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FACIL:50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Ga 05000275
50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Ga 05000323
AUTH.NAME AUTHOR AFFILIATION
SHIFFER,J.D. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
KNIGHTON,G.W. Licensing Branch 3

SUBJECT: Forwards responses to NRC Allegatons 1430 & 1431 re pipe supports raised during 850114-17 piping audit. Based on analysis results, location or type of support precluded as cause for overstress.

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NOTES:J Hanchett 1cy PDR Documents. 05000275
OL:09/22/81
J Hanchett 1cy PDR Documents. 05000323

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	NRR/DE/MTEB		1	1	NRR/DHFS/DEPY	12	1	1
	NRR/DHFS/HFEB	16	1	1	NRR/DHFS/LQB		1	1
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	NRR/DL/SSPB		1	0	NRR/DSI/ADRS		1	0
	NRR/DSI/AEB	28	1	1	NRR/DSI/CPB	11	1	1
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	NRR/DSI/METB	13	1	1	NRR/DSI/PSB	21	1	1
	NRR/DSI/RSB	25	1	1	REG FILE	04	1	1
	RGN5		1	1	RM/DDAMI/MIB		1	0
EXTERNAL:	LPDR	03	2	2	NRC PDR	02	1	1
	NSIC	06	1	1	PNL GRUEL,R		1	1
NOTES:			1	1				

TOTAL NUMBER OF COPIES REQUIRED: LTTR 38 ENCL 30

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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

February 1, 1985

PGandE Letter No.: DCL-85-041

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323
Diablo Canyon Units 1 and 2
NRC Allegations 1430, 1431, and 1432

Dear Mr. Knighton:

During the NRC Staff piping audit on Diablo Canyon Unit 2 conducted on January 14-17, 1985, the Staff requested a written response to NRC Allegations 1430, 1431, and 1432 raised by C. Stokes related to pipe supports. Enclosed are PGandE's responses to these allegations. The response to Allegation 1432 was previously provided to Mr. H. Polk, NRR, on January 17, 1985.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

for J. D. Shiffer

Enclosure

cc: R. T. Dodds
J. B. Martin
H. E. Schierling
Service List

B021
1/27

ENCLOSURE

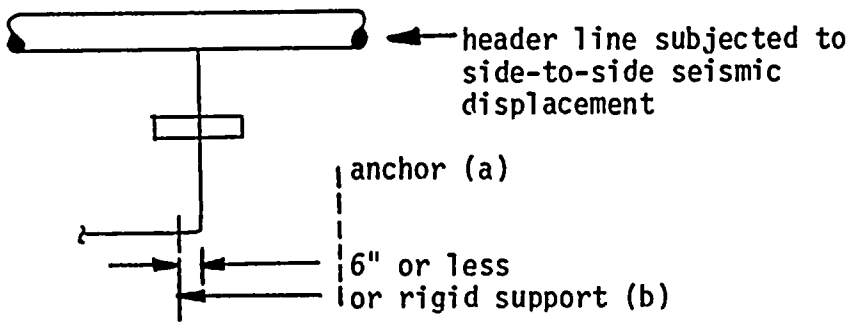
NRC Allegation #1430

It is alleged that:

The first of my concerns involves the placement of rigid supports near elbows. Two cases come to mind --

(1) A branch line being subjected to axial buckling, or tensile stress.

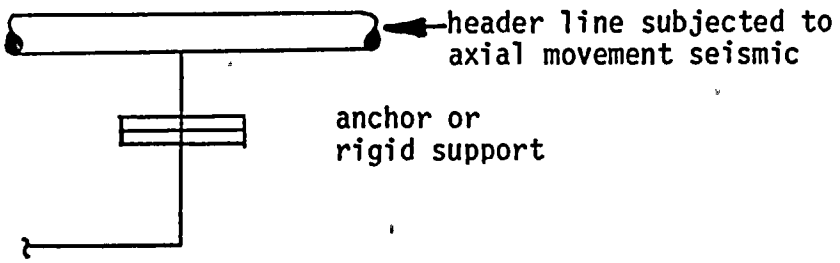
Figure 1



From the NRC and PGandE documents, it is impossible to tell if NRC or PGandE looked at this potential problem.

(2)

Figure 2



I am concerned about the 15,000 feet of pipe qualified soley (sic) by span rule. (Reference page 5 of IDVP re-evaluation in proposed SSER). This appears to have been overlooked.

Response:

This allegation raises the following questions:

i) For a branch line, was the placement of the first support from the header piping done correctly?

ii) Did the 15000 feet of small bore piping qualified by the span method correctly consider the issue in (i) above?

In Unit 1, the location and type of the first support on a branch line in each direction from the header pipe is based on the following:

a) The branch piping between this support and the connection to the header pipe has sufficient flexibility to accommodate seismic and thermal displacements of the header pipe.

b) The branch piping has stresses less than the code allowable stress when subjected to the header displacements.

c) The support load is of reasonable value (about 300 lbs or less for small bore piping).

The small bore piping sample program was specifically designed to include the design considerations of piping and equipment seismic anchor movement (SAM) and thermal anchor movement (TAM). The sample program analysis results provided the basis for accepting the 15,000 feet of small bore piping and supports for the SAM design consideration. However, the sample program results caused verification of all small bore piping subjected to large SAM from equipment. Further, all stainless steel piping above 165^{o}F and carbon steel piping above 200^{o}F was computer analyzed (using ME101), thereby eliminating the possibility of any TAM-related problems. These analyses would preclude either the location or the type of support as the cause for piping overstress.

Sections 3.3.3, 5.2, and 5.3 of the IDVP Interim Technical Report 61 thoroughly investigated the above aspects of the span method.

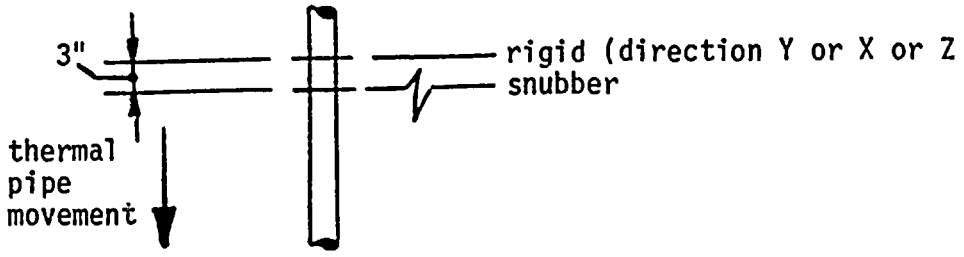
For Unit 2, all Class 1 piping was analyzed by computer addressing SAM and TAM, as applicable.

NRC Allegation #1431

It is alleged that:

The second concern is placement through the construction tolerance of six inches for the location of a pipe support on piping. This factor must be considered in combination with a special support configuration. But the pipe stress group had separated the two supports when we received them at the pipe support group. As a result, they improperly were considered in isolation. I am aware of this happening at least once because I corrected it:

Figure 3



This pair of supports are usually shown on the stress isometric drawings as being at the same location. It is a special case where the pipe must be seismically restrained but allowed to move for thermal reasons. It is possible by using the six-inch construction tolerance to place the snubber (see above) on the opposite side of the rigid restraint. As a result, when the pipe moves, the snubber clamp binds on the rigid restraint, either causing the restraint to fail or the pipe to overstress. This is also applicable to a spring-can and as rigid restraint in the lateral direction.

Response:

This allegation describes a possibility of interference between a pipe support and external structural steel or between two adjacent pipe supports due to the Construction Group's use of the six-inch pipe support installation tolerance.

During the pipe support design phase, it is not always possible to identify all interferences. Hence, walkdowns were performed to provide added assurance that the systems are installed such that they will perform their intended design function.

Mr. Stokes appears to be concerned that pipe supports separated by six inches or less were only considered in isolation. This is not so. All adjacent pipe support hardware which was known at the time of design was considered. Only supplementary steel which was subsequently installed could not be considered. Mr. Stokes also appears to be concerned that in certain circumstances use of a 6-inch tolerance criterion could result in pipe overstress. In either case, the potential interference or the condition of overstress would be identified during the walkdown program, thereby, eliminating any potential overstress condition.

All conditions of improper location of supports or overstress were identified and corrected according to appropriate procedures as part of the various piping walkdown programs that were performed at the Diablo Canyon site. (References: Project Procedure P-36, "Walkdown of Piping During Hot Functional," and Project Instructions I-50, "Stress Walkdown for Design Class I Systems.")

Attached are examples from these walkdowns identifying and correcting such interferences.

ATTACHMENT I

Heatup Walkdown Problem Report #15-1

Problem Description: Pipe clamp of support #15-115SL interferes with steel of support #575-188R due to thermal growth of the pipe.

