



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

415-397-5600

May 22, 1984
84056.004

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

50-445

Telecon Transmittal #2
Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4
Job No. 84056

Dear Mrs. Ellis:

Enclosed please find telecons associated with the Phase 4 Independent Assessment Program and the program plan document.

If you have any questions or desire to discuss any of these documents please don't hesitate to call. If you are unable to reach me in the Cygna San Francisco office ask for Ms. Donna Oldag at the same number.

Very truly yours,

Oldag for
N.H. Williams
Project Manager

NHW/dhb

Attachment

cc: Peter B. Bloch, Esq. (USNRC, w/program plan only)
Mr. S. Treby (US NRC) w/a
Mr. D. Wade (TUEC) w/a
Mr. G. Grace (TUEC) w/a
Mr. D. Pigott w/a

8411260410 840522
PDR ADOCK 05000445
A PDR

2222
1/1 See Attached



Communications Report

Company: TUGCO/TUSI

Telecon

Conference Report

Project: Comanche Peak Steam Electric Station

Job No. 84056

Independent Assessment Program - Phase 4

Date: 5/18/84

Subject: Request for Spec.s & FSAR Sections

Time: 1:30 p.m.

Place: SF, CA

Participants:

of

J.D. Laurie

Cygn

R. Baker

TUGCO/TUSI

Item

Comments

Required Action By

1.

Laurie requested and Baker agreed to provide copies of the FSAR sections shown below, and the specifications shown below (including all spec. revisions) to Cygn representatives at CPSES on Tuesday, May 22, 1984.

Purchase Specifications

ES-1-D.2	MS-44B	MS-20C
MS-100	MS-20A.1	MS-21B
MS-26	MS-20B.1	MS-21D.1
MS-44A	MS-20B.2	MS-21E

FSAR Sections

7.2, 7.3, 7.4 and 7.5

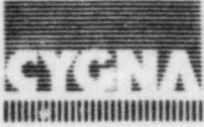
Signed:

N.A. Williams

eam Page 1 of 1

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File



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: 5/4/84	
Subject: Data Collection	Time: 3:30 p.m.	
	Place: CPSES	
Participants: R. Baker	of TUSI	
D. Smedley	Cygn	

Item	Comments	Required Action By
1)	<p>Asked R. Baker for copies of FSAR Sections:</p> <p style="padding-left: 40px;">11.5 3.2 3.3 3.5 6.2.4</p> <p>To be sent to S.F at the request of Bob Hess. Bob had also requested System Descriptions for:</p> <p>Component Cooling Water and Service Water Systems.</p> <p>Baker said he would move immediately to have our request completed.</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:	5/7/84
Subject:	Conduit Design Criteria for Phase 4 Structural Review	Time:	9:50 AM
		Place:	SFRO
Participants:	Peter Huang	of	Gibbs & Hill
	John Russ		CES

Item	Comments	Required Action By
	<p>I spoke to Mr. Huang concerning the Phase 4 structural review for CPSES Unit 1. This review will be concerned with the electrical cable tray and conduit raceways of the Component Cooling Water System. To develop Cygna's design criteria sections on conduit supports, I requested Gibbs & Hill's documentation (work instructions and criteria) for the design of conduit raceway supports.</p> <p>Mr. Huang responded by detailing the design process for conduit raceway supports. The process essentially has four steps. These are:</p> <ol style="list-style-type: none"> Gibbs & Hill developed a conceptual design (CD) for the raceway systems for the plant. The CD is transmitted to the site engineering group. The site engineering group modifies the CD to meet existing conditions. The finished field run package is numbered 2323-S-0910. Gibbs & Hill, New York, reviews the field run designs. <p>Mr. Huang then stated that since the design was really performed on-site, that it would be better to request the documents at site. I then requested the pertinent design material from Gibbs & Hill's conceptual design package. Mr. Huang stated that he would send a copy of "Category I Support System for Conduit Raceway," drawing no. 2323-S-0910 to me upon receipt of a formal letter of request by Cygna.</p>	

Signed: *M. Williams* Page _____ of _____

Distribution: _____ /dnh _____ I _____ I _____

D. Wade, N. Williams, R. Hess, G. Grace, J. Russ, S. Treby, J. Ellis, Project



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:	4/5/84
Subject:	Cable Tray Document Request	Time:	11:30 am
		Place:	CPSES Site
Participants:	C. Crowe, R. Baker	of	Brown & Root
	J. Russ		Cygna

Item	Comments	Required Action By
	<p>Reference: Conference Report dated 5 April 1984, "Cable Tray Document Request," D. Bleeker, N. Munoz, C. Crowe and J. Russ participating</p> <p>Cygna received documents ECP-10, ECP-19 and ES-100 from Ms. Crowe. She stated that CPEI 4.-49 was available from Mr. Baker.</p> <p>I requested this document from Mr. Baker. He stated that the document is numbered CP-EI-4.0-49 and gave me a copy.</p>	

Signed: N. Williams /pm 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:	5/8/84
Subject:	Request for Guide in Field	Time:	11:20 AM
		Place:	SFRO
Participants:	David Rencher	of	TUGCO
	John Russ		CES

Item	Comments	Required Action By
	<p>I asked Mr. Rencher to schedule someone to act as guide for a walkdown of plant equipment. I also requested two safety belts and ropes for Cygna's use. Mr. Rencher stated that a person would be assigned to Cygna for the afternoon of 5/9/84.</p>	

Signed: *N. Williams* /dhb 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:	5/8/84
Subject:	Drawing List for CCW Valves Power Trains	Time:	9:20 AM
		Place:	SFRO
Participants:	Ivan Bogelson	of	TUGCO
	John Russ		CES

