RCP

RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002
Redacted

July 12, 2011

Pacific Gas and Electric Company
3600 Adobe Rd
Petaluma, Ca 94954
Attention: Joel Mannie
Attention:

Test Contractor:	Milbar Hydro-test Incorporated -- FY12-112
Asset Owner:	Pacific Gas and Electric Company -- 41474079
Construction Contractor:	Snelson -- 41474053-T51
Test Section:	PG&E T-51 Line 300A MP 121.87 - 122.68
Test Date:	June 8, 2011
Certificate Number:	RCP 61362 - T-51, L-300A

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).

Prior to initiation of the hydrostatic test period, the test segment was subjected to a spike pressure of 940 psig for 30 minutes, without observed leakage or yielding of the pipe segment.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8 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 872 psig and the established MAOP is 793 psig.

Pressure decreased 62 psi during the test. 10,345.60 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 4,520.98 ounces, gain, which is equivalent to a 1.48 °F change in pipe temperature and larger than the anticipated 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 inherent error associated with physically attempting to measure the average temperature of 4,297 feet of buried and 225 feet of exposed pipe from a single point on the line.

Sincerely,

Redacted

cc. file

Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	Snelson	Job Number	414/4053-T51
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-51 Line 300A MP 121.87 - 122.68		
File Name	RCP 61362 - T-51, L-300A		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Test Date: 8-Jun-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-51 Line 300A MP 121.87 - 122.68

From: MP 121.87 To: MP 122.68

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	2,105 ft	34.000 in.	0.313 in.	API5L-X52, DSAW, Arc Weld, Steel	958 psi
2	2,192 ft	34.000 in.	0.409 in.	API5L-X60, DSAW, Arc Weld, Steel	1,855 psi
3	203 ft	34.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,324 psi
4	22 ft	34.000 in.	0.500 in.	API5L-X60, DSAW, Arc Weld, Steel	1,785 psi

Initial Test Conditions

Pressure at Test Point:	940 psig	Date/Time:	6/8/11 2:38 PM	Pipe Temperature Unrestrained:	71.0 °F
Ambient Temperature:	90.0 °F			Restrained:	79.0 °F
		Elevation @ Test Point:	1,791 ft	Location:	42+97
Pressure @ High Point (Cal/Measure):	934 psig	Elevation @ High Point:	1,804 ft	Location:	00+00
Pressure @ Low Point (Cal/Measure):	940 psig	Elevation @ Low Point:	1,791 ft	Location:	42+97

Final Test Conditions

Pressure at Test Point:	878 psig	Date/Time:	6/8/11 10:53 PM	Pipe Temperature Unrestrained:	86.0 °F
Ambient Temperature:	77.0 °F			Restrained:	78.0 °F
		Elevation @ Test Point:	1,791.0 ft	Location:	42+97
Pressure @ High Point (Cal/Measure):	872 psig	Elevation @ High Point:	1,804.0 ft	Location:	00+00
Pressure @ Low Point (Cal/Measure):	878 psig	Elevation @ Low Point:	1,791.0 ft	Location:	42+97

Total Fluid Injected:			Volume gain	
Total Fluid Withdrawn:	10345.60 fluid ounces			
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	4,520.98 oz	gain	0.0173%	1.484 °F equivalent

Test Duration: 8 hours

Maximum Test Pressure:	940 psig					
% SMYS @:	98.3%	Test Point	97.7%	High Point	98.3%	Low Point
				Minimum Test Pressure (Calculated/Measured):		872 psig
		Maximum Allowable Operating Pressure:		DOT Part 192	Test Factor= 1.10	793 psig

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	Prior to initiation of the hydrostatic test period, the test segment was subjected to a spike pressure of 940 psig for 30 minutes, without observed leakage or yielding of the pipe segment. No leaks were observed during the test period. The test section included 4,297 feet of buried and 225 feet of exposed pipe. Pressure lost 62 psi during the test. The buried pipe segment lost 1°F fluid temperature and the exposed pipe segment lost 5°F. 10,345.60 ounces of fluid was intentionally released from the test section. Not corrected volumetric change from beginning of the test to the end of the test is calculated to be 4,520.98 ounces, gain, which is equivalent to a 1.48 °F change in pipe temperature and larger than the anticipated 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 inherent error associated with physically attempting to measure the average temperature of 4,297 feet of buried and 225 feet of exposed pipe from a single point on the line.
Remarks		

Redacted

12-Jul-11

Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	Snelson	Job Number	41474053-T51
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-51 Line 300A MP 121.87 - 122.68		
File Name	RCP 61362 - T-51, L-300A		

Date 8-Jun-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	Comment	Bleed	Inject
1	6/8/11	2:07 PM	651 psig	92 °F	71 °F	79 °F	Start Spike		
2	6/8/11	2:08 PM	660 psig	92 °F	71 °F	79 °F			1,270 oz.
3	6/8/11	2:09 PM	670 psig	92 °F	71 °F	79 °F			1,552 oz.
4	6/8/11	2:10 PM	680 psig	92 °F	71 °F	79 °F			1,481 oz.
5	6/8/11	2:11 PM	690 psig	92 °F	71 °F	79 °F			1,481 oz.
6	6/8/11	2:12 PM	700 psig	92 °F	71 °F	79 °F			1,552 oz.
7	6/8/11	2:14 PM	710 psig	92 °F	71 °F	79 °F			1,481 oz.
8	6/8/11	2:15 PM	720 psig	92 °F	71 °F	79 °F			1,552 oz.
9	6/8/11	2:16 PM	730 psig	92 °F	71 °F	79 °F			1,552 oz.
10	6/8/11	2:17 PM	740 psig	92 °F	71 °F	79 °F			1,481 oz.
11	6/8/11	2:18 PM	750 psig	90 °F	71 °F	79 °F			1,552 oz.
12	6/8/11	2:19 PM	760 psig	90 °F	71 °F	79 °F			1,481 oz.
13	6/8/11	2:20 PM	770 psig	90 °F	71 °F	79 °F			1,552 oz.
14	6/8/11	2:21 PM	780 psig	90 °F	71 °F	79 °F			1,481 oz.
15	6/8/11	2:22 PM	790 psig	90 °F	71 °F	79 °F			1,552 oz.
16	6/8/11	2:23 PM	800 psig	90 °F	71 °F	79 °F			1,481 oz.
17	6/8/11	2:24 PM	810 psig	90 °F	71 °F	79 °F			1,552 oz.
18	6/8/11	2:25 PM	820 psig	90 °F	71 °F	79 °F			1,481 oz.
19	6/8/11	2:26 PM	830 psig	90 °F	71 °F	79 °F			1,552 oz.
20	6/8/11	2:27 PM	840 psig	90 °F	71 °F	79 °F			1,622 oz.
21	6/8/11	2:28 PM	850 psig	90 °F	71 °F	79 °F			1,513 oz.
22	6/8/11	2:29 PM	860 psig	90 °F	71 °F	79 °F			1,520 oz.
23	6/8/11	2:30 PM	870 psig	90 °F	71 °F	79 °F			1,481 oz.
24	6/8/11	2:31 PM	880 psig	90 °F	71 °F	79 °F			1,552 oz.
25	6/8/11	2:32 PM	890 psig	90 °F	71 °F	79 °F			1,481 oz.
26	6/8/11	2:34 PM	900 psig	90 °F	71 °F	79 °F			1,622 oz.
27	6/8/11	2:35 PM	910 psig	90 °F	71 °F	79 °F			1,552 oz.
28	6/8/11	2:36 PM	920 psig	90 °F	71 °F	79 °F			1,513 oz.
29	6/8/11	2:37 PM	930 psig	90 °F	71 °F	79 °F			1,520 oz.
30	6/8/11	2:38 PM	940 psig	90 °F	71 °F	79 °F			1,552 oz.
31	6/8/11	2:38 PM	940 psig	90 °F	71 °F	79 °F	On Test		
32	6/8/11	2:48 PM	940 psig	92 °F	71 °F	79 °F			
33	6/8/11	2:58 PM	940 psig	91 °F	71 °F	79 °F			
34	6/8/11	3:08 PM	940 psig	92 °F	71 °F	80 °F	End Spike		
35	6/8/11	3:13 PM	940 psig	92 °F	71 °F	80 °F			
36	6/8/11	3:25 PM	930 psig	91 °F	71 °F	80 °F		1,696 oz.	
37	6/8/11	3:31 PM	879 psig	91 °F	71 °F	80 °F		8,650 oz.	
38	6/8/11	3:45 PM	879 psig	92 °F	71 °F	80 °F			
39	6/8/11	4:00 PM	880 psig	92 °F	71 °F	80 °F			
40	6/8/11	4:15 PM	880 psig	92 °F	71 °F	80 °F			
41	6/8/11	4:30 PM	880 psig	93 °F	71 °F	80 °F			
42	6/8/11	4:45 PM	881 psig	93 °F	71 °F	80 °F			
43	6/8/11	5:00 PM	881 psig	93 °F	71 °F	80 °F			

Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	Snelson	Job Number	41474053-T51
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-51 Line 300A MP 121.87 - 122.68		
File Name	RCP 61362 - T-51, L-300A		

Date 8-Jun-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe Unrestrained	Pipe Restrained	Comment	Bleed	Inject
44	6/8/11	5:15 PM	881 psig	93 °F	71 °F	79 °F			
45	6/8/11	5:30 PM	882 psig	93 °F	71 °F	79 °F			
46	6/8/11	5:45 PM	882 psig	92 °F	70 °F	79 °F			
47	6/8/11	6:00 PM	882 psig	92 °F	70 °F	79 °F			
48	6/8/11	6:15 PM	882 psig	91 °F	70 °F	79 °F			
49	6/8/11	6:30 PM	882 psig	91 °F	70 °F	79 °F			
50	6/8/11	6:45 PM	882 psig	90 °F	70 °F	79 °F			
51	6/8/11	7:00 PM	882 psig	89 °F	68 °F	79 °F			
52	6/8/11	7:15 PM	882 psig	88 °F	68 °F	79 °F			
53	6/8/11	7:30 PM	882 psig	87 °F	68 °F	79 °F			
54	6/8/11	7:45 PM	882 psig	86 °F	68 °F	79 °F			
55	6/8/11	8:00 PM	882 psig	85 °F	68 °F	79 °F			
56	6/8/11	8:15 PM	881 psig	84 °F	68 °F	79 °F			
57	6/8/11	8:30 PM	881 psig	83 °F	67 °F	79 °F			
58	6/8/11	8:45 PM	881 psig	81 °F	67 °F	79 °F			
59	6/8/11	9:00 PM	880 psig	80 °F	67 °F	79 °F			
60	6/8/11	9:15 PM	880 psig	79 °F	66 °F	79 °F			
61	6/8/11	9:30 PM	880 psig	79 °F	66 °F	79 °F			
62	6/8/11	9:45 PM	880 psig	78 °F	66 °F	79 °F			
63	6/8/11	10:00 PM	879 psig	77 °F	66 °F	78 °F			
64	6/8/11	10:15 PM	879 psig	77 °F	66 °F	78 °F			
65	6/8/11	10:30 PM	879 psig	77 °F	66 °F	78 °F			
66	6/8/11	10:38 PM	879 psig	77 °F	66 °F	78 °F			
67	6/8/11	10:53 PM	878 psig	77 °F	66 °F	78 °F	End of Test		
							Spike Test		44,009.5 oz.
							Hydrostatic Test	10,345.6 oz.	

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	High Test Pressure:	940 psig
		Low Test Pressure:	878 psig

Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	Snelson	Job Number	41474053 T51
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-51 Line 300A MP 121.87 - 122.68		WATER
File Name	RCP 61362 - T-51, L-300A		

General Pipe Data

Description	Segment 1	2	3	4
Restrained or Unrestrained?	Restrained	Restrained	Unrestrained	Unrestrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.
Wall Thickness	0.313 in.	0.469 in.	0.375 in.	0.500 in.
Inside Diameter	33.375 in.	33.062 in.	33.250 in.	33.000 in.
Spec./Grade	API5L-X52	API5L-X60	API5L-X60	API5L-X60
Length Unrestrained			203 ft	22 ft
Length Restrained	2,105 ft	2,192 ft		
Temperature -- On Test	79 °F	79 °F	71.0 °F	71.0 °F
Temperature -- End of Test	78 °F	78 °F	66.0 °F	66.0 °F
Pressure -- On Test	940 psig	940 psig	940 psig	940 psig
Pressure -- End of Test	878 psig	878 psig	878 psig	878 psig

Unrestrained Pipe

Sum:	Vo	10,134.17 gal / 1,297,174 oz.	Vtp1	10,187.91 gal / 1,304,053 oz.	Vtp2	10,188.76 gal / 1,304,161 oz.
Vo Unrestrained		9,157 gal	977 gal			
Fwp 1		1.002880	1.002880			
Fpp 1		1.003473	1.002585			
Fpt 1		1.000200	1.000200			
Fwt 1		1.001170	1.001170			
Fpwt 1 = Fpt/Fwt		0.999032	0.999032			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		9,206.03 gal	981.88 gal			
Fwp 2		1.002689	1.002689			
Fpp 2		1.003244	1.002415			
Fpt 2		1.000109	1.000109			
Fwt 2		1.000582	1.000582			
Fpwt = Fpt/Fwt		0.999527	0.999527			
Vtp = Vo(Fwp)(Fpp)(Fpwt)		9,206.74 gal	982.01 gal			

Restrained Pipe

Sum:	Vo	193,424.43 gal / 24,758,327 oz.	Vtp1	194,090.97 gal / 24,843,645 oz.	Vtp2	194,044.62 gal / 24,837,712 oz.
Vo Unrestrained	95,665 gal	97,750 gal				
Fwp 1	1.002860	1.002880				
Fpp 1	1.003114	1.002078				
Fpt 1	1.000230	1.000230				
Fwt 1	1.002255	1.002255				
Fpwt 1 = Fpt/Fwt	0.997979	0.997979				
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	96,045 gal	98,046 gal				
Fwp 2	1.002689	1.002689				
Fpp 2	1.002809	1.001942				
Fpt 2	1.000218	1.000218				
Fwt 2	1.002122	1.002122				
Fpwt = Fpt/Fwt	0.998100	0.998100				
Vtp = Vo(Fwp)(Fpp)(Fpwt)	96,019 gal	98,020 gal				

Combined Pipe

Sum:	Vo	203,558.60 gal / 26,055,501 oz.	Vtp1	204,278.88 gal / 26,147,697 oz.	Vtp2	204,233.38 gal / 26,141,873 oz.

Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	Snelson	Job Number	41474053-T51
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-51 Line 300A MP 121.87 - 122.68		WATER
File Name	RCP 61362 - T-51, L-300A		

General Pipe Data

Description	Segment 1	2	3	4							
Restrained or Unrestrained?	Restrained	Restrained	Unrestrained	Unrestrained							
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.							
Wall Thickness	0.313 in.	0.469 in.	0.375 in.	0.500 in.							
Inside Diameter	33.375 in.	33.062 in.	33.250 in.	33.000 in.							
Spec/Grade	API5L-X52	API5L-X60	API5L-X60	API5L-X60							
Length Unstrained			203.00 ft	22 ft							
Length Restrained	2,105 ft	2,192 ft									
Temperature – On Test	78 °F	78 °F	68 °F	68 °F							
Temperature – End of Test	79 °F	79 °F	69 °F	69 °F							
Pressure – On Test	909 psig	909 psig	909 psig	909 psig							
Pressure – End of Test	909 psig	909 psig	909 psig	909 psig							

Unrestrained Pipe

Sum:	Vo	10,134.17 gal / 1,297,174 oz.		Vtp1	10,188.98 gal / 1,304,190 oz.		Vtp2	10,187.89 gal / 1,304,049 oz.				
Vo Unrestrained			9,157 gal	977 gal								
Fwp 1			1.002785	1.002785								
Fpp 1			1.003358	1.002500								
Fpt 1			1.000146	1.000146								
Fwt 1			1.000803	1.000803								
Fpwt 1 = Fpt/Fwt			0.999343	0.999343								
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			9,206.97 gal	982.01 gal								
Fwp 2			1.002785	1.002785								
Fpp 2			1.003358	1.002500								
Fpt 2			1.000164	1.000164								
Fwt 2			1.000929	1.000920								
Fpwt = Fpt/Fwt			0.999236	0.999236								
Vtp = Vo(Fwp)(Fpp)(Fpwt)			9,205.98 gal	981.91 gal								

Restrained Pipe

Sum:	Vo	193,424.43 gal / 24,758,327 oz.		Vtp1	194,079.15 gal / 24,842,131 oz.		Vtp2	194,058.44 gal / 24,839,225 oz.				
Vo Restrained	95,065 gal	97,759 gal										
Fwp 1	1.002785	1.002785										
Fpp 1	1.003010	1.002009										
Fpt 1	1.000218	1.000218										
Fwt 1	1.002122	1.002122										
Fpwt 1 = Fpt/Fwt	0.998100	0.998100										
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	98,037 gal	98,042 gal										
Fwp 2	1.002785	1.002785										
Fpp 2	1.003013	1.002012										
Fpt 2	1.000230	1.000230										
Fwt 2	1.002255	1.002255										
Fpwt = Fpt/Fwt	0.997979	0.997979										
Vtp = Vo(Fwp)(Fpp)(Fpwt)	96,026 gal	98,030 gal										

Combined Pipe

Sum:	Vo	203,558.60 gal / 26,055,501 oz.		Vtp1	204,266.13 gal / 26,146,321 oz.		Vtp2	204,244.33 gal / 26,143,274 oz.				
1 °F Change	23.81 gal		3,047.20 oz.									

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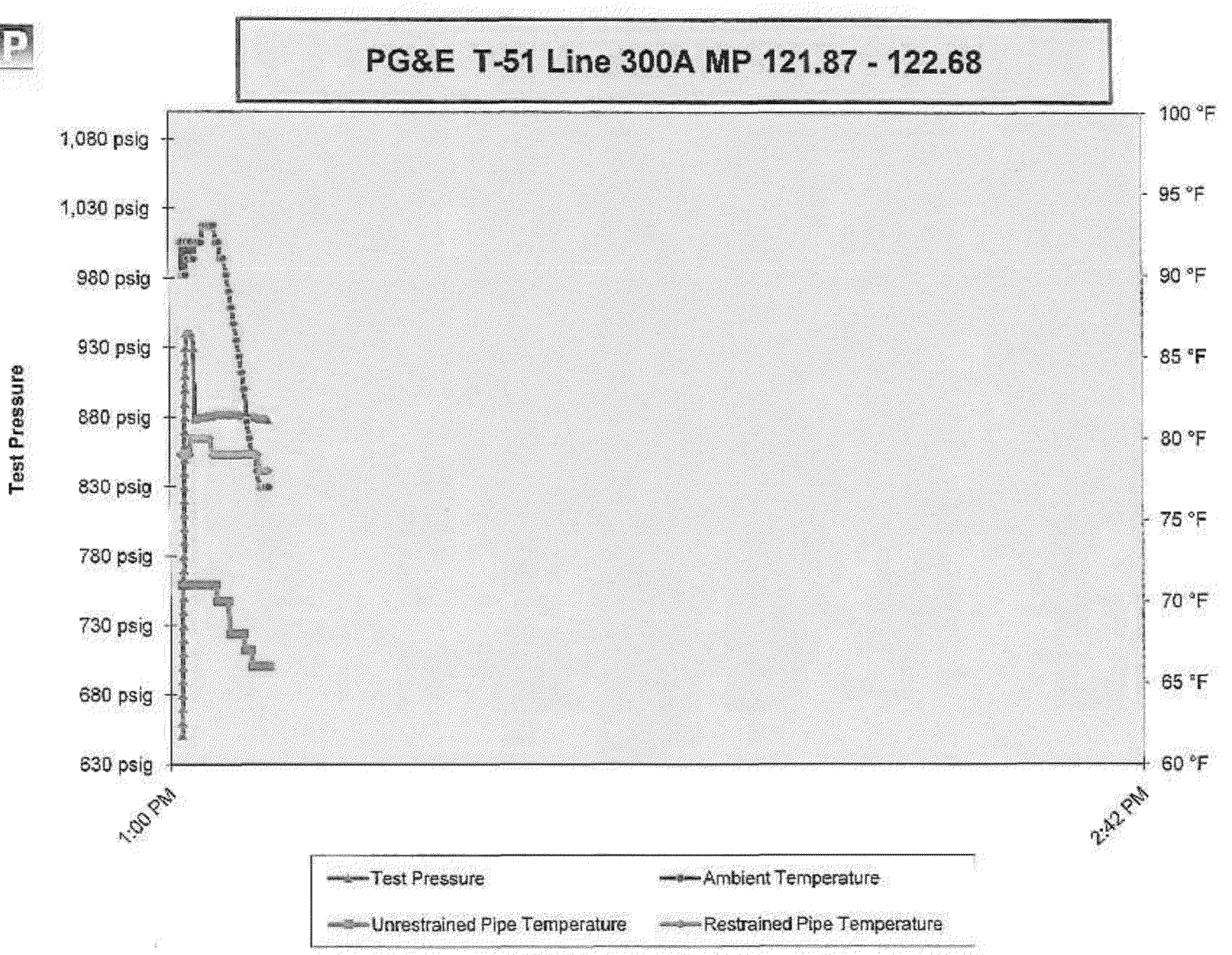
Hydrostatic Test Pipe Data Table

Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	2,105 ft	Restrained	34.000 in.	0.3125 in.	API5L-X52	956 psig	Steel	Arc Weld	DSAW
2	2,192 ft	Restrained	34.000 in.	0.4690 in.	API5L-X60	1,655 psig	Steel	Arc Weld	DSAW
3	203 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X60	1,324 psig	Steel	Arc Weld	DSAW
4	22 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X60	1,765 psig	Steel	Arc Weld	DSAW

Hydrostatic Test Project Owner & Participants

Owner Company	Pacific Gas and Electric Company	Job Number
Address	3600 Adobe Rd Petaluma, Ca 94954 Attention: Joel Mannie	41474079
Construction Company	Snelson	Job Number
Address	601 West State Street Sedro-Woolley, WA 98284 Attention: Redacted	41474053-T51
Hydrostatic Test Co.	Milbar Hydro-test Incorporated	Project No.
Address	P. O. Box 7701 Shreveport, Louisiana 71137-7701 Attention: Redacted	FY12-112
Test Section	PG&E T-51 Line 300A MP 121.87 - 122.68 From: MP 121.87 To: MP 122.68	
File Name	RCP 61362 - T-51, L-300A	



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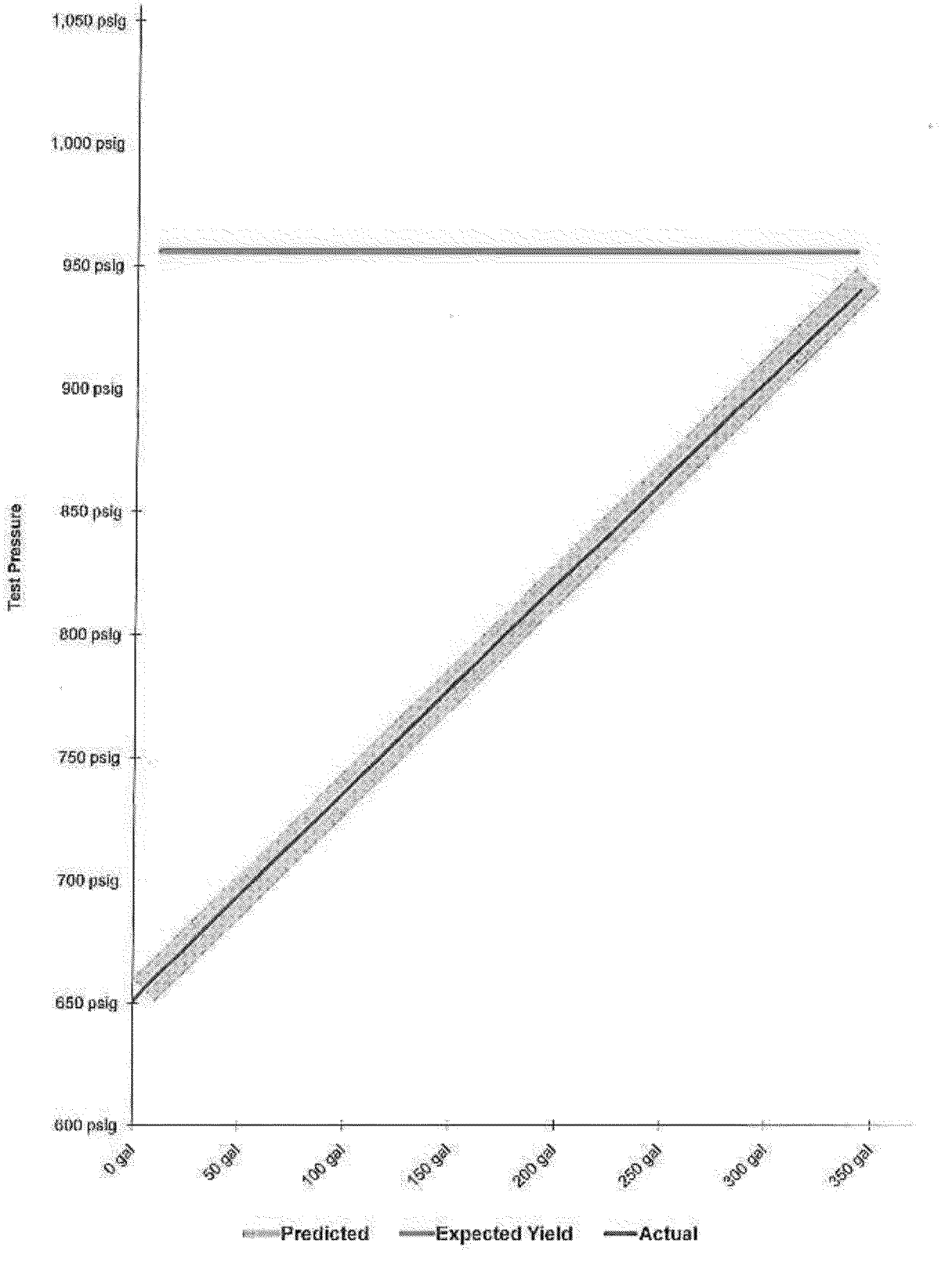
Spike Pressure Test
Stress Strain Curve -- PG&E T-51 Line 300A MP 121.87 - 122.68



7/12/2011

RCP

Spike Pressure Test
Stress Strain Curve -- PG&E T-51 Line 300A MP 121.87 - 122.68

Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted
651 psig	0	0.00 gal		0	0.00 gal
660 psig	18	9.92 gal	10.64 gal	1.102	1.182
670 psig	40	22.04 gal	22.46 gal	1.212	1.182
680 psig	61	33.61 gal	34.28 gal	1.157	1.182
690 psig	82	45.18 gal	46.10 gal	1.157	1.182
700 psig	104	57.30 gal	57.92 gal	1.212	1.182
710 psig	125	68.88 gal	69.75 gal	1.157	1.182
720 psig	147	81.00 gal	81.57 gal	1.212	1.182
730 psig	169	93.12 gal	93.40 gal	1.212	1.182
740 psig	190	104.69 gal	105.22 gal	1.157	1.183
750 psig	212	116.81 gal	117.05 gal	1.212	1.183
760 psig	233	128.38 gal	128.88 gal	1.157	1.183
770 psig	255	140.51 gal	140.70 gal	1.212	1.183
780 psig	276	152.08 gal	152.53 gal	1.157	1.183
790 psig	298	164.20 gal	164.36 gal	1.212	1.183
800 psig	319	175.77 gal	176.19 gal	1.157	1.183
810 psig	341	187.89 gal	188.02 gal	1.212	1.183
820 psig	362	199.46 gal	199.85 gal	1.157	1.183
830 psig	384	211.58 gal	211.68 gal	1.212	1.183
840 psig	407	224.26 gal	223.52 gal	1.267	1.183
850 psig	428	236.08 gal	235.35 gal	1.182	1.183
860 psig	450	247.95 gal	247.19 gal	1.187	1.183
870 psig	471	259.52 gal	259.02 gal	1.157	1.183
880 psig	493	271.64 gal	270.86 gal	1.212	1.184
890 psig	514	283.21 gal	282.69 gal	1.157	1.184
900 psig	537	295.89 gal	294.53 gal	1.267	1.184
910 psig	559	308.01 gal	306.37 gal	1.212	1.184
920 psig	580	319.83 gal	318.21 gal	1.182	1.184