Resolution: Both supports redesigned to resolve this problem.

ATTACHMENT II

Stress Walkdown Problem Resolution #220

Problem Description: Pipe support #74-2V interferes with 1-inch diameter heat-traced pipe due to thermal growth of the line.

Resolution: Pipe clamp offset to avoid interference with the heat-traced pipe. Insulation on pipe at north notched to avoid interference due to offset of clamp.

ATTACHMENT III

Stress Walkdown Problem Report #1034

Problem Description: Interference between coupling and steel of pipe support due to thermal growth of the line.

Resolution: Support steel to be notched to avoid the interference.

ATTACHMENT IV

This is an excerpt from the referenced Hot Piping Walkdown Report addressing the thermal growth concern.

NRC Allegation #1432

It is alleged that:

Issues which the ACRS discussed on Friday, July 13, 1984, involve the radial expansion of large bore lines. There is a construction tolerance of 1/16-inch on a side with a 1/6-inch tolerance, for a total gap of 3/16-inch maximum. Many of the large bore lines, such as Main Steam, Residual Heat Removal (RHR), and Reactor Coolant System (RCS), which are subjected to high pressure and temperature, will expand more than the 3/16-inch maximum (zero-inch possible) and bind up in the support, rather than slide through as intended.

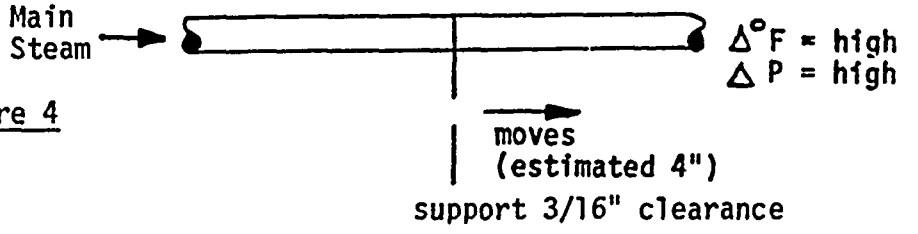


Figure 4

The approximate radial expansion of this line can be one inch. This line will grow in length and diameter roughly at the same uniform rate. It will therefore lock up at approximately only one inch of the axial growth. It still has three inches more to go. I estimated four inches movement as a conservative assumption in Figure 4, because at the meeting on Friday Mr. Shipley admitted movements of six inches in some lines. Two possibilities are likely. -- (1) the pipe stronger than the support - support fails, (2) support stronger than pipe -- pipe fails.

Response:

This allegation raises the concern that the radial expansion of high temperature piping, such as main steam piping, may be greater than the gap (3/16-inch) around the pipe at frame-type supports. This would result in the pipe binding in the support and causing overstress of the pipe or support.

The 3/16-inch clearance provided for supports in the restrained direction is adequate to accommodate radial thermal growth of the main steam and residual heat removal piping without closing the gaps, assuming maximum line temperature.

The hot functional and power ascension testing programs have verified that the actual gaps provided in the field are adequate to permit radial expansion of the pipe and permit axial movement of the pipe without binding. The final report on the results of the hot piping walkdown was submitted to the NRC on December 20, 1984 (PGandE letter No. DCL-84-382). Attachment IV is excerpted from the referenced Hot Piping Walkdown Report addressing the thermal growth concern. The NRC also participated in the physical inspections (walkdowns) during the Unit 2 Hot Functional Test Program.

For Unit 1, as noted in SSER-25 (page 2-2), the NRC concluded that in satisfaction of Item 5 of License Condition 2.C.(11) the actual thermal movements are in reasonable agreement with calculated movements.

ATTACHMENT I

Heatup Walkdown Problem Report

Heatup Walkdown Package Number: 15 Problem No.: 15-1

Piping System Description: STEAM GEN 3 BLOWDOWN OUTSIDE CONTAINMENT

Analysis Number of Piping Where Problem is Located: 1-113
(list only one)

Describe Problem: PIPE CLAMP ON 15-115SL IS UP AGAINST STEEL OF ADJACENT HANGER S7S-188R, CAUSING AN UNINTENTIONAL AXIAL RESTRAINT. THE CALCULATED MOVEMENT IS 1.6" AXIALLY. CLAMP SHOULD BE RELOCATED 1¾" N.W. TO ALLOW THIS MOVEMENT. (REMOVE INSULATION FIRST TO DETERMINE IF PIPE CONFIGURATION WILL ALLOW MOVING CLAMP) (.80" NORMAL, .88" DILATION, 1.60" ACCIDENT WITH DILATION) EHN 2-3-84

Temperature: ~~ALL LEVELS~~ 160°

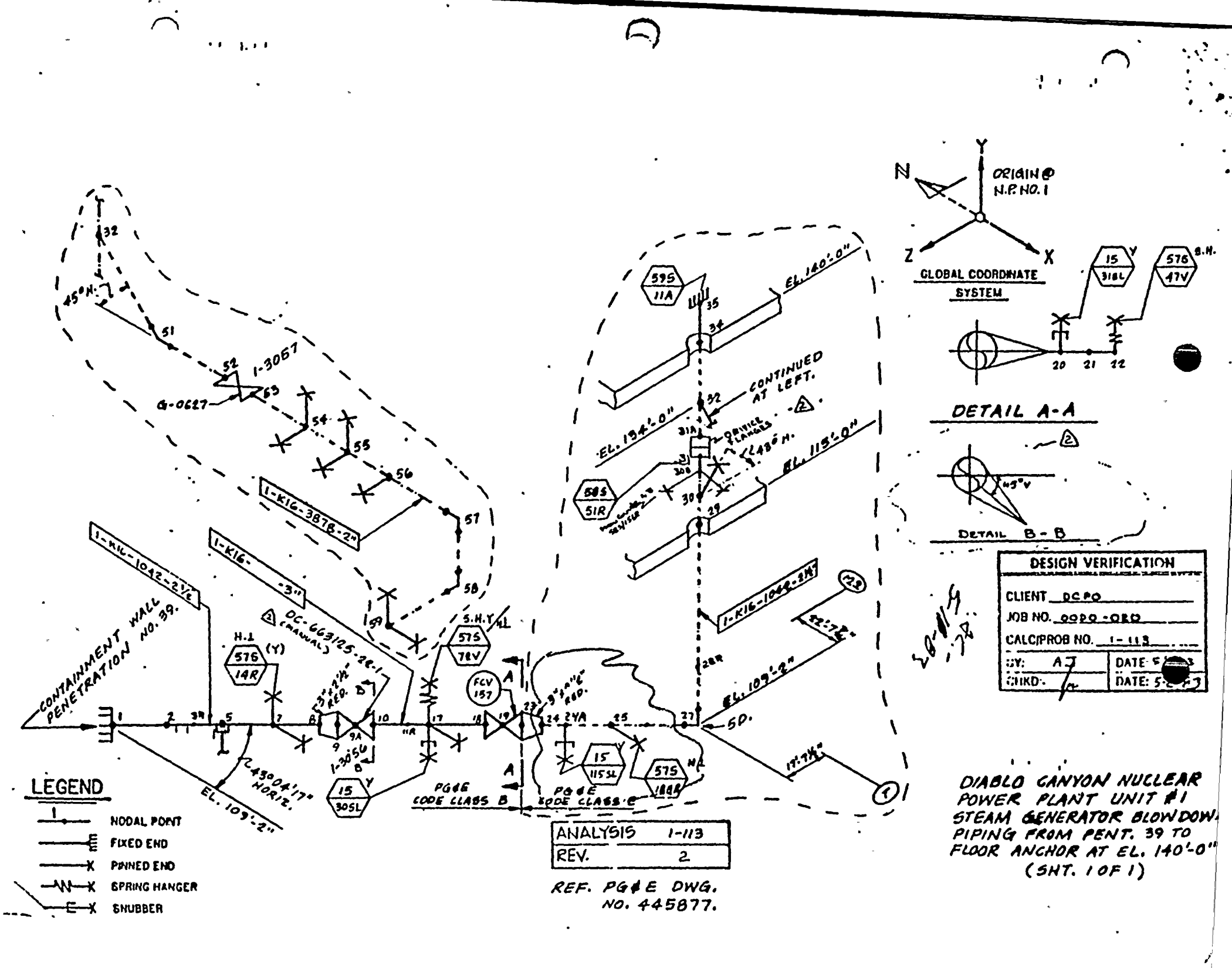
By: Stephen Bekey 1-31-84
Date

2-1-84
Date

Resolution: ~~Move clamp on 115SL 6" downstream to other side of 188R.~~ KAP 2-10-84 REDESIGNS FOR ABOVE SUPPORTS ISSUED TO RESOLVE INTERFERENCE. ISSUE DATE 2-10-84 PER DCI-EP-17476 R0