Item	Comments	Required Action By
	<p>I requested Ivan to provide a list of drawings and the computer printout of cable tray and conduit segments for the power trains for the valves listed.</p> <p style="text-align: center;"><u>Valve No.</u></p> <p>1-HV-4512 Unit 1 train A CCW pump isolation valve</p> <p>1-HV-4513 " " " B " " " "</p> <p>1-HV-4514 " " train A to non-safeguards loop isolation valve</p> <p>1-HV-4516 " " train B to non-safeguards loop isolation valve</p> <p>1-HV-4572 " " train A RHR heat exchanger isolation valve</p> <p>1-HV-4574 " " train A containment spray heat exchanger isolation valve</p> <p>Ivan stated that he would provide a list of the following drawing types:</p> <p style="margin-left: 40px;">A. Cable Routing B. Tray and Conduit Plan C. Tray Segment Plan D. Tray Support Plan</p>	



Communications Report

Company: Texas Utilities

Telecon

Conference Report

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

Job No. 84056

Date: 5/9/84

Subject: Conduit Support Design

Time: 11:20 AM

Place: CPSES Site

Participants: Doug Hunt

of Gibbs & Hill

John Russ

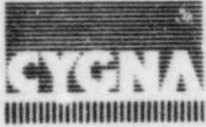
CES

Item	Comments	Required Action By
	<p>I spoke to Doug regarding the design of conduit supports at CPSES. Doug related the following facts about the conduit designs:</p> <ol style="list-style-type: none"> 1. There are two types of conduit runs: Type LA - conduit runs along a wall Type LS - conduit runs suspended in space 2. There are two types of conduit supports: Type CA - used for Type LA runs Type CSM - used for type LS runs 3. History of design process: CSM supports were originally designed using the highest G value in the plant. The G value was adjusted for the specific elevation at which the support was to be installed. LA supports are designed using the maximum plant ZPA. 4. Evaluation of fire protection effects on conduit supports is performed at site by calculation after the conduit in question is walked down and drawn on an IN-FP drawing. 5. Drawing 2323-S-0910 shows 44 CSM types supports as well as 16 CA type supports. Other individually designed supports are appended to 2323-S-0910. 	

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Communications Report

Company: Texas Utilities

Telecon

Conference Report

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

Job No: 84056

Date: 5/9/84

Subject: Cable Tray and Conduit Drawing Request

Time: 11:50 AM

Place: CPSES Site

Participants: Richard Beals

of B&R - DCC

John Russ

CES

Item	Comments	Required Action By
	<p>I received copies of the following drawings:</p> <ul style="list-style-type: none"> 2323-E1-0601-01 2323-E1-0700-01 2323-F1-0701-01 2323-E1-0714 2323-E1-0601-11 2323-E1-0714-11 2323-E1-0700-11 2323-E1-0601-01-S 2323-E1-0714-S 2323-E1-0700-01-S 	

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Communications Report

Company: Texas Utilities

Telecon

Conference Report

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

Job No. 84055

Date: 5/9/84

Subject: Gable Tray and Conduit Drawing Request

Time: 11:00 AM

Place: CPSES Site

Participants: Richard Beals

of B&R - DCC

John Russ

CES

Item	Comments	Required Action By
	<p>I requested copies of the following drawings:</p> <ul style="list-style-type: none"> 2323-E1-0601-01 2323-E1-0700-01 2323-E1-0701-01 2323-E1-0714 2323-E1-0601-11 2323-E1-0714-11 2323-E1-0700-11 2323-E1-0601-01-S 2323-E1-0714-S 2323-E1-0700-01-S 	

Signed *N.A. Williams*

/dhb Page 1 of 1

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Communications Report

Company: Texas Utilities

Telecon

Conference Report

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

Job No. 84056

Date: 5/9/84

Subject: Cable Tray and Conduit Drawing Request

Time: 4:00 AM

Place: CPSES Site

Participants: Richard Beals

of B&R - DCC

John Russ

CES

Item	Comments	Required Action By
	<p>I received copies of the following drawings:</p> <ul style="list-style-type: none"> 2323-E1-0601-02 2323-E1-0601-03 2323-E1-0501-04 2323-E1-0700-02 2323-E1-0701-02 2323-E1-0701-03 	

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:	5/9/84
Subject:	Cable Tray and Conduit Drawing Request	Time:	3:25 PM
		Place:	CPSES Site
Participants:	Richard Beals		B&R - DCC
	John Russ		CES

Item	Comments	Required Action By
	<p>I requested copies of the following drawings:</p> <ul style="list-style-type: none"> 2323-E1-0601-02 2323-E1-0601-03 2323-E1-0601-04 2323-E1-0700-02 2323-E1-0701-02 2323-E1-0701-03 	

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

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Communications Report

Company: Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project: Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No. 84056	Date: 5/10/84
Subject: Cable Tray and Conduit Scopes	Time: 9:10 AM	Place: CPSES Site
Participants: Pravin Patel (x519)	of Gibbs & Hill	
N. Williams, J. Russ	CES	

Item	Comments	Required Action By
	<p>Nancy and I spoke to Pravin in order to gather information to determine the scope of the structural review for Phase 4. We asked Pravin to determine what percentage of the plant's total cable tray support each support type represented. We also requested that he determine which conduit supports are used most frequently at CPSES.</p> <p>Pravin also discussed the procedures for construction and verification of cable tray and conduit supports. He discussed the following points:</p> <ol style="list-style-type: none"> 1. Cable tray standard support details are prepared for construction fabrication and erection by preparing an 8-1/2 x 11" drawing which is part of drawing FSE-00159. Erection is per procedure ECP-10. 2. Conduit supports are located and installed by construction per procedure ECP-19. The acceptance of the support for its suitability to resist applied loads is checked by quality control through the use of travellers per procedure ECP-19. No as-built drawings are produced for Unit 1, but drawings are produced for Unit 2. 3. Conduit design calculations are available in New York, but are constantly being transmitted to site. The Gibbs & Hill site group has a set and a cross-reference to get from a specific support to the appropriate calculation binder. 	

