Documentation for the acceptability of the reamed P2558 clamps is not available from Unistrut. However, a test program was run to show that acceptability of the clamp assemblies in the modified condition. Documentation on the test program and its results are available at site. Cygna will review this documentation during the next visit to site.</p> <p><u>Question 5, Letter 84056.021</u></p> <p>The effect of working point deviations will be incorporated into the Gibbs & Hill calculations for Detail "N." Messrs. Bhujang and Keiss are examining the possibility of employing Detail "W" as a longitudinal support. If this is unacceptable, there is a possibility that X-bracing will be installed between a pair of Detail "N" supports to provide a longitudinal load resisting system. To ensure positive mechanical contact, heavy duty clamps will be installed as required.</p> <p><u>Question 5, Letter 84056.022</u></p> <p>Cygna noted that the moments considered in the response for Detail SP-4 did not consider mid-span moments which Cygna believes are higher than the end moments used in the beam analysis. Mr. Bhujang stated that he would get the calculations for the support and speak to us on Friday, 28 September 1984. In regards to the SP-4 support without brace within the review scope, Cygna asked if clamps were used at both locations where the cable tray passed over the support. Mr. Bhujang replied that to his knowledge clamps were provided at both locations.</p> <p><u>Question 7, Letter 84056.021</u></p> <p>The original response to this question provided a CMC as a basis for closing out Cygna's question. Cygna asked whether the CMC had been designed reviewed. Mr. Keiss replied that the review process had been completed and that Cygna could review the documentation at site.</p> <p><u>Question 4, Letter 84056.022</u></p> <p>Cygna noted that the response on regular case Detail B₄ used loads from the Phase 2 NASTRAN analysis. The site response may be unconservative. Gibbs & Hill will evaluate the support for response to Cygna concerns.</p> <p>Cygna also asked what was meant by the reference to "yield" in the site response. Mr. Bhujang stated that the use of the term was incorrect and would send a rewritten response to Cygna.</p>	



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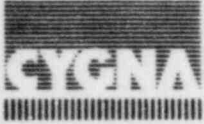
Item	Comments	Required Action By
	<p><u>Questions 6 & 7, Letter 84056.022</u></p> <p>Response to questions regarding regular case Details D₁ and D₄ were being prepared by Gibbs & Hill in New York and will be sent to Cygna when completed.</p> <p><u>Question 1, Letter 84056.026</u></p> <p>Cygna will review the test procedures and results of the ultrasonic testing during the next site visit.</p> <p><u>Question 3, Letter 84056.025</u></p> <p>Cygna noted that response did not consider the effects of transverse and vertical loadings in the reanalysis of the longitudinal supports. Cygna is presently examining these effects and will advise the site on the acceptability of the response based on the results of the Cygna investigation.</p> <p><u>Question 2, Letter 84056.027</u></p> <p>Cygna noted that the angle brace calculations were based on the results of the Phase 2 NASTRAN results. Cygna will review the acceptability of the calculations and advise TUGCO on the results.</p> <p><u>Question 1, Letter 84056.019</u></p> <p>The site personnel noted that Cygna's concerns regarding Detail "W" would be responded to in the response to Question 5, Letter 84056.021 as described above.</p>	



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:	9/26/84
Subject:	Mechanical Questions	Time:	11:00 am
		Place:	SFRO
Participants:	R. Hess, N. Williams, J. Foley, P. Rainey	of	CES
	J. Irons, W. Cristalli, C. Cavanaugh, D. Ghosh		G & H
	J. Van Amerongen		TUGCO

Item	Comments	Required Action By																
1)	The conference call was set up to discuss the TUGCO response to the Cygna question on the CCW recirculation valve opening and closing setpoints.																	
2)	<p>The minimum desired flow through the CCW heat exchanger is 11,500 GPM per the G & H mechanical group. The flow sensing circuit accuracy is 596 GPM therefore, to insure 11,500 GPM the valve is set to open at a minimum flow of $11,500 + 596 = 12,096$ GPM on decreasing flow. It could open at a maximum flow of 12,692 GPM on decreasing flow. The control circuit has a dead-band of 600 GPM between the open and close setpoints for the valve on decreasing and increasing flow respectively. This results in the following valve operation limits:</p> <table><tr><td></td><td><u>GPM MINIMUM</u></td><td><u>GPM NOMINAL</u></td><td><u>GPM MAXIMUM</u></td></tr><tr><td>OPEN</td><td>11,500</td><td>12,096</td><td>12,692</td></tr><tr><td>CLOSE</td><td>12,100</td><td>12,696</td><td>13,292</td></tr><tr><td>MAXIMUM PUMP OUTPUT WITH 4,000 GPM RECIRCULATION FLOW</td><td>16,100</td><td>16,696</td><td>17,292</td></tr></table> <p>Since the pump runout flow is slightly above 18,000 GPM, the recirculation valve will close prior to reaching runout of the pump even with the worst case instrument tolerance. In addition, if the pump head decreased to a level (near runout)</p>		<u>GPM MINIMUM</u>	<u>GPM NOMINAL</u>	<u>GPM MAXIMUM</u>	OPEN	11,500	12,096	12,692	CLOSE	12,100	12,696	13,292	MAXIMUM PUMP OUTPUT WITH 4,000 GPM RECIRCULATION FLOW	16,100	16,696	17,292	
	<u>GPM MINIMUM</u>	<u>GPM NOMINAL</u>	<u>GPM MAXIMUM</u>															
OPEN	11,500	12,096	12,692															
CLOSE	12,100	12,696	13,292															
MAXIMUM PUMP OUTPUT WITH 4,000 GPM RECIRCULATION FLOW	16,100	16,696	17,292															



Communications Report

Item	Comments	Required Action By
	<p>that did not supply the minimum flow to the most distant coolers, low flow alarms would be triggered and the operator would manually close, the recirculation valve. This action would stop the recirculation flow and increase the pump discharge head and flow to the most distant cooler. Based on the above data, the Cygna question will be closed.</p> <p>3) Cygna also questioned the maximum flow rate out of the CCW system due to a failure of one of the non-nuclear chillers. G & H stated they had run a "pipeflow" analysis for this condition and that the non safeguards loop isolation valves would close prior to the CCW surge tank being drained. The maximum flow out of the break would be less than 2500 GPM and it would decrease as the loop isolation valve closes. TUGCO will forward this analysis to Cygna as soon as the verification is complete.</p>	



Communications Report

Company:	TUGCO	<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:	9/26/84
Subject:	Cable Tray and Conduit Support Questions Modal Combinations	Time:	9:30 a.m.
		Place:	SFRO
Participants:	R. M. Kissinger	of	TUGCO
	W. R. Horstman, J. P. Russ		CES

Item	Comments	Required Action By
	Cygn spoke to Mr. Kissinger regarding the 10 percent method of modal combinations. A review of the CPSES FSAR, Section 3.7B.2.7, noted that analysis require the use of the 10 percent method. Mr. Kissinger stated that the procedure, as stated in the FSAR for 10 percent combination as well as the combination of component forces resulting from three earthquake directions, was open to interpretation.	

Signed:	<i>NH Williams</i>	/rb	Page 1	of 1
Distribution:	N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, S. Treby, J. Ellis, S. Burwell, 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:	9/25/84
Subject:	Mechanical/Electrical Questions	Time:	9:15 am
		Place:	SFRO
Participants:	Jeanne Van Amerongen	of	TUGCO
	R. Hess		CES

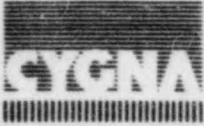
Item	Comments	Required Action By
	<p>References</p> <p>a. TUGCO letter Popplewell to Williams 9/17/84 b. TUGCO letter Popplewell to Williams 9/18/84</p> <p>1) The TUGCO response in reference a. states that the surge tank relief valve ASME Class 2 tag has been removed and the correct tag installed. Asked Jeanne if TUGCO used any paper work to document this correction to safety released equipment such as a punch list or traveler. She stated that no paper work was generated for this type of discrepancy. The correct tag was just installed by TUGCO after the discrepancy was found.</p> <p>2) Told Jeanne that the documentation supplied on the fire doors in Ref. a. would close out our question.</p> <p>3) The Ref. a. response to CYGNA's question on thermolag installation only addresses cable T130ACA43, the original CYGNA question also pertained to T13GCCM98. Jeanne will check on this and get back to us. It appears this question will require field re-verification for close-out.</p> <p>4) TUGCO's response to CYGNA's question on CCW recirculation valve set points contained in Ref. b. does not fully answer the CYGNA concern. Will the valve ever automatically close with the recirculation flow path up-off prior to the flow element? This requires that the system demand be greater than 12,696 GPM and the pump output be greater than ~ 16,700 GPM.</p>	

Signed:	<i>N. Williams</i>	/rb	Page 1	of 2
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Communications Report

Item	Comments	Required Action By
	<p>Jeanne said she would have the person who prepared the response call me to discuss the question.</p> <p>5) Jeanne also stated that TUGCO was sending another letter out today to answer the remaining systems questions.</p> <p>6) Asked Jeanne if the floor drains in the area of the CCW surge tank were monitored drains for radioactive waste. Also asked if in addition to the 10 CFR 100 analysis of releases from the surge tank vent they had looked at the ALARA implications of this release. She will check on both of these issues.</p>	



25-C-124

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:	9/20/84
Subject:	Electrical Review Question	Time:	9:40 am
		Place:	SFRO
Participants:	Jeanne Van Amerongen	of	TUGCO
	R. Hess		CES

Item	Comments	Required Action By
	<p>References</p> <p>a. Telecon R. Hess/J. Van Amerongen 9/18/84. b. Cygna letter 84056.019 (8/10/84) c. TUGCO letter Popplewell to Williams (8/30/84)</p> <p>1) Jeanne called about the additional documentation Cygna requested in reference a. She wanted to know if we wanted it verbally or in writing. Told her we would prefer it in writing.</p> <p>2) Discussed TUGCO's response (Ref. c) to Cygna's question (Ref. b) on motor horsepower rating of valves HV-4512 and HV-4524. Explained that our question was not directed at the rating listed on the one line or interconnection drawings. The vendor, Fisher Controls, listed the motor rating as 1.0 H.P. in letter CVN-027 dated 8/16/77 and G&H calculation 2323-V-12 Rev. 15 dated 5/26/82 also showed a 1.0 H.P. rating for these valve motors. Requested Jeanne to supply documentation showing the change to 0.7 H.P. listed on the installed motor name plates.</p>	

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1020.01a E. VanStigjeran, S. Ireby, 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:	9/20/84
Subject:	Cable Tray and Conduit Support Review	Time:	3:00 p.m.
	Status of Responses to Cygna Questions	Place:	G&H (N.Y.)
Participants:	E. Bezkor, B. K. Bhujang, S. C., Chang,	of	G&H
	P. T. Huang		G&H
	P. Patel		TUGCO
	W. R. Horstman, J. P. Russ		CES

