ENCLOSURE 2

FOR INFORMATION ONLY

Diablo Canyon Project

Units I and II

Procedure for Coordination of Pipe Support Loads with Civil Engineering

Procedure No. P-22, R-2

Prepared By: C. Krage / [illegible] Date: 2-24-84

Reviewed By: [illegible] Date: 3/13/84
Civil Group Supervisor Unit I

Reviewed By: [illegible] Date: 3/21/84
Civil Group Supervisor Unit II

Reviewed By: [illegible] Date: 2/24/84
Piping Group Supervisor Unit I

Reviewed By: [illegible] for VPM Date: 2-29-84
Piping Group Supervisor Unit II

Reviewed By: [illegible] Date: 2/27/84
Piping Group Supervisor - OPEG

Approved By: D.B. Vandervoort PE Date: 3-21-84
Project Engineer - Unit I

Approved By: P.G. Antiochos for G.V. Cranston Date: 3-21-84
Project Engineer - Unit II

Approved By: [illegible] for M. Rossi Date: 3-21-84
Chief Mechanical and Nuclear Engineer

FOR INFORMATION ONLY

1.0 Purpose

To establish a procedure for the approval by Civil Engineering of pipe support loads imposed on structures (platforms, structural steel columns, beams, inserts, concrete walls and slabs, etc.). This procedure supersedes P-31.

2.0 Scope

2.1 This procedure applies to the following Seismic Category I large bore pipe supports:

A. All supports attached to the containment liner plate, or any metal lined areas.

B. All supports attached to containment annulus steel.

C. All supports attached to platforms in containment.

D. Any support not referred to in A, B or C above which has a design load in excess of 500 lbs.

E. Any support which, in the judgement of the Design Engineer, warrants civil review.

2.2 This procedure applies to Seismic Category I small bore pipe supports within the review scope as follows:

A. Supports attached directly to concrete walls or slabs by means of expansion anchors or welded to an existing embed plate do not require civil coordination.

B. Supports attached to the main structural steel members of the annulus structure shall be coordinated with civil if the loads are 500 lb. or more.

C. Supports attached to the secondary members of the annulus steel such as bracing members or attached to the platform steel shall be coordinated with the Civil Group. Please note that any new support designed after 3/15/84, which is attached to secondary members of the annulus steel shall require prior Civil approval.

D. Supports attached to main structural steel floor beams in the Turbine Building do not require civil coordination.

E. Hangers attached to the containment liner plate shall be coordinated with the Civil Group.

F. There should be no attachments to the Auxiliary Building concrete slab at elevation 107'-0" (Auxiliary Building) without prior approval from the Civil Group.

G. Any support which, in the judgement of the Design Engineer, warrants Civil review.

2.3. Other pipe support loads will be supplied by the Pipe Support Group as required by the Civil Engineering Group.

2.4 Any support, Large Bore or Small Bore, which has been civil verified and subsequently has an increase in design load of 10% or greater shall be sent to Civil Engineering for reverification.

2.5 New supports designed after 3/15/84 shall not be attached to concrete beams or columns without prior approval from the Civil Engineering Group.

2.6 Any new Seismic Category I support designed after 3/15/84, regardless of size which is attached to a platform shall be coordinated with the Civil Group.

3.0 Responsibility

3.1 The Pipe Support Group Supervisor is responsible to assure compliance with this procedure, i.e., to obtain approval by Civil Engineering of the pipe support loads on structures. The D.C.P.O. Pipe Support Group is responsible for the design and Civil coordination of pipe supports.

3.2 The Pipe Support Group Leaders are responsible for assigning qualified Design Engineers to assemble the data packages and for implementation of this procedure.

3.3 For all pipe supports attached to the containment liner, the Pipe Support Group is responsible for the design of the supports up to and including the welds of the support member(s) to the base plate(s).

The Civil Group is responsible for the design of the plate(s) attached to the containment liner including the welded studs and the grouting detail. Approval by the Civil Engineering Group of the support implies only approval of the base plate/welded stud design as shown in the hanger detail drawings.

3.4 For pipe supports not attached to the containment liner, the Pipe Support Group is responsible for the design of the entire pipe support including the base plate, anchor bolts or welded studs where applicable.

4.0 Procedure

4.1 The pipe support design engineer will assemble a civil verification package including but not limited to the items listed below.

A. Copy of current pipe support detail.

B. Documents clearly showing the loading, whether pipe load or footprint load, load combinations, coordinate system and required pipe support attachment points to the civil structure.

These documents may consist of any of the following:

1. The STRUDL model and computer output listing the support reactions.

2. The model or sketch used for hand calculations with the node points and coordinate system clearly defined. Also, documents clearly showing the piping loads or support reactions and their directions.

3. For supports not requiring a model or sketch, a copy of the support detail drawing with the coordinate system and node points clearly defined. Also, documents clearly showing the piping loads or support reactions and their directions.

