RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002
(713)655-8080
Redacted

July 23, 2011

Pacific Gas and Electric Company
350 N. Wiget
Walnut Creek, CA 94598
Attention: Redacted
Attention:

Test Contractor:	Milbar Hydro-test Incorporated -- FY12-112
Asset Owner:	Pacific Gas and Electric Company -- 41497329-T84
Construction Contractor:	Snelson -- 41474005-T84-2
Test Section:	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31
Test Date:	July 23, 2011
Certificate Number:	RCP 61362 - T-84-2 C-A, L-300B

To whom it may concern,

This letter is to certify that the hydrostatic test performed on pipe owned by Pacific Gas and Electric Company and tested by Milbar Hydro-test Incorporated met the requirements of the Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 1).

The test segment was subjected to a spike pressure test of 1202 psig for 30 minutes, without observed leakage or yielding of the pipe segment. The 30 minute spike test and subsequent pressure reduction with volume bleed was included and is part of the 8.72 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.72 continuous hours without evidence of a leak failure. Water was the test medium. At the highest elevation point in the test section, the calculated test pressure was 1127 psig and the established MAOP is 1024 psig.

Pressure decreased 75 psi during the test. 4,696.32 ounces of fluid was intentionally released from the test section Net corrected volumetric change from beginning of the test to the end of the test is calculated to be 815.15 ounces, gain, which is equivalent to a 0.63 °F change in pipe temperature and within the error attributed to the temperature measurement instrumentation utilized.

Test pressure did not remain steady even though no leaks were observed. The volumetric gain is attributed to the error characteristic of the temperature measurement instrumentation utilized.

Sincerely,

Redacted

cc. file

RCP

Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41497329-T84
Construction Co.	Snelson	Job Number	41474005-T84-2
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		
File Name	RCP 61362 - T-84-2 C-A, L-300B		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Test Date: 23-Jul-11

Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 1)

This is to certify that the pipeline or pipeline section(s) described below was hydrostatically pressure tested in accordance with the following procedure:

Pipeline:	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		
From:	00+00	To:	11+67

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	85 ft	34.000 in.	0.505 in.	API5L-X60, DSAW, Arc Weld, Steel	1,782 psi
2	548 ft	34.000 in.	0.500 in.	API5L-X46, DSAW, Arc Weld, Steel	1,353 psi
3	619 ft	34.000 in.	0.438 in.	API5L-X48, DSAW, Arc Weld, Steel	1,235 psi
4	40 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi

Initial Test Conditions

Pressure at Test Point:	1,202 psig	Date/Time:	7/23/11 9:17 AM	Pipe Temperature Unrestrained:	94.0 °F
Ambient Temperature:	82.0 °F			Restrained:	89.0 °F
		Elevation @ Test Point:	504.0 ft	Location:	00+00
Pressure @ High Point (Cal/Measure):	1,202 psig	Elevation @ High Point:	504.0 ft	Location:	0+00
Pressure @ Low Point (Cal/Measure):	1,213 psig	Elevation @ Low Point:	479.0 ft	Location:	11+67

Final Test Conditions

Pressure at Test Point:	1,127 psig	Date/Time:	7/23/11 6:00 PM	Pipe Temperature Unrestrained:	100.0 °F
Ambient Temperature:	92.0 °F			Restrained:	89.0 °F
		Elevation @ Test Point:	504.0 ft	Location:	00+00
Pressure @ High Point (Cal/Measure):	1,127 psig	Elevation @ High Point:	504.0 ft	Location:	0+00
Pressure @ Low Point (Cal/Measure):	1,138 psig	Elevation @ Low Point:	479.0 ft	Location:	11+67

Total Fluid Injected:		Volume gain	
Total Fluid Withdrawn:	4696.32 fluid ounces		
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	815.15 oz	gain	0.0109% / 0.632 °F equivalent

Test Duration: 8.72 hours

Minimum Test Pressure:	Test Point	1,124 psig	Max Elevation	1,124 psig	Min Elevation	1,135 psig
Maximum Test		1,202 psig		1,202 psig		1,213 psig
% SMYS :		97.3%		97.3%		98.2%

Minimum Test Pressure (Calculated/Measured):			1,127 psig
Maximum Allowable Operating Pressure:	DOT Part 192	Test Factor= 1.10	1,024 psig

Were leaks observed?	**No**	Explain:
Acceptable Hydrostatic Test?	**Yes**	The test segment was subjected to a spike pressure test of 1202 psig for 30 minutes, without observed leakage or yielding of the pipe segment. The 30 minute spike test and subsequent pressure reduction with volume bleed was included and is part of the 8.72 hour test duration period. No leaks were observed during the test period. The test section included 1,167 feet of buried and 144 feet of exposed pipe. Pressure lost 75 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment gained 6°F. 4,696.32 ounces of fluid was intentionally released from the test section Net corrected volumetric change from beginning of the test to the end of the test is calculated to be 815.15 ounces, gain, which is equivalent to a 0.63 °F change in pipe temperature and within the error attributed to the temperature measurement instrumentation utilized. Test pressure did not remain steady even though no leaks were observed. The volumetric gain is attributed to the error characteristic of the temperature measurement instrumentation utilized.
Remarks		

Redacted

23-Jul-11

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497329-T84
Construction Co.	Snelson	Job Number	41474005-T84-2
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		
File Name	RCP 61362 - T-84-2 C-A, L-300B		