By: Ken Palmer 2-24-84
Date

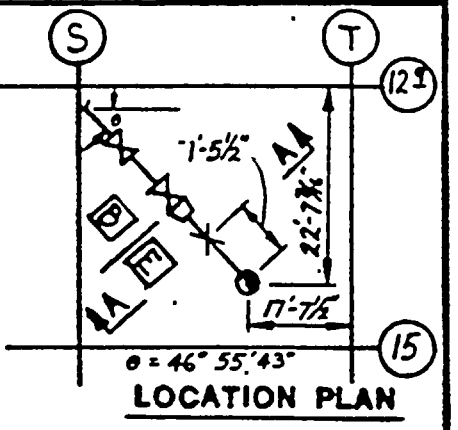
DC Category 4/M/84 ALL PAPER WORK COMPLETE 2.29.84


ORIGIN @ N.P. NO. 1
GLOBAL COORDINATE SYSTEM
DETAIL A-A
DETAIL B-B
CONTINUED AT LEFT.
EL. 140'-0"
EL. 194'-0"
EL. 115'-0"
EL. 109'-2"
EL. 109'-2"
45° H.
LATCH
OFFICE LANGES
CONTAINMENT WALL PENETRATION NO. 39.
1-K16-3878-2"
1-K16-
-3"
1-K16-1042-2½"
1-K16-1044-2½"
1-3057
G-0627
1-3056
DC-663125-2C-1
(MANUAL)
S.H.Y
FCV 157
PG&E CODE CLASS B
PG&E CODE CLASS C
595 11A
595 51R
576 14R
575 78V
575 188R
15 305L
15 115SL
15 318L
576 47V
S.H.
H.1
(Y)
(Z)
(X)
LEGEND
NODAL POINT
FIXED END
PINNED END
SPRING HANGER
SNUBBER
ANALYSIS 1-113
REV. 2
REF. PG&E DWG. NO. 445877.
DESIGN VERIFICATION
CLIENT PGPO
JOB NO. 0090-0R0
CALC/PROB NO. 1-113
BY: AJ
CHKD:
DATE: 5-
DATE: 5-
DIABLO CANYON NUCLEAR POWER PLANT UNIT #1
STEAM GENERATOR BLOWDOWN PIPING FROM PENT. 39 TO FLOOR ANCHOR AT EL. 140'-0"
(SHT. 1 OF 1)

AREA GE	LINE 1-K16-1042-2½"-P[E] (STM. GEN. BD)	HANGER SYMBOL 57S / 188R ⊥(H) REST
EL 100'-0"		LOC ON DWG 500057

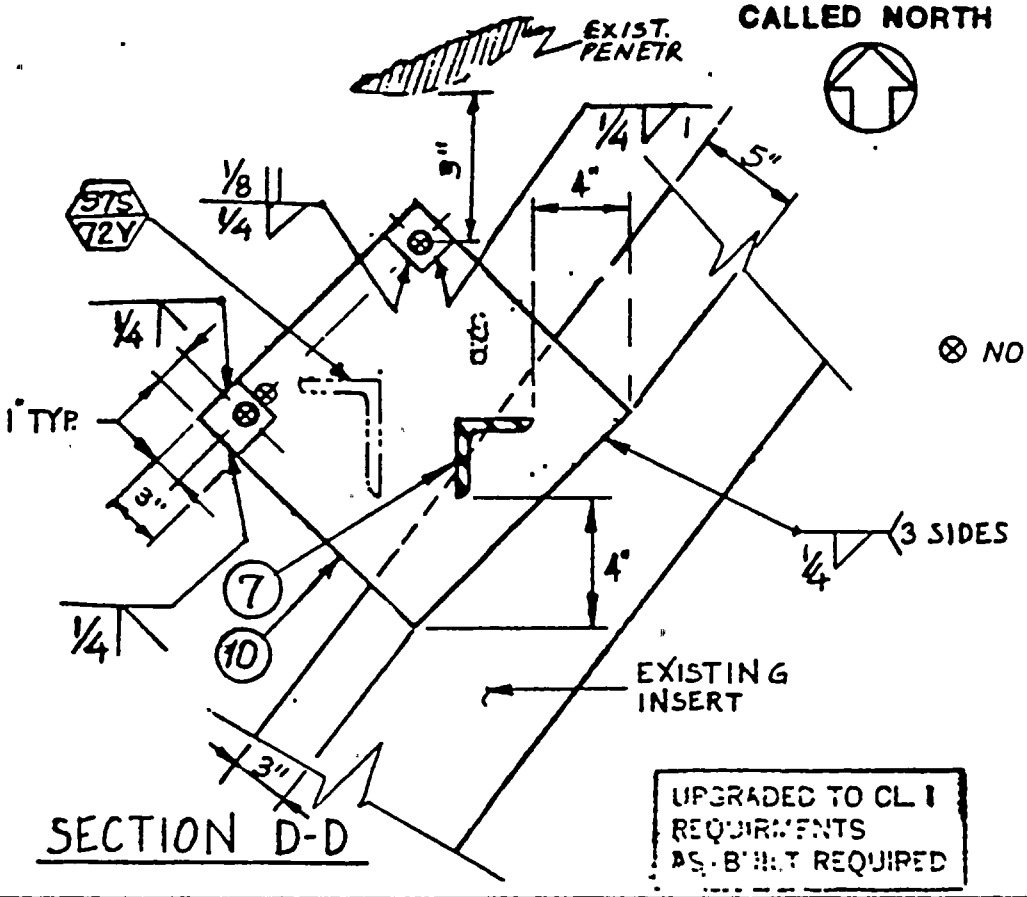
DESIGN CLASS I
CODE CLASS E'

