RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002
Redacted

August 14, 2011

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

Test Contractor:	Contra Costa Inspection Co. -- T-28 8/14/2011
Asset Owner:	Pacific Gas and Electric Company -- 41497352
Construction Contractor:	ARB -- 0629-53-3500
Test Section:	PG&E T-28 L-132, MP 8.54 - 10.32
Test Date:	August 14, 2011
Certificate Number:	RCP 61362 - T-28, L-132, MP 8.54 - 10.32

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 Contra Costa Inspection Co. met the requirements of the Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3).

The test segment was subjected to a spike pressure test of 671 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 8.33 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.33 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 616 psig and the established MAOP is 410 psig.

Pressure decreased 44 psi during the test. 8,006.40 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 685.82 ounces, gain, which is equivalent to a 0.25 °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.

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Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41497352
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection Co.	Project No.	T-28 8/14/2011
Test Section	PG&E T-28 L-132, MP 8.54 - 10.32		
File Name	RCP 61362 - T-28, L-132, MP 8.54 - 10.32		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Test Date: 14-Aug-11

Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3)

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-28 L-132, MP 8.54 - 10.32		
From:	96+18	To:	0+00

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	21 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
2	1,225 ft	30.000 in.	0.375 in.	API5L-X42, DSAW, Arc Weld, Steel	1,050 psi
3	11 ft	24.000 in.	0.375 in.	API5L-X42, SM, Arc Weld, Steel	1,313 psi
4	8 ft	24.000 in.	0.375 in.	40ksmys, SM, Arc Weld, Steel	1,250 psi
5	53 ft	24.000 in.	0.312 in.	API5L-X60, DSAW, Arc Weld, Steel	1,560 psi
6	924 ft	24.000 in.	0.312 in.	API5L-X42, DSAW, Arc Weld, Steel	1,092 psi
7	7,511 ft	24.000 in.	0.281 in.	40ksmys, SM, Arc Weld, Steel	937 psi

Initial Test Conditions

Pressure at Test Point:	671 psig	Date/Time:	8/14/11 1:50 PM	Pipe Temperature Unrestrained:	73.0 °F
Ambient Temperature:	75.0 °F			Restrained:	64.0 °F
		Elevation @ Test Point:	31.0 ft	Location:	98+16
Pressure @ High Point (Cal/Measure):	660 psig	Elevation @ High Point:	56.0 ft	Location:	16+25
Pressure @ Low Point (Cal/Measure):	675 psig	Elevation @ Low Point:	22.5 ft	Location:	95+61

Final Test Conditions

Pressure at Test Point:	627 psig	Date/Time:	8/14/11 10:10 PM	Pipe Temperature Unrestrained:	73.0 °F
Ambient Temperature:	64.0 °F			Restrained:	64.0 °F
		Elevation @ Test Point:	31.0 ft	Location:	98+16
Pressure @ High Point (Cal/Measure):	616 psig	Elevation @ High Point:	56.0 ft	Location:	16+25
Pressure @ Low Point (Cal/Measure):	631 psig	Elevation @ Low Point:	22.5 ft	Location:	95+61
Total Fluid Injected:				Volume gain	
Total Fluid Withdrawn:		8006.40 fluid ounces			
Net Change in Volume of the Test Section ± (+ Gain, - Loss):		685.82 oz	gain	0.0023%	0.248 °F equivalent

Test Duration: 8.33 hours

Minimum Test Pressure:	Test Point	626 psig	Max Elevation	615 psig	Min Elevation	630 psig
Maximum Test Pressure:		671 psig		660 psig		675 psig
% SMYS :		70.5%		70.5%		43.2%
Test Segment Observed % SMYS :			Minimum	24.8%	Maximum	71.5%
					Minimum Test Pressure (Calculated/Measured):	616 psig
Maximum Allowable Operating Pressure:				DOT Part 192	Test Factor= 1.50	410 psig

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	The test segment was subjected to a spike pressure test of 671 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 8.33 hour test duration period. No leaks were observed during the test period. The test section included 9,733 feet of buried and 43 feet of exposed pipe. Pressure lost 44 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment fluid temperature remained steady. 8,006.40 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 685.82 ounces, gain, which is equivalent to a 0.25 °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		