Item	Comments	Required Action By
	<p>Cygna met with the TUGCO and Gibbs & Hill personnel listed above to discuss issues related to specific questions of the Cygna letters.</p> <p><u>Question 2, Appendix B Letter 84056.015</u></p> <p>The response to this question is now open pending a response to question 2 of letter 84056.031.</p> <p><u>Question 3, Letter 84056.019</u></p> <p>The responses on Detail "N," Detail "W" and the longitudinal supports are awaiting a review of the as-built conditions. A response based on these conditions will be provided to Cygna.</p> <p>Cygna will review the response provided in TUGCO's letter of 11 September 1984.</p>	



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:	9/20/84
Subject:	Cable Tray Support Review	Time:	10:00 am
		Place:	San Francisco - CES
Participants:	Pravin Patel, Ed Bezkor, S. Chang, Peter Huang	Gibbs & Hill	
	P. Patel	TUGCO	
	John Russ, Bill Horstman,	CYGNA	
	Nancy Williams		

Item	Comments	Required Action By
	<p>A discussion was held to identify open items associated with the cable tray and conduit support reviews. The following list summarizes the status:</p> <ol style="list-style-type: none"><u>Working point deviation study</u><ol style="list-style-type: none">Controlling load case: Cygnal believes that there are situations where SSE will be the governing load case. We found a case (detail SP-7) where an embedded plate was designed to 0.75 F_y for bending. The applied stresses were right to the limit. Therefore, the allowable increase in allowable for SSE would be on the order of 20-25% rather than the 60% increase permitted in the FSAR.<u>Richmond Inserts</u><p>It appears that prying was not considered for Richmond Inserts. All calculations appear to have checked Hilti expansion anchors assuming them to be the controlling bolt type. Gibbs & Hill will evaluate the effects of the change in controlling bolt type on the conclusions of their calculations.</p><u>Connection Design</u><p>Cygnal believes that rotation about the weak axis of a base plate due to pull out must be considered. Cygnal is also concerned with consistency of design assumptions at the connection. In some cases the connections are</p>	

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1020 01a



Communications Report

Item	Comments	Required Action By
	<p>considered fixed for member design while the anchorage design does not evaluate the anchor bolts with the same assumption. G & H will evaluate the effect of the connection on bolt stresses and fixity considerations.</p> <p>4. <u>Load Combinations</u></p> <p>Referring to Cygna letter 84056.031, Cygna reiterated that G&H must consider the effects of aspect ratio on comparison of the "exact" versus "simplified" method in future responses. No specific action is required by G&H at this time.</p> <p>5. <u>SRSS Methods</u></p> <p>TUGCO (Dick Kissenger) is evaluating the difference in the two SRSS methods for member component load resultants since G&H has used both in support design.</p> <p>6. <u>Eccentricities</u></p> <p>G&H has not considered the effects of eccentric loadings on beam members, i.e. not loading through the shear center. Cygna also noted that if G&H is going to rely on a "systems" approach to evaluated supports then the loads induced in the supports must be considered properly. G&H should make sure that global assumptions do not conflict with detailed assumptions. Gibbs & Hill is preparing a response on the effect of eccentricities.</p> <p>7. <u>Vertical and Transverse Loads on Longitudinal Supports</u></p> <p>Gibbs & Hill and Cygna will independently review the effects of adjacent support stiffness on the imposition of applied transverse and vertical loads to regular case longitudinal supports such as L-A₁ and L-A₄.</p> <p>8. <u>ACI 349 Appendix B</u></p> <p>Cygna is concerned with the selective use of Appendix B of ACI 349-76. G&H uses Appendix B to justify a safety factor of 1.8. Alternatively, G&H may not be adopting other Appendix B requirements. A response to these concerns will be provided.</p> <p>9. <u>AISI Versus AISC</u></p> <p>G&H is still studying the differences between the two codes. Pravin Patel noted that around 1982 they had discussed designing to AISI instead of AISC but designing</p>	



Communications Report

Item	Comments	Required Action By
	<p>to AISI was considered too difficult and incomplete. They felt there was sufficient margin in the design to account for the differences in codes. G&H must discuss this further with TUGCO. There is no schedule for response at this time.</p> <p>10. <u>Reaming of Unistrut Clamps</u></p> <p>Cygna has asked for documentation on the acceptability of increasing the hole size of a manufacturer supplied and certified component. TUGCO will supply the necessary documentation.</p> <p>11. <u>Frame Brace Angles</u></p> <p>The response to question 2 of letter 84056.027 did not address the bracing angles within the plane of the cable tray support frames. These braces will be discussed with the site during Cygna's upcoming visit.</p> <p>12. <u>Lacing Plates for Double Angle Braces</u></p> <p>Cygna is concerned that the double angle braces for supports L-A₁ and L-A₄ will not act together as a unit because no stitching or lacing plates are provided. Calculations will be performed to address this issue.</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

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

Job No. 84056

Date: 9/20/84

Subject: Cable Tray Support Review Calculations

Time: 1:00 p.m.

Place: G&H NYC

Participants: P. T. Huang

of G&H

S. C. Chaing

G&H

W. R. Horstman

CES

Item	Comments	Required Action By
	<p>The following calculations were received from Gibbs & Hill, Inc.</p> <ol style="list-style-type: none">1. SCS-104C, Set 5, Shts. 76, 78, 79, rev 6.2. SCS-122C, Set 3, Shts. 9, 10, rev 0.3. SCS-101C, Set 2, (Shts. not numbered) (Calculation pertains to use of double angles without tie plates)4. SCS-104C, Set 1, Shts. 76-95A, rev 8.	

Signed

N. Williams

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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: 9/19/84

Subject: Pipe Support Review

Time: 8:00 am

Place: SF

Participants: J. Van Amerongen

of TUGCO

D. Rencher

TUGCO

M. Chamberlain

TUGCO

J. Minichiello

Cygna

Item	Comments	Required Action By
	<p>After reviewing additional TUGCO data, Cygna requested the following information:</p> <ol style="list-style-type: none">1) In Engineering Evaluation of Separation Violation #1486 (TUGCO's response to Question 5, letter 84056.013), there are no calculations for the embedment plate. Please provide the backup calculations showing the 6"-7" separation acceptable.2) The Material Test report associated with TUGCO's response to question 10 of letter 84056.013 does show the yield and ultimate data referenced in the TUGCO response. Please provide documentation which shows that the material for the filler plate (piece 35) was taken from the bulk material in this test report.	

Signed:

N. Williams

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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:	9/18/84
Subject:	Mechanical Questions	Time:	7:40 am
		Place:	SFRO
Participants:	Jeanne Van Amerongen	of	TUGCO
	R. Hess		CES

Item	Comments	Required Action By
	<p>1) Called Jeanne concerning TUGCO response on Class 5 piping contained in TUGCO letter, Popplewell to Williams, dated 9/11/84. Asked her if position C.2 of Reg. Guide 1.29 specifically addressed Class 5 pipe design. She said it covered piping that could fall on safety related equipment. Told her that page 10 of specification 2323-MS-448 (referenced by D. Wade) stated that Class 5 piping was non-nuclear safety piping that was seismically supported. This specification does not indicate that Class 5 piping larger than 2" is seismically designed. I requested her to supply us with a seismic piping analysis for Class 5 which shows that it is seismically designed. Also requested her to send us position C.2 of Reg. Guide 1.29 since we don't have it in our files.</p> <p>2) Asked Jeanne what criteria TUGCO/G&H uses to determine if a water hammer analysis is required for a given system. She will check and get back to me.</p> <p>3) In reference to TUGCO response to Cygna Question #1 of 84056.023 I asked Jeanne how they knew that the revised calculation 233-16 would show that the max CCW temp was 130°F or less. She said that the calculation revision was not complete but they would send it to Cygna when it was done or notify Cygna if the temperature was higher than 130°F.</p>	



Communications Report

Item	Comments	Required Action By
4)	<p>Asked Jeanne how the operational modifications required by the TUGCO response to Cygna Question #7 of 84056.023 on thermal barrier minimum flow will be implemented. Also asked why Cygna was not given page 91A of calculation 229-15 while we were at G&H in June when the page is signed prepared and checked on 6/14/84. The Cygna personnel left New York on 6/22/84. Jeanne said she would check on these items and get back to me. Also told her these were preliminary comments on this response and that we had not completed reviewing it in detail.</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:	9/18/84
Subject:	Cable Tray Support Review Questions	Time:	10:00 a.m.
		Place:	G&H NYC
Participants:	P. T. Huang	of	G&H
	S. C. Chaing		G&H
	W. R. Horstman		CES

Item	Comments	Required Action By
	<p>In response to Cygna review question 84056.019, No. 2.2 - Longitudinal support on tray segment T120ABC04, Gibbs & Hill provided calculation SCS-104C, set 5, shts. 75-80, rev. 6.</p> <p>Cygna observed an error on sheet 76: support No. 480 had been assumed to support this tray segment.</p> <p>However, Cygna's walkdown, and review of the applicable drawings 2323-E1-0700-01-S and 2323-S-0904 indicate that this support does not reach to the elevation of this tray. Messrs. Huang and Chaing agreed with Cygna's observation and agreed to revise the calculations to correct this error.</p>	



Communications Report

Company:	TUGCO	<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:	9/17/84
Subject:	Conduit Support Design As-Built Analysis	Time:	1:30 pm
		Place:	G & H (N.Y.)
Participants:	P. Patel	of	TUGCO
	J. Russ		CES

Item	Comments	Required Action By
	<p>Ref: Conference Report dated 16 September 1984, "As-Built Analysis," Bezkor, Bhujang, Chang, Huang, et. al. participating.</p> <p>Since Mr. Patel was in charge of the conduit support installation, I asked him if any retro-active generic analysis had ever been performed. The intent of the question was to determine if proper control of design input, as reflected in the as-built conditions of the conduit supports, was maintained. He replied that in only one instance did such a situation occur. In that case, he stated, all change notices were collected and the impact reported in an SDAR which was subsequently closed out.</p>	

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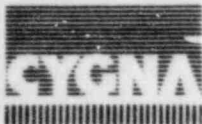


Communications Report

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	09/17/84
Subject:	Cable Tray Support Review Questions	Time:	11:00 a.m.
		Place:	Gibbs & Hill, New York
Participants:	B. K. Bhujang	of	Gibbs & Hill site
	W. R. Horstman		CES

Item	Comments	Required Action By
	<p>In reviewing TUGCO's response to question 84056.022, No. 6, regarding three specific D₁ type cable tray supports in the Auxiliary Building, Cygna found several potential problems with the analytical assumptions. First, the loads for a regular case D₁ were taken from the Phase 2 NASTRAN analysis, which does not properly account for dynamic effects of the cable trays. Second, in checking the beam and wall connection, the connection to the wall was assumed to be pinned.</p> <p>Mr. Bhujang provided several reasons for these assumptions.</p> <ol style="list-style-type: none">1. Phase 2 NASTRAN results were used, since at the time these calculations were generated, the problem with these analyses were not known. He later learned of the errors from G&H, and also was told by S. C. Chang that cases D₁ - D₄ were being reevaluated by G&H, NYC, so these calculations from site will no longer be needed.2. As for the assumption of pinned end at wall, this was done as a "worst case" for the bending moments in the beam. He felt that the base angle on the wall was sufficiently more flexible than the beam, to allow some rotation of this connection. <p>In addition, if the top Hilti bolt on the wall was to fail from the moment load, the end would be free to rotate, and the remaining bolt would still be capable of supporting the design loads.</p> <p>Mr. Horstman did not fully agree with Item 2 above, and it was agreed that further evaluation would be performed after G&H had completed the reevaluation of generic support details D₁ - D₄.</p>	