CALLED NORTH



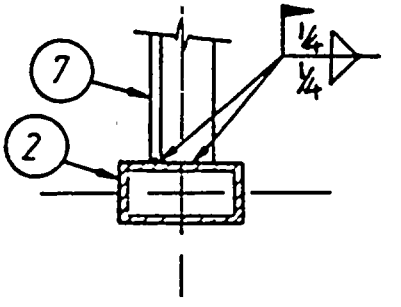
LOCATION PLAN

⊗ NO WELD



SECTION D-D

UPGRADED TO CL 1 REQUIREMENTS AS-BUILT REQUIRED



SECTION B-B

NO OF ASSEMBLIES REQUIRED 1

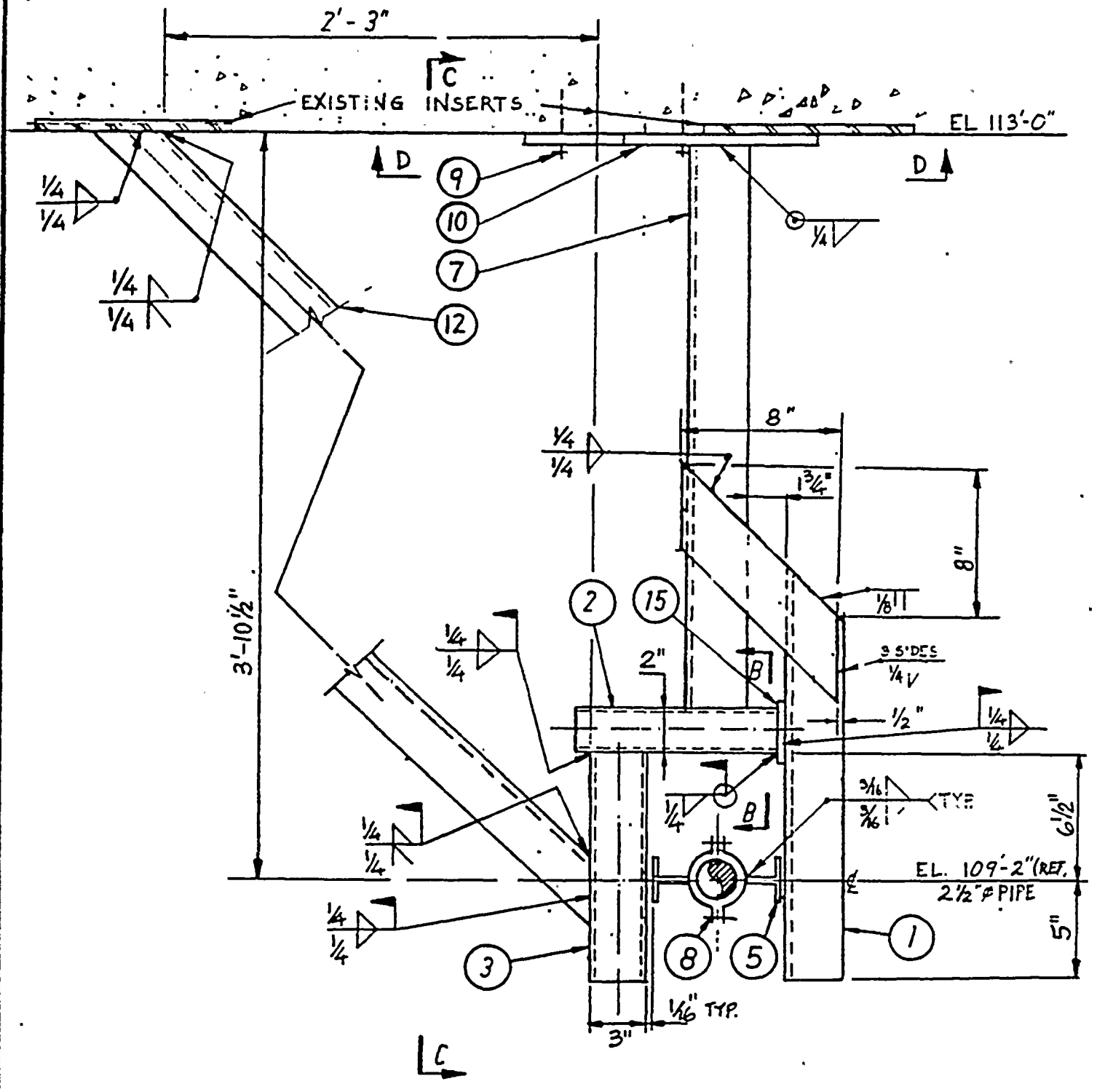
NO	REQD	MATERIALS PER ASSEMBLY
1	1	L 3" × 3" × 3/8" — 2'-0⅛" LONG (CUT TO FIT)
2	1	TS 4" × 2 × ¼ — 0'-10½" LONG
3	1	TS 4 × 3 × ¼ — 0'-11½" LG.
~~4~~	~~1~~	~~L 3" × 3" × 3/8" — 0'-7" LONG~~ DELETED
5	2	MT 2 × 6.5 — 0'-3" LONG (FIELD GROUND TO FIT EXISTING TEE)
6	1	L 3" × 3" × 3/8" — 1'-1½" LONG (CUT ONE LEG OFF)
7	1	L 3" × 3" × 3/8" — 3'-4⅞" LONG (CUT TO FIT)
8	1	2½" PIPE CLAMP (FIG 212)
9	2	¾" ϕ SHELL TYPE CONCRETE FASTENER W/BOLT
10	1	PL ½" × 10" — 0'-10" LONG
12	1	L 3" × 3" × 3/8", 4'-11" LG (CUT TO FIT)
13	1	13/4" X 3" X ½" THK FISH PL
14	1	3" X 3" X ½" THK FISH PL

15	1	PL ½" × 3" × 5" LG.

DSGN	DRAWING NO
DWN GH 4/15/80	049262
CHKD SJ 4/18/80	

RM INDEXED REV.

AREA GE	LINE 1-K16-1042-2½ V P E	HANGER SYMBOL 57S / 188R
EL 100'-0"	(STM. GEN. BD.)	⊥(H) REST
		LOC ON DWG 500057



ELEV. VIEW A-A

DSGN	DRAWING NO
DWN SH 4/15/80	049262
CHKD 4/18/80	

INDEXED REV. ....

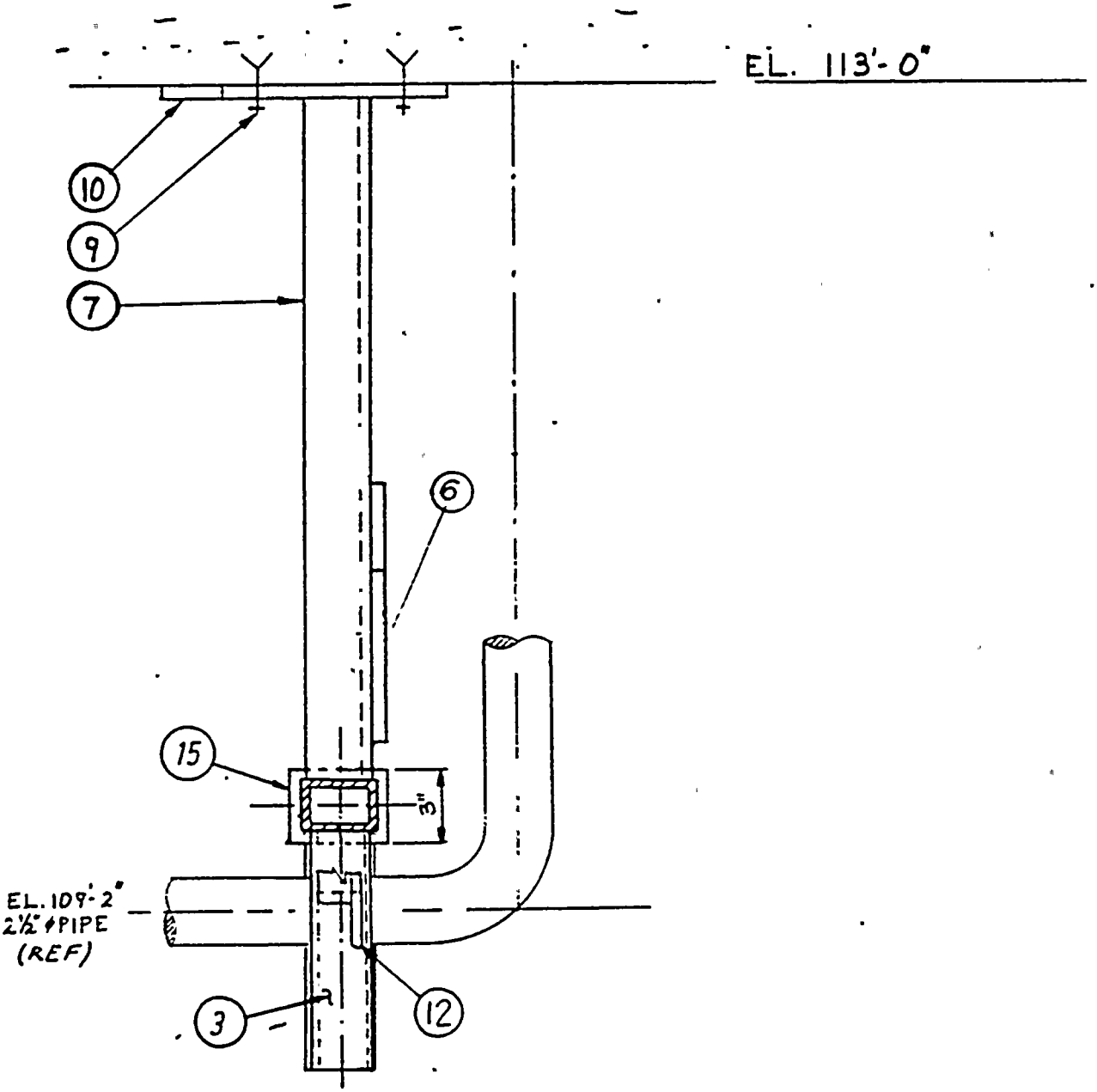
76-111 MAY 3-76

8

AREA GE	LINE 1-K16-1042-2½ ▽ P E	HANGER SYMBOL ⊥ (H); REST
EL 100'-0"	(STM. GEN. BD.)	LOC ON DWG 500057

57S / 188R

76-11 / Rev 3-76



SECTION C-C

INDEXED REV. ____

	DSGN	DRAWING NO
	DWN GH 4/16/80	049262
	CHKD SJ 4/18/80	
PROJECT: DIABLO CANYON UNIT: 1	SHT 2045 OF SHTS	P G & E CO

AREA 1-GE | LINE 1-K16-1042-2½"P-E | HANGER SYMBOL 57S 188 R

EL 100'-0" | STM GEN 1-3 BLOW TNK HDR | 1, H RESTRAINT

LOC ON DWG 500057

REV	ISSUE DATE	DESCRIPTION OF CHANGES	PREPARATION			APPROVAL		
			DSGN	DWN	CHKD	DUS	ENGR	SUPV ENGR
4	8-16-82	AS BUILT PER M.E. LEPPKE MEMO DATED 6-1-82.	JS	JS	JEB	MS	[illegible]	[illegible]
5	12-0-82	CHANGED SUPPORT DESIGN CLASS II TO CLASS I	J.L	J.L	RE	[illegible]	DAVE CRYER (BRC)	JPS
		ACCEPTED BY PROJECT ENGINEERING FOR CONSTRUCTION DCN. DC1-E-P-5060 UPGRADED TO DESIGN CLASS I					[illegible]	JPS
6	5-7-83	REVISED TO INCORPORATE FCT # 692 NO FIELD WORK REQUIRED	KP	ST	D. Patel	ED	RKC	DJC
7	8-16-83	REVISED TO INCORPORATE FCT # 3290 C, AND REMOVED MVMT DATA ON SHT 204. NO FIELD WORK REQUIRED.	J.L	J.L	PI.	[illegible]	ASM	JB
8	2/10/84	DELETED ITEM-4, REVISED ITEMS 2 & 3, ADDED ITEM 15. APPROVED FOR CONSTRUCTION PER DCN, DC-1-E-P-17476. GENERIC DCN	E L.	ST	RKC	[illegible]	[illegible]	[illegible]