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

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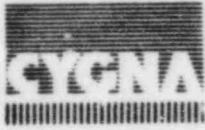


Communications Report

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.:	84056
		Date:	5/10/84
Subject:	Cable Tray and Conduit Drawing Request	Time:	1:45 PM
		Place:	CPSES Site
Participants:	Richard Beals	of	B&R - DCC
	John Russ		CES

Item	Comments	Required Action By
	I requested and received a copy of drawing 2323-E1-0713-011.	

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

Company:	Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project:	Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No.	84056
		Date:	5/10/84
Subject:	Conduit Drawing Request	Time:	2:30 PM
		Place:	CPSES Site
Participants:	Norman Munoz	of	B&R - DCC
	John Russ		CES

Item	Comments	Required Action By
	I requested a copy of drawing 2323-S-0910 and a list of change documents (CMCs and DCAs) against it.	

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

Distribution: N. Williams, D. Wade, G. Grace, S. Treby, J. Ellis, 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: 5/10/84

Subject: Cable Tray and Conduit Drawing Request

Time: 3:15 PM

Place: CPSES Site

Participants: Richard Beals

of B&R - DCC

John Russ

CES

Item	Comments	Required Action By
	I requested and received a copy of drawing 2323-E1-0700-012.	

Signed

W. Williams

/dhb

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of 1

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Communications Report

Company: Texas Utilities	<input type="checkbox"/> Telecon	<input checked="" type="checkbox"/> Conference Report
Project: Comanche Peak Steam Electric Station Independent Assessment Program - Phase 4	Job No. 84056	Date: 5/11/84
Subject: Document Requests	Time: 10:00 AM	Place: CPSES Site
Participants: K. Norman, D. Bleeker, N. Munoz	of	P&R -DCC
J. Russ		CES

Item	Comments	Required Action By
	<p>I received the following documents:</p> <ol style="list-style-type: none"> 1. A computer output listing all E1 and E2 series drawings 2. Drawing 2323-S-0910 3. A computer output listing all E1 and E2 series drawings 	

Signed: *N. Williams* /dhb Page 1 of 1
 Distribution: N. Williams, D. Wade, G. Grace, S. Treby, J. Ellis, 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:	5/16/84
Subject:	Conduit Support Lists by Conduit Number	Time:	11:45 AM
		Place:	SFRO
Participants:	Pravin Patel	of	Gibbs & Hill
	John Russ		CES

Item	Comments	Required Action By
	I asked Pravin if it was possible to determine which supports were on a specific conduit run. He replied that it was possible by reviewing the traveller forms in the DCC vault.	

Signed: *N. Williams* /dhb Page 1 of 1
 Distribution: N. Williams, D. Wade, G. Grace, R. Hess, S. Treby, J. Ellis, 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: 4/2/84
Subject: Cable Tray Documents Phase 4	Time: 2:55 pm	Place: CPSES Site
Participants: Pravin Patel	of Gibbs & Hill	
Doug Hunt	Gibbs & Hill	
John Russ	Cygn	

Item	Comments	Required Action By
	<p>I met with Doug and Pravin to request the following information:</p> <ol style="list-style-type: none"> 1. A list of electrical, structural and FSE drawings for the cable tray segments listed on the attached sheet. This list will include drawing numbers for tray segment drawings. 2. A list of CMCs and DCAs against the supports for these tray segments. 3. A listing of the following for each tray segment: <ol style="list-style-type: none"> a. tray weight; b. tray length; c. % cable fill and its weight; d. weight of any fire coating. 	

Signed: *W. Williams* /pm Page 1 of 1
 Distribution: D. Wade, N. Williams, G. Grace, S. Treby, B. Hess, J. Russ, J. Ellis, Project
 File