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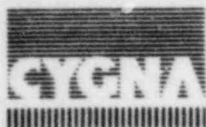


Communications Report

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:	9/17/84
Subject:	Cable Tray Support Calculations Support Cases D ₁ -D ₄	Time:	10:00 a.m.
		Place:	NYC
Participants:	P.T. Huang	of	G&H NYC
	S.C. Chaing		G&H NYC
	W.R. Horstman		CES

Item	Comments	Required Action By
	<p>In Cygna's review of the design calculations for support cases D₁ - D₄ (SCS-101C, Set 1) it was determined that the beams were designed as propped cantilevers (i.e., fixed at wall, pinned at hanger connection), resulting in a fixed end moment at the wall. However, in the design of the wall connection (Detail "7," dwg. 2323-S-0903), this moment was neglected, and only shear and pullout loads were considered.</p> <p>Gibbs and Hill indicated that they realized that this error had been made, but at the time their judgment indicated that the effect of the added moment was not significant. G&H is presently reanalyzing these support types, and will provide revised calculations as soon as they are available.</p>	

Signed: *W.H. Williams* /rmk Page 1 of 1
Distribution: N. Williams, D. Wade, J. Van Amerongen, S. Russ, R. Hess, W. Horstman, S. Treby,
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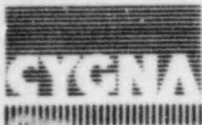


Communications Report

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:	9/16/84
Subject:	Cable Tray Supports	Time:	9:00 a.m.
	SP-7 Design History	Place:	G & H (N.Y.)
Participants:	B. K. Bhujang, S. C. Chang, P. T. Huang	of	Gibbs & Hill
	T. Keiss		TUGCO
	J. Russ		CES

Item	Comments	Required Action By
	<p>I asked Mr. Chang to explain the history of the design of Support Detail SP-7. He replied with the following chronology.</p> <ol style="list-style-type: none">1. The original design showed a maximum length (L) of 7'-0" with a maximum tray width (W) of 2'-0".2. The anchor bolt designs were based on tray spors of 9'-0" (later reduced to 8'-6") for L = 7'-0" and W = 2'-0".3. The reanalysis for undercut sections (Calculation SCS-146C, Set 1) required the calculation of a new L. The results of this generic reanalysis showed that L must be less than or equal to 6'-0" with W = 2'-0". An "as-built" analysis of all supports in the plant showed all SP-7 supports to be okay.	

Signed: N.H. Williams /rf Page 1 of 1
Distribution: N.Williams, D.Wade, J.VanAmerongen, J.Russ, S.Treby, J.Ellis, S.Burwell, Project



Communications Report

Company: TUGCO

☐ Telecon

☒ Conference Report

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

Job No. 84056

Date: 9/16/84

Subject: Cable Tray and Conduit Support Review Criteria
Allowable Stress Values

Time: 1:15 pm

Place: G & H (N.Y.)

Participants: R. M. Kissinger, T. Keiss, P. Patel

of TUGCO

E. L. Bezkor, B. K. Bhujang, P. T. Huang

Gibbs & Hill

W. Horstman, J. Russ

CES

Item	Comments	Required Action By
	<p>Mr. Kissinger asked the basis for selection of the quantities listed in the Table of Allowable Stresses in the Cygna Design Review Criteria, DC-3. I replied that the table was developed based on Cygna's previous reviews and experience. The intent of the table is for the convenience of the reviewer only. It is not intended to verbatim reflect the contents of the Gibbs & Hill design documents. It contains information such as SSE increase from the Comanche Peak project and excerpts from the AISC manual.</p>	

Signed:

N. 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:	9/16/84
Subject:	Cable Tray Support Review As-Built Analysis	Time:	2:30 pm
		Place:	G & H (N.Y.)
Participants:	E. Bezkor, B. K. Bhujang, S. C. Chang	of	
	P. T. Huang, A. Kenkre		Gibbs & Hill
	Pravin Pater		TUGCO
	John Russ		CES

Item	Comments	Required Action By
	<p>Gibbs & Hill performed a generic reanalysis of anchor bolts for detail SP-7 with brace. The analysis concluded that for supports above certain elevations, the supports would need to be evaluated on a case-by-case basis. I asked Mr. Chang if the as-built configurations as reflected by CMC's and DCA's were considered. He replied that only in cases where the stresses were near the allowable levels were the as-built conditions considered. I then spoke to Messrs. Bezkor, Bhujang, Huang, Kenkre and Patel and asked if the as-built conditions had been considered in all generic studies. They replied that they had and also noted that all CMC's had to be design reviewed which would eliminate any problem.</p>	

Signed:	<i>N. Williams</i>	/rf	Page 1	of 1
Distribution:	N. Williams, D. Wade, J. VanAmerongen, R. Hess, J. Russ, 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: 9/15/84

Subject: Response to Cygna Cable Tray and Conduit Questions

Time: 1:00 pm

Place: G & H

Participants: N. H. Williams, J. R. Russ, W. R. Horstman of

CES

R. M. Kissinger, T. Keiss

TUGCO

B.K. Bhujang, P. T. Huang, and

G & H

S. C. Chang (intermittent)

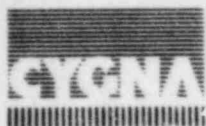
Item	Comments	Required Action By
1.	<p>Cygna addressed several issues which resulted from the initial review of cable tray and conduit support calculations. The following questions were asked:</p> <p>Q Cygna's review has noted that the effects of prying action were not considered in the design of Richmond Inserts. Can Gibbs & Hill or TUGCO validate the assumption of no-prying on the inserts?</p> <p>A Originally it was felt that the Hilti expansion anchors controlled the design and therefore, the Richmond Inserts would not need to be checked. We realize that 1-1/4" diameter Hilti Super-Kwik bolts with 10-5/8" and 13-1/8" embedments have greater tensile allowables than 1" diameter Richmond Inserts.</p> <p>Obviously assurances that 1" diameter Richmond Inserts are not loaded beyond their allowables must be provided. Gibbs & Hill prepared a series of calculations for the effects of prying on Hilti Kwik bolts. These calculations showed the elevations, above which, the anchor bolts for the support type under consideration, had to be checked on a case-by-case basis. We feel that by considering the actual tray loads, G-values and support configurations, the Richmond Inserts will be adequate to resist the applied loads.</p> <p>Cygna noted that the cut-off elevations were determined on the basis of Hilti-Super Kwik bolt allowables. Therefore, any similar evaluation would need to consider cut-off elevations based on Richmond Insert allowables.</p>	

Signed:

NH Williams

/rb Page 1 of 4

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S. Burwell, Project File



Communications Report

Item	Comments	Required Action By
2.	<p>Q Do Regular type Longitudinal supports with double-angle braces have spacer plates at required intervals?</p> <p>A No spacer plates were used.</p>	
3.	<p>Q TUGCO's response (reference letter from L. M. Popplewell to N. Williams dated 4 September 1984) to question 1 of Cygna's letter 84056.021 states that the cable tray supports in question are in contact with the heat exchanger. Doesn't the condition still violate the criteria referenced in Cygna's letter and if necessary, how will the situation be rectified?</p> <p>A TUGCO agrees that the situation is in violation of the referenced criteria. An evaluation on the impact of the support-heat exchanger contact by the Mechanical Engineering Group will be performed. This evaluation includes an assessment of the effects of notching the support and/or the insulation.</p>	
4.	<p>Q TUGCO's response (reference letter from L. M. Popplewell to N. Williams dated 6 September 1984) to question 7 of Cygna's letter 84056.021 references CMC 12105, revision 1 as the reason for accepting the noted spacing violation? Will Cygna be provided with a copy of the CVC?</p> <p>A Cygna will be provided with the CVC for revision 1 of the CMC.</p>	
5.	<p>Q Cygna has noted the use of unstiffened moment connections between cable tray supports and embedded plates. Gibbs & Hill specification 2323-SS-30, revision 1 requires that the embedment be stiffened to resist the applied moment. Can the use of the unstiffened moment connection be validated?</p> <p>A G&H agrees that per 2323-SS-30 the unstiffened moment connections must be evaluated.</p>	
6.	<p>Q TUGCO's response (reference letter from L. M. Popplewell to N. Williams, dated 6 September 1984) to question 1 of Cygna letter 84056.026 noted that ultrasonic testing was performed to verify that the correct anchor bolts were installed prior to implementation of the "star" requirement for Hilti Super-Kwik bolts. Please explain how this is accomplished and where documentation exists on the results of the testing?</p> <p>A The testing method for the length and bolt type (Kwik versus Super-Kwik) is based on the difference between the reflection of the sound waves in a Super-Kwik bolt versus a regular Kwik bolt. The wave is reflected differently due to the additional cone associated with the extra wedges on the Super-Kwik bolts. Documentation from the test program is available on site.</p>	



Communications Report

Item	Comments	Required Action By																
7.	<p>Q Please explain TUGCO's response on 6 inch wide cable trays (reference letter from L. M. Popplewell to N. Williams, dated 7 September 1984) as noted in question 1 of Cygna letter 84056.015?</p> <p>A Any time a 6-inch wide tray is covered with Thermolag, the tray is automatically evaluated for the actual applied loadings.</p>																	
8.	<p>Q In response to question 3 of Cygna letter 84056.025, Gibbs & Hill provided calculations in GTN-69437. Cygna noted that the response for L-A₄ type supports did not address vertical or horizontal transverse cable tray loads on the support. Would you please explain this assumption?</p> <p>A Regular type longitudinal cable tray supports do not support vertical or transverse loads. These supports are placed between a pair of regular cable tray supports after the regular supports are erected.</p> <p>Futhermore, the flexural stiffnesses of the beam and hanger members of the longitudinal support are much smaller than the flexural stiffnesses of the transverse support beams and hangers. Therefore, the transverse supports will resist the vertical and transverse tray loadings.</p>																	
9.	<p>Q Cygna has noted two different methods of calculating stress interaction valves for structural members of cable tray and conduit supports. The first method involves a square root of the sum of the squares (SRSS) of the component forces or moments due to all directions of seismic loading before calculating the stress interaction values based on AISC equations. The second method involves calculating interaction ratios for each direction of loading and then performing an SRSS on the interaction values. An example is shown below. The second method results in lower resultant interaction valves than the first. Which method is appropriate for use in the design of cable tray and conduit supports?</p> <table><tr><th>EQ DIR.</th><th>S T R E S S AXIAL</th><th colspan="2">C O M P O N E N T BENDING 1 BENDING 2</th></tr><tr><td>X</td><td>f_{ax}</td><td>f_{b1x}</td><td>f_{b2x}</td></tr><tr><td>Y</td><td>f_{ay}</td><td>f_{b1y}</td><td>f_{b2y}</td></tr><tr><td>Z</td><td>f_{az}</td><td>f_{b1z}</td><td>f_{b2z}</td></tr></table>	EQ DIR.	S T R E S S AXIAL	C O M P O N E N T BENDING 1 BENDING 2		X	f _{ax}	f _{b1x}	f _{b2x}	Y	f _{ay}	f _{b1y}	f _{b2y}	Z	f _{az}	f _{b1z}	f _{b2z}	
EQ DIR.	S T R E S S AXIAL	C O M P O N E N T BENDING 1 BENDING 2																
X	f _{ax}	f _{b1x}	f _{b2x}															
Y	f _{ay}	f _{b1y}	f _{b2y}															
Z	f _{az}	f _{b1z}	f _{b2z}															