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497352
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	Contra Costa Inspection Co.	Project No.	T-28 8/14/2011
Test Section	PG&E T-28 L-132, MP 8.54 - 10.32		
File Name	RCP 61362 - T-28, L-132, MP 8.54 - 10.32		

Date 14-Aug-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	Comment	Bleed	Inject
1	8/14/11	1:13 PM	458 psig	75 °F	70 °F	64 °F	Start Spike		
2	8/14/11	1:15 PM	468 psig	75 °F	70 °F	64 °F	Inject		1,597 oz.
3	8/14/11	1:17 PM	478 psig	75 °F	70 °F	64 °F	Inject		1,597 oz.
4	8/14/11	1:19 PM	488 psig	75 °F	71 °F	64 °F	Inject		1,580 oz.
5	8/14/11	1:21 PM	498 psig	75 °F	71 °F	64 °F	Inject		2,118 oz.
6	8/14/11	1:23 PM	508 psig	75 °F	71 °F	64 °F	Inject		1,866 oz.
7	8/14/11	1:25 PM	518 psig	75 °F	71 °F	64 °F	Inject		1,799 oz.
8	8/14/11	1:27 PM	528 psig	75 °F	71 °F	64 °F	Inject		1,799 oz.
9	8/14/11	1:29 PM	538 psig	75 °F	71 °F	64 °F	Inject		1,816 oz.
10	8/14/11	1:31 PM	548 psig	75 °F	71 °F	64 °F	Inject		1,765 oz.
11	8/14/11	1:33 PM	558 psig	75 °F	71 °F	64 °F	Inject		1,782 oz.
12	8/14/11	1:35 PM	568 psig	75 °F	71 °F	64 °F	Inject		1,866 oz.
13	8/14/11	1:37 PM	578 psig	75 °F	71 °F	64 °F	Inject		1,681 oz.
14	8/14/11	1:39 PM	588 psig	75 °F	72 °F	64 °F	Inject		1,749 oz.
15	8/14/11	1:41 PM	598 psig	75 °F	72 °F	64 °F	Inject		1,866 oz.
16	8/14/11	1:42 PM	608 psig	75 °F	72 °F	64 °F	Inject		1,765 oz.
17	8/14/11	1:43 PM	618 psig	75 °F	72 °F	64 °F	Inject		1,816 oz.
18	8/14/11	1:44 PM	628 psig	75 °F	72 °F	64 °F	Inject		1,749 oz.
19	8/14/11	1:45 PM	638 psig	75 °F	72 °F	64 °F	Inject		1,799 oz.
20	8/14/11	1:46 PM	648 psig	75 °F	72 °F	64 °F	Inject		1,833 oz.
21	8/14/11	1:47 PM	658 psig	75 °F	72 °F	64 °F	Inject		1,967 oz.
22	8/14/11	1:48 PM	668 psig	75 °F	72 °F	64 °F	Inject		1,194 oz.
23	8/14/11	1:49 PM	671 psig	75 °F	72 °F	64 °F	Inject		891 oz.
24	8/14/11	1:50 PM	671 psig	75 °F	73 °F	64 °F	On Test		
25	8/14/11	2:00 PM	671 psig	75 °F	73 °F	64 °F			
26	8/14/11	2:10 PM	671 psig	76 °F	73 °F	64 °F			
27	8/14/11	2:20 PM	671 psig	75 °F	74 °F	64 °F	End Spike		
28	8/14/11	2:24 PM	661 psig	75 °F	74 °F	64 °F	Bleed	1,779 oz.	
29	8/14/11	2:28 PM	651 psig	75 °F	74 °F	64 °F	Bleed	1,779 oz.	
30	8/14/11	2:32 PM	641 psig	75 °F	74 °F	64 °F	Bleed	1,779 oz.	
31	8/14/11	2:36 PM	631 psig	75 °F	74 °F	64 °F	Bleed	1,779 oz.	
32	8/14/11	2:39 PM	626 psig	75 °F	74 °F	64 °F	Bleed	890 oz.	
33	8/14/11	2:40 PM	626 psig	74 °F	74 °F	64 °F	Sun Shine		
34	8/14/11	2:55 PM	626 psig	74 °F	74 °F	64 °F			
35	8/14/11	3:10 PM	626 psig	74 °F	75 °F	64 °F			
36	8/14/11	3:25 PM	626 psig	73 °F	75 °F	64 °F			
37	8/14/11	3:40 PM	626 psig	74 °F	75 °F	64 °F	Sun Shine		
38	8/14/11	3:55 PM	626 psig	74 °F	75 °F	64 °F			
39	8/14/11	4:10 PM	626 psig	74 °F	75 °F	64 °F			
40	8/14/11	4:25 PM	626 psig	74 °F	76 °F	64 °F			
41	8/14/11	4:40 PM	627 psig	74 °F	76 °F	64 °F			
42	8/14/11	4:55 PM	627 psig	74 °F	76 °F	64 °F			
43	8/14/11	5:10 PM	627 psig	73 °F	76 °F	64 °F			

Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497352
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection Co.	Project No.	T-28 8/14/2011
Test Section	PG&E T-28 L-132, MP 8.54 - 10.32	WATER	
File Name	RCP 61362 - T-28, L-132, MP 8.54 - 10.32		

General Pipe Data

Description	Segment										
	1	2	3	4	5	6	7	8	9		
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	nrestrained		
Outside Diameter	24.000 in.	30.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	16.000 in.	24.000 in.		
Wall Thickness	0.375 in.	0.375 in.	0.375 in.	0.375 in.	0.312 in.	0.312 in.	0.281 in.	0.375 in.	0.500 in.		
Inside Diameter	23.250 in.	29.250 in.	23.250 in.	23.250 in.	23.376 in.	23.376 in.	23.438 in.	15.250 in.	23.000 in.		
Spec./Grade	API5L-X60	API5L-X42	API5L-X42	40ksmys	API5L-X60	API5L-X42	40ksmys	40ksmys	API5L-X65		
Length Unrestrained	21 ft								22 ft		
Length Restrained		1,225 ft	11 ft	8 ft	53 ft	924 ft	7,511 ft	1 ft			
Temperature -- On Test	73 °F	64 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	73.0 °F		
Temperature -- End of Test	73 °F	64 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	73.0 °F		
Pressure -- On Test	671 psig	671 psig	671 psig	671 psig	671 psig	671 psig	671 psig	671 psig	671 psig		
Pressure -- End of Test	627 psig	627 psig	627 psig	627 psig	627 psig	627 psig	627 psig	627 psig	627 psig		

Unrestrained Pipe

Sum:	Vo	926.95 gal 118,650 oz.		Vtp1	929.15 gal 118,932 oz.		Vtp2		928.94 gal 118,904 oz.		
Vo Unrestrained	452 gal								475 gal		
Fwp 1	1.002054								1.002054		
Fpp 1	1.001733								1.001286		
Fpt 1	1.000237								1.000237		
Fwt 1	1.001423								1.001423		
Fpwt 1 = Fpt/Fwt	0.998815								0.998815		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	453.30 gal								475.85 gal		
Fwp 2	1.001919								1.001919		
Fpp 2	1.001620								1.001202		
Fpt 2	1.000237								1.000237		
Fwt 2	1.001423								1.001423		
Fpwt = Fpt/Fwt	0.998815								0.998815		
Vtp = Vo(Fwp)(Fpp)(Fpwt)	453.19 gal								475.75 gal		