Date **23-Jul-11**

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	Comment	Bleed	Inject
1	7/23/11	8:41 AM	835 psig	82 °F	90 °F	89 °F	Start Spike		
2	7/23/11	8:42 AM	845 psig	82 °F	90 °F	89 °F	Inject		485 oz.
3	7/23/11	8:43 AM	855 psig	82 °F	90 °F	89 °F	Inject		405 oz.
4	7/23/11	8:44 AM	865 psig	82 °F	90 °F	89 °F	Inject		405 oz.
5	7/23/11	8:45 AM	875 psig	82 °F	90 °F	89 °F	Inject		364 oz.
6	7/23/11	8:46 AM	885 psig	82 °F	90 °F	89 °F	Inject		405 oz.
7	7/23/11	8:47 AM	895 psig	82 °F	90 °F	89 °F	Inject		364 oz.
8	7/23/11	8:48 AM	905 psig	82 °F	90 °F	89 °F	Inject		405 oz.
9	7/23/11	8:49 AM	915 psig	82 °F	90 °F	89 °F	Inject		405 oz.
10	7/23/11	8:50 AM	925 psig	82 °F	90 °F	89 °F	Inject		405 oz.
11	7/23/11	8:51 AM	935 psig	82 °F	90 °F	89 °F	Inject		364 oz.
12	7/23/11	8:52 AM	945 psig	82 °F	90 °F	89 °F	Inject		405 oz.
13	7/23/11	8:53 AM	955 psig	82 °F	90 °F	89 °F	Inject		405 oz.
14	7/23/11	8:54 AM	965 psig	82 °F	90 °F	89 °F	Inject		364 oz.
15	7/23/11	8:55 AM	975 psig	82 °F	90 °F	89 °F	Inject		405 oz.
16	7/23/11	8:56 AM	985 psig	82 °F	90 °F	89 °F	Inject		405 oz.
17	7/23/11	8:57 AM	995 psig	82 °F	90 °F	89 °F	Inject		364 oz.
18	7/23/11	8:58 AM	1,005 psig	82 °F	90 °F	89 °F	Inject		405 oz.
19	7/23/11	8:59 AM	1,015 psig	82 °F	90 °F	89 °F	Inject		405 oz.
20	7/23/11	9:00 AM	1,025 psig	82 °F	90 °F	89 °F	Inject		405 oz.
21	7/23/11	9:01 AM	1,035 psig	82 °F	90 °F	89 °F	Inject		364 oz.
22	7/23/11	9:02 AM	1,045 psig	82 °F	90 °F	89 °F	Inject		405 oz.
23	7/23/11	9:03 AM	1,055 psig	82 °F	90 °F	89 °F	Inject		405 oz.
24	7/23/11	9:04 AM	1,065 psig	82 °F	90 °F	89 °F	Inject		405 oz.
25	7/23/11	9:05 AM	1,075 psig	82 °F	90 °F	89 °F	Inject		364 oz.
26	7/23/11	9:06 AM	1,085 psig	82 °F	90 °F	89 °F	Inject		405 oz.
27	7/23/11	9:07 AM	1,095 psig	82 °F	90 °F	89 °F	Inject		405 oz.
28	7/23/11	9:08 AM	1,105 psig	82 °F	90 °F	89 °F	Inject		405 oz.
29	7/23/11	9:09 AM	1,115 psig	82 °F	90 °F	89 °F	Inject		364 oz.
30	7/23/11	9:10 AM	1,125 psig	82 °F	90 °F	89 °F	Inject		405 oz.
31	7/23/11	9:11 AM	1,135 psig	82 °F	90 °F	89 °F	Inject		405 oz.
32	7/23/11	9:12 AM	1,145 psig	82 °F	90 °F	89 °F	Inject		405 oz.
33	7/23/11	9:13 AM	1,155 psig	82 °F	90 °F	89 °F	Inject		364 oz.
34	7/23/11	9:14 AM	1,165 psig	82 °F	90 °F	89 °F	Inject		405 oz.
35	7/23/11	9:15 AM	1,175 psig	82 °F	90 °F	89 °F	Inject		405 oz.
36	7/23/11	9:16 AM	1,185 psig	82 °F	90 °F	89 °F	Inject		405 oz.
37	7/23/11	9:17 AM	1,195 psig	82 °F	94 °F	89 °F	Inject		364 oz.
38	7/23/11	9:17 AM	1,202 psig	82 °F	94 °F	89 °F	Inject		324 oz.
39	7/23/11	9:17 AM	1,202 psig	82 °F	94 °F	89 °F	On Test		
40	7/23/11	9:27 AM	1,202 psig	82 °F	95 °F	89 °F			
41	7/23/11	9:37 AM	1,202 psig	82 °F	96 °F	89 °F			
42	7/23/11	9:47 AM	1,202 psig	83 °F	96 °F	89 °F	End Spike		
43	7/23/11	9:48 AM	1,192 psig	83 °F	96 °F	89 °F	Bleed	397 oz.	

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497329-T84
Construction Co.	Snelson	Job Number	41474005-T84-2
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		
File Name	RCP 61362 - T-84-2 C-A, L-300B		

Date **23-Jul-11**

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	Comment	Bleed	Inject
44	7/23/11	9:49 AM	1,182 psig	83 °F	96 °F	89 °F		397 oz.	
45	7/23/11	9:50 AM	1,172 psig	83 °F	96 °F	89 °F		397 oz.	
46	7/23/11	9:51 AM	1,162 psig	83 °F	96 °F	89 °F		397 oz.	
47	7/23/11	9:52 AM	1,152 psig	83 °F	96 °F	89 °F		397 oz.	
48	7/23/11	9:53 AM	1,142 psig	83 °F	96 °F	89 °F		397 oz.	
49	7/23/11	9:55 AM	1,132 psig	83 °F	97 °F	89 °F		397 oz.	
50	7/23/11	10:10 AM	1,128 psig	84 °F	98 °F	89 °F		159 oz.	
51	7/23/11	10:15 AM	1,128 psig	84 °F	98 °F	89 °F	Warm		
52	7/23/11	10:30 AM	1,129 psig	84 °F	98 °F	89 °F			
53	7/23/11	10:45 AM	1,131 psig	85 °F	100 °F	89 °F			
54	7/23/11	11:00 AM	1,132 psig	86 °F	100 °F	89 °F			
55	7/23/11	11:15 AM	1,133 psig	86 °F	101 °F	89 °F			
56	7/23/11	11:30 AM	1,135 psig	87 °F	101 °F	89 °F			
57	7/23/11	11:45 AM	1,136 psig	87 °F	102 °F	89 °F			
58	7/23/11	12:00 PM	1,138 psig	88 °F	102 °F	89 °F			
59	7/23/11	12:15 PM	1,140 psig	88 °F	102 °F	89 °F	Bleed	608.00 oz.	
60	7/23/11	12:21 PM	1,124 psig	88 °F	102 °F	89 °F			
61	7/23/11	12:30 PM	1,126 psig	88 °F	102 °F	89 °F			
62	7/23/11	12:45 PM	1,128 psig	89 °F	102 °F	89 °F			
63	7/23/11	1:00 PM	1,129 psig	89 °F	102 °F	89 °F	Hot		
64	7/23/11	1:15 PM	1,131 psig	90 °F	102 °F	89 °F			
65	7/23/11	1:30 PM	1,133 psig	90 °F	102 °F	89 °F			
66	7/23/11	1:45 PM	1,134 psig	90 °F	102 °F	89 °F			
67	7/23/11	2:00 PM	1,136 psig	90 °F	102 °F	89 °F			
68	7/23/11	2:15 PM	1,138 psig	90 °F	102 °F	89 °F			
69	7/23/11	2:30 PM	1,140 psig	91 °F	102 °F	89 °F	Bleed	576.00 oz.	
70	7/23/11	2:33 PM	1,125 psig	91 °F	102 °F	89 °F			
71	7/23/11	2:45 PM	1,126 psig	91 °F	102 °F	89 °F			
72	7/23/11	3:00 PM	1,128 psig	92 °F	103 °F	89 °F	Hot		
73	7/23/11	3:15 PM	1,129 psig	92 °F	104 °F	89 °F			
74	7/23/11	3:30 PM	1,131 psig	92 °F	104 °F	89 °F			
75	7/23/11	3:45 PM	1,132 psig	92 °F	104 °F	89 °F			
76	7/23/11	4:00 PM	1,134 psig	92 °F	104 °F	89 °F			
77	7/23/11	4:15 PM	1,136 psig	92 °F	105 °F	89 °F			
78	7/23/11	4:30 PM	1,136 psig	92 °F	105 °F	89 °F			
79	7/23/11	4:45 PM	1,138 psig	92 °F	104 °F	89 °F			
80	7/23/11	5:00 PM	1,139 psig	92 °F	104 °F	89 °F			
81	7/23/11	5:15 PM	1,140 psig	92 °F	104 °F	89 °F	Bleed	576.00 oz.	
82	7/23/11	5:18 PM	1,125 psig	92 °F	104 °F	89 °F			
83	7/23/11	5:30 PM	1,126 psig	92 °F	104 °F	89 °F			
84	7/23/11	5:45 PM	1,127 psig	92 °F	102 °F	89 °F			
85	7/23/11	6:00 PM	1,127 psig	92 °F	100 °F	89 °F	End of Test		

Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497329-T84
Construction Co.	Snelson	Job Number	41474005-T84-2
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		
File Name	RCP 61362 - T-84-2 C-A, L-300B		

Date **23-Jul-11**

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	Comment	Bleed	Inject
							Spike Test		14,562.6 oz.
							Hydrostatic Test	4,696.3 oz.	

Were leaks observed during the test period? Exposed and buried pipe, no leaks observed.

High Test Pressure:	1,202 psig
Low Test Pressure:	1,124 psig

Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497329-T84
Construction Co.	Snelson	Job Number	41474005-T84-2
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		WATER
File Name	RCP 61362 - T-84-2 C-A, L-300B		

General Pipe Data

Description	Segment											
	1	2	3	4	5	6						
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Unrestrained	Unrestrained	Unrestrained						
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.						
Wall Thickness	0.505 in.	0.500 in.	0.438 in.	0.500 in.	0.375 in.	0.375 in.						
Inside Diameter	32.990 in.	33.000 in.	33.125 in.	33.000 in.	33.250 in.	33.250 in.						
Spec./Grade	API5L-X60	API5L-X46	API5L-X48	API5L-X65	API5L-X60	API5L-X65						
Length Unrestrained	85 ft			40 ft	7 ft	12 ft						
Length Restrained		548 ft	619 ft									
Temperature -- On Test	94 °F	89 °F	89.0 °F	94.0 °F	94.0 °F	94.0 °F						
Temperature -- End of Test	100 °F	89 °F	89.0 °F	100.0 °F	100.0 °F	100.0 °F						
Pressure -- On Test	1,202 psig	1,202 psig	1,202 psig	1,202 psig	1,202 psig	1,202 psig						
Pressure -- End of Test	1,127 psig	1,127 psig	1,127 psig	1,127 psig	1,127 psig	1,127 psig						

Unrestrained Pipe

Sum:	Vo	6,408.63 gal		Vtp1	6,427.52 gal		Vtp2		6,417.63 gal		
		820,304 oz.			822,722 oz.				821,456 oz.		
Vo Unrestrained	3,774 gal			1,777 gal	316 gal	541 gal					
Fwp 1	1.003686			1.003686	1.003686	1.003686					
Fpp 1	1.003272			1.003306	1.004441	1.004441					
Fpt 1	1.000619			1.000619	1.000619	1.000619					
Fwt 1	1.004797			1.004797	1.004797	1.004797					
Fpwt 1 = Fpt/Fwt	0.995842			0.995842	0.995842	0.995842					
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	3,784.86 gal			1,782.25 gal	317.00 gal	543.42 gal					
Fwp 2	1.003455			1.003455	1.003455	1.003455					
Fpp 2	1.003068			1.003099	1.004164	1.004164					
Fpt 2	1.000728			1.000728	1.000728	1.000728					
Fwt 2	1.006009			1.006009	1.006009	1.006009					
Fpwt = Fpt/Fwt	0.994751			0.994751	0.994751	0.994751					
Vtp = Vo(Fwp)(Fpp)(Fpwt)	3,779.07 gal			1,779.52 gal	316.49 gal	542.55 gal					

Restrained Pipe

Sum:	Vo	52,059.84 gal		Vtp1	52,207.36 gal		Vtp2		52,186.92 gal		
		6,663,659 oz.			6,682,542 oz.				6,679,926 oz.		
Vo Unrestrained		24,348 gal	27,712 gal								
Fwp 1		1.003686	1.003686								
Fpp 1		1.002511	1.002865								
Fpt 1		1.000351	1.000351								
Fwt 1		1.003903	1.003903								
Fpwt 1 = Fpt/Fwt		0.996461	0.996461								
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		24,413 gal	27,795 gal								
Fwp 2		1.003455	1.003455								
Fpp 2		1.002361	1.002693								
Fpt 2		1.000351	1.000351								
Fwt 2		1.003903	1.003903								
Fpwt = Fpt/Fwt		0.996461	0.996461								
Vtp = Vo(Fwp)(Fpp)(Fpwt)		24,403 gal	27,784 gal								

Combined Pipe

Sum:	Vo	58,468.47 gal	Vtp1	58,634.87 gal	Vtp2	58,604.55 gal
		7,483,964 oz.		7,505,264 oz.		7,501,383 oz.

Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41497329-T84
Construction Co.	Snelson	Job Number	41474005-T84-2
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31		WATER
File Name	RCP 61362 - T-84-2 C-A, L-300B		

General Pipe Data

Description	Segment										
	1	2	3	4	5	6					
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Unrestrained	Unrestrained	Unrestrained					
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.					
Wall Thickness	0.505 in.	0.500 in.	0.438 in.	0.500 in.	0.375 in.	0.375 in.					
Inside Diameter	32.990 in.	33.000 in.	33.125 in.	33.000 in.	33.250 in.	33.250 in.					
Spec./Grade	API5L-X60	API5L-X46	API5L-X48	API5L-X65	API5L-X60	API5L-X65					
Length Unstrained	85.00 ft			40 ft	7 ft	12 ft					
Length Restrained		548 ft	619 ft								
Temperature – On Test	96 °F	88 °F	88 °F	96 °F	96 °F	96 °F					
Temperature – End of Test	97 °F	89 °F	89 °F	97 °F	97 °F	97 °F					
Pressure – On Test	1,164 psig	1,164 psig	1,164 psig	1,164 psig	1,164 psig	1,164 psig					
Pressure – End of Test	1,164 psig	1,164 psig	1,164 psig	1,164 psig	1,164 psig	1,164 psig					

Unrestrained Pipe

Sum:	Vo	6,408.63 gal 820,304 oz.		Vtp1	6,423.64 gal 822,226 oz.		Vtp2	6,422.63 gal 822,096 oz.			
Vo Unrestrained	3,774 gal			1,777 gal	316 gal	541 gal					
Fwp 1	1.003569			1.003569	1.003569	1.003569					
Fpp 1	1.003168			1.003201	1.004300	1.004300					
Fpt 1	1.000655			1.000655	1.000655	1.000655					
Fwt 1	1.005214			1.005214	1.005214	1.005214					
Fpwt 1 = Fpt/Fwt	0.995465			0.995465	0.995465	0.995465					
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	3,782.59 gal			1,781.18 gal	316.79 gal	543.08 gal					
Fwp 2	1.003569			1.003569	1.003569	1.003569					
Fpp 2	1.003168			1.003201	1.004300	1.004300					
Fpt 2	1.000673			1.000673	1.000673	1.000673					
Fwt 2	1.005392			1.005392	1.005392	1.005392					
Fpwt = Fpt/Fwt	0.995307			0.995307	0.995307	0.995307					
Vtp = Vo(Fwp)(Fpp)(Fpwt)	3,781.99 gal			1,780.90 gal	316.74 gal	542.99 gal					

Restrained Pipe

Sum:	Vo	52,059.84 gal 6,663,659 oz.		Vtp1	52,206.07 gal 6,682,377 oz.		Vtp2	52,197.00 gal 6,681,216 oz.			
Vo Restrained		24,348 gal	27,712 gal								
Fwp 1		1.003569	1.003569								
Fpp 1		1.002431	1.002774								
Fpt 1		1.000339	1.000339								
Fwt 1		1.003713	1.003713								
Fpwt 1 = Fpt/Fwt		0.996638	0.996638								
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		24,412 gal	27,794 gal								
Fwp 2		1.003569	1.003569								
Fpp 2		1.002435	1.002778								
Fpt 2		1.000351	1.000351								
Fwt 2		1.003903	1.003903								
Fpwt = Fpt/Fwt		0.996461	0.996461								
Vtp = Vo(Fwp)(Fpp)(Fpwt)		24,408 gal	27,789 gal								

Combined Pipe

Sum:	Vo	58,468.47 gal 7,483,964 oz.		Vtp1	58,629.71 gal 7,504,603 oz.	Vtp2	58,619.63 gal 7,503,312 oz.
1 °F Change	10.08 gal		1,290.62 oz.				

RCP

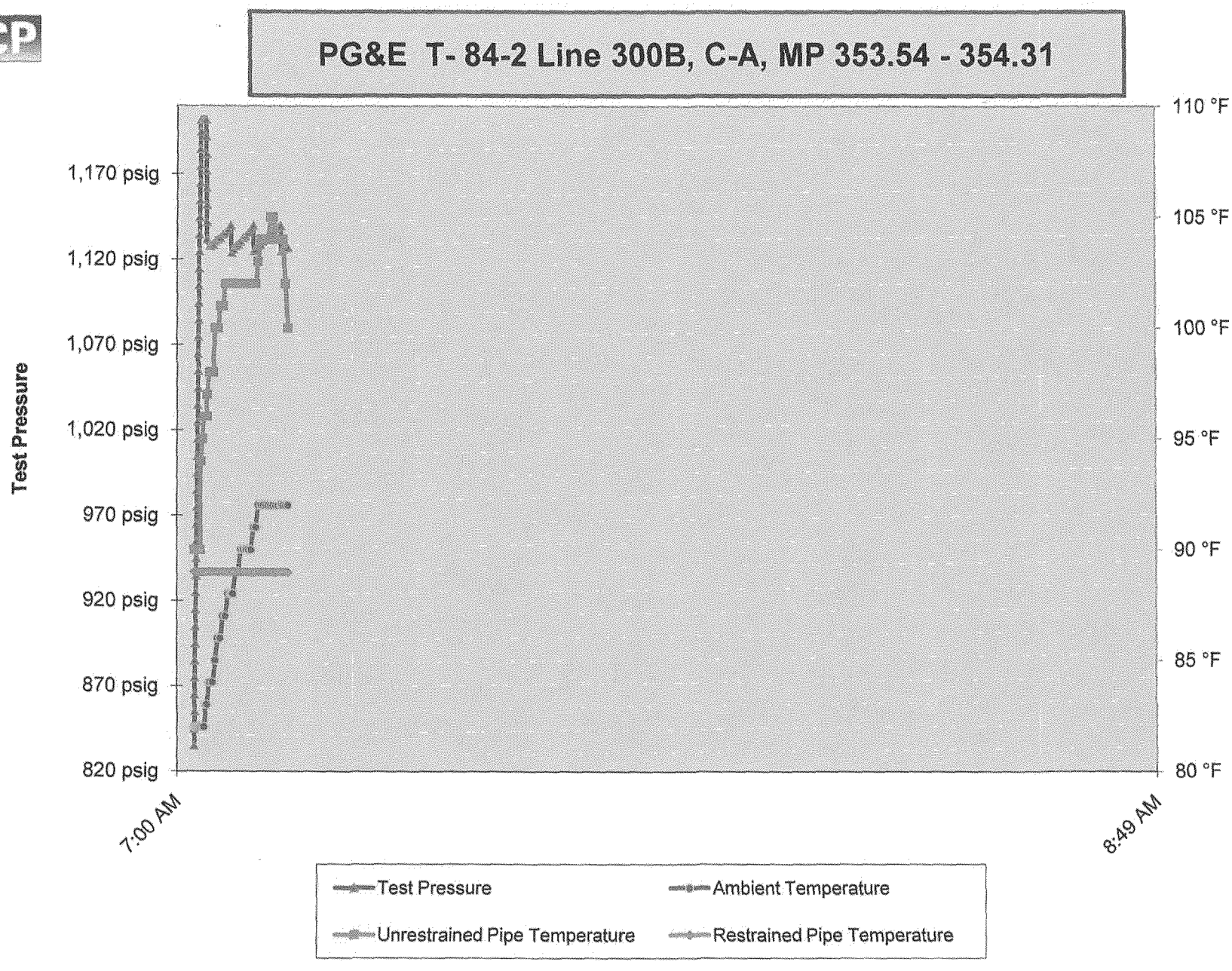
Hydrostatic Test Pipe Data Table

Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	85 ft	Unrestrained	34.000 in.	0.5050 in.	API5L-X60	1,782 psig	Steel	Arc Weld	DSAW
2	548 ft	Restrained	34.000 in.	0.5000 in.	API5L-X46	1,353 psig	Steel	Arc Weld	DSAW
3	619 ft	Restrained	34.000 in.	0.4375 in.	API5L-X48	1,235 psig	Steel	Arc Weld	DSAW
4	40 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW
5	7 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X60	1,324 psig	Steel	Arc Weld	DSAW
6	12 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X65	1,434 psig	Steel	Arc Weld	DSAW