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Item	Comments	Required Action By
METHOD 1	$I_{TOTAL} = \frac{(f_{ax}^2 + f_{ay}^2 + f_{az}^2)^{1/2}}{F_a} + \frac{(f_{b1x}^2 + f_{b1y}^2 + f_{b1z}^2)^{1/2}}{F_{b1}} + \frac{(f_{b2x}^2 + f_{b2y}^2 + f_{b2z}^2)^{1/2}}{F_{b2}}$	
METHOD 2	$I_x = \frac{f_{ax}}{F_a} + \frac{f_{b1x}}{F_{b1}} + \frac{f_{b2x}}{F_{b2}}$ $I_y = \frac{f_{ay}}{F_a} + \frac{f_{b1y}}{F_{b1}} + \frac{f_{b2y}}{F_{b2}}$ $I_z = \frac{f_{az}}{F_a} + \frac{f_{b1z}}{F_{b1}} + \frac{f_{b2z}}{F_{b2}}$ $I_{TOTAL} = (I_x^2 + I_y^2 + I_z^2)^{1/2}$	
<p>A The question of which method is acceptable has not been decided. We will consider this issue before providing a response to the question.</p>		
<p>10. Q Is the 10% criteria for closely spaced modes required to be checked for the NASTRAN response spectrum analysis?</p>		
<p>A No, not to our knowledge.</p>		



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station	Job No.	84056
	Independent Assessment Program - Phase 4	Date:	9/14/84
Subject:	Cable Tray/Conduit Support Reviews	Time:	9:30 a.m.
		Place:	G&H NYC
Participants:	B.K. Bhojang, S.C. Chang, P.T. Huang	of	G&H
	R.M. Kissinger		TUGCO
	W.R. Horstman, J.P. Russ, N.H. Williams		CES

Item	Comments	Required Action By
	<p>Cygna addressed the following issues as described below.</p> <ol style="list-style-type: none">Cygna noted the following while the checking the buckling for the longer member of the enveloping case of B₄ - C₄ type supports in the working point deviation calculations.<ol style="list-style-type: none">The values for the stiffness at the tray level which are used to calculate the K value for buckling was incorrect. The calculation used the flexural stiffness of the channel beam instead of the torsional stiffness. Using the torsional stiffness increases the K value to 0.70.The base connection was assumed as fixed against rotation about the centerline of the bolts. This means that the bolts must be designed as a moment resistant connection which has not been considered for cases of tensile or compressive loads on the outstanding leg of the angle.A reduction factor for K based on the stepped compressive load in the hanger was applied. This factor was calculated for a different loading condition in a separate analysis. The factor must be recalculated for the case under consideration. <p>In response, the Gibbs & Hill - TUGCO personnel stated the following:</p> <ol style="list-style-type: none">The stiffness value and its effects would be reviewed.	

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

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Communications Report

Item	Comments	Required Action By
	<p>B. The connection does provide moment resistance and the anchor bolts would have to be designed accordingly. The bolt loads may see a load of 1.5 to 2.9 times the applied compressive or tensile load from the hanger. An evaluation of this effect will be performed and a response will be given to Cygna.</p> <p>C. The use of the reduction factor from a previous analysis was incorrect and a new factor would be calculated.</p> <p>2. In the response to question 2.1 of letter 84056.019, Cygna noted that support 480 was considered as a support on the in-scope tray. Cygna's walkdown and the generic support drawings show that the tray is not supported by this support. Gibbs & Hill will reevaluate the tray segments in question and provide Cygna with a response.</p> <p>3. In the response to question 3 of letter 84056.018 which discusses Detail "K" of drawing 2323-E1-0601-01-S, Gibbs & Hill considered the torsion on the support due to longitudinal loads to be resisted by flexure of the tray. Cygna noted that by considering the relative stiffnesses of the tray and the support, the support must resist the load. Gibbs & Hill concurred and will reevaluate the support considering the above.</p>	



Communications Report

Company: Texas Utilities

☒ Telecon

☐ Conference Report

Project: Texas Utilities

Job No. 84056

Independent Assessment Program - Phase 4

Date: 9/13/84

Subject: Mechanical System Questions

Time: 11:00 a.m.

Place: SFRO

Participants: Mark Wells

of TUGCO

R. Hess

CES

Item	Comments	Required Action By
	<ol style="list-style-type: none">1) Mark called in reference to question #6 of Cygna letter 84056.023 dated 8/21/84. He wanted to know what documentation we needed as part of the TUGCO response to this question on fire doors.2) Stated that we wanted the documentation TUGCO generated when the wrong door was found installed in Room 115. Mark said that since fire doors are not safety related they do not fill out NCR's or Travelers when discrepancies are noted. The documentation may consist of a memo from engineering or construction to purchasing and a subsequent purchase order to obtain the correct door. Fire door ratings are normally checked during walkdowns such as for Appendix "R" compliance.3) Asked Mark to send us whatever existed and a brief description of their procedure for finding and correcting these discrepancies.	

Signed:

R. V. Hess

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~~D. Smedly, S. Troby, J. Ellic, 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:	09/13/84
Subject:	Conduit Supports and Letter Responses	Time:	9:00 a.m.
		Place:	G&H, New York
Participants:	B. K. Bhujang	of	Gibbs & Hill
	R. M. Kissinger		TUGCO
	W. R. Horstman, J. P. Russ		CES

Item	Comments	Required Action By
1.	<p>Cygna met with the TUGCO and Gibbs & Hill personnel listed above to review the cable tray and conduit support design. The items discussed are listed below.</p> <p>Inconsistent use of ACI 349-76, Appendix B.</p> <p>Cygna had noted the selective use of ACI 349-76, Appendix B as a reference for justification of factors of safety for Richmond Inserts and Hilti expansion anchors as well as equations for calculating Hilti anchorage capacities. (Detail "11", Drawing 2323-S-0905.) Cygna wanted to know if TUGCO had adopted the appendix as a basis for qualifying anchorages as referenced, why hadn't they consistently applied the intent of the other code sections such as B.7.3?</p> <p>In response, Mr. Kissinger replied that Appendix B had not been formally adopted by TUGCO. In addition, as far as the requirements of Section B.7.3 are concerned, he felt that if connections as described therein were designed using manufacturers' tested allowables, then there was sufficient justification of the connection adequacy. A response on the selective use of the code will be prepared for Cygna.</p>	
2.	<p>Cygna's review of the conduit support IN-CSM-15a noted that the calculation did not address the weld capacities, nor the effects due to concrete compressive forces on the anchor bolts. During the walkdown, Cygna had also noted a base angle which did not provide adequate bearing due to concrete unevenness (Ref. Question 4, Letter 84056.020). Mr. Bhujang stated that the support noted in the referenced question had been repaired by grouting under</p>	

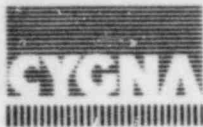
Signed: W. Williams /jw Page 1 of 4

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Communications Report

Item	Comments	Required Action By
	the support and using beveled washers for the Hiltis. Calculations had been prepared for this support but had not been checked. Mr. Kissinger stated that Cygna's concerns would be addressed in these calculations.	
3.	<p>In the calculations for conduit supports CSM-18c, -18d, and -18f, Cygna noted that the support was designed to the conduit configuration shown in Figure 1, attached. The calculations result in a total allowable load which the support may carry. Cygna was concerned that the configuration shown in Figure 2 was the controlling case and would result in lower allowable loads.</p> <p>Mr. Kissinger agreed that Cygna was correct but the total change in loads was negligible due to the formulation shown in Attachment 1. Cygna questioned the inclusion of the vertical loads in the SRSS. A revised calculation showed that $P_1 = .53 P_o$. Mr. Kissinger stated that when considering the base conservative base plate prying factor of 1.5, the effect on the design was negligible.</p> <p>Cygna also noted that the base plate stress calculations did not include the effects due to the compressive concrete force. Mr. Bhujang checked with the site and determined that the baseplate stress calculations were conservative as they included only one-half the plate width, a distance equal to 5".</p>	
4.	Cygna asked if conduit support type CA-5a was adequate for 5" diameter conduits. Gibbs & Hill stated that calculations for 5" conduits would be provided to Cygna.	
5.	Cygna asked if the load case of Figure 2 from Item 3 above had been considered in the design of CSM-42a. Mr. Kissinger and Mr. Russ then reviewed calculation SCS-209C, Set 3. The calculation considered all loading configurations. Cygna also asked about the effect of concrete compressive forces in the bolt design. Mr. Kissinger stated such calculations would be included with the calculation for support IN-CSM-15a.	
6.	<p>Cygna had reviewed the response to question 5, Attachment A of letter 84056.019 and noted the following discrepancies.</p> <p>A. The orientation of the tee-joint was incorrect and did not reflect the as-built condition;</p> <p>B. no longitudinal supports for the in-scope tray exist in the Safeguards Building; and,</p> <p>C. The tray segments' widths used in the analysis were incorrect.</p>	



Communications Report

Item	Comments	Required Action By
7.	<p>Mr. Bhujang stated that the as-built situation will be checked and new calculations prepared as required.</p> <p>Cygna asked if a DCA/CMC existed for bracing plates on double angle braces. Mr. Bhujang stated that a search would be made but felt that no plates were used.</p>	

ATTACHMENT 1

- Assumptions:
- A. Design is controlled by anchor bolt capacities.
 - B. Shear in bolts due to moments about Y-Y axis are small.
 - C. Longitudinal spans are two times transverse spans.
Transverse spans are equal to vertical spans.
 - D. A uniform and equal G field is applied in all directions (X, Y, Z).

Per assumption C, the loadings for Figures 1 and 2 are as follows:

Figure 1:

$$P_X = P_T = P_0$$

$$P_Y = P_V = P_0$$

$$P_Z = P_L = 2P_T = 2P_0$$

Figure 2:

$$P_X = P_{L_1} + P_{T_1}$$

$$= 2P_1 + P_1 = 3P_1$$

$$P_Y = 2P_{V_1} = 2P_1$$

$$P_Z = P_{L_1} + P_{T_1}$$

$$= 2P_1 + P_1 = 3P_1$$

Since the support is a cantilever, the three earthquake components cause distinct effects, and the tube steel may be oriented at any angle about the Y-Y axis on the base plate. A total applied load vector which is equal to the SRSS of the components may be applied. By applying such a vector, the relative magnitudes of P_0 and P_1 may be established.

$$\overline{P}_0 = [P_0^2 + P_0^2 + (2P_0)^2]^{1/2} = \sqrt{6} P_0 \quad (1)$$

$$\overline{P}_1 = [(3P_1)^2 + (2P_1)^2 + (3P_1)^2]^{1/2} = \sqrt{21} P_1 \quad (2)$$

Equating (1) and (2) and solving for P_1 :

$$P_1 = \sqrt{\frac{6}{21}} P_0$$

$$= .52 P_0$$

Therefore, this shows that the loads for the condition in Figure 2 are 1/2 the magnitude of Figure 1. Considering the vector magnitude, the design is adequate.