Restrained Pipe

Sum:	Vo	233,315.40 gal 29,864,372 oz.		Vtp1	234,109.89 gal 29,966,066 oz.		Vtp2		234,052.92 gal 29,958,774 oz.		
Vo Unrestrained		42,761 gal	243 gal	176 gal	1,182 gal	20,600 gal	168,344 gal	9 gal			
Fwp 1		1.002054	1.002054	1.002054	1.002054	1.002054	1.002054	1.002054			
Fpp 1		1.001602	1.001276	1.001276	1.001539	1.001539	1.001712	1.000842			
Fpt 1		1.000048	1.000048	1.000048	1.000048	1.000048	1.000048	1.000048			
Fwt 1		1.000375	1.000375	1.000375	1.000375	1.000375	1.000375	1.000375			
Fpwt 1 = Fpt/Fwt		0.999674	0.999674	0.999674	0.999674	0.999674	0.999674	0.999674			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		42,903 gal	243 gal	177 gal	1,185 gal	20,668 gal	168,924 gal	10 gal			
Fwp 2		1.001919	1.001919	1.001919	1.001919	1.001919	1.001919	1.001919			
Fpp 2		1.001498	1.001194	1.001194	1.001439	1.001439	1.001601	1.000788			
Fpt 2		1.000048	1.000048	1.000048	1.000048	1.000048	1.000048	1.000048			
Fwt 2		1.000375	1.000375	1.000375	1.000375	1.000375	1.000375	1.000375			
Fpwt = Fpt/Fwt		0.999674	0.999674	0.999674	0.999674	0.999674	0.999674	0.999674			
Vtp = Vo(Fwp)(Fpp)(Fpwt)		42,893 gal	243 gal	177 gal	1,185 gal	20,663 gal	168,682 gal	10 gal			

Combined Pipe

Sum:	Vo	234,242.36 gal 29,903,022 oz.	Vtp1	235,039.05 gal 30,084,998 oz.	Vtp2	234,981.86 gal 30,077,678 oz.

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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	21 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
2	1,225 ft	Restrained	30.000 in.	0.3750 in.	API5L-X42	1,050 psig	Steel	Arc Weld	DSAW
3	11 ft	Restrained	24.000 in.	0.3750 in.	API5L-X42	1,313 psig	Steel	Arc Weld	SM
4	8 ft	Restrained	24.000 in.	0.3750 in.	40ksmys	1,250 psig	Steel	Arc Weld	SM
5	53 ft	Restrained	24.000 in.	0.3120 in.	API5L-X60	1,560 psig	Steel	Arc Weld	DSAW
6	924 ft	Restrained	24.000 in.	0.3120 in.	API5L-X42	1,092 psig	Steel	Arc Weld	DSAW
7	7,511 ft	Restrained	24.000 in.	0.2810 in.	40ksmys	937 psig	Steel	Arc Weld	SM
8	1 ft	Restrained	16.000 in.	0.3750 in.	40ksmys	1,875 psig	Steel	Arc Weld	OTH
9	22 ft	Unrestrained	24.000 in.	0.5000 in.	API5L-X65	2,708 psig	Steel	Arc Weld	DSAW

Hydrostatic Test Project Owner & Participants

Owner Company	Pacific Gas and Electric Company	Job Number
Address	350 N. Wiget	41497352
	Walnut Creek, CA 94598	
	Attention: Redacted	
Construction Company	ARB	Job Number
Address	1875 Loveridge Road	0629-53-3500
	Antioch, CA 94565	
	Attention: Redacted	
Hydrostatic Test Co.	Contra Costa Inspection Co.	Project No.
Address	2820 LaJolla Drive	T-28 8/14/2011
	Atnitioch, CA 94565	
	Attention: Redacted	
Test Section	PG&E T-28 L-132, MP 8.54 - 10.32	
	From: 96+18	
	To: 0+00	
File Name	RCP 61362 - T-28, L-132, MP 8.54 - 10.32	