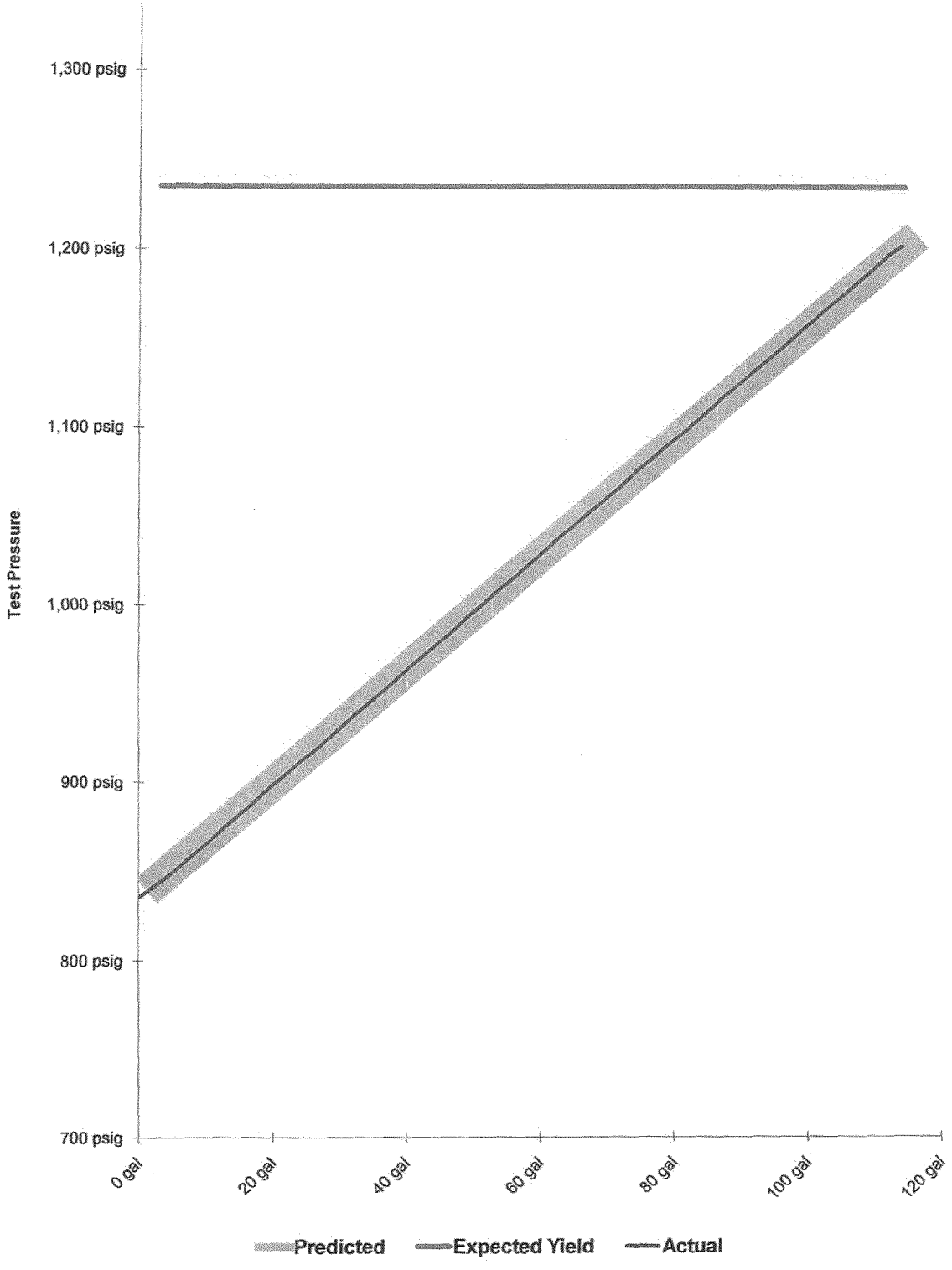
Hydrostatic Test Project Owner & Participants

Owner Company	Pacific Gas and Electric Company	Job Number
Address	350 N. Wiget Walnut Creek, CA 94598 Attention: Redacted	41497329-T84
Construction Company	Snelson	Job Number
Address	601 West State Street Sedro-Woolley, WA 98284 Attention: Redacted	41474005-T84-2
Hydrostatic Test Co.	Milbar Hydro-test Incorporated	Project No.
Address	P.O. Box 7701 Shreveport, Louisiana 71137-7701	FY12-112
Test Section	PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31 From: 00+00 To: 11+67	
File Name	RCP 61362 - T-84-2 C-A, L-300B	

RCP


PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31
Test Pressure
1,170 psig
1,120 psig
1,070 psig
1,020 psig
970 psig
920 psig
870 psig
820 psig
110 °F
105 °F
100 °F
95 °F
90 °F
85 °F
80 °F
7:00 AM
8:49 AM
Test Pressure
Ambient Temperature
Unrestrained Pipe Temperature
Restrained Pipe Temperature

Spike Pressure Test
Stress Strain Curve -- PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31