Calculation Sheet

Project	Prepared By	Date
Subject	Checked By	Date
System	Job No	File No
Analysis No	Rev. No	Sheet No

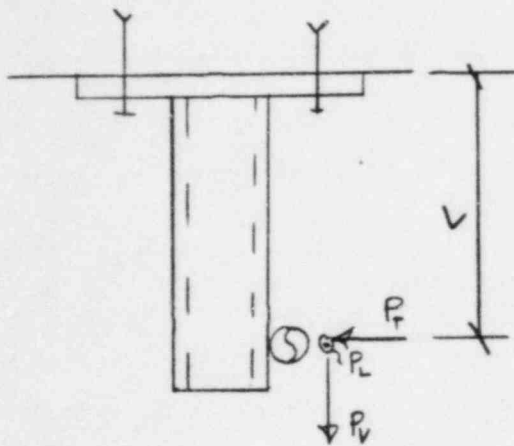


FIGURE 1

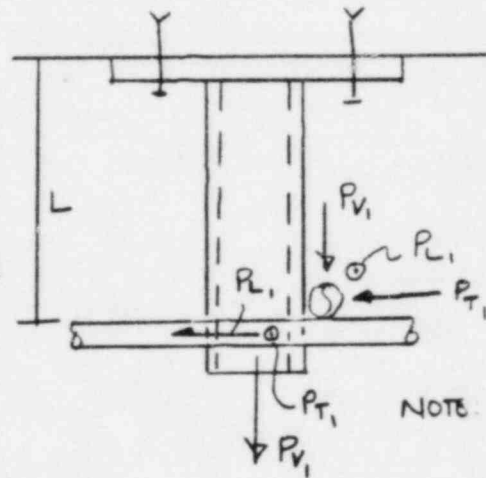
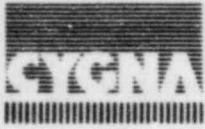


FIGURE 2

NOTE: CONDUITS
OF EQUAL
DIAMETER



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station	Job No.	84056
	Independent Assessment Program - Phase 4	Date:	9/12/84
Subject:	NRC Questions	Time:	11:00 a.m.
		Place:	G&H (NYC)
Participants:	E. Bezkor, B.K. Bhujang, S.C. Chang, P.T. Huang, J. Pier	of	G&H
	R.M. Kissinger, C.R. Hooton (phone), D. Wade (phone)		TUGCO
	J. Van Amerongen		TUGCO (EBASCO)
	W.R. Horstman, J.P. Russ		CES

Item	Comments	Required Action By
	<p>Reference: Letter from B. J. Youngblood to M. D. Spence, Docket No. 50-455</p> <p>Mr. Wade called to discuss the questions asked by the NRC (Ref. 1). Cygna was present to respond to questions regarding Cygna's statements on the issues.</p> <p>Mr. Wade asked Mr. Kissinger if it was possible to easily arrive at a number of Hilti bolts which may have a factor of safety of three. Mr. Kissinger responded that the task would involve a large volume of work. Mr. Wade stated that he felt that the NRC wasn't questioning the factor of safety of three and would speak to the staff about the intent of their question. Mr. Bezkor stated that Gibbs & Hill had prepared a reply on the acceptability of a safety factor of three. Mr. Wade asked that the reply be mailed to site so that it could be studied before replying to the NRC.</p> <p>Mr. Wade asked what the intent of question 130.38 was. Mr. Kissinger stated that he was not sure but suggested that the transcripts of the hearings be reviewed to see what Cygna's statements were. Mr. Wade said that copies of the transcripts would be telecopied to Gibbs & Hill for review. Messrs. Horstman and Russ were requested to speak to N. H. Williams about her statements in testimony.</p> <p>In regards to question 130.39, Mr. Wade asked why the NRC is asking the FSAR to be changed. He asked if that was what the intentions of Cygna's statements were. Mr. Russ replied that the intent of referring to the ANCO report, a comprehensive</p>	

Signed: NH Williams Page 1 of 2 /rmk

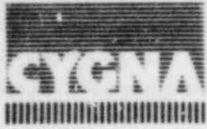
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Communications Report

Item	Comments	Required Action By
	<p>report detailing raceway behavior under seismic loading, was to show the actual behavior of the systems. This report had also been used by other utilities to justify damping values greater than those specified by the applicable regulatory guides. The TUGCO personnel will review the FSAR commitments and correlate them with the use of damping values for bolted structures for cable trays and supports.</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:	9/12/84
Subject:	Cable Tray/Conduit Support Reviews Generic CMC's & DCA's	Time:	
		Place:	
Participants:	B.K. Bhujang	of	G&H
	R.M. Kissinger		TUGCO
	W.R. Horstman, J.P. Russ		CES

Item	Comments	Required Action By
	<p>Cygna met with Messrs. Bhujang and Kissinger to discuss the DCA's and CMC's listed below. Due to their continuing involvement with the cable tray and conduit supports, these gentlemen were able to provide Cygna with the historical information regarding the change notices listed below:</p> <p><u>DCA 575, Rev 1</u></p> <p>The detail shown was not used as it was superceded by a later connection detail.</p> <p><u>DCA 1564, Rev. 0</u></p> <p>Cygna believes that it is possible for violations of AISC edge distance requirements to occur. Mr. Kissinger replied that violations could not occur since Q.C. inspections are performed in accordance with the AISC code. Therefore, edge violations are caught.</p> <p><u>DCA 1711, Rev. 0 and DCA 20385, Rev. 0</u></p> <p>Cygna noted that the replacement of 1" diameter Richmond Inserts with 1-1/4" diameter Hilti Super-Kwik bolts is not appropriate because the allowable shear for the Super-Kwik bolt (10.37 kips) is smaller than the allowable shear for a Richmond Insert (11.5 kips) as listed in Gibbs & Hill Specification 2323-SS-30, Rev. 1. Mr. Bhujang replied that DCA 1711 was written before the issuance of 2323-SS-30 when the allowable shear for 1" diameter Richmond Inserts was listed as 10.1 kips per calculation SCS-101C, Set 5.</p>	

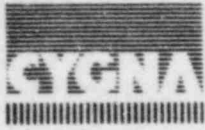
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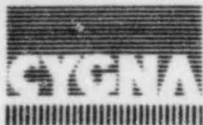
Communications Report

Item	Comments	Required Action By
	<p><u>DCA 2079 Rev. 0 and DCA 2084, Rev. 0</u></p> <p>Cygna will review the connection details for acceptability.</p> <p><u>DCA 2421, Rev. 0</u></p> <p>Cygna asked Mr. Bhujang how this depicted base connection behaved. Cygna was concerned that for the case 1 connection shown, the Richmond inserts capabilities would not be enveloped by the original two-bolt detail since the behavior of the connection is quite different. Calculations in support of the CVC will be searched for in the Gibbs & Hill calculation books and made available to Cygna.</p> <p><u>DCA 2538, Rev. 0</u></p> <p>DE/CD S-1000 lists calculation book SCS-101C as a reference for the tolerances shown. The calculations will be provided to Cygna when located.</p> <p><u>DCA 3318, Rev. 0</u></p> <p>To assure the adequacy of the brace connection details, Cygna was referred to the response to Question 2 of letter 84056.027.</p> <p><u>DCA 3423, Revs. 0 and 1</u></p> <p>Cygna was concerned with the adequacy of the welds as noted in Revision 0 of the DCA. Hand calculations show that the tensile and shear capabilities exceed those of the bolt. The Revision 0 detail was used until Revision 1 of the DCA was issued. Supporting documentation for Revision 1 exists with the calculations for welding supports to embedded plates.</p> <p><u>DCA 3464, Rev. 23</u></p> <p>Cygna is to review the referenced calculations.</p> <p><u>DCA 3622, Rev. 1 and DCA 4897, Rev. 0</u></p> <p>Cygna was referenced to response to question 1 of letter 84056.025 and question 1 of letter 84056.018.</p> <p><u>DCA 4735, Rev. 0</u></p> <p>Cygna asked for the location of the calculations that verify the design changes. The calculations appear in the original support design calculations. Cygna will verify this.</p>	



Communications Report

Item	Comments	Required Action By												
	<p><u>DCA 7043, Rev. 3</u></p> <p>Cyigna will review calculation SCS-122C, Set 2, Sheets 1-60.</p> <p><u>DCA 19973, Rev. 5</u></p> <p>This change is covered in a CMC and will be discussed at that time.</p> <p><u>DCA 20278, Rev. 1</u></p> <p>These changes deal with working point deviations which were previously discussed with Gibbs & Hill.</p> <p><u>CMC 32503, Rev. 0</u></p> <p>Since shear governs, there is no problem with the calculations. Mr. Kissinger will obtain a copy of NCR-E-2092 for Cyigna's review.</p> <p><u>CMC 80254, Rev. 0</u></p> <p>Cyigna was referred to the response to question 2 of letter 84056.027.</p> <p>Cyigna reviewed the following DCA's and CMC's and found no problems.</p> <table><tr><td><u>DCA'S</u></td><td><u>CMC'S</u></td></tr><tr><td>2687</td><td>1969</td></tr><tr><td></td><td>2055</td></tr><tr><td></td><td>3422</td></tr><tr><td></td><td>32456</td></tr><tr><td></td><td>77652</td></tr></table>	<u>DCA'S</u>	<u>CMC'S</u>	2687	1969		2055		3422		32456		77652	
<u>DCA'S</u>	<u>CMC'S</u>													
2687	1969													
	2055													
	3422													
	32456													
	77652													



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:	9/11/84
Subject:	Mechanical and Electrical Review	Time:	11:00 a.m.
		Place:	SERO
Participants:	Jeanne Van Amerongen	of	TUGCO
	R. Hess		C.E.S.

Item	Comments	Required Action By
	References: (1) Cygna letter 84056.023 (8/12/84) Question #6 (2) Cygna letter 84056.024 (8/21/84) Question #5 (3) TUGCO letter Popplewell to Williams dated 8/31/84 (4) TUGCO letter Popplewell to Williams dated 9/4/84	
1.	The TUGCO response (Ref. 3) to Cygna Question 6 (Ref. 1) did not supply the requested documentation on how the nonfire rated door was originally detected by TUGCO and what paperwork was used to correct the problem. Jeanne said she would investigate it and provide Cygna with the required documentation.	
2.	The TUGCO response (Ref. 4) to Cygna Question 5 (Ref. 2) stated that the Thermo-Lag fire protection had been reinstalled after the Cygna walkdown. However, the attached Construction Operation Traveler no. AM84-876-0500 shows that the reinstallation was signed off by QA/QC ENG on 7/13/84. This is before the Cygna walkdown which occurred during the week of July 16 - 20, 1984. Also, the attached inspection report E-1-0049703 is dated 7/14/84. Jeanne said she would check with QC on this and get additional information back to Cygna.	