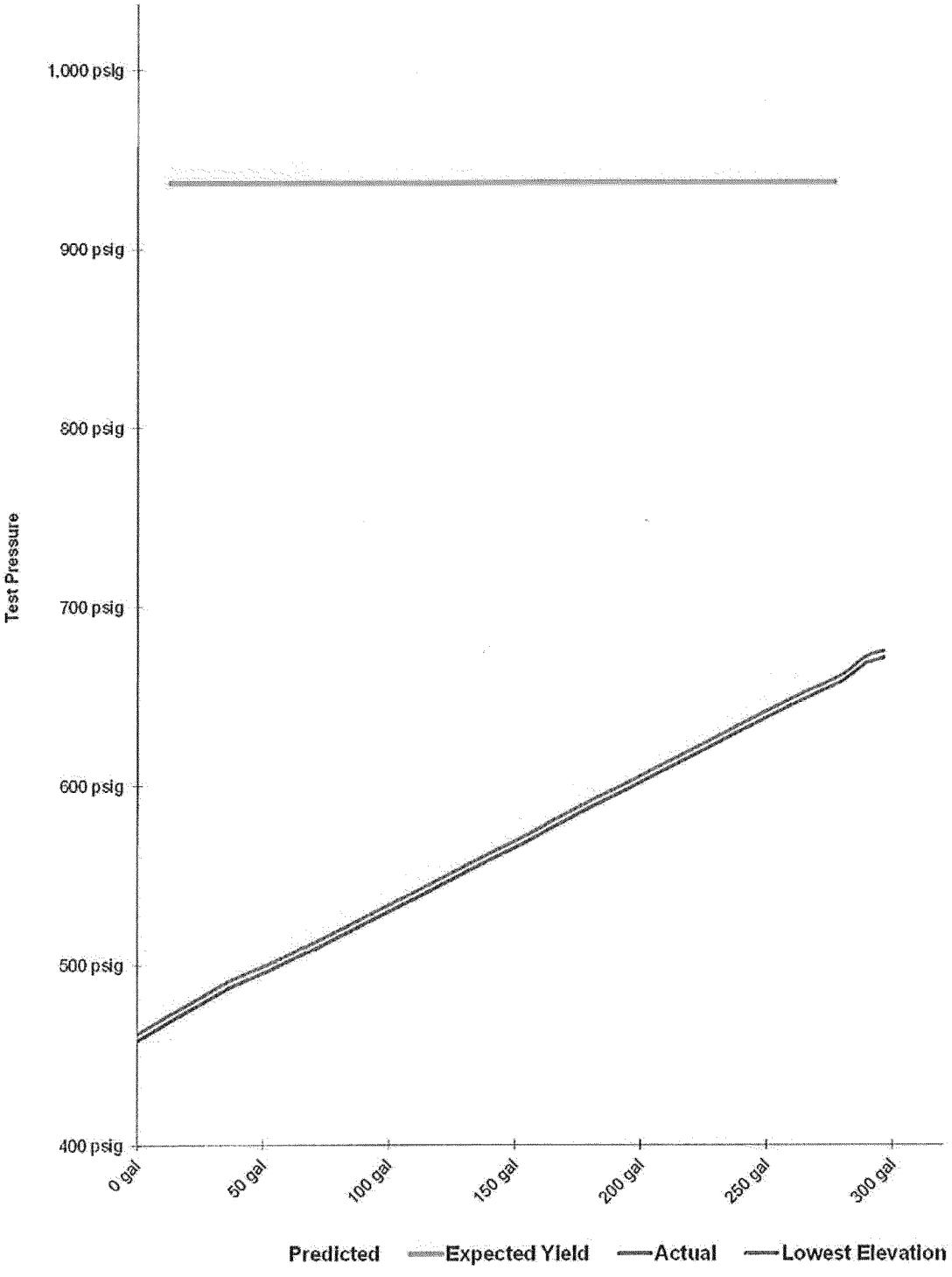
Part II – Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)