RCP

Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted
835 psig	0	0.00 gal		0	0.00 gal
845 psig	12	3.79 gal	3.11 gal	0.379	0.311
855 psig	22	6.95 gal	6.22 gal	0.316	0.311
865 psig	32	10.11 gal	9.33 gal	0.316	0.311
875 psig	41	12.96 gal	12.44 gal	0.284	0.311
885 psig	51	16.12 gal	15.55 gal	0.316	0.311
895 psig	60	18.96 gal	18.66 gal	0.284	0.311
905 psig	70	22.12 gal	21.77 gal	0.316	0.311
915 psig	80	25.28 gal	24.88 gal	0.316	0.311
925 psig	90	28.44 gal	27.99 gal	0.316	0.311
935 psig	99	31.29 gal	31.10 gal	0.284	0.311
945 psig	109	34.45 gal	34.21 gal	0.316	0.311
955 psig	119	37.61 gal	37.32 gal	0.316	0.311
965 psig	128	40.45 gal	40.43 gal	0.284	0.311
975 psig	138	43.61 gal	43.54 gal	0.316	0.311
985 psig	148	46.77 gal	46.66 gal	0.316	0.311
995 psig	157	49.62 gal	49.77 gal	0.284	0.311
1,005 psig	167	52.78 gal	52.88 gal	0.316	0.311
1,015 psig	177	55.94 gal	55.99 gal	0.316	0.311
1,025 psig	187	59.10 gal	59.10 gal	0.316	0.311
1,035 psig	196	61.94 gal	62.22 gal	0.284	0.311
1,045 psig	206	65.10 gal	65.33 gal	0.316	0.311
1,055 psig	216	68.26 gal	68.44 gal	0.316	0.311
1,065 psig	226	71.42 gal	71.56 gal	0.316	0.311
1,075 psig	235	74.27 gal	74.67 gal	0.284	0.311
1,085 psig	245	77.43 gal	77.78 gal	0.316	0.311
1,095 psig	255	80.59 gal	80.90 gal	0.316	0.311
1,105 psig	265	83.75 gal	84.01 gal	0.316	0.311
1,115 psig	274	86.59 gal	87.12 gal	0.284	0.311
1,125 psig	284	89.75 gal	90.24 gal	0.316	0.311
1,135 psig	294	92.91 gal	93.35 gal	0.316	0.311
1,145 psig	304	96.07 gal	96.47 gal	0.316	0.311
1,155 psig	313	98.92 gal	99.58 gal	0.284	0.311
1,165 psig	323	102.08 gal	102.70 gal	0.316	0.312
1,175 psig	333	105.24 gal	105.81 gal	0.316	0.312
1,185 psig	343	108.40 gal	108.93 gal	0.316	0.312
1,195 psig	352	111.24 gal	112.04 gal	0.284	0.312
1,202 psig	360	113.77 gal	114.23 gal	0.361	0.312
1,202 psig		113.77 gal	114.23 gal	0.000	0.000
1,202 psig		113.77 gal	114.23 gal	0.000	0.000
1,202 psig		113.77 gal	114.23 gal	0.000	0.000
1,202 psig		113.77 gal	114.23 gal	0.000	0.000
1,202 psig		113.77 gal	114.23 gal	0.000	0.000
1,202 psig		113.77 gal	114.23 gal	0.000	0.000

Spike Pressure Test
Stress Strain Curve -- PG&E T- 84-2 Line 300B, C-A, MP 353.54 - 354.31

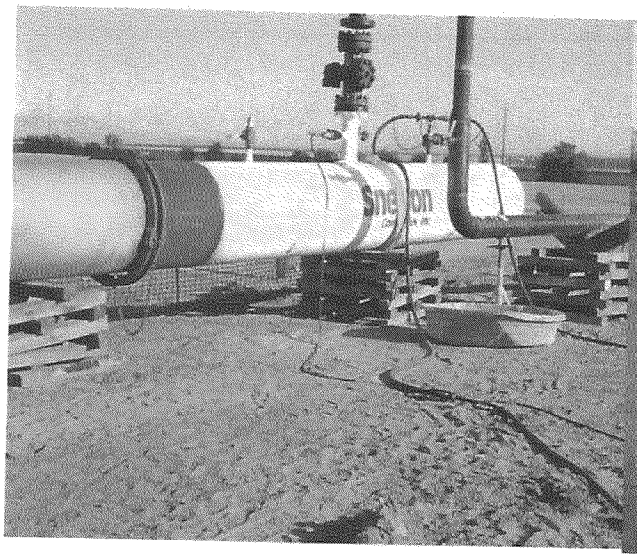
Pump gal per stroke	0.551 gal/stroke
Pump Piston Diameter	3.000 in
Pump Piston Stroke	6.00 in
Pump Cylinders	3 ea
Volume check gal per stroke	0.316 gal/stroke
Volume Released (gallons)	3.10 gal
Pressure Reduced (psi)	10 psi
Maximum2	120 gal
Minimum2	0 gal
Maximum1	1,336 psig
Minimum1	700 psig
Gallons/Stroke Used	0.316 gal/stroke
Predicted Gallons/Stroke	0.317 gal/stroke
1160	10 psi
Max Pressure	1,202 psig
Buried Pipe Temperature	89 °F
Exposed Pipe Temperature	95 °F

ASME B31.8 Appendix N-5

Average Actual Elastic Slope	0.311
Average Predicted Elastic Slope	0.311
Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	0.591
Established Minimum Yield Pressure B31.8 N-5 (c)(2)	1,202 psig
Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal

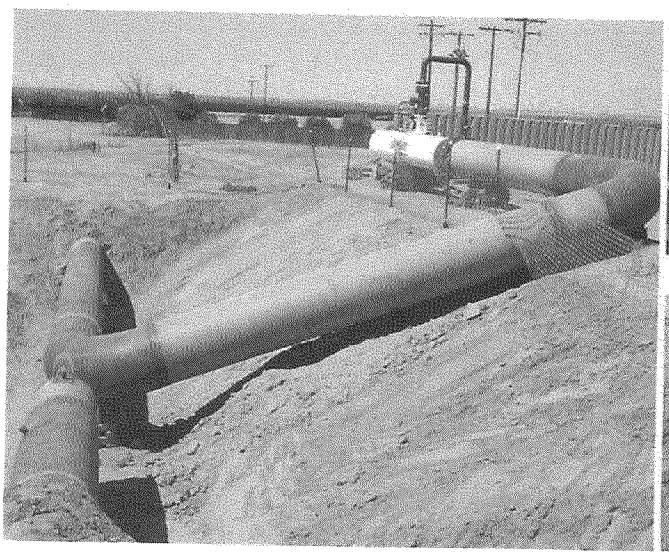
Redacted

7-23-11
Date



Test Location Test Header

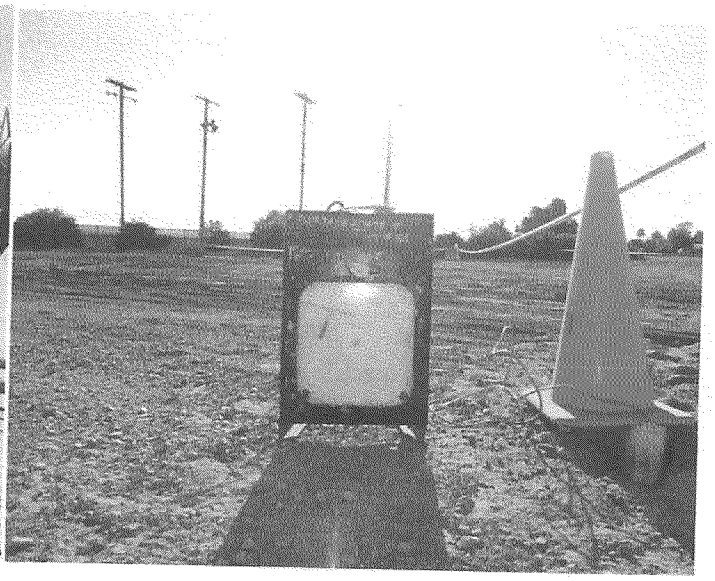
Test Location Test Header to existing pipe