Signed:	<i>R. W. Hess</i>	Page	1	of	1
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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:	9/11/84
Subject:	Pipe Support Follow-up Questions	Time:	1:00 p.m.
		Place:	San Francisco
Participants:	J. Van Amerongen	of	TUGCO
	D. Rencher		TUGCO
	T. Kerlin		TUGCO
	J. Minichiello		Cygna

Item	Comments	Required Action By
	<p>Cygna had the following follow-up questions on the pipe support design/walkdown review scope.</p> <p>1. <u>Cygna letter 84056.013, question 10a</u></p> <p>a. The rear bracket is adequately located with respect to the two beams, as shown in section J-J. Piece 35, however, is <u>not</u> located anywhere on the drawing with respect to item 22 or the rear bracket. In other words,</p> <p>(1) how did the designer size piece 35 if he didn't know where it was relative to the rear bracket?</p> <p>(2) how did construction fabricate the support without knowing the location of piece 35?</p> <p>(3) If piece 35 was "assumed centered" on the rear bracket, which was located on the two beams, what tolerances does QC use for "assume center" items?</p> <p>(4) The output is conservative since the thickness of piece 35 is input as 7/16" rather than the 1/2" shown on Revision 10 of the drawing.</p> <p>Mr. Kerlin stated that piece 35 may have been properly dimensioned in an earlier revision of the drawing. He believed the designer, in the earlier calculation, had designed the plate (piece 35) to transmit the load directly to piece 22 through the welds. (TUGCO will provide further response.)</p>	

Signed: John C Minichiello /dmm Page 1 of 2

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Communications Report

Item	Comments	Required Action By
2. <u>Cygna letter 84056.014, Question 1</u>	<p>In TUGCO's response, they note that traceability can be through nameplates, tags or serial number. As TUGCO has stated in their response to letter 84056.013, question 3, material from unused supports is occasionally used in other supports, so tag numbers are not a reliable source. Cygna points this out as an inconsistency.</p> <p>In tracing sizes by measuring, Cygna concurs that this is a possible method. However, how is this done for an SRS-12 and SRS-14 sway struts, since both have the same dimensions in the NPSI catalog? If these are verified through component traceability, please provide an example (list, etc.) of the serial numbers which QC would check.</p>	
3. <u>Cygna letter 84056.017, question 1</u>	<p>Since there were no dimensions to the stiffness of section BB in the present revision, had earlier revisions had this dimension? Cygna requested a description of the construction of this plate from the standpoint of fabrication and QC.</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:	9/7/84
Subject:	Cable Tray Support Review	Time:	9:30 a.m.
	Working Point Deviations	Place:	G & H (N.Y.)
Participants:	Jong Pier	of	Gibbs & Hill
	J. P. Russ, Bill Horstman		CES

Item	Comments	Required Action By
	<p>Cygnal asked Mr. Pier the following questions regarding the working point deviation analysis:</p> <ol style="list-style-type: none">1. Why were the cable tray supports restrained in the out-of-plane direction;2. Why were the trays fixed to the beams of the supports;3. Were mode shapes plotted; and,4. What percentage of mass was participating. <p>Mr. Pier replied as follows:</p> <ol style="list-style-type: none">1. & 2: The support restraint and tray fixities were per instructions of the structural group;3. No mode shapes were plotted or output; and,4. The participation factors were printed in the output.	

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Communications Report

Item	Comments	Required Action By
	Cygna verified that sufficient mass was participating in the analysis.	



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:	9/7/84
Subject:	Cable Tray Support Review Working Point Deviations	Time:	1:30 p.m.
		Place:	G & H (N.Y.)
Participants:	E. Bezkor, B. Bhujang, S. Chang, P. Huang,	of	
	J. Pier		G & H
	W. Horstman, J. Russ, N. Williams		CES

Item	Comments	Required Action By
	<p>Cygna discussed with Gibbs & Hill the analysis for working point deviations. Cygna noted that the out-of-plane displacements of the tray supports were restrained and that the trays were rigidly connected to the support beams. Mr. Huang replied that these modelling assumptions were consistent with the support-tray system behavior. He noted that the longitudinal supports will resist the accelerated frame weight in the out-of-plane direction.</p> <p>Cygna also noted that only Hilti expansion anchors were checked in the analysis. Since Richmond Inserts were used for the supports and they have lower allowables when compared to some Hilti expansion anchors, the calculations must consider them also. The calculations for the cut-off elevation, above which the supports must be checked on a case-by-case basis, were checked and were found to be unchanged by considering the Richmond Inserts. Gibbs & Hill noted that the Richmond Inserts would be considered in the future. Cygna will review the remaining working point deviations calculations to check for the effects of Richmond Inserts.</p> <p>Cygna also noted that the working point calculations compared the refined OBE loads to unrefined SSE loads. Cygna believes that comparison is not correct. Gibbs & Hill noted Cygna's concerns and stated that they would await Cygna's completed evaluation before responding. Gibbs & Hill also noted that the cases</p>	

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S. Burwell, Project File

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Communications Report

Item	Comments	Required Action By
	<p>reviewed were very conservative and did not really represent actual plant conditions.</p> <p>Cygna noted that the response to question 4 of letter 84056.015 showed loads beyond the Unistrut rated capability of the P2558 clamp assembly. Mr. Huang showed Cygna sheets 7a, 7b, 8a, 8b, 9a and 9b of drawing 2323-S-0910 which show limitations on the longitudinal spans for supports using P2558 clamps and thus ensure that the loads will not exceed the noted allowables.</p>	



20-C-17

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:	9/7/84
Subject:	Data Request Follow-up	Time:	7:30 a.m.
		Place:	SF
Participants:	J. Van Amerongen	of	TUGCO
	J. Minichiello		Cygna

Item	Comments	Required Action By
	<p>Cygna requested the following backup documents to the TUGCO responses on the pipe supports:</p> <ol style="list-style-type: none">1. Cygna letter 84056.013, question 5, TUGCO response 8/24/84 - Cygna requested a copy of the EESV form showing acceptability.2. Cygna letter 84056.013, Question 8, TUGCO response 8/11/84 - since the nuts were not backed off in July 1984, Cygna requested documentation to show that the rework described in NCR 9241, Rev. 2, had been performed.3. Cygna letter 84056.013, Question 10, TUGCO response 8/30/84 - Cygna requested the material test report from which the yield and ultimate data were taken. <p>I asked Jeanne to call me when the data was available.</p>	

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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:	9/6/84
Subject:	Cable Tray and Conduit Support Review Gibbs & Hill Responses to Cygna's Question	Time:	2:00 p.m.
		Place:	G&H, New York
Participants:	E. Bezkor, B.K. Bhunjang, S.C. Chang, P.T. Huang	Gibbs & Hill	
	T. Keiss, D. Kissinger	TUGCO	
	W. Horstman, J. Russ, N. Williams	CES	

Item	Comments	Required Action By
	Cygna discussed the following items with the Gibbs & Hill and TUGCO personnel:	
1.	Q. For the working point deviation analysis, what is the basis for choosing the sample analyzed: A. The sample that was analyzed was selected on the basis of Gibbs & Hill's experience with previous analysis for regular cable tray supports. Aspect ratios (height to width) were selected to assure that the largest possible axial load would occur in the hanger. The intent of the sampling was to make the analysis generic for the entire plant.	
2.	Q. Please explain Gibbs & Hill's response to question 2b of Cygna letter 84056.015 (reference Gibbs & Hill GTN-69371). A. The longitudinal rigidity of the conduit system will impart a restoring force to the support shown in the calculation. This force will prevent rotation of the support. Therefore, additional forces in the bolt resulting from concrete compressive forces will be resisted by the longitudinal restoring force.	
3.	Q. Cygna noted several fire-protected trays with total weights which exceeded the 35 psf design weight. (Reference question 3, letter 84056.027.) Please explain why these trays and their supports were not evaluated per procedure CP-EI-4.0-49. A. The trays and supports in question were not analyzed because the increase in loads and the accelerations at those eleva-	

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Communications Report

Item	Comments	Required Action By
	<p>tions are low. Therefore, by engineering judgment, the trays and supports were considered acceptable. For trays and supports at higher elevations or where the loads are much greater than the design load, we have performed numeric evaluations.</p>	
4.	<p>Q. Due to on-going work and the presence of fire protection, Cygna was unable to determine if the cable trays in scope were continuous between the auxiliary and safeguards building. Are these trays continuous?</p> <p>A. All trays throughout the plant are not continuous across building boundaries.</p>	
5.	<p>Cygna was concerned about the following items for Detail "11" on drawing 2323-S-0905:</p> <ul style="list-style-type: none">(a) Use of an average span length rather than tributary span for calculation of longitudinal loads;(b) Beam end fixity assumptions for analysis of longitudinal loads;(c) Ignoring the transverse load in the calculation of bolt loads for the beam connection; and(d) The acceleration values used in the analysis of Detail "11." <p>In response to these concerns, Gibbs & Hill and TUGCO personnel provided the following answers:</p> <ul style="list-style-type: none">(a) An average span is acceptable as the trays and supports act as a system;(b) The worst case loads have been considered in the frame design;(c) The effect of the transverse load on one bolt of the beam connection will be small and disappear when combined by an SRSS method; and(d) The system, when analyzed for actual stiffness will show high frequency values, therefore, lower accelerations and forces will result. <p>Cygna noted that it will consider these responses and respond with further questions as needed.</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:	9/6/84
Subject:	Cable Tray Support Review	Time:	9:30 am
	Working Point Deviation NASTRAN Analysis	Place:	G & H, N.Y.
Participants:	Jong Pier	of	G & H
	Bill Horstman		CES
	John Russ		CES

Item	Comments	Required Action By
	<p>Cygna asked Mr. Pier to describe the features of the NASTRAN analysis for the working point deviations. Mr. Pier noted the following points:</p> <ol style="list-style-type: none">1. The structural department dictated the sample of supports to be analyzed.2. The analysis is a response spectrum analysis.3. A study was made to determine the appropriate number of spans and unit weight to be used in the analysis. A five-span model at 35 psf was selected. The tray-support system was modeled as 2 1/2 spans with symmetric boundary conditions.4. The cable trays were modeled as a single beam fixed to the support. Tray properties were taken from the cable tray test program.	

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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: 9/5/84

Subject: Mechanical Review Questions

Time: 3:00 p.m.

Place: S.F.R.O.