NOTES:

SHEETS ASSIGNED TO THIS HANGER SYMBOL (TOTAL 4 SHEETS)

204	204 A	204 B	204 X																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

DSGN JS | DWN JS | CHKD JEB | DRAWING NO 049262

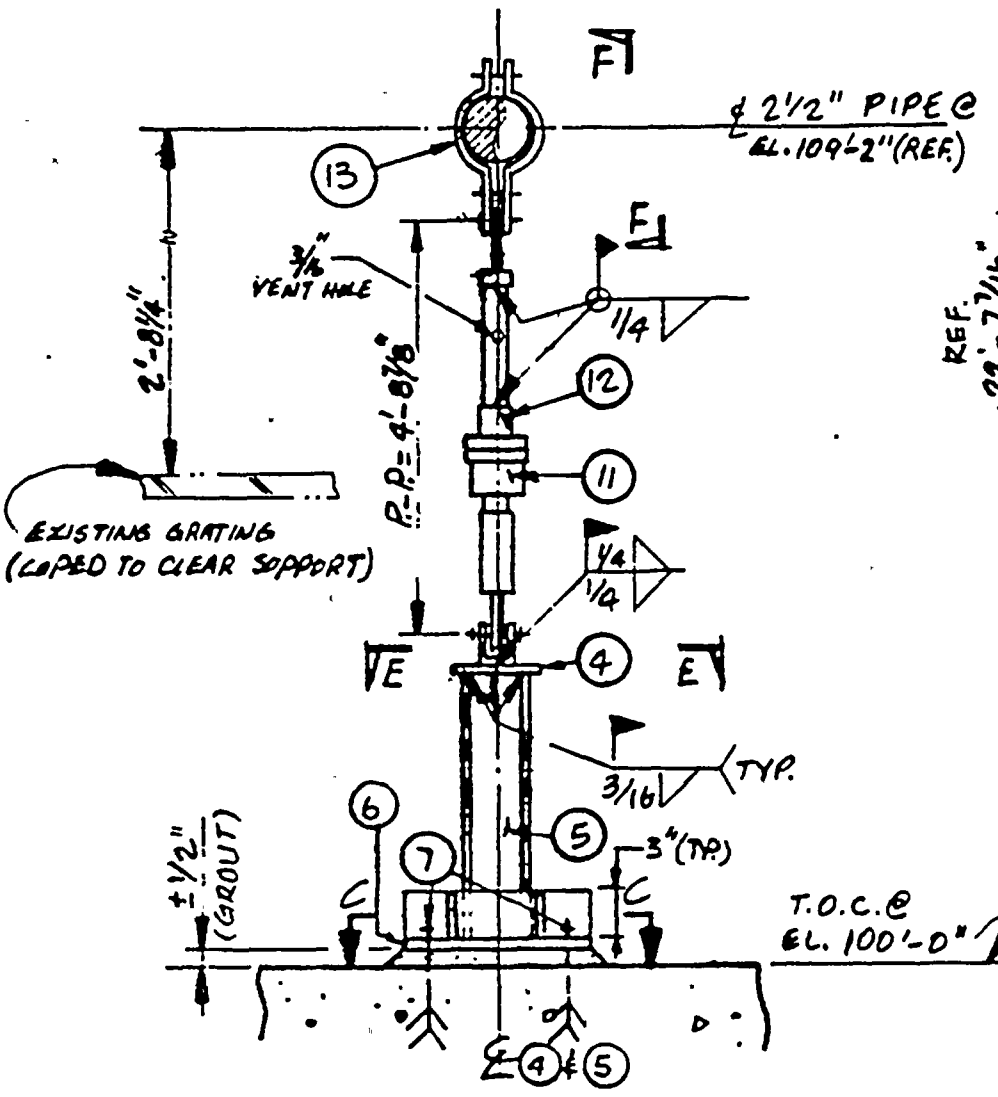
PROJECT DIABLO CANYON | UNIT: ONE | 204X OF SHS | P G & E CO | ISSUE 7 | REV

76-146 (-82)

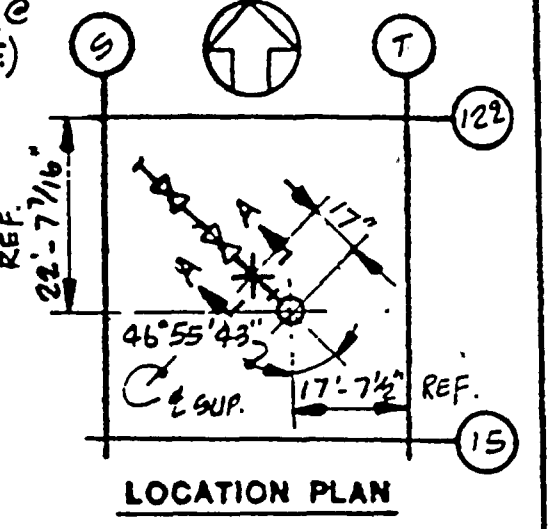
RM INDEXED

AREA 1 GE	LINE 1-K16-1042-2½"-I P E STM. GEN. 1-3 BLOW DN TK. HDR. M.S. SVS. 04	HANGER SYMBOL Y SNUBBER 15 / 155
EL 100'-0"		LOC ON DWG 500057

DESIGN CLASS I
CODE CLASS E



ELEV. VIEW A-A

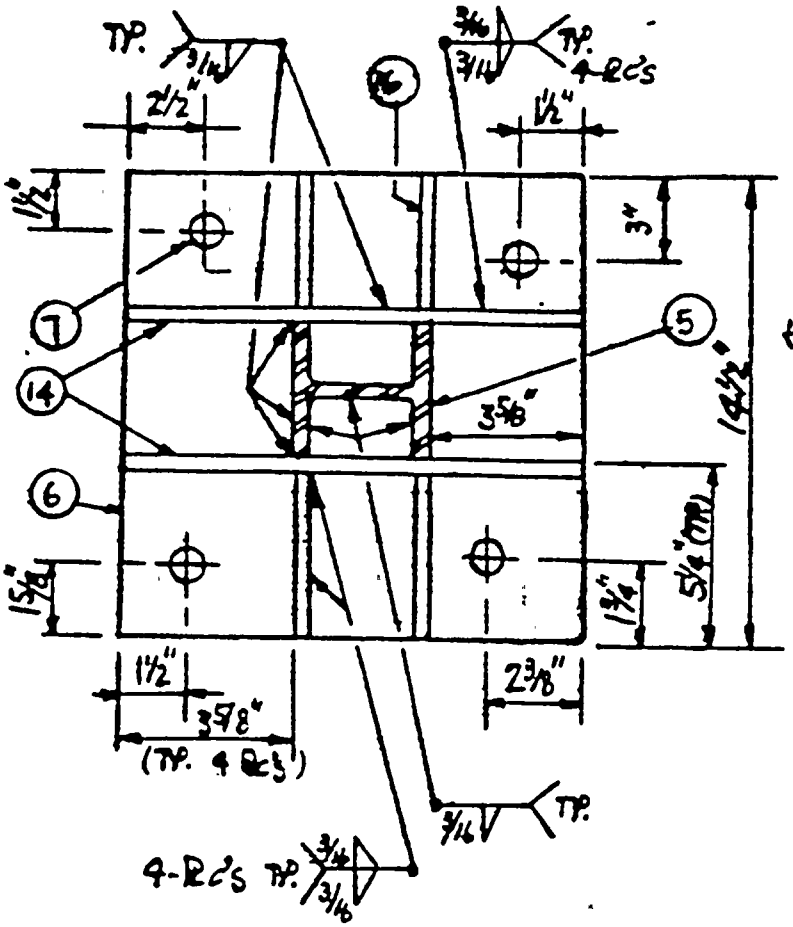


LOCATION PLAN

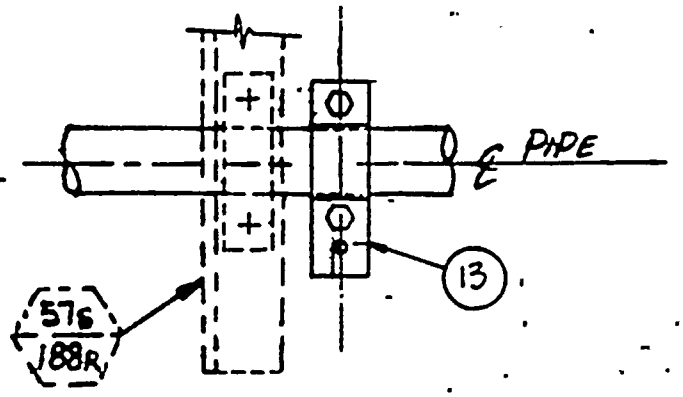
NO	REQD	MATERIALS PER ASSEMBLY
1		DELETED
2		DELETED
3		DELETED
4	1	C.S. PL. ½" x 5" x 5" LG.
5	1	M4 x 13, 3'-6¼" LG.
6	1	C.S. PL. ¾" x 14½" x 11½" LG.
7	4	¾" ℄ HILTI SHELL TYPE ANCHOR
8		DELETED
9		DELETED