RECEIVED Fr: IVAN
 BOGELSON
 (TUGGO)
 19 MARCH 1984

GIBBS & HILL, INC.
 ENGINEERS DESIGNERS CONSTRUCTORS
 NEW YORK

CLIENT TEXAS UTILITIES SERVICES INC.
 STATION CHANDLER PEAK (UNISUB)
 SHEET NUMBER 2323A

CABLE SCHEDULE 2323 EI 3700
 ISSUE 123
 DATE 12/01/83
 PAGE NO. 401. 1

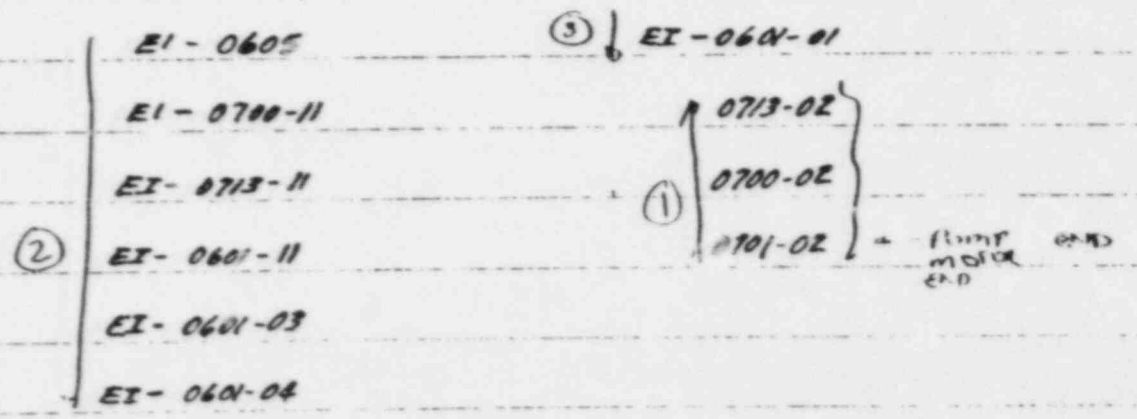
REPORT SECTION NO. 401 6900V SWITCHGEAR SAFEGUARD BUS TIE 11 POWER CABLES

REV. CODE	CABLE NUMBER	ORIGIN	DESTINATION	FUNCTION/REMARKS	PHY WIRE	CABLE DESCRIPTION	TYPE NO.	CABLE LENGTH	SYS CODE
	65G ED100001	SWGR TEA1 COMPT 3	CHPNT COOL WTR PMP	MAINTAIN SPACE	716	004 1/C- 4/DRUG SHEDD W-108		271	16
		CP1EPSWEA01-03	CP1CCAPCC01	6 9KV PWR FDR	701	004 W/ ORANGE JACKET 8000V PWR	CL 10	3X	

TEA1-03 -0811-4886-4797
 (C-11003394 9 FEET OF 5 INCH GS CONDUIT)
 T110SAA21-0806-4886-4801 T110SAA20-0806-4874-4801 T110SAA19-0806-4874-4807 TWS-S-001-0807-4874-4810
 (C-11004359 11 FEET OF 5 INCH GS CONDUIT)
 T110SAA18-0805-4871-4816 T110SAA17-0805-4862-4816 T110SAA16-0805-4862-4834 T110SAA15-0805-4862-4851
 T110SAA14-0805-4859-4858 T110SAA13-0805-4859-4876 T110SAA12-0805-4859-4896 T110SAA11-0806-4859-4902
 T110AAA10-0806-4859-4914 T110AAA09-0805-4859-4918 T110AAA08-0805-4859-4986
 (C-11003395 32 FEET OF 4 INCH GS CONDUIT AND 3 FEET OF FLEX)
 ICCAPCC01-0814-4885-4986

2323-EI-0714

2323-EI-0701-01





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:	5/11/84
Subject:	Data Collection	Time:	AM-PM
		Place:	G&H Office N.Y.
Participants:	John Irons	of	G&H
	Wanda Cristali		G&H
	R. Hess & P. Rainey		CES

item	Comments	Required Action By
1)	The flow, pressure drop, and heat balance calculations on the component cooling water (CCW) system are a combination of computer analysis and hand calculations. The original calculations used the "P-Drop" computer program. G&H is presently completing a new system flow calculation utilizing the "Pipeflow" program. The new calculation utilizes the as-built piping configuration. This is a flow network type program. We requested that G&H provide Cygna with a copy of the "P-Drop" and "Pipeflow" user's manuals.	
2)	The basic system flow and heat load data came from the Westinghouse functional requirements document and equipment vendor data.	
3)	G&H produced a technical description (TD-0229) for the CCW system. This was last issued on 2/12/79. John supplied us with a copy.	
4)	TUGCO operations is responsible for producing the system operating manuals and technical specifications.	
5)	Specification MS-200 contains a Modes of Operation appendix which serves as operating temperature input to the pipe stress group.	
6)	G&H does not develop a statepoint analysis or process flow diagram for the system.	
7)	No detailed F.M.E.A. exists as a separate document.	
8)	Fluids are never mixed between Units 1 and 2.	

Signed: *N.A. Williams* Page 1 of 2 /dhb

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S. Treby, J. Ellis, Project File



Communications Report

Item	Comments	Required Action By
9)	Radiation monitors are specified by the electrical group.	
10)	An "S" signal is a first-level alert, partial containment isolation (small break LOCA).	
11)	A "P" signal is major problem (LOCA). It isolates non-safeguards loop.	
12)	G&H was requested to supply the mechanical and I&C standard symbols lists MI-0200 and MI-2200.	

TEXAS UTILITIES ELECTRIC CO.
COMANCHE PEAK STEAM ELECTRIC STATION
INDEPENDENT ASSESSMENT PROGRAM
PHASE 4 PROGRAM PLAN

CYGNA ENERGY SERVICES, INC.
101 CALIFORNIA STREET
SUITE 1000
SAN FRANCISCO, CA 94111



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3.0 Design Control Review Scope	14
4.0 Project Organization	15



1.0 INTRODUCTION

Cygn Energy Services has been conducting an independent assessment of the Comanche Peak Steam Electric Station design and design control process using various plant systems to establish the scope. This program plan document describes the scope of the Phase 4 review. Prior to this time, Phases 1 and 2 were performed to provide the NRC staff with added assurance that the plant was designed and constructed in accordance with the licensing application. Phase 3 was established to address specific concerns the Atomic Safety and Licensing Board (ASLB) had with design quality at Comanche Peak. The basis for the Phase 3 scope is contained in "Applicant's Plan to Respond to Memorandum and Order (Quality Assurance for Design)," February 3, 1984.