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

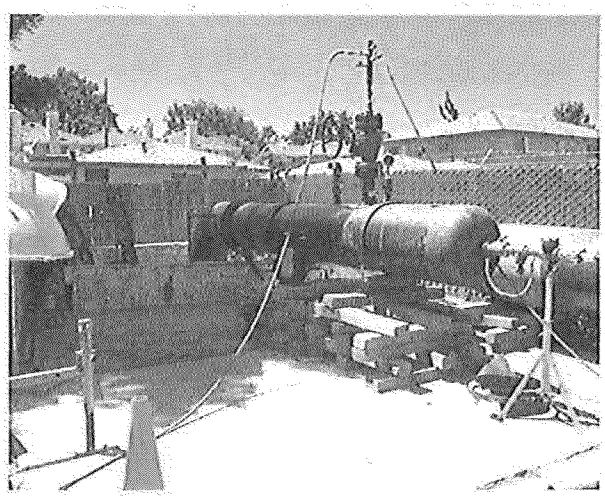
Time and Date Test Pressure Reached	8/14/11 1:50 PM	Elevation at Test Point	31 ft	Min. Required Test Press At Test Point (1)	610.83 psig	Max. Allowable Test Press at Test Point (4)	676.32 psig
Time and Date Test Ended	8/14/11 10:10 PM	Max. Elevation in Test Section	56 ft	Min. Indicated Test Pressure (2)	626.00 psig	Max. Indicated Test Pressure (5)	671.00 psig
Actual Duration of Test	8 hours 20 minutes	Min. Elevation in Test Section	23 ft	Min. Test Pressure at Max. Elevation (3)	615.17 psig	Max. Test Pressure at Min. Elevation (6)	674.68 psig

RCP

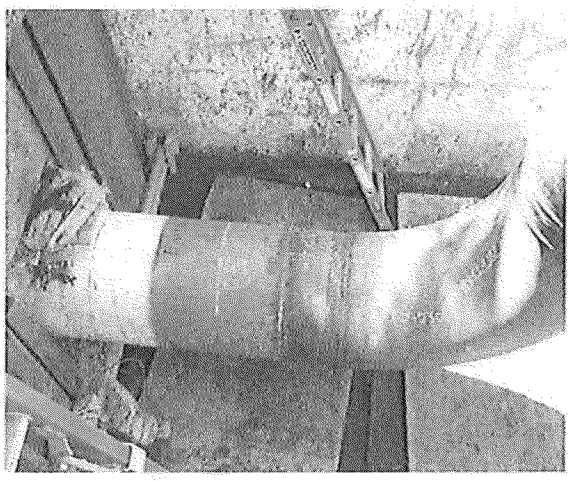
Spike Pressure Test
Stress Strain Curve -- PG&E T-28 L-132, MP 8.54 - 10.32



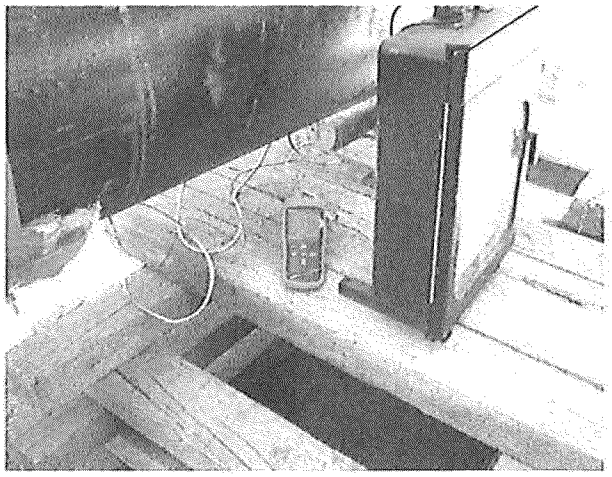
Test Trailer



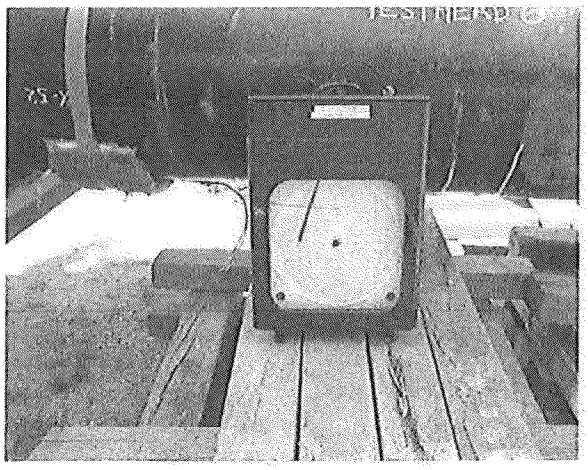
Test Header at location A



Tie-in to existing pipe location A



Unrestrained Temp. Recorder



Unrestrained Tem. Chart

Restrained Temp. Recorder