	DSGN EFT DWN C DELUCA CHKD JPN	DRAWING NO 049313

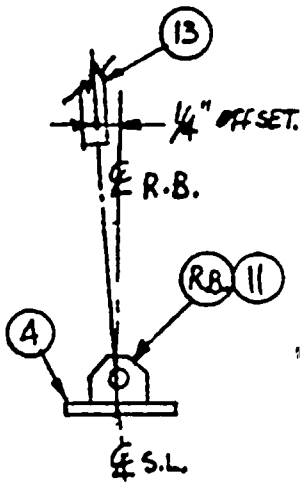
AREA 16E	SEE SHT 136	HANGER SYMBOL SNUBBER 15 / 15SL
EL 100'-0"		LOC ON DWG 500057



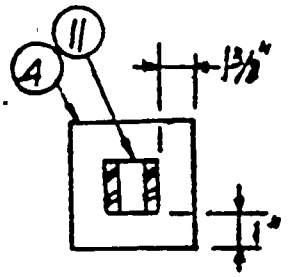
SECT. C-C



VIEW F-F
(SNB. OMITTED FOR CLARITY)



OFFSET DETAIL



SECT. E-E
ITEMS 5,6,7,14 & 16 OMITTED FOR CLARITY

NO	REQD	MATERIALS PER ASSEMBLY
10	—	DELETED
11	1	PSA-10 NF (SER. #14577) W/PSA NF R.B. C.S. = 3 5/8"; H.S. = 2 1/2"
12	1	TRANS. KIT FOR PSA-10 W/2"ϕ SCH. 80 EXT. PIPE (LENGTH BY FIELD)
13	1	SPC-14-025 FOR PSA-10 (1"ϕ PIN)
14	2	C.S. PL. 1/2" x 3" x 11 1/2"
15	—	DELETED
16	4	C.S. PL. 1/2" x 3" x 4 3/4" LG.

	DSGN EPT	DRAWING NO 049313
	DWN C. DELUCA	
	CHKD JBL	

PROJECT: DIABLO

AREA 1-GE

EL 100'-0"

LINE 1-K16-1042-2½ V E
STM. GEN. 1-3 BLOWDN DN.
T.K. HDR. MS SYS 04

HANGER SYMBOL
Y SNUBBER
15
1154

LOC ON DWG 500057

REV	ISSUE DATE	DESCRIPTION OF CHANGES	PREPARATION			APPROVAL		
			DSGN	DWN	CHKD	DUS	ENGR	SUPV ENGR
A	02/10/84	EXIST. ITEM # 13 SSC-14-025, REPLACED BY SPC-14-025 TO AVOID INTERFERENCE WITH SUPPORT NO. 57S-198R DUE TO SYSTEM HEAT UP. APPROVED FOR CONSTRUCTION PER DCN-DC-1-E-P-T7476/REV.0 GENERIC DCN.	VL	ST				

NOTES:

SHEETS ASSIGNED TO THIS HANGER SYMBOL (TOTAL 3 SHEETS)

136 | 136A | 136X

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

DSGN V KAPOOR
DWN ST

DRAWING NO 049313

76-1483(4-8)

ATTACHMENT II

Instruction I-50
Revision 1
Attachment B

STRESS WALKDOWN PROBLEM RESOLUTION

Package No. 8-110-3-Y-A
Problem No. 220
System No. 10
Line No. SI-119-8
Analysis No. 8-110 R3
Building AUX
Building(s) AUX
Key INT. - SUPPORT
Fuel Load Required? [X] yes [ ] no
Walkdown Team Ralph Norsteng Date 8-24-83
Arjan Singh Bansal Date 8-24-83

Item for Resolution: 74/2V WILL HIT A 1" ϕ HEAT TRACED PIPE @ ≈ el 97'7". SI-119-8 MOVES 1/4" SOUTH. SEE ATTACHED SKETCH.

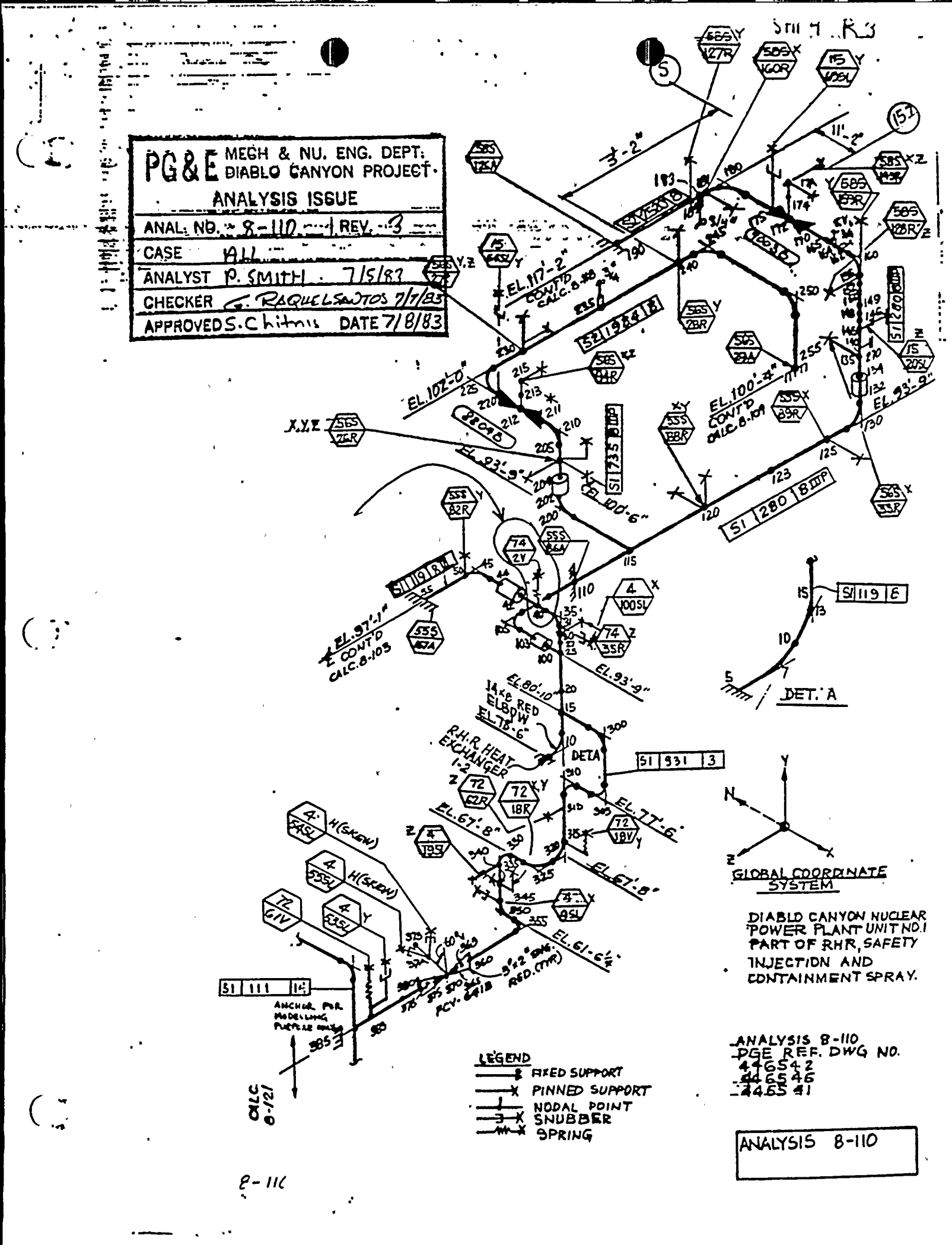
Disposition Requested From: [ ] Engineering [X] Construction
GC to cope ~~insulation~~ and offset pipe clamp as described on the attached drawing.
DC Tateosian 8/25/83