In Phases 1 and 2, Cygna performed an Independent Assessment Program in accordance with Cygna proposal S83-12C, Rev. 1, dated September 9, 1983. The objectives of this effort were to:

- Assess the adequacy of the design control program at Texas Utilities and Gibbs & Hill.
- Assess the multi-discipline design adequacy of a portion of a selected safety system. (Residual Heat Removal System, Train B).
- Verify the as-built condition of a selected portion of the safety systems. (Spent Fuel Pool Cooling, Train A).
- Verify the adequacy of the implementation of three selected elements of the design control program at Texas Utilities and Gibbs & Hill.

The Phase 3 Independent Assessment was conducted on two systems, Component Cooling Water and Main Steam, which exhibited design characteristics similar to the concerns raised by Messrs. Walsh and Doyle during the ASLB Hearings.



In addition, two additional 10CFR50, Appendix B criteria were added. The objective of the Phase 3 effort was to:

- Assess the adequacy of Texas Utilities, Gibbs & Hill, NPSI, and ITT Grinnell organization (Criterion I) and corrective action program (Criterion XVI) as they pertain to design.
- Verify the adequacy of the implementation of Criteria I and XVI at Texas Utilities, Gibbs & Hill, NPSI and ITT Grinnell.
- Assess the adequacy of piping and pipe support design in portions of the Component Cooling Water System (CCWS) and the Main Steam System.

It is Cygna's understanding that Texas Utilities currently holds the following principal objective in terms of the overall Independent Assessment Program (Phases 1, 2, 3, and 4) on CPSES:

- That the results of Cygna's design control and technical reviews coupled with previous reviews of CPSES (CAT and SIT) provides the NRC, the ASLB, and Texas Utilities with an integrated basis for evaluating the adequacy of the design and design process employed on CPSES.

In the context of this overall objective, Cygna proposes the following scope of work, referred to herein as Phase 4. This scope of work, when combined with the reviews performed by Cygna under Phases 1, 2, and 3, and the efforts of other parties, will provide that basis. The scope of work for Phase 4 is detailed below and is comprised of the following:

- Multi-discipline technical review of selected portions of the design of the Component Cooling Water System (CCWS).



- As-built verification of selected portions of the CCWS.
- Evaluation of the implementation of two additional elements of the design control program at Texas Utilities and Gibbs & Hill. Specifically, the Design Input Control and Design Verification Control Elements.

At the completion of the Phase 4 workscope, Cygna will have accomplished the following:

- A multi-disciplined technical review of a portion of one train of the CCWS, and a portion of the RHR system.
- As-built verification of a portion of one train of the CCWS and a portion of the Spent Fuel Pool Cooling System.
- Complete design control program evaluations of TUSI and Gibbs & Hill.
- Implementation evaluations of the design control program in terms of five design control elements as shown in Exhibit 1.1.
- Program and implementation evaluation of the organization and corrective action system as they pertain to design.

Cygna has reviewed Supplement to Applicant's Plan to Respond to Memorandum and Order (Quality Assurance for Design), dated March 13, 1984, and has the following clarifications/interpretations on pages 4 and 5 of that document:

- Page 4: There is reference to the review of Criteria I and XVI as they relate to overall design activities. Cygna is performing the Criteria I and XVI reviews as they relate to design. We interpret the Applicant's reference to "overall design" to mean multi-



discipline. We are looking at piping, pipe support, structural, electrical, and Instrument & Controls for the corrective action and organizational reviews.

- Page 4 and 5: Items 6, 7, 8, and 9 refer to the five elements of the design control program, Criterion III, rather than Criterion I as described in the Applicant's Plan.
- The paragraph in the middle of the page states, "...Cygnal will assess whether an appropriate design quality assurance program has been in place and effectively executed at Comanche Peak...". Cygnal's criteria I, III, and XVI reviews when coupled with previous reviews conducted by other organizations will provide an integrated basis for evaluating the adequacy of the design control program.