Participants: D. Wade

of TUGCO

R. Hess

CES

Item	Comments	Required Action By
1.	Dave called to discuss TUGCO responses to several Cygna questions that resulted from the mechanical systems design review.	
2.	Reference Cygna letter 84056.010 dated 7/30/84 question 4 and TUGCO letter dated 8/24/84. The Cygna question concerned rupture of the reactor coolant pump thermal barrier and resultant leakage of reactor coolant (small break LOCA) into the CCW system outside containment. The present system design does not meet single failure criteria for automatically isolating this LOCA. Dave stated that he believed that the TUGCO response that referenced the Westinghouse Part 21 and stated that TUGCO was filing a 10 CFR 50.55e report on this issue should close out the Cygna question. I stated that we did not have sufficient information to draw the same conclusion. The Westinghouse Part 21 only addresses overpressurization of components on the <u>discharge</u> side of the CCW pump and does not specifically address <u>single</u> failure criteria or a LOCA. The Cygna question is focused on the single failure of the temperature controlled isolation valve, overpressurization of piping and components on the <u>suction</u> side of the CCW pump and possible rupture of the CCW surge tank or piping resulting in a LOCA outside containment. The Westinghouse fix is to enlarge the vent capacity of the CCW surge tank. I pointed out to Dave that the proposed Westinghouse fix would not result in an acceptable system at CPSES. Dave said TUGCO was aware of this and that they were focused on the correct problem of small break LOCA and single failure criteria. It is TUGCO's opinion that this is a generic industry problem and should be handled as such. I agreed that the problem appeared to be generic but stated that Cygna needed additional documentation showing that TUGCO was addressing the Cygna issues and proposed	

Signed: *R. W. Hess*

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



Communications Report

Item	Comments	Required Action By
3.	<p>fixes. According to Dave, the 50.55e report, which is due to the NRC by 9/28/84, will cover the issue in accordance with TUGCO licensing requirements. Dave then agreed to revise the TUGCO response to the Cygna question to better address the Cygna concerns.</p> <p>References:</p> <ul style="list-style-type: none">a. Cygna letter 84056.010 (7/30/84) question #3.b. Cygna letter 84056.023 (8/21/84) question #2.c. TUGCO letter dated 8/11/84. <p>Dave wanted to know why Cygna asked the question on the rupture of the Class 5 piping on the inlet to the N.N.S. chillers in reference (b) when it wasn't asked in reference (a) and therefore, was not addressed in reference (c). Since it was Cygna's understanding that Class 5 piping was not seismically designed (only seismically supported), we assumed that TUGCO would address its failure in the response. Dave stated that this was not true and that Cygna had not been given the full story on Class 5 piping by Gibbs & Hill. According to Dave, the Class 5 piping to the chillers is seismically designed. Not all Class 5 piping is seismically designed but all Class 5 piping over 2" in the CCW system is. TUGCO will provide documentation that the Class 5 piping to the non-nuclear chillers is seismically designed. Dave stated that Cygna should review specification MS-44 A and B for reference.</p>	
4.	<p>In relation to Cygna's questions on minimum flow to the reactor coolant pump thermal barrier, Dave said that the latest verified analysis indicates a minimum flow of 36 G.P.M. under all conditions. Cygna had based the question on the latest data available from G & H in June of 1984. Cygna was aware that the Q. C. verification was not complete on this analysis but asked the question to insure that minimum flow requirements were met in the final design. I requested that Dave supply the latest flow calculation data.</p>	
5.	<p>Dave stated that TUGCO was still working on responses to questions contained in Cygna letters 84056.023 (8/21/84), 84056.024 (8/21/84) and 84056.028 (8/27/84).</p>	



Communications Report

Company:	Texas Utilities	<input checked="" type="checkbox"/> Telecon	<input type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station	Job No:	84056
	Independent Assessment Program - Phase 4	Date:	8/8/84
Subject:		Time:	3:30 PM
	Pipe Support and Mechanical Questions	Place:	CES-SERO
Participants:	George Grace	of	TUGCO (EBASCO)
	Nancy Williams		CYGNA

Item	Comments	Required Action By
1.	George asked for clarification on the following Cygna review questions: Cygna letter 84056.014, dated 8/6/84, Attachment A, Question 4. Question: What main steam support is Cygna referring to which is 1/4" - 1/2" warping?	
2.	Cygna letter 84056.013, dated 7/31/84, Question 7. Question: A TUGCO inspection went into the field to check on Cygna's reference to the bolt being 2" off from the center line of the tube steel. Looking at tube steel item 10, they couldn't find the 2" offset. Is Item 10 the correct item?	
3.	Cygna letter 84056.010, dated 7/30/84, Attachment A, Question 5. Question: Did Cygna perform a calculation which would show that a water hammer analysis would produce significant effects? Response: I said that we were interested in the valve closure item since a fast closing valve would have more of an effect than a slower closing one. He said that Gibbs & Hill's response was that the fastest actuating valve took 3 seconds to open and 17 seconds to close.	

Signed	<i>N. Williams</i>	Page	1	of	2
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Communications Report

Item	Comments	Required Action By
4.	<p>Cynga letter 84056.010, dated 7/30/84, Attachment A, Questions 8 and 9.</p> <p>Question: What is the difference between these two questions?</p> <p>Response: Question 8 refers to the fact that ASME name plates, in general, were not attached to the valve.</p> <p>Question 7 refers to a particular conflict between the ASME name plate and the CPSES tag.</p>	



Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station	Job No.	84056
	Independent Assessment Program - Phase 4	Date	July 27, 1984
Subject:	Walkdown Inspection Procedures	Time	1:30
		Place	Site
Participants:	T. Blixt	of	B&R
	J. Minichiello		Cygna

Item	Comments	Required Action By
	In response to Cygna's question on ASME valve nameplates, Mr. Blixt provided the procedure used to track nameplates (CP-QAP-12.4). He also provided examples of the inspection reports QC used to verify the nameplate/valve correlation.	

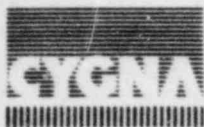


Communications Report

Company:	<u>Texas Utilities</u>	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	<u>Comanche Peak Steam Election Station</u>	Job No.	<u>84056</u>
	<u>Independent Assessment Program - Phase 4</u>	Date	<u>7/19/84</u>
Subject:	<u>Cable Tray Support</u>	Time	
		Place	<u>CPSES Site</u>
Participants:	<u>Frank O'Neill</u>	of	<u>DCTG (Gibbs & Hill)</u>
	<u>Bill Horstman</u>		<u>Cygna</u>

Item	Comments				Required Action By
	Please provide copies of the following CMC's and their related CVC's:				
	<u>CMC</u>	<u>Rev.</u>	<u>CMC</u>	<u>Rev.</u>	
	4550	0,1	44519	0	
	30282	0	8278	0, 1, 2, 3	
	9916	0	6114	0, 1, 2, 3, 4, 5	
	1974	0	88568	0	
	74945	0, 1, 2	30452	0	
	56315	0, 1	4534	0, 1, 2	
	30285	0, 1, 2, 3, 4	6961	0	
	68386	0	90714	0, 1	
	90727	0, 1, 2, 3, 4	8285	0	
	61806	0, 1	85720	0, 1, 2, 3	
	8528	0, 1			
	164	0, 1, 2, 3			
	88240	0, 1			
	2663	0, 1, 2, 3			
	93232	0			
	32513	0, 1, 2, 3			
	3631	0			
	35537	0, 1, 2			
	53778	0, 1			
	91716	0			
	11062	0, 1, 2			

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1020 01a	Project File				



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>	Job No.	<u>84056</u>
	<u>Independent Assessment Program - Phase 4</u>	Date:	<u>7/19/84</u>
Subject:	<u>Cable Tray Supports</u>	Time:	<u>11:15 a.m.</u>
		Place:	<u>CPSES Site</u>
Participants:	<u>Tom Keiss</u>	of	<u>TUGCO</u>
	<u>Bill Horstman</u>		<u>Cygna</u>

Item	Comments	Required Action By
	<p>During a field walkdown of Cable Tray T120SBC29-33, Cygna found a major difference between the existing tray routing and that shown on Drawing FSE-00176 rev. 13 (5/29/84). I asked Mr. Keiss why the change was not shown on the drawing. Mr. Keiss told me that the FSE drawings are not updated to reflect changes in tray routing, they are only changed to indicate hanger modifications; therefore, in the area where the tray has been re-routed, the hanger locations on the FSE drawing are only approximate. To determine correct routings of trays, you must check the current "Cable Tray Segments" drawing, 2323-E1-0601-11.</p>	

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

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:	6/20/84
Subject:	Conduit Supports - CMCs & DCAs	Time:	4:00 p.m.
		Place:	CPSES
Participants:	Desmond Stevens (x226)	of	Cygna
	George Grace		TUEC

Item	Comments	Required Action By
	<p>Please allow Cygna access to Q. C. vault to review conduit line packages for the lines listed below:</p> <p>C12 G 03126 C13 G 03528 C12 Ø 02935 C12 G 05086 C11 Ø 03395 C13 G 02851 C12 Ø 04695 C12 G 05087 C12 G 05124 C12 G 05254 C13 Ø 13677 C11 Ø 04359</p>	



Communications Report

Company: Texas Utilities

☐ Telecon

☒ Conference Report

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

Job No. 84056

Date: 6/8/84

Subject: Mechanical Review

Time: 3:30 pm

Place: NY, NY

Participants: W. Cristali

of G&H

R. Hess

CES

Item	Comments	Required Action By
1)	In response to our earlier question on orifice installation requirements Wanda gave us the attached installation standards.	
2)	She said that the I&C engineer stated that everybody uses the same criteria and all vendors requirements are the same. In other words the G&H criteria is industry standard. If we have additional questions the I&C engineer would be available to discuss the matter with us.	

Signed:

N. Williams

/ss Page 1 of 1

Distribution: N. Williams, D. Wade, G. Grace, R. Hess, P. Rainey, J. Foley, S. Treby, J. Ellis,