Final Resolution:
Issued to Mosely 9/30
Support complete
MR

By: WR Bell BM Todd Dept. Mech Date: 10-12-83
Walkdown: G H Barkley Date: 10-25-83
R Norsteng Date: 10-25-83
Approved by: DC Tateosian Date: 1/15/84

0193B/0123P-7

DCC 5484


PG&E MECH & NU. ENG. DEPT.
DIABLO CANYON PROJECT
ANALYSIS ISSUE
ANAL. NO. 8-110 REV. 3
CASE ALL
ANALYST P. SMITH 7/5/83
CHECKER G. RAQUEL SANTOS 7/7/83
APPROVED S. Chitnis DATE 7/8/83
EL. 117'-2"
EL. 102'-0"
EL. 100'-4"
EL. 93'-9"
EL. 97'-1"
EL. 80'-10"
EL. 67'-8"
EL. 77'-6"
EL. 61'-6"
14"ø RED ELBOW EL. 78'-6"
R.H.R. HEAT EXCHANGER 1-2
DET. A
GLOBAL COORDINATE SYSTEM
DIABLO CANYON NUCLEAR POWER PLANT UNIT NO. 1 PART OF RHR, SAFETY INJECTION AND CONTAINMENT SPRAY.
ANALYSIS 8-110
PGE REF. DWG NO.
446542
446546
446541
LEGEND
FIXED SUPPORT
PINNED SUPPORT
NODAL POINT
SNUBBER
SPRING
ANCHOR FOR MODELING PURPOSE ONLY
CALC 8-121
ANALYSIS 8-110

Design Drafting
62-3690

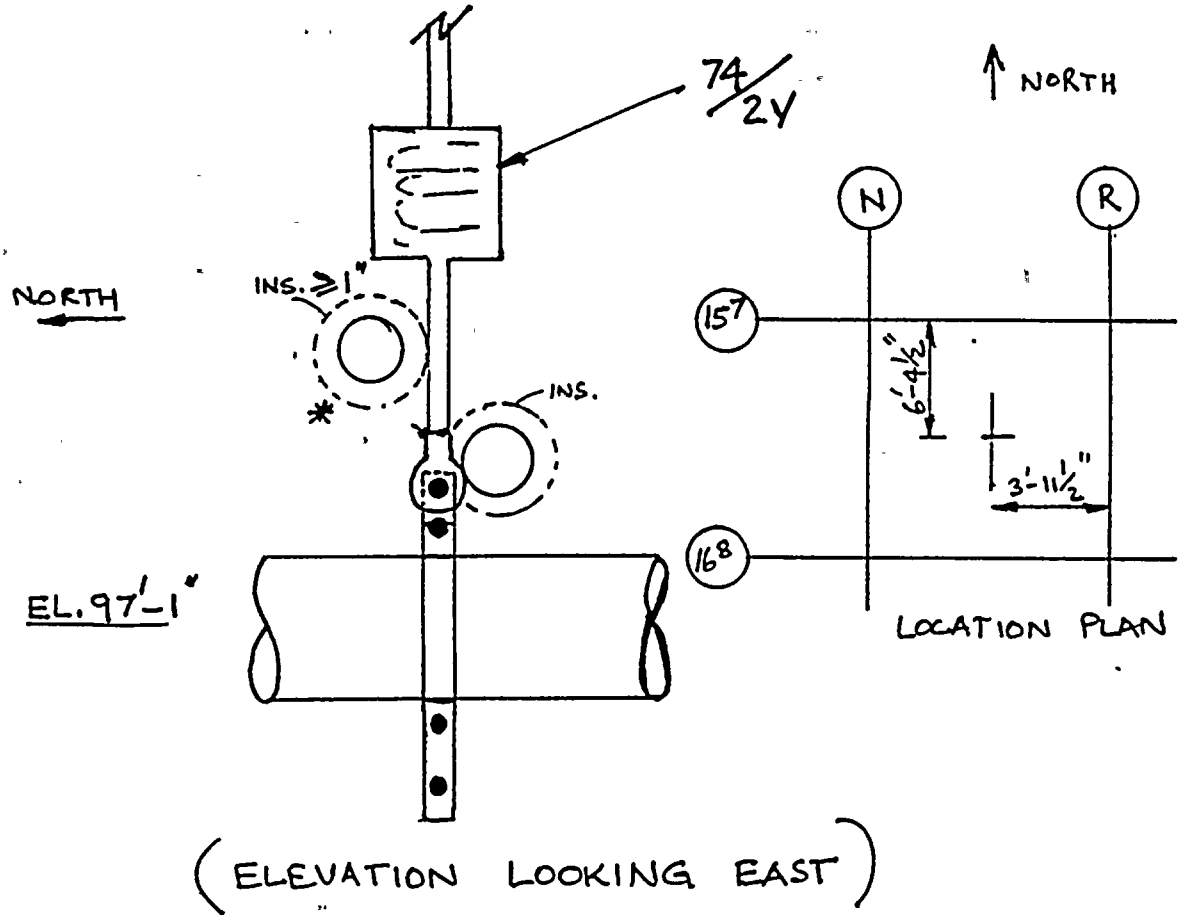
PACIFIC GAS AND ELECTRIC COMPANY

GENERAL COMPUTATION SHEET

SHEET NO. ____ OF ____ SHEETS
JOB FILE NO. ____
LOCATION ____

SUBJECT ____

MADE BY ASB DATE 8/23/83 CHECKED BY ____ APPROVED BY ____



(ELEVATION LOOKING EAST)

* CUT INSULATION AND MOVE ROD HANGER (CLAMP) ½" NORTH ON UPPER 1"Ø LINE

ATTACHMENT III

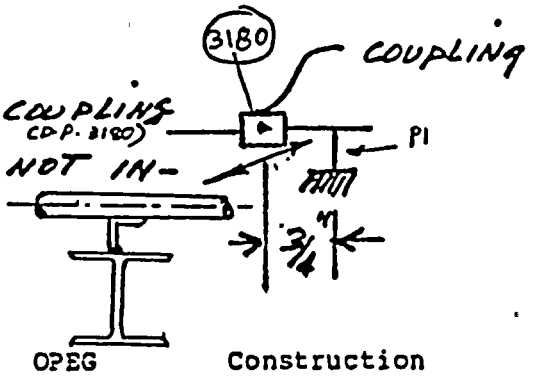
STRESS WALKDOWN PROBLEM REPORT

Package No. W049-05-01-C
Unit NO. 2
System No. 9
Problem No. 1034
Priority No. 400
Line No. 2-56-3866-2-?
Analysis No. W049-05-R01
Building CONTAINMENT

Walkdown Team ALLEN J. MAHNCKE Date 8-8-84
ROBERT YAZDANI Date 8-9-84

Item for Resolution:

2.2" interference exist between COUPLING & D.L.S. RESTRAINT. ALSO DLS RESTRAINT IS NOT INDICATED ON ISOMETRIC.



Disposition Requested From: (SFHO) OPEG Construction

SFHO TO EVALUATE THE D.L. SUPPORT AND UNINTENTIONAL AXIAL RESTRAINT IN N-W DIRECTION.

11/8/84

Final Resolution: DCN, AMFT

Predicted displacements are .15" (THT), 1.07" (Normal), 2.5" (Accident Axial), all in direction of DLS. DLS is not in analysis. ∴ Delete DLS. 11/8/84

THIS IS OPEG SCOPE. PLS. SEND TO OPEG P/S GROUP FOR RESOLUTION JMHagan

By: K.S. ANAND Dept. M S W E Date: 11/08/84

Walkdown Team: _____ Date: _____

_____ Date: _____

Approved by: _____ Date: _____
Stress Walkdown Group Leader

SUPPORT SK2216-99 MEMBER 3180 TO 0 AT NODES 3190

LOADING CONDITION NO.		F(KIPS)	FX(KIPS)	FY(KIPS)	FZ(KIPS)	MX(IN-K)	MY(IN-K)	MZ(I
104	THNMAX	0.0000	-0.0000	0.0000	-0.0000	0.000	-0.000	-0.
105	THNMIN	0.0013	-0.0000	0.0013	-0.0000	0.000	-0.000	-0.
204	THAMAX	0.0001	-0.0001	0.0000	-0.0001	0.000	-0.000	-0.
205	THAMIN	0.0044	-0.0000	0.0044	-0.0000	0.000	-0.000	-0.
206	THMAX	0.0001	-0.0001	0.0000	-0.0001	0.000	-0.000	-0.
207	THMIN	0.0044	-0.0000	0.0044	-0.0000	0.000	-0.000	-0.
5	DW+THNMX+DE+SA	0.0975	-0.0001	-0.0975	-0.0001	-0.000	-0.000	-0.
6	DW+THNMX-DE+SA	0.0515	0.0001	-0.0515	0.0000	0.000	0.000	0.
7	DW+THMX+DDF+SA	0.1040	-0.0003	-0.1040	-0.0002	-0.000	-0.000	-0.
8	DW+THMN-DDE+SA	0.0419	0.0002	-0.0419	0.0001	0.000	0.000	0.
9	DW+(HOS+SAM)	0.2996	-0.0002	-0.2996	-0.0001	-0.000	-0.000	-0.
10	DW-(HOS+SAM)	0.1494	0.0002	0.1494	0.0001	0.000	0.000	0.