930 psig	602	331.70 gal	330.05 gal	1.187	1.184
940 psig	624	343.82 gal	341.89 gal	1.212	1.184
940 psig		343.82 gal	341.89 gal	0.000	0.000
940 psig		343.82 gal	341.89 gal	0.000	0.000
940 psig		343.82 gal	341.89 gal	0.000	0.000
940 psig		343.82 gal	341.89 gal	0.000	0.000
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940 psig		343.82 gal	341.89 gal	0.000	0.000
940 psig		343.82 gal	341.89 gal	0.000	0.000

Pump gal per stroke	0.551 gal/stroke
Pump Piston Diameter	
Pump Piston Stroke	
Pump Cylinders	
Volume check gal per stroke	0.614 gal/stroke
Volume Released (gallons)	13.25 gal
Pressure Reduced (psi)	10.0 psi
Maximum2	370 gal
Minimum2	0 gal
Maximum1	1,056 psig
Minimum1	600 psig
Gallons/Stroke Used	0.551 gal/stroke
Predicted Gallons/Stroke	0.548 gal/stroke
Pressure Increment	10 psi
Max Pressure	940 psig
Buried Pipe Temperature	79 °F
Exposed Pipe Temperature	71 °F

ASME B31.8 Appendix N-5

Average Actual Elastic Slope	1.191
Average Predicted Elastic Slope	1.183
Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	2.262
Established Minimum Yield Pressure B31.8 N-5 (c)(2)	940 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

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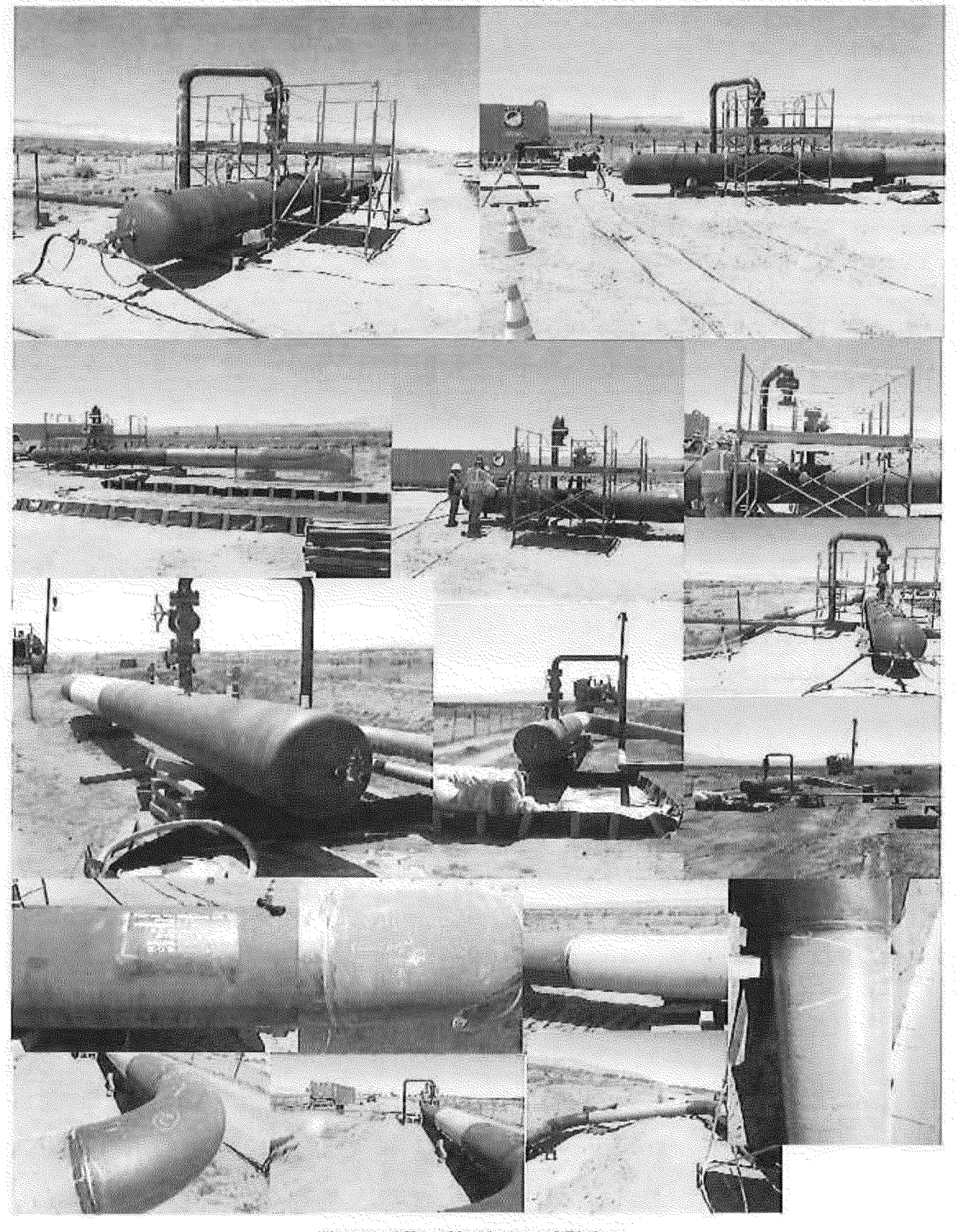
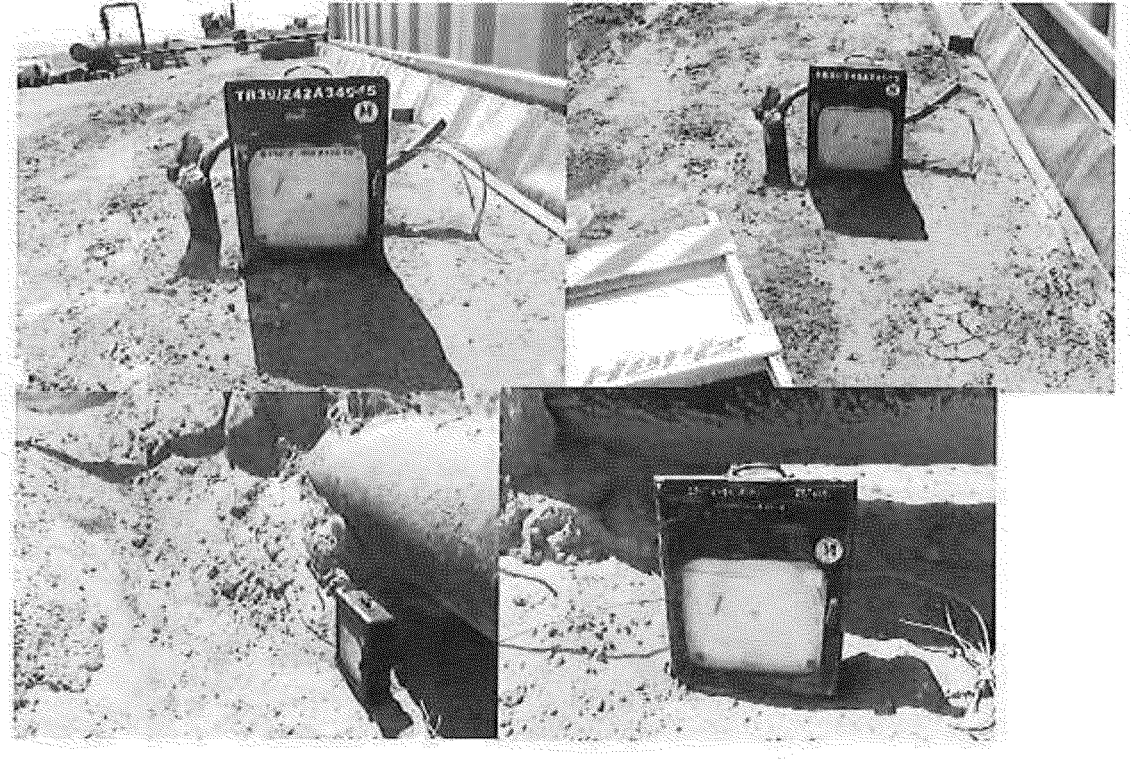
7-12-11
Date