C. Attachments A, B, C, D and E - These forms may be used as aids in transmitting the above information to Civil Engineering. At least one of them will appear in the civil verification package. The engineer assembling the package will use them where appropriate. Equivalent forms may also be used.

4.2 The Pipe Support Group logs the data packages and delivers them to the Civil Group Supervisor via a transmittal form.

4.3 The Civil Group reviews the packages.

4.3.1 If the support loads are acceptable the Civil Group completes the applicable forms in the package or clearly indicates their approval in writing or by use of a stamp on the Civil verification package. The package is then signed, dated and returned to the Pipe Support Group.

4.3.2 If the loads are approved by Civil Engineering with conditions, these conditions will have to be satisfied before approval is considered final.

4.3.3 If the support loads are not acceptable, the Civil Group clearly indicates their disapproval in writing. They also state their reason for disapproval and recommend a possible resolution to the problem. The package is then returned to the Pipe Support Group.

The responsible pipe support engineer resolves the problem, if necessary by discussion with the responsible civil engineer. The package is then resubmitted to Civil Engineering for approval.

4.3.4 If Civil review indicates a stiffener is required to strengthen a structural member, Civil Design Group shall provide stiffener dimensions and weld sizes required. The design calculation for the stiffener shall be the responsibility of the Civil Group. The pipe support design group will incorporate the stiffener details into the hanger drawings.

Upon receipt of the As-Built drawing, the items required by Civil Engineering will be reviewed by the pipe support designer. Any changes in the Civil required items which affect the capacity of the Civil structure shall be sent to Civil Engineering for reverification.

5.0 Documentation

For Large Bore supports, the approved civil verification package (latest revision) is placed in the pipe support calculation package before it is microfilmed. If the last revision of the pipe support calculations has been microfilmed, the Civil verification and any other attachments may be added to the calculation package as the next revision, the revision blocks updated, signed and the package sent for microfilming.

For Small Bore supports, the approved Civil verification package, latest revision only, will be kept in the OPEG Civil verification log.

6.0 Reference

6.1 DCM M-9

7.0 Attachments

Attachment A (Sample Transmittal Form)

Attachment B (Sample Transmittal Form)

Attachment C (Pipe Support Load Structural Verification Form)

Attachment D (Pipe Load Combination Comparison Form)

Attachment E (Pipe Load Combination Comparison Form)

FOR INFORMATION ONLY

PROCEDURE NO. P-22, R2

ATTACHMENT A

DIABLO CANYON UNIT
PIPE SUPPORT LOAD STRUCTURAL VERIFICATION

SHEET NO.___ OF___
JOB NO. 15320

MADE BY:_____ DATE:_____ CHECKED BY:_____ DATE:_____

1. HANGER & REFERENCES:
   HGR.#_____ REV._____ CALC.#_____ REV._____
   STRESS ANALYSIS#_____ REV._____ DATA POINT_____
   BLDG._____ ELEV._____ AREA_____

2. ATTACHMENT LOCATION: ☐ WALL ☐ SLAB ☐ COLUMN ☐ BEAM
3. ATTACHMENT TYPE: ☐ EMBEDDED PLATE (1) ☐ STEEL (2) ☐ BASE PLATE (3) ☐ PIPE SLEEVE (4)
4. LOADS & MOMENTS AT STRUCTURAL INTERFACE
   FOR DEFINITION OF COORDINATES SEE:
   ☐ COMPUTER MATH MODEL ☐ HAND CALC. SKETCH

TO BE COMPLETED PIPE SUPPORT GROUP

NODE / ATT. TYPE	LOAD CASE	LOADS (LB)			MOMENTS (IN-LB)		
		F_X	F_Y	F_Z	M_X	M_Y	M_Z
	I. NORMAL						
	II. UPSET						
	III. EMER.						
	IV. FAULTED						
	I. NORMAL						
	II. UPSET						
	III. EMER.						
	IV. FAULTED						
	I. NORMAL						
	II. UPSET						
	III. EMER.						
	IV. FAULTED						

TO BE COMPLETED BY CIV. VERIFICATION GROUP

5. REVIEW RESULT:
   ☐ APPROVED ☐ APPROVED w/COND. ☐ REJECT
   ☐ ON HOLD ☐ OVERALL BLDG. TO REVIEW/RESOLV.
   ☐ COLUMN CHECK (FOR WALL ONLY)
   STRUCTURAL DWG. NO._____ REV._____ VIEW_____
   EMBEDDED PLATE TYPE_____ DWG. NO._____

LOADS PLOTTED
☐ YES ☐ NO ☐ N/A
DWG. NO._____

6. EXPLANATION:

EVALUATED BY:_____ DATE:_____ CHECKED BY:_____ DATE_____

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FOR INFORMATION ONLY

PROCEDURE P-22,R2
ATTACHMENT B

DIABLO CANYON UNIT
PIPE LOAD COMBINATION COMPARISION

SHEET NO. ___ OF ___
JOB NO. 15320

MADE BY: _____ DATE: _____ CHECKED BY: _____ DATE: _____

HANGER & REFERENCES:
HGR.# _____ REV. _____ CALC.# _____ REV. _____
STRESS ANALYSIS# _____ REV. _____ DATA POINT _____
BLDG. _____ ELEV. _____ AREA _____