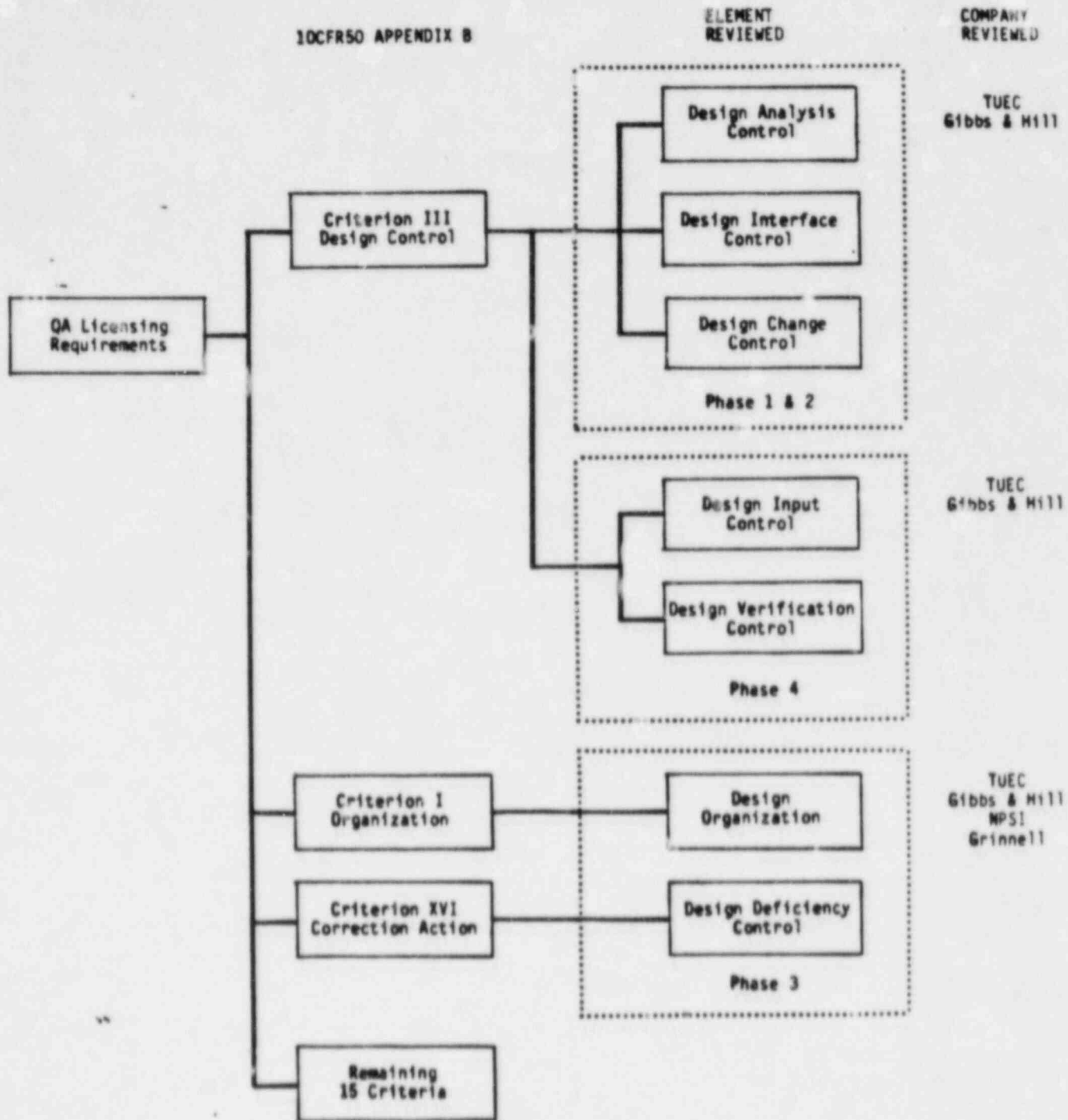


EXHIBIT 1.1

DESIGN CONTROL REVIEW SCOPE



2.0 TECHNICAL REVIEW SCOPE

The Phase 4 technical review scope will include an expanded, multi-discipline review of the design of the Component Cooling Water System (CCWS). The review scope will include mechanical systems, electrical (power and instrumentation & controls), structural, as-built walkdowns and additional pipe stress and pipe support reviews. In general, the review scope has been selected from the Unit 1 CCWS subsystem such that portions of both the safeguards and nonsafeguards loops of one train are included. The review boundaries for each discipline are described below.

Mechanical Systems

The mechanical review will focus on ensuring that the Gibbs & Hill design of the CCWS satisfies documented system functional requirements. A review criteria document and checklists will be developed to evaluate the following items:

- Verification that all system design bases have been implemented in accordance with FSAP and SER requirements, industry standards, regulatory documents, and other Texas Utilities Electric Company commitments,
- Verification that the NSSS (Westinghouse) design requirements have been correctly incorporated into the system design,
- Verification that the BOP (Gibbs & Hill) supplied equipment and piping are adequate to meet all process and interface requirements,
- Verification that the system functional capabilities, including redundant components and flow paths are in accordance with design requirements.



The physical boundaries for the mechanical systems review will vary somewhat in order to permit an effective review of the various aspects of mechanical system design. In essence the verification of the design of mechanical system components will be limited to those components located in the major flow path depicted in Exhibit 2.1. Verification of the design of the CCW Surge Tank, pump and heat exchangers are, therefore, encompassed. In order to effectively review the methodology employed by Gibbs & Hill in the sizing of the CCW pump, the review may expand beyond the boundary depicted in Exhibit 2.2. For example, the system head loss calculation and/or heat load calculation will be reviewed for a given complete flow loop in the CCW subsystem for Unit 1. In addition, a segment of the non-safeguards loop from its connection to the safeguards loop to the Reactor Coolant Pump coolers will be reviewed in order to provide an assessment of the design process and interaction between safety related and non-safety related portions of the system.

Electrical (Power and Instrumentation & Controls)

Design criteria, based on the IAP Phase 2 work, will be developed for the electrical review activities. This criteria document and the checklists will include the following aspects of the electrical design review:

- Verify that electrical system design has been implemented in accordance with FSAR and SER requirements, industry standards, regulatory documents, and other Texas Utilities Electric Company commitments.
- Verify that the NSSS (Westinghouse) design requirements have been correctly implemented into the design.
- Verify that the BUP (Gibbs & Hill) design requirements have been correctly incorporated into the design.



- Verify that the design requirements have been correctly imposed upon the equipment suppliers and that the equipment furnished is adequate for its intended use.
- Verify that the electrical, control and instrumentation design is correctly documented. Verify that the design is logical, organized, and reproducible.

The boundaries of the electrical review shall be limited to the power and instrumentation and control circuits associated with the primary flowpath depicted in Exhibit 2.1.

Structural

The structural review will be conducted on cable tray and conduit supports which carry the power cables from the emergency bus to the CCh pump and power cables for six motor-operated valves from the valves to the respective motor control centers. The criteria will be a revision to the Phase 2 structural criteria which will establish general guidelines to be used in the review. The review will assess whether or not the cable tray and conduit supports are adequate to transmit the loads from the cable trays to supporting building structural members. The review checklists will include a check of:

- support spacing
- loads and load combinations
- compliance with codes, standards, and licensing commitments
- stresses and use of allowables (members, welds, anchor bolts, and plates).



