



RCP, Inc

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

Redacted

July 12, 2011

Pacific Gas and Electric Company
3600 Adobe Rd
Petaluma, Ca 94954
Attention: Redacted
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	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		
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	956 psi
2	2,192 ft	34.000 in.	0.469 in.	API5L-X60, DSAW, Arc Weld, Steel	1,655 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	1,765 psi

Initial Test Conditions

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

Final Test Conditions

Pressure at Test Point:	878 psig	Date/Time:	6/8/11 10:53 PM	Pipe Temperature	
Ambient Temperature:	77.0 °F	Elevation @ Test Point:	1,791.0 ft	Unrestrained:	66.0 °F
Pressure @ High Point (Cal/Measure):	872 psig	Elevation @ High Point:	1,804.0 ft	Restrained:	78.0 °F
Pressure @ Low Point (Cal/Measure):	878 psig	Elevation @ Low Point:	1,791.0 ft	Location:	42+97
				Location:	00+00
				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	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
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		Comment	Bleed	Inject
1	6/8/11	2:07 PM	651 psig	92 °F	71 °F	79 °F			
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		Comment	Bleed	Inject
					Unrestrained	Restrained			
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							
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	97,759 gal				
Fwp 1		1.002880	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		1.002909	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	98,026 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							
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		1.000929		
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	194,056.44 gal 24,839,225 oz.
Vo Restrained	95,665 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)	96,037 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	204,268.13 gal 26,146,321 oz.	Vtp2	204,244.33 gal 26,143,274 oz.
1 °F Change	23.81 gal	3,047.20 oz.					



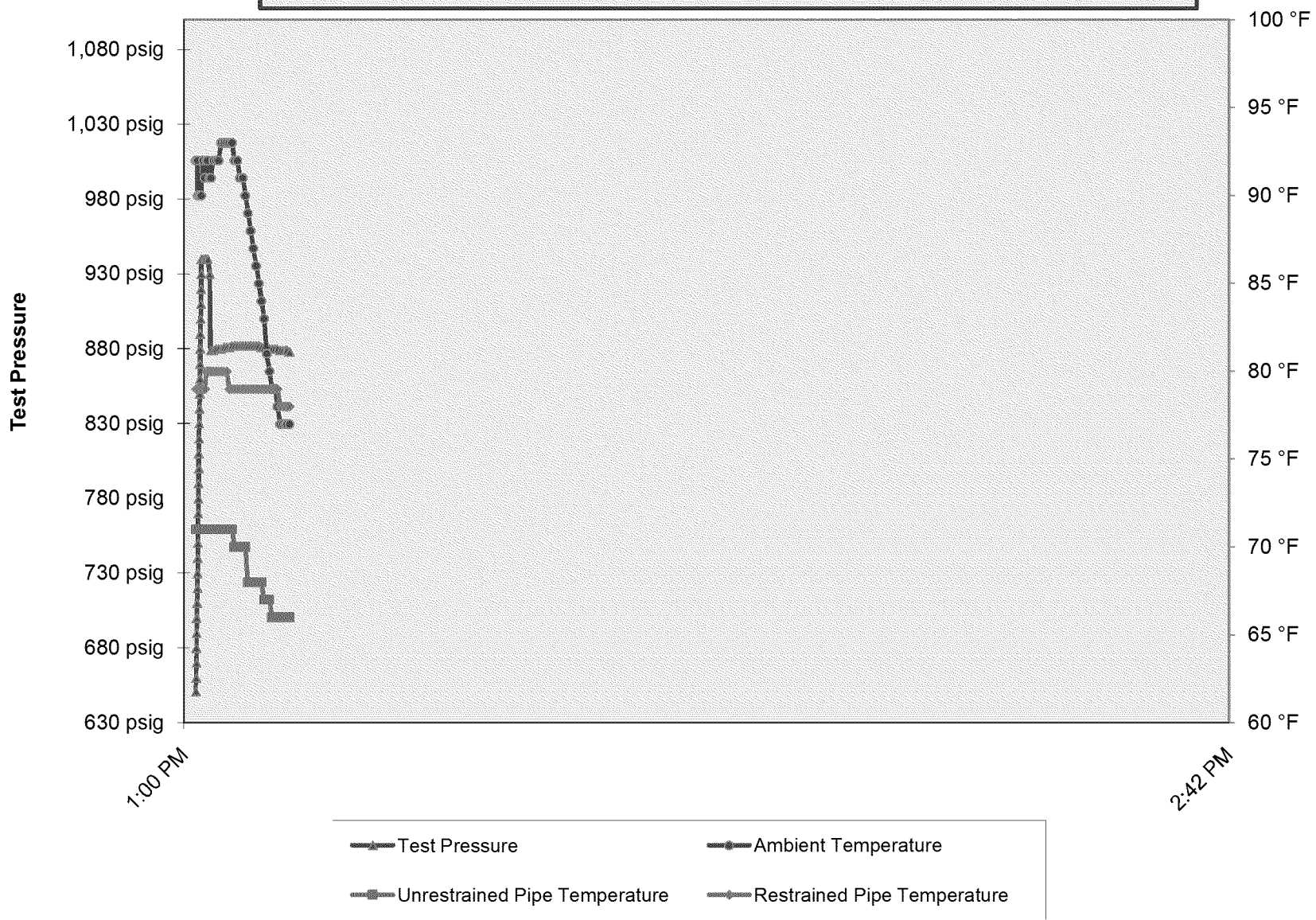
Hydrostatic Test Pipe Data Table

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