S. Burwell, Project File

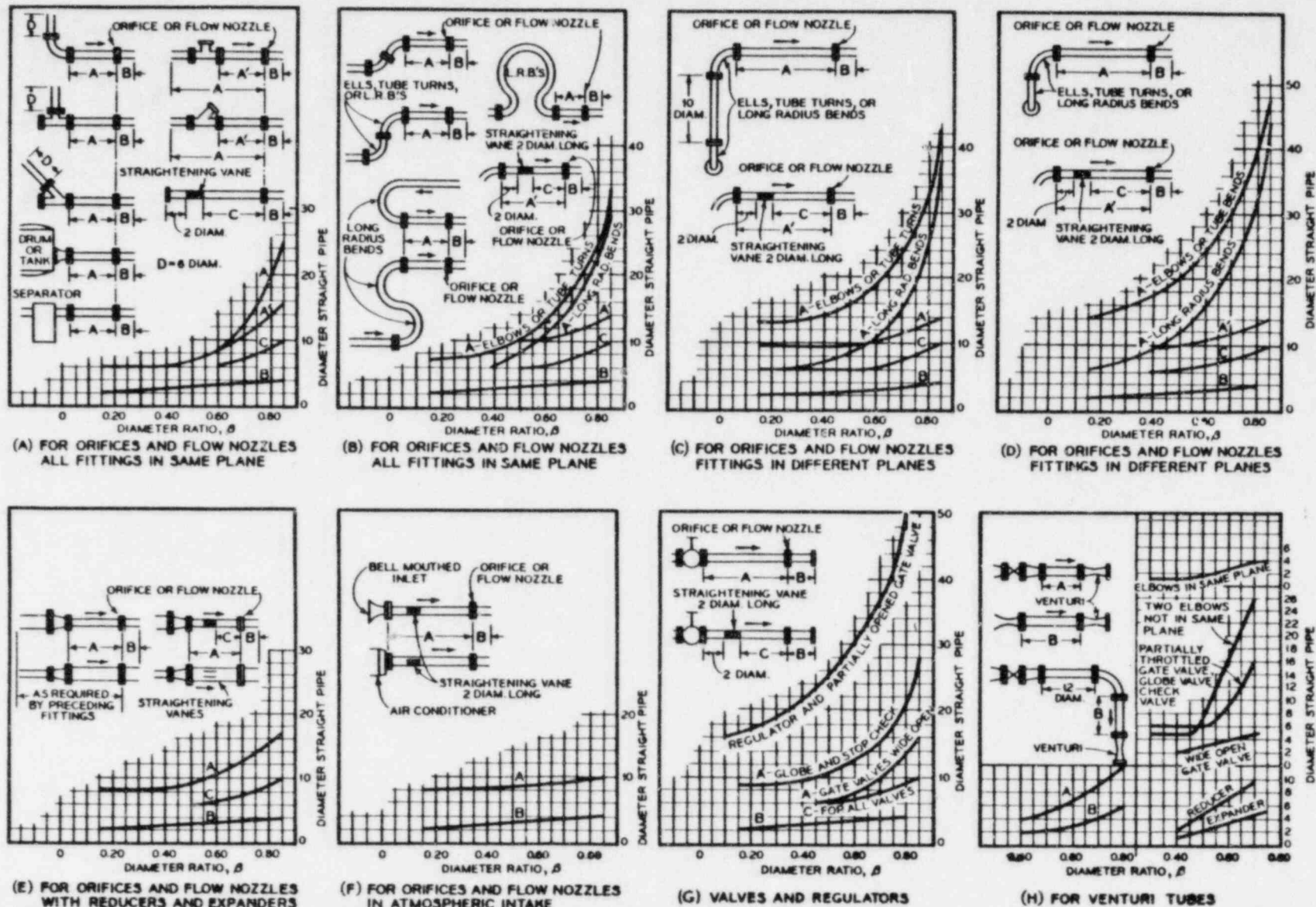


FIG. II-II-1 RECOMMENDED MINIMUM LENGTHS OF PIPE PRECEDING AND FOLLOWING ORIFICES, FLOW NOZZLES AND VENTURI TUBES (ALL CONTROL VALVES, INCLUDING REGULATORS, SHOULD BE LOCATED ON OUTLET SIDE OF PRIMARY ELEMENT.)

**DESIGN ENGINEERING
PIPING DESIGN SECTION
DESK MANUAL**

DATE
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INSTRUMENTATION

2. C. Position of Flow Lines

The position of the flowing lines in which any of the differential pressure producing devices are installed, shall be in accordance with the following chart. Preferred installations are indicated by an asterisk.

FLUID MEDIUM	POSITION OF FLOWING LINE FOR TYPE OF DIFFERENTIAL PRESSURE PRODUCING DEVICE USED				
	CONCENTRIC ORIFICE PLATE	ECCENTRIC ORIFICE PLATE	VENTURI TUBE	FLOW NOZZLE	PITOT TUBE OR PITOT VENTURI
CLEAN LIQUID	*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.		*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.	*HORIZONTAL VERTICAL, DOWNWARD FLOW ONLY	*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.
LIQUID WITH SOLIDS IN SUSPENSION	VERTICAL, DOWNWARD FLOW ONLY.	HORIZONTAL ONLY.	*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.	HORIZONTAL *VERTICAL, DOWNWARD FLOW ONLY.	
LIQUID-VAPOR	*HORIZONTAL VERTICAL, UPWARD FLOW ONLY.		*HORIZONTAL VERTICAL UPWARD OR DOWNWARD FLOW.	*HORIZONTAL ONLY.	
SATURATED STEAM	HORIZONTAL *VERTICAL, DOWNWARD FLOW ONLY.		HORIZONTAL VERTICAL, UPWARD OR *DOWNWARD FLOW.	HORIZONTAL *VERTICAL, DOWNWARD FLOW ONLY.	
SUPERHEATED STEAM (50° HIGHER)	HORIZONTAL VERTICAL, UPWARD OR *DOWNWARD FLOW.		HORIZONTAL, VERTICAL, UPWARD OR *DOWNWARD FLOW.	HORIZONTAL, VERTICAL, *DOWNWARD FLOW ONLY.	
DRY GAS OR AIR	*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.		*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.	*HORIZONTAL VERTICAL, DOWNWARD FLOW ONLY.	*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.
WET GAS OR AIR	HORIZONTAL, *VERTICAL, DOWNWARD FLOW ONLY.		*HORIZONTAL VERTICAL, UPWARD OR DOWNWARD FLOW.	HORIZONTAL, *VERTICAL, DOWNWARD FLOW ONLY.	*HORIZONTAL VERTICAL UPWARD OR DOWNWARD FLOW.

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FIG. 1



FIG. 2

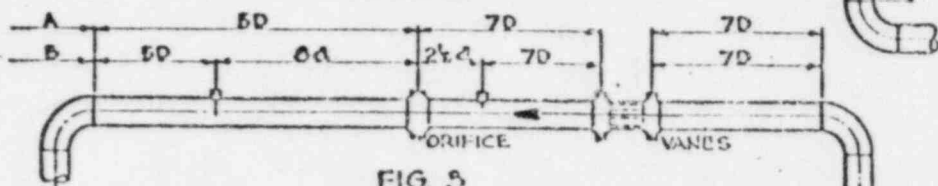


FIG. 3

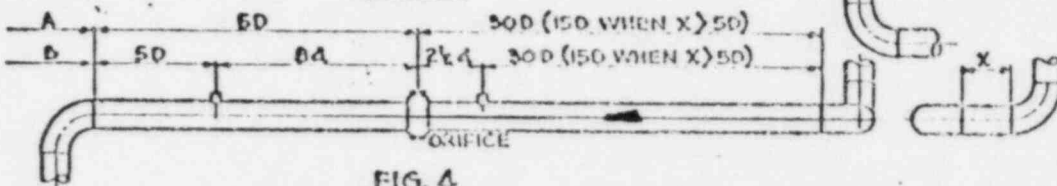


FIG. 4



FIG. 5



FIG. 6



FIG. 7

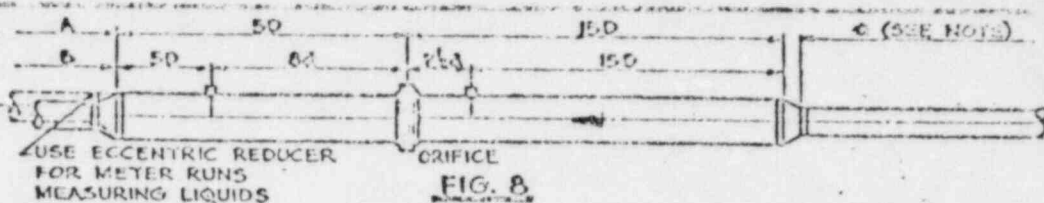


FIG. 8

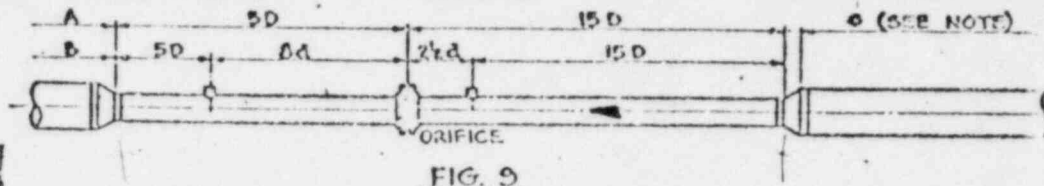


FIG. 9

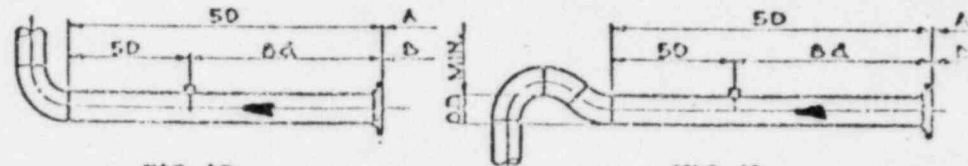


FIG. 10

FOR METER RUNS MEASURING LIQUIDS (SEE NOTE)

NOTE:

"A" - THESE DIMENSIONS ARE FOR FLANGE TAPS.

"B" - THESE DIMENSIONS ARE FOR 2 1/2 x 8 PIPE TAPS.

"d" - NOMINAL PIPE DIAMETER.

"2 1/2" - EXACT I.D. OF PIPE.

2 1/2 x 8 PIPE TAPS SHALL BE LOCATED TO NEAREST "B" USING EXACT I.D. OF PIPE.

FOR METER RUNS MEASURING LIQUIDS, FIG. 1 TO 6 INCL., THE DOWNSTREAM END OF THE RUN SHALL TURN UP AS IN FIG. 10 OR RISE ONE PIPE DIA. MINIMUM BEFORE TURNING DOWN AS IN FIG. 11. FIG. 8 SHALL HAVE AN ECCENTRIC REDUCER AT THE DOWNSTREAM END AS SHOWN BY DOTTED LINE.

THIS DIMENSION APPLIES TO THE UPSTREAM RUN IN FIG. 1 TO 7, INCL. AND IS COMPUTED BY USING THE NOMINAL DIAMETER OF THE INCLUDED PIPE.

ALL "d" RUNS SPECIFIED ARE MINIMUM. THE UPSTREAM "d" RUN SHALL BE AS LONG AS POSSIBLE.

VANES SHALL BE USED ONLY WHEN IT BECOMES NECESSARY TO PRODUCE THE MINIMUM LINE RUN REQUIREMENTS. WHEN REQUIRED, VANES SHALL BE ADDED TO THE DESIGN REPORT ITEM LIST BY REQUEST TO THE ENGINEERING DEPT. FOR VANE DETAILS SEE STD IN-102.

FIG. 11

ALL PIPE SKETCHES COVERING ORIFICE RUN DETAILS SHALL INCLUDE THE FOLLOWING NOT.

1. THIS DETAIL SHALL BE FABRICATED FROM (a) FULL PIPE LENGTH, UNJOINTED OR (b) UNJOINTED PIPE FROM FLANGE 1 - (NEAREST PIPE FITTING).

2. PIPE FOR FABRICATION OF THIS DETAIL SHALL BE SELECTED FOR INSIDE SMOOTHING ORIFICE RUNS INSIDE MINIMUM RUN REQUIREMENTS SHALL CONTAIN NO WELDED JOINTS AND NO FLO OR FITTINGS OTHER THAN ORIFICE FLANGES AND TAPS.

ALL PIPE SKETCHES COVERING ORIFICE RUN DETAILS SHALL INCLUDE SUITABLE NOTES TO INSURE FLANGES OR COUPLING INSTALLATION AS PER STD IN-102 OR STD IN-103, AND POSITION TAP AS PER STD IN-102.

DIRECTION OF FLOW SHALL BE INDICATED ON PIPE SKETCH.

DRAFTING STANDARD

CARDIFF & CARDIFF ENGINEERING DEPT. - 3, CHARTERED, E.

STANDARD MINIMUM LENGTHS OF STRAIGHT PIPE FOR ORIFICE RUNS

1000 1000 1000