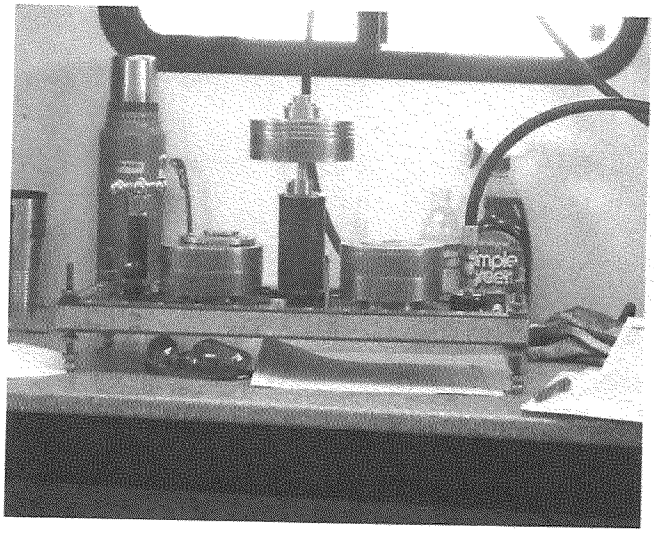
Test location Test Head

Dual Unrestrained Temp. recorder/
Restrained Temp. recorder Alternate

Injection pump



Restrained Temp Recorder



Deadweight and Pressure Recorder

End of test segment header

Pacific Gas and Electric Company

Gas Pipeline Facilities Strength Test Pressure Report

(For Pipeline Facilities Designed to Operate over 100 PSIG)

62-4921 (Rev. 2/04)
California Gas Transmission
(Use in accordance with Gas Standard A-34 and GO 112-D)

Sheet 1 of 4

PART I - DESIGN DATA (TO BE PREPARED BY PROJECT ENGINEER)

Feeder Main Number, Line Number, or Station Name	Area	Division/District	Job Number	Date Job Authorized
L-300B	Central	Fresno	41497329-T84	6-22-11

Description of Job – Include Reference Drawing Numbers, and Pipeline Mileposts

Test 1 – Segment A-C - Existing 34" materials listed are from the "Material of Record" (refer to DWG 41497329-T84, sheet 7)
Hydrostatically test 34" tie-in piping, hydrostatic test piping and existing 34" L-300B
Hydrotest L-300B from MP 353.54 – 354.31 Test Segment A-C Kettleman, CA (Test section 84)

Location Class	Design Factor (F)	MAOP to be Established for this Piping by this Test	Future Design Pressure
1	.72	890 PSIG	890 PSIG

STATIC HEAD DUE TO ELEVATION DIFFERENCE (WHERE APPLICABLE)			Static Head Calculation		
	Max. Elevation	504 Ft.	For Water	0.433 X Elev. Diff. =	10.83 PSIG
	Min. Elevation	479 Ft.	Other (Specify)	X Elev. Diff. =	PSIG
	Elev. Diff.	25 Ft.			

Pipe Specification				Pipe Spec. and Footage Verified In Field	% of SMYS			Pressure to Give 90% SMYS
Size O.D.	Size W.T.	API or ASTM Grade Long Seam (ERW, DSAW, Seamless, Etc.)	Footage to Be Tested		At MAOP	At Min. Test Press.	At Max. Test Press.	
34.00	.505	API 5L, GR X60, DSAW (item#101)	60'	85.34' BA	49.93	62.42	68.73	1604
34.00	.500	API 5L, GR X46, DSAW (item#2)	548'		65.78	82.27	90.54	1218
34.00	.4375	API 5L, GR X48, DSAW (item#5)	619'		72.05	90.10	99.17	1112
34.00	.375	API 5L, GR X60 DSAW		6.5' BA	67.24	84.09	92.56	1191
34.00	.375	API 5L, GR X65 DSAW		11.916' BA	62.07	77.62	85.44	1291

Minimum Test Pressure @ Max. Elevation	1113 PSIG	Test Fluid To Be Used: WATER	MINIMUM TEST DURATION - UNDER 30% SMYS (1 HR. MINIMUM) - 30% SMYS & OVER (8 HRS. MINIMUM) - PREINSTALLATION TEST (SEE ATTACHMENT 'A', GAS STD. A-34)
Maximum Test Pressure @ Min. Elevation	1225 PSIG		8 HOURS

Prepared By:	Date:	For Information or Changes, Call:	Approved By:	Date:
Redacted	06/22/11	Redacted		

PART II - TEST DATA (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)

Note: Minimum test pressure and duration are not to be changed without written approval.

Time and Date Test Pressure Reached	7-23-11 9:17 AM	Elevation at Test Point	504 FT	Min. Required Test Press. At Test Point	(1)	1113 PSIG	Max. Allowable Test Press at Test Point	(4)	1214 PSIG
Time and Date Test Ended	7-23-11 15:00 PM	Max. Elevation in Test Section	504 FT	Min. Indicated Test Pressure	(2)	1124 PSIG	Max. Indicated Test Pressure	(5)	1204 PSIG
Actual Duration of Test	8 Hr. 43 Min	Min. Elevation in Test Section	479 FT	Min. Test Pressure at Max. Elevation	(3)	1124 PSIG	Max. Test Pressure at Min. Elevation	(6)	1213 PSIG

Test Fluid Used	Pipe Specification and Footage Verified (See Part I)
WATER	BA

Make, Range, and Serial No. of Pressure Recording Gauge	Date Last Calibrated	Make, Range, and Serial No. of Dead Weight Tester (See Note 7)	Date Last Calibrated
BARTON 0-3000 S/N 6840816	6-17-11	CHANDLER 50-3000 S/N 7850	6-17-11

Test Supervised By:	Date:	Approved By:	Date:
Redacted	7-23-11		

PUT SCHEMATIC PIPING SKETCH ON BACK OF THIS SHEET

SHOW LOCATION OF FACILITY TESTED, MINIMUM AND MAXIMUM ELEVATION IN FEET, MILE POINTS, VALVE NUMBERS AND INCORPORATED AREAS. USE AN ADDITIONAL SHEET IF NECESSARY (SHOW REFERENCE NUMBERS ON FACE OF ALL DRAWINGS AND ATTACHMENTS). FOR STATION PIPING, FABRICATED UNITS AND SHORT SECTIONS OF PIPE, ALSO SHOW A DETAILED SKETCH OF EACH ASSEMBLY TESTED.