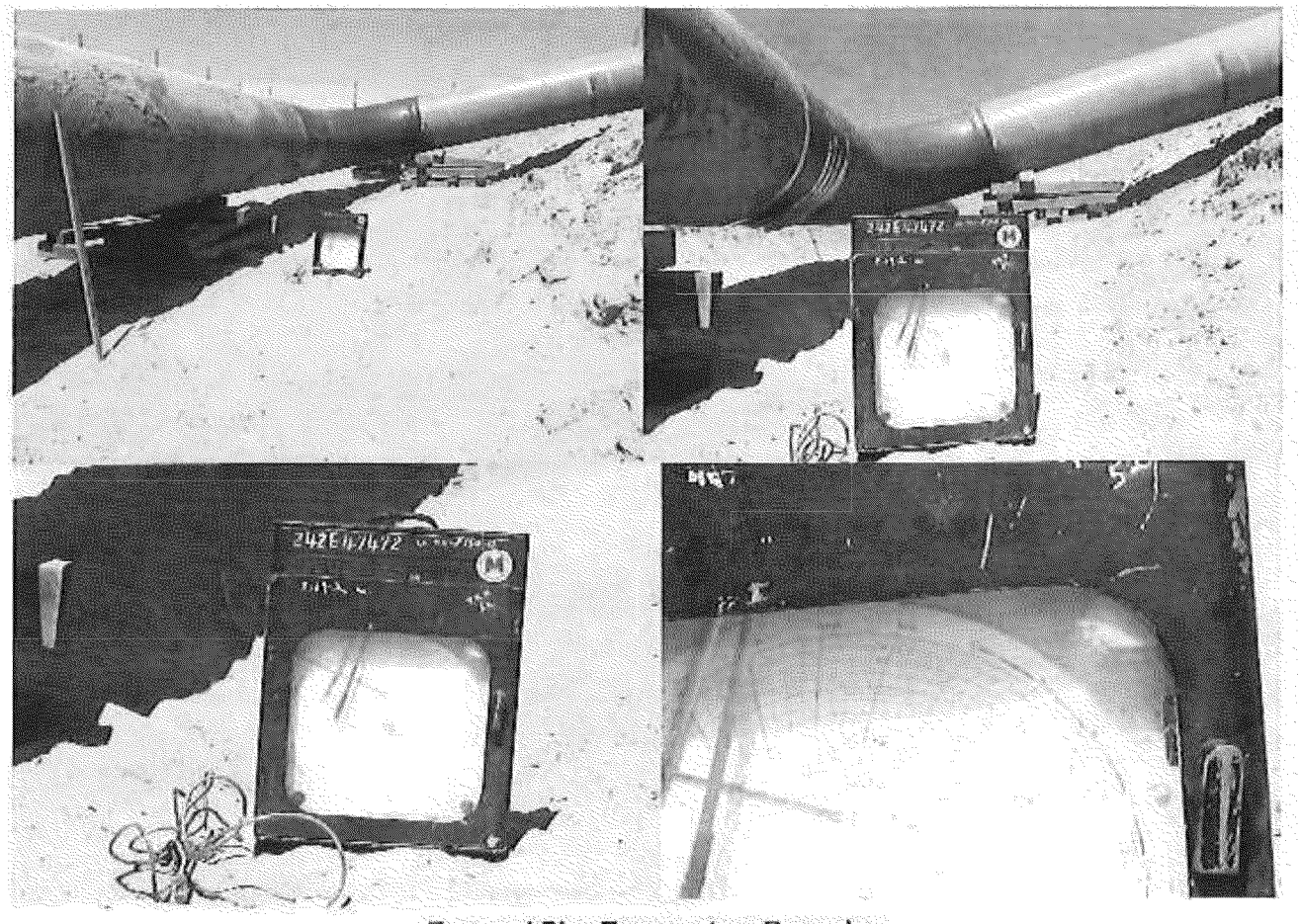
Exposed Test Headers and Piping

Test Pressure Pump

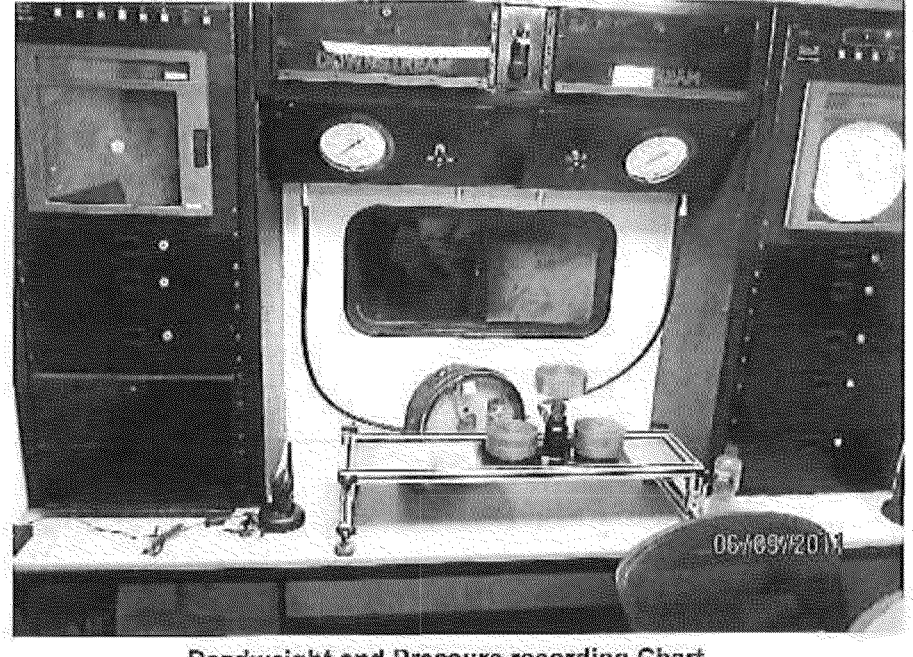


RCP

Buried Pipe Temperature Recorders



Exposed Pipe Temperature Recorder



Deadweight and Pressure recording Chart

MILBAR Hydro-Test, Incorporated

STROKE / PRESSURE LOG

Date: 6/8/11

Page: 1 of 2

Company & Contractor:	PG&E / SNELSON	Project:	PG&E Hydro Test Existing Lines
Contract Number:	FY12-112	Location:	Hinkley California
Pipe Description:	34 " O.D. 0.313 " W.T. X-52 Grade		
Section Number(s):	51	From: MP/STA	/ 42+97
To: MP/STA	/ 0+00	Length:	0.81 Mi.
Pressure Unit Location:	Sta. #4297	Pressure Unit Number:	PT930
Gallons/Stroke:	0.551		
Date & Time Start Pump:	6/8/11 2:07 PM	Pressure:	650
Date & Time Stop Pump:	6/8/11 2:38 PM	Pressure:	940

Time	Pressure (psig)	Strokes	Difference
2:07 PM	650	0	0
2:08 PM	660	18	18
2:09 PM	670	40	22
2:10 PM	680	61	21
2:11 PM	690	82	21
2:12 PM	700	104	22
2:14 PM	710	125	21
2:15 PM	720	147	22
2:16 PM	730	169	22
2:17 PM	740	190	21
2:18 PM	750	212	22
2:19 PM	760	233	21
2:20 PM	770	255	22
2:21 PM	780	276	21
2:22 PM	790	298	22
2:23 PM	800	319	21
2:24 PM	810	341	22
2:25 PM	820	362	21
2:26 PM	830	384	22
2:27 PM	840	407	23
2:28 PM	850	428	21
2:29 PM	860	450	22
2:30 PM	870	471	21
2:31 PM	880	493	22
2:32 PM	890	514	21
2:34 PM	900	537	23
2:35 PM	910	559	22
2:36 PM	920	580	21
2:37 PM	930	602	22

Time	Pressure (psig)	Strokes	Difference
2:38 PM	940	624	22

Log Continued: ☐ Yes ☒ No

Remarks:

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6-8-2011
Date

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6-8-11
Date

SB_GT&S_0502598

STROKE / PRESSURE PLOT

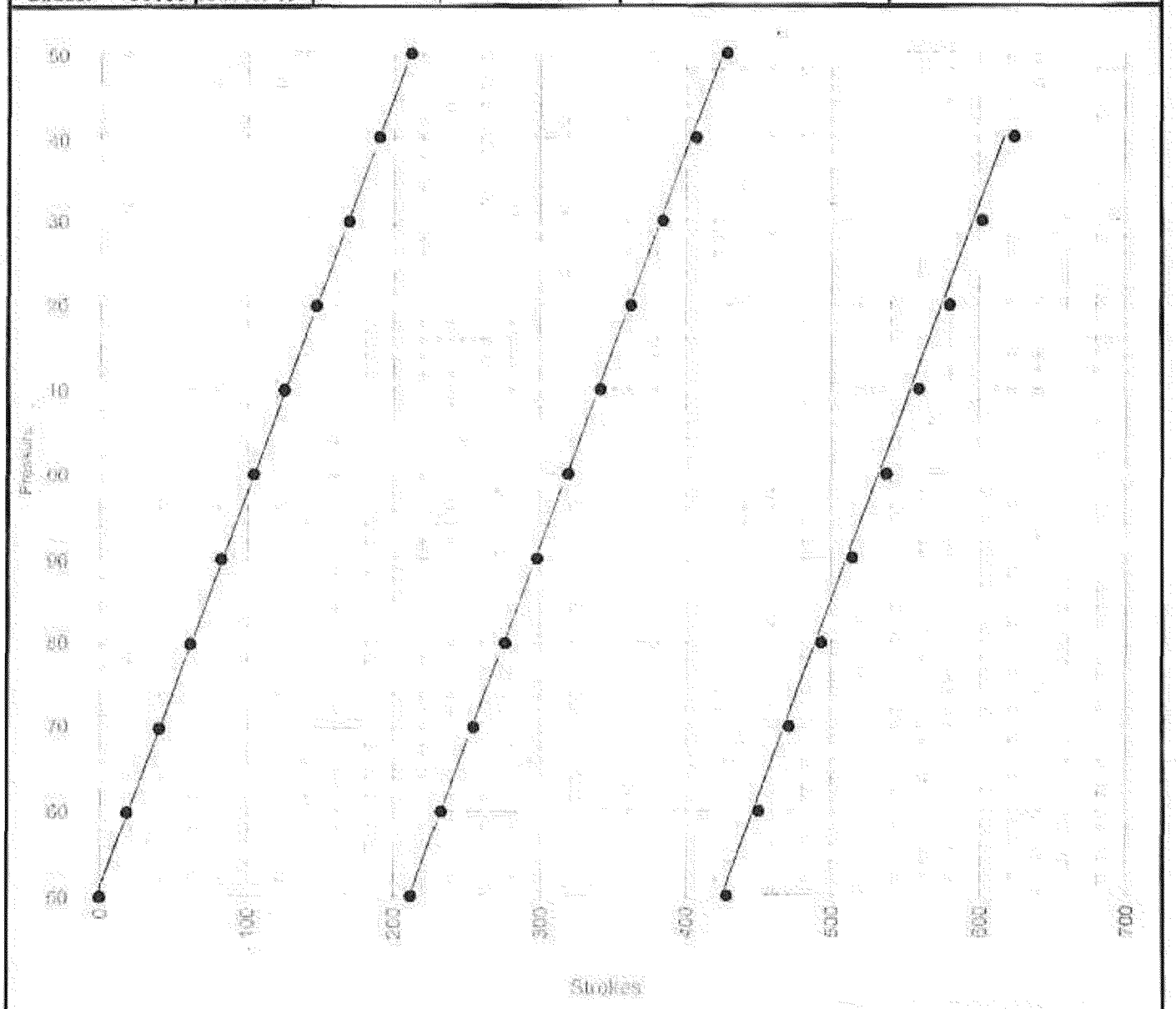
MILBAR Hydro-Test, Incorporated

Date: 06/08/11

Page: 2 of 2

Company & Contractor:	PG&E / SNELSON	Project:	PG&E Hydro Test Existing Lines
Contract Number:	FY12-112	Location:	Hinkley California
Pipe Description:	34 "O.D. 0.313 "W.T X-52 Grade		
Section Number(s):	51	From: MP/STA	/ 42+97
To: MP/STA	/ 0+00	Length:	0.81

Low Sta: 42+97 Ele: 1791.0	High Sta: 0+00 Ele 1804.0	Total Gallons Pumped:	344	Gallons/Stroke:	0.551
Stress: 51136 psi/98.3 %	Stress: 50829 psi/97.7 %				
Begin Sta: 42+97 Ele: 1791.0	End Sta: 0+00 Ele 1804.0	Strokes/PSI:	2.15	Gallons/PSI:	1.19
Stress: 51136 psi/98.3 %	Stress: 50829 psi/97.7 %				
TS Sta: 42+97 Ele: 1791.0	Deviation: Gals: 3.75 Gallons	Strokes/Min:	20.13	PSI/Min:	9.35
Stress: 51136 psi/98.3 %	Per Mile: 4.61 Gals/Mile				



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6-8-2011
Date

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SB_GT&S_0502599

MILBAR Hydro-Test, Incorporated

TEST LOG

Date: 6/8/2011
Page: 1 of 1

Company / Contractor:	PG&E / SNELSON	Project:	PG&E Hydro Test Existing Lines
Contract Number: FY12-112	Location: Hinkley California	Pipe Descriptio	34 " O.D. 0.3126 " W.T. X-52 Grade
Section Number(s): 51	From: MP/STA / 42+97	To: MP/STA / 00+00	Length: 0.81 Mi.
Pressure Unit Location: Sta. #4297	Pressure Unit #: PT930	Gallons / Stroke: 0.551	Strokes / 10psi: 21.52
Test Pressure Maximum: 893 psi	Test Pressure Minimum: 867 psi	Test Medium: water	Weather: sunny hot

Instruments	Dead Weight Gauge	Pressure	Temperature (Ambient)	Temperature (Pipe)	Temperature (Ground)	TEMP #52
Range	50-3000 #	0-3000	-40 -140	-20 - 120	-20 - 120	0 - 150
Manufacturer	CHANDLER	CHESSELL	CHESSELL	CHESSELL	CHESSELL	BARTON
Serial #	6106	04042809	04042809	04042809	04042809	242E-47
Certification	5/19/2011	5/20/2011	5/20/2011	5/20/2011	5/20/2011	5/18/2011

Date / Time Test Started: 6/8/2011 / 2:38 PM

Date / Time Test Ended: 6/8/2011 / 10:38 PM

Date	Time	Pressure (psig)	Temperature (°F) Ambient	Pipe	Ground	Remarks
6/8/2011	10:15 AM	123	82	78	76	
6/8/2011	12:35 PM	126	89	78	76	Start Pump
6/8/2011	1:07 PM	650	88	78	76	Stop Pump
6/8/2011	1:22 PM	650	90	79	76	
6/8/2011	1:38 PM	651	89	79	76	
6/8/2011	1:51 PM	651	90	79	76	
6/8/2011	2:07 PM	651	89	79	76	Start Pump
6/8/2011	2:38 PM	940	90	79	76	On Spike Test
6/8/2011	2:48 PM	940	92	79	76	
6/8/2011	2:58 PM	940	91	79	76	
6/8/2011	3:08 PM	940	92	80	76	Off Spike Test
6/8/2011	3:13 PM	940	92	80	76	Bleed to Test
6/8/2011	3:25 PM	930	91	80	76	
6/8/2011	3:31 PM	879	91	80	76	On Test
6/8/2011	3:45 PM	879	92	80	76	
6/8/2011	4:00 PM	880	93	80	76	
6/8/2011	4:15 PM	880	93	80	76	
6/8/2011	4:30 PM	880	93	80	76	
6/8/2011	4:45 PM	881	93	80	76	
6/8/2011	5:00 PM	881	93	79	76	
6/8/2011	5:15 PM	881	93	79	76	
6/8/2011	5:30 PM	882	93	79	76	
6/8/2011	5:45 PM	882	92	79	76	
6/8/2011	6:00 PM	882	92	79	76	

Date	Time	Pressure (psig)	Temperature (°F) Ambient	Pipe	Ground	Remarks
6/8/2011	6:15 PM	882	91	79	76	
6/8/2011	6:30 PM	882	91	79	76	
6/8/2011	6:45 PM	882	90	79	76	
6/8/2011	7:00 PM	882	89	79	76	
6/8/2011	7:15 PM	882	88	79	76	
6/8/2011	7:45 PM	882	86	79	76	
6/8/2011	8:00 PM	882	85	79	76	
6/8/2011	8:15 PM	881	84	79	76	
6/8/2011	8:30 PM	881	83	79	76	
6/8/2011	8:45 PM	881	81	79	76	
6/8/2011	9:00 PM	880	80	79	76	
6/8/2011	9:15 PM	880	79	79	76	
6/8/2011	9:30 PM	880	79	79	76	
6/8/2011	9:45 PM	880	78	79	76	
6/8/2011	10:00 PM	979	77	78	76	
6/8/2011	10:15 PM	879	77	78	76	
6/8/2011	10:30 PM	879	77	78	76	
6/8/2011	10:38 PM	879	77	78	76	Off Test
6/8/2011	10:53 PM	878	77	78	76	Depressure

Log Continued: ☐ Yes ☑ No

Remarks: TR#39 0-150 barton 242a-34945 5/18/2011 TR#103 0-150 barton 242e218022 5/18/2011 PR#15 0-3000 239674 5/18/2011 3:26 bleed 10 lbs for t3
13 ½ [illegible] 3:31 650-825 [illegible] Total

Section Accepted ☐ Yes P-V Plot ☑ Yes Section Ruptured ☐ Yes Section Leaking ☐ Yes

Redacted

Milbar Representative

6-8-2011
Date

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