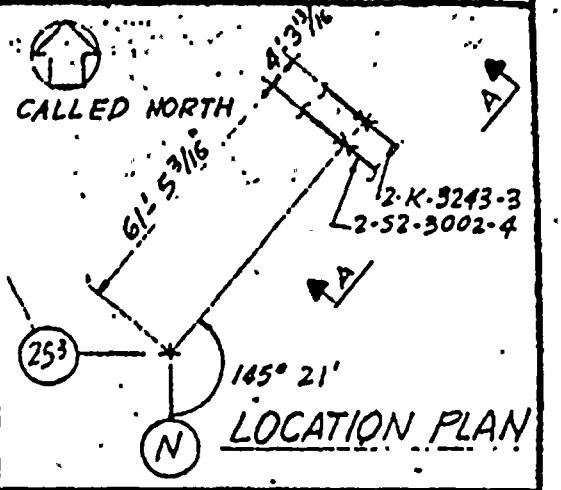
		DX(INCHES)	DY(INCHES)	DZ(INCHES)	RX(RADS)	RY(RADS)	RZ(RA
104	THNMAX	-0.000	0.000	-0.000	0.000026	-0.000003	-0.000
105	THNMIN	-0.189	0.000	-0.208	0.000000	-0.002829	-0.000
204	THAMAX	-0.000	0.000	-0.000	0.000126	-0.000003	-0.000
205	THAMIN	-0.892	0.000	-0.983	0.000000	-0.013389	-0.000
206	THMAX	-0.000	0.000	-0.000	0.000126	-0.000003	-0.000
207	THMIN	-0.892	0.000	-0.983	0.000000	-0.013389	-0.000
5	DW+THNMX+DE+SA	0.929	-0.001	0.379	0.000496	0.005532	0.001
6	DW+THNMX-DE+SA	-1.108	-0.001	-0.584	-0.000974	-0.008294	-0.001
7	DW+THMX+DDF+SA	1.800	-0.000	0.733	0.001168	0.010038	0.001
8	DW+THMN-DDE+SA	-2.683	-0.001	-1.712	-0.001546	-0.023360	-0.002
9	DW+(HOS+SAM)	2.400	0.001	0.965	0.001317	0.010258	0.005
10	DW-(HOS+SAM)	-2.391	-0.003	-0.964	-0.001821	-0.010188	-0.005

ANALYSIS PHASE II
REF. PAGE 2 OF 3
SECTION

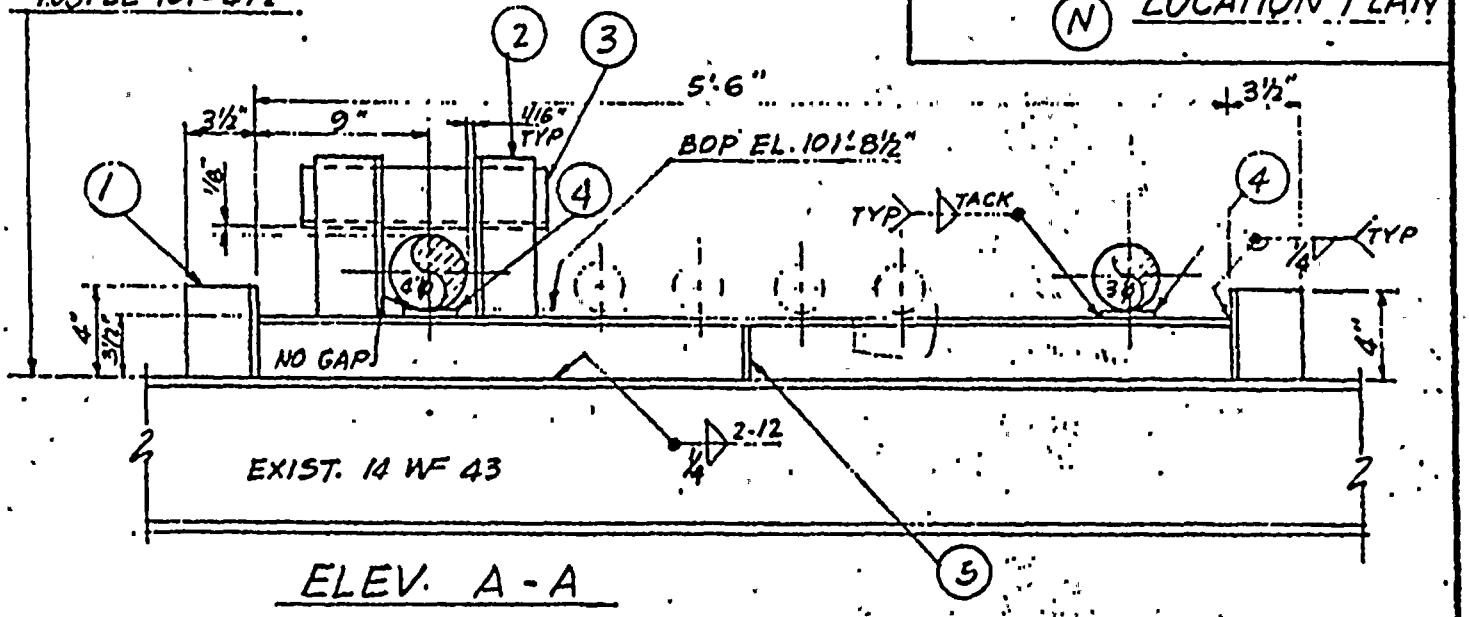
813

AREA 2G	LINE 2-52-3002-4 [E]	HANGER SYMBOL 6 / 63R Y # H⊥-RESTR.
EL. 100'-0"	NOS. 2-K-3243-3 [E]	LOC. ON DWG. 500906

DESIGN CLASS II
CODE CLASS E



LOCATION PLAN



ELEV. A-A

NO. OF ASSEMBLIES REQUIRED 1

NO.	REQD	MATERIALS
1	1	∠ 4" x 3 1/2" x 1/2" (3 MEMBERS) T.L. = 6'-2", (2) 4" LG. EA. (1) 5'-6" LG.
2	2	∠ 3" x 3" x 3/8", 8 5/8" LG. EA.
3	1	∠ 3" x 3" x 3/8", 0'-11 5/8" LG.
4	2	SHIM PL 3" x 1/2", 4" LG.
5	1	STIFF. PL 3" x 1/2", 3 1/2" LG.

REV 1: ADDED ITEMS 2 TO 5. APPROVED FOR CONST.

DIABLO CANYON UNIT 2 | P G & E CO. | DRAWING NO. [illegible] | REV 1

ATTACHMENT IV

SECTION 2

THERMAL RADIAL EXPANSION OF LARGE DIAMETER PIPING WITH REGARD TO POTENTIAL BINDING DUE TO RIGID SUPPORT GAP CLOSURE

2.0 Description of Program, Development, and Followup Information

On large diameter hot piping a concern may exist that due to the small clearances in the restrained direction of a rigid frame-type pipe support, the radial expansion of the pipe may be sufficient to close the gaps and result in the pipe binding within the restraint. At Diablo Canyon the only piping where this condition may exist is the feedwater, main steam, and diesel engine exhaust lines.

The diesel engine exhaust lines were addressed as a part of the design process in that all of the frame type restraints were replaced by sway struts where this concern does not exist.

The feedwater and main steam lines have thermal diametric growths of approximately 1/16" and 1/8", respectively. Because these growths are about the size of the seismic gap typically designed into a pipe support, no special reviews were undertaken. However, this issue is addressed as a part of the piping walkdowns in that if the pipe was to bind it would become apparent by virtue of the actual piping movements being different than predicted. As a result, the binding problem would be identified and corrective action taken.

In fact, this happened during the Unit 2 Hot Functional testing on the main steam piping. As a result of observing one pipe support to be binding, the walkdown team undertook a special review to walkdown all of the frame-type supports on main steam to see if any others were binding. As a result, appproximately eight such supports were modified to provide increased clearance.

A cold walkdwon of feedwater piping and supports will be performed prior to fuel load to assure the existance of sufficient gaps. The hot walkdown of this piping will occur during power ascension and will consider hot support gaps, as well as piping deflections and clearances.

In summary, the normal design review process and the existing walkdown programs will ensure that this potential binding condition will not occur in the final accepted piping and pipe support configuration.