Pipe Stress

The pipe stress review will be a continuation of the Phase 3 effort and will consist of the piping problem that encompasses the piping from the CCW pump to the CCW heat exchanger. The review checklists will include:

- Check input data (pressure, operating modes, anchor movements, dynamic loads).
- Verify that the computer model uses the proper geometry, section properties, supports, components.
- Ensure special features are considered (valve stem frequencies, nozzle load checks, local stress analysis for lugs).
- Review stress report data (load cases and combinations, valve accelerations, piping displacements).

The boundaries of the physical piping problem are shown in Exhibit 2.2. the physical definition of the piping problem encompasses the piping between both CCW pumps and heat exchangers for Units 1 and 2. Also shown are the physical boundaries of the piping problem reviewed previously in Phase 3.

Pipe Supports

The pipe support review scope will include the supports located on the piping problem shown in Exhibit 2.2. The major elements of the review checklists will include:

- Review input data (required support stiffness, support type, piping deflections and loads).



- Review design calculations (welds, members, standard components, proper computer modeling, consideration of base plate flexibility).
- Check support drawings (type, location, clearances, size of members, weld data, anchor bolt data).
- Evaluate the Walsh/Doyle concerns as they pertain to this scope of work.

As-Built Verification

The final activity is to assure that the systems, components and structures have been installed to the latest design documents. To accomplish this, an as-built review team will perform a detailed field verification of portions of the Component Cooling Water System. This team will review mechanical, structural, electrical and instrumentation and control areas. The walkdown will consider the following as a minimum:

- Identification, location and installation of piping and mechanical equipment.
- Location, configuration and detailing of pipe supports and supporting structures.
- Cable and raceway identification, installation, routing, separation and termination.
- Representative conduit and cable tray support designs.
- Instrumentation location and identification.



- Equipment location, orientation, anchorage, support structures, and identification.

We recognize, however, that some portions of the design are still undergoing changes as part of Comanche Peak's iterative design process. Care will be taken to ensure that any discrepancies found have been correctly processed, thereby evaluating the adequacy of this aspect of the design process.



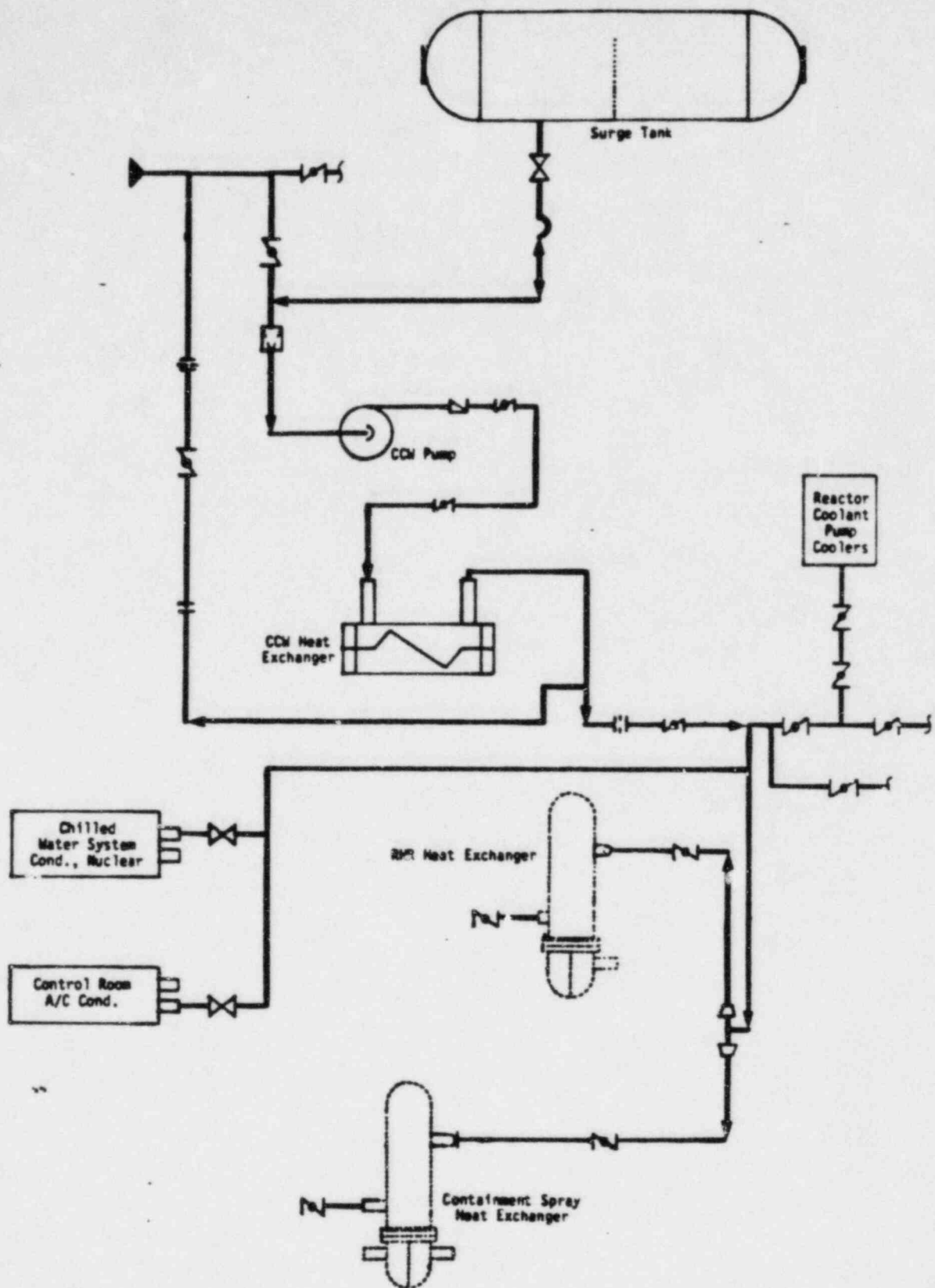


EXHIBIT 2.1
SYSTEM REVIEW SCOPE



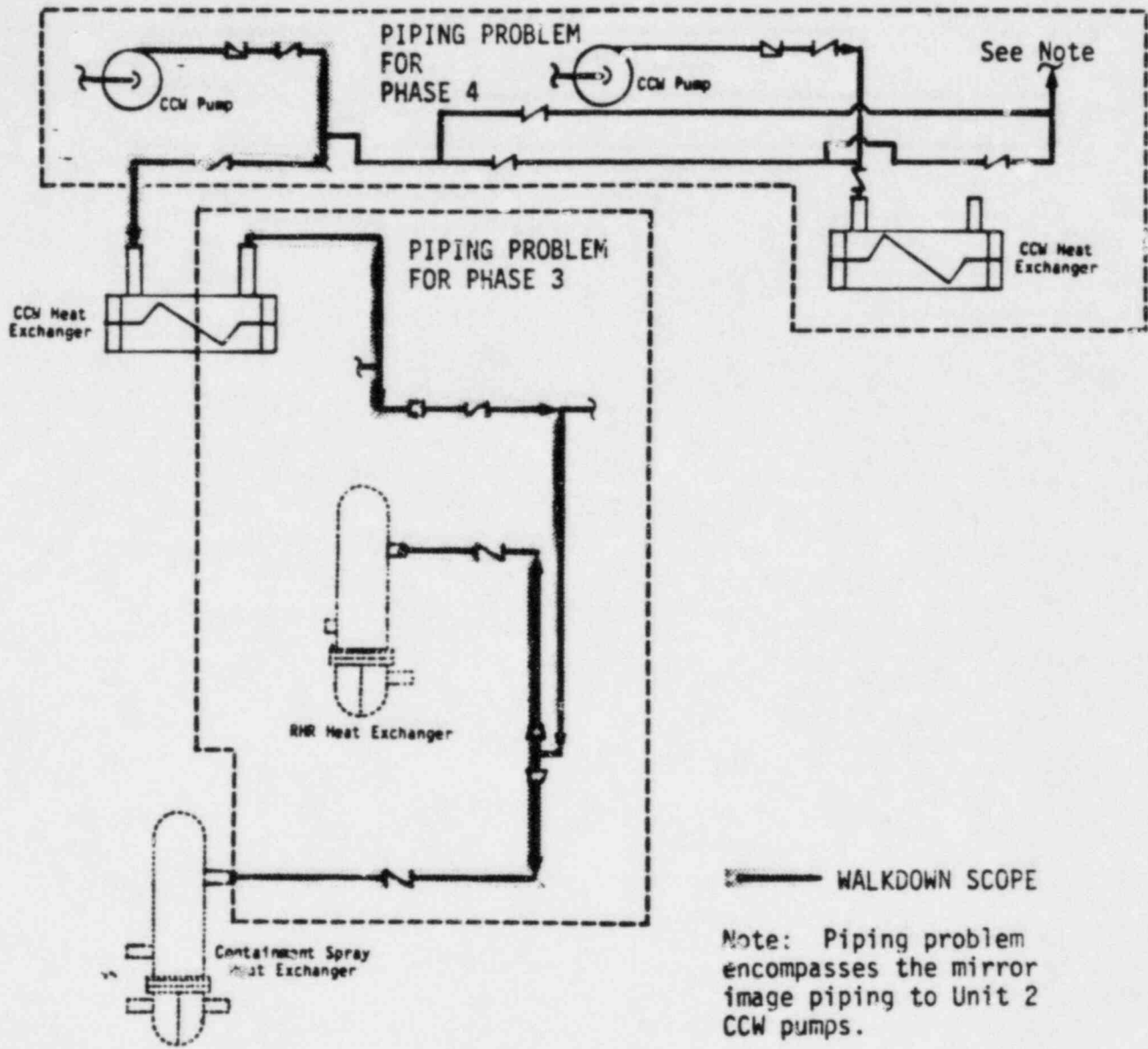


EXHIBIT 2.2

PIPING REVIEW AND WALKDOWN SCOPE



Texas Utilities Electric Company
 Independent Assessment Program Plan, Phase 4
 Project No. 84056

3.0 DESIGN CONTROL REVIEW SCOPE

Cygnal proposes to evaluate two additional design control elements as shown in Exhibit 1.1. The two additional elements will be Design Input Control and Design Verification Control. Matrices were developed identifying specific ANSI N45.2.11 requirements related to design input and design verification; the matrices will address Texas Utilities and Gibbs & Hill implementing procedures past and present. These matrices will be utilized for the Phase 4 implementation assessment effort. Cygnal will develop implementation checklists for each of these two elements in order to perform the implementation assessment of these two companies.

The checklists for the two organizations mentioned above will concentrate on the design activities receiving technical review under this Phase 4 work scope.



4.0 PROJECT ORGANIZATION

Exhibit 5.1 illustrates the project organization for Phase 4 of the Independent Assessment Program. The project is organized to provide multiple levels of review to ensure that each matter receives thorough technical and management attention. This multi-level review process involves a Project Team and a Senior Review Team. The Senior Review Team consists of two outside consultants, Drs. Kennedy and Bush, and one member of Cygna's senior management. Dr. Kennedy and Dr. Bush each offer extensive experience in the areas of dynamics and engineering mechanics, respectively.



EXHIBIT 4.1
PROJECT ORGANIZATION