NOTES:

(1) Add the static head due to elevation difference (between test point and maximum elevation) to "minimum test pressure at maximum elevation" from PART I.
(2) Use lowest pressure on test gauge at any time during test.
(3) Subtract static head due to elevation difference (between test point and maximum elevation) from minimum indicated test pressure.
(4) Subtract static head due to elevation difference (between test point and minimum elevation) from "maximum test pressure at minimum elevation" from PART I.
(5) Highest pressure on test gauge at any time during test.
(6) Add static head due to elevation difference (between test point and minimum elevation) to maximum indicated test pressure.
(7) A dead weight tester is only required when testing to a pressure which produces a stress level of 90% of SMYS or greater. However, if a dead weight tester is used on any test, enter the information in the space provided above.

DISTRIBUTION

JOB FILE (AT SPONSORING ORGANIZATION)
GSM&TS RESPONSIBLE DISTRICT SUPERINTENDENT
PROJECT MANAGER/PROJECT ENGINEER
TECHNICAL & CONSTRUCTION SERVICES - ASSIGNED JOBS ONLY
CAPITAL ACCOUNTING (FOREMAN'S COPY OF JOB)
RECORDS SECTION (WC), GM&TS
REPORT FAILURES UNDER TEST TO GAS ENGINEERING & PLANNING

Pacific Gas and Electric Company

Gas Pipeline Facilities Strength Test Pressure Report

(For Pipeline Facilities Designed to Operate over 100 PSIG)

62-4921 (Rev. 2/04)
California Gas Transmission
(Use in accordance with Gas Standard A-34 and GO 112-D)

Sheet 1 of 4

PART I - DESIGN DATA (TO BE PREPARED BY PROJECT ENGINEER)

Feeder Main Number, Line Number, or Station Name	Area	Division/District	Job Number	Date Job Authorized
L-300B	Central	Fresno	41497329-T84	6-22-11

Description of Job - Include Reference Drawing Numbers, and Pipeline Mileposts

Test 1 – Segment A-C - Existing 34" materials listed are from the "Material of Record" (refer to DWG 41497329-T84, sheet 7)
Hydrostatically test 34" tie-in piping, hydrostatic test piping and existing 34" L-300B
Hydrotest L-300B from MP 353.54 – 354.31 Test Segment A-C Kettleman, CA (Test section 84)

Location Class	Design Factor (F)	MAOP to be Established for this Piping by this Test	Future Design Pressure
1	.72	890 PSIG	890 PSIG

STATIC HEAD DUE TO ELEVATION DIFFERENCE (WHERE APPLICABLE)			Static Head Calculation		
	Max. Elevation	504 Ft.	For Water	0.433 X Elev. Diff. =	10.83 PSIG
	Min. Elevation	479 Ft.	Other (Specify)	X Elev. Diff. =	PSIG
	Elev. Diff.	25 Ft.			

Pipe Specification: Size O.D.	Size W.T.	Pipe Specification: API or ASTM Grade Long Seam (ERW, DSAW, Seamless, Etc.)	Footage to Be Tested	Pipe Spec. and Footage Verified In Field	% of SMYS: At MAOP	% of SMYS: At Min. Test Press.	% of SMYS: At Max. Test Press.	Pressure to Give 90% SMYS
34.00	.505	API 5L, GR X60; DSAW (item#101)	60'	85.34' LO	49.93	62.42	68.73	1604
34.00	.500	API 5L, GR X46, DSAW (item#2)	548'		65.78	82.27	90.54	1218
34.00	.4375	API 5L, GR X48, DSAW (item#5)	619'		72.05	90.10	99.17	1112
34.00	.375	API 5L, GR X60 DSAW		6.5' BA	62.24	84.09	92.56	1191
34.00	.375	API 5L, GR X65 DSAW		11.916' BA	62.07	77.62	85.44	1291

Minimum Test Pressure @ Max. Elevation	1113 PSIG	Test Fluid To Be Used: WATER	MINIMUM TEST DURATION – UNDER 30% SMYS (1 HR. MINIMUM) – 30% SMYS & OVER (8 HRS. MINIMUM) – PREINSTALLATION TEST (SEE ATTACHMENT 'A', GAS STD. A-34): 8 HOURS
Maximum Test Pressure @ Min. Elevation	1225 PSIG		

Prepared By: Redacted Date: 06/22/11 For Information or Changes, Call: Redacted Date: 6/22/11

PART II - TEST DATA (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)

Note: Minimum test pressure and duration are not to be changed without written approval.

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Time and Date Test Ended	7-23-11 6:00 PM	Max. Elevation in Test Section	504 FT	Min. Indicated Test Pressure (2)	1124 PSIG	Max. Indicated Test Pressure (5)	1204 PSIG
Actual Duration of Test	8 Hr. 43 Min	Min. Elevation in Test Section	479 FT	Min. Test Pressure at Max. Elevation (3)	1124 PSIG	Max. Test Pressure at Min. Elevation (6)	1213 PSIG

Test Fluid Used: WATER

Pipe Specification and Footage Verified (See Part I): BA

Make, Range, and Serial No. of Pressure Recording Gauge	Date Last Calibrated	Make, Range, and Serial No. of Dead Weight Tester (See Note 7)	Date Last Calibrated
BARTON 0-3000 S/N 6840816	6-17-11	CHANDLER 50-3000 S/N 7850	6-17-11

Test Supervised By: Redacted Date: 7-23-11

Approved By: Date:

PUT SCHEMATIC PIPING SKETCH ON BACK OF THIS SHEET

SHOW LOCATION OF FACILITY TESTED, MINIMUM AND MAXIMUM ELEVATION IN FEET, MILE POINTS, VALVE NUMBERS AND INCORPORATED AREAS. USE AN ADDITIONAL SHEET IF NECESSARY (SHOW REFERENCE NUMBERS ON FACE OF ALL DRAWINGS AND ATTACHMENTS). FOR STATION PIPING: FABRICATED UNITS AND SHORT SECTIONS OF PIPE, ALSO SHOW A DETAILED SKETCH OF EACH ASSEMBLY TESTED.

NOTES:

(1) Add the static head due to elevation difference (between test point and maximum elevation) to "minimum test pressure at maximum elevation" from PART I.
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