TO BE COMPLETED BY PIPE SUPPORT GROUP

LOAD CASE		Fx lbs	Fy lbs	Fz lbs	Mx in-lbs	My in-lbs	Mz in-lbs
I (NORMAL)	NEW						
	OLD						
	% CHANGE						
II (UPSET)	NEW						
	OLD						
	% CHANGE						
III (EMERG.)	NEW						
	OLD						
	% CHANGE						
IV (FAULTED)	NEW						
	OLD						
	% CHANGE						
	NEW						
	OLD						
	% CHANGE						
TRIB MASS	NEW				NA	NA	NA
	OLD				NA	NA	NA
	% CHANGE				NA	NA	NA

TO BE COMPLETED BY CIVIL GROUP

☐ APPROVED ☐ APPROVED WITH CONDITION ☐ REJECTED ☐ GLOBAL REVIEW REQ'D.

EXPLANATION _____

EVALUATED BY: _____ DATE: _____ CHECKED BY _____ DATE _____

UNCONTROLLED COPY

[GP02J11/9]

FOR INFORMATION ONLY

PROCEDURE NO.: P-22, Rev. 2
ATTACHMENT C

PG&E

FOR INTRA—COMPANY USES

From Division or Department: Mechanical Design Section
Piping Support Unit

Date _____ 19__
Diablo Canyon Unit No.

FILE NO.
RE LETTER OF
SUBJECT:
To Division or Department:

Drawing Initial Review ☐ Check one
Drawing Final Review ☐

To: Civil/Architectural Design Section

_____

_____

_____

Attached are check prints of the following listed drawings issued for review and comment. Please return one copy by _____ date, marked and signed, to the initiating piping support unit after you have completed your review.

All supporting documents to be returned to: _____

_____

attn: _____
DUS

Drawing No.	Rev.	Sh. No.	Hanger No.	File 33 Rev. No.

Attachments

_____
Designer / Design Unit Supervisor

UNCONTROLLED COPY

FOR INFORMATION ONLY

PROCEDURE P-22 R2
ATTACHMENT D

DIABLO CANYON UNIT 2
PIPE LOAD COMBINATION COMPARISION

SHEET NO. ___ OF ___
JOB NO. 15320

MADE BY: _____ DATE: _____ CHECKED BY: _____ DATE: _____

HANGER & REFERENCES:
HGR.# _____ REV. _____ CALC.# _____ REV. _____
STRESS ANALYSIS# _____ REV. _____ DATA POINT _____
BLDG. _____ ELEV. _____ AREA _____

TO BE COMPLETED BY PIPE SUPPORT GROUP

LOAD CASE			Fx lbs	Fy lbs	Fz lbs	Mx in-lbs	My in-lbs	Mz in-lbs
I (NORMAL)	NEW	+						
		−						
	OLD	+						
		−						
	% CHANGE	+						
		−						
II (UPSET)	NEW	+						
		−						
	OLD	+						
		−						
	% CHANGE	+						
		−						
III (EMERG.)	NEW	+						
		−						
	OLD	+						
		−						
	% CHANGE	+						
		−						
IV (FAULTED)	NEW	+						
		−						
	OLD	+						
		−						
	% CHANGE	+						
		−						
	NEW	+						
		−						
	OLD	+						
		−						
	% CHANGE	+						
		−						
TRIB MASS	NEW					NA	NA	NA
	OLD					NA	NA	NA
	% CHANGE					NA	NA	NA

TO BE COMPLETED BY CIVIL GROUP

☐ APPROVED ☐ APPROVED WITH CONDITION ☐ REJECTED ☐ GLOBAL REVIEW REQ'D.

EXPLANATION _____

EVALUATED BY: _____ DATE: _____ CHECKED BY _____ DATE _____

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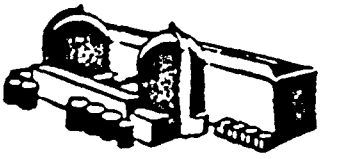
FOR INFORMATION ONLY

INTEROFFICE MEMORANDUM

Diablo Canyon Project



PACIFIC GAS AND ELECTRIC COMPANY
BECHTEL POWER CORPORATION

To

From

Of

At Extension

Date

File No.

Subject Drawing Initial Review ☐ Check One
Drawing Final Review ☐

Diablo Canyon Unit No.

Attached are check prints of the following listed drawings issued for review and comment. Please return one copy by _____ date, marked and signed, to the initiating piping support unit after you have completed your review.

All supporting documents to be returned to: _____

_____

Attn: _____

Drawing No.	Rev.	Sheet No.	Hanger No.	File 33 Rev. No.

_____
Designer/Design Unit Supervisor

Attachments

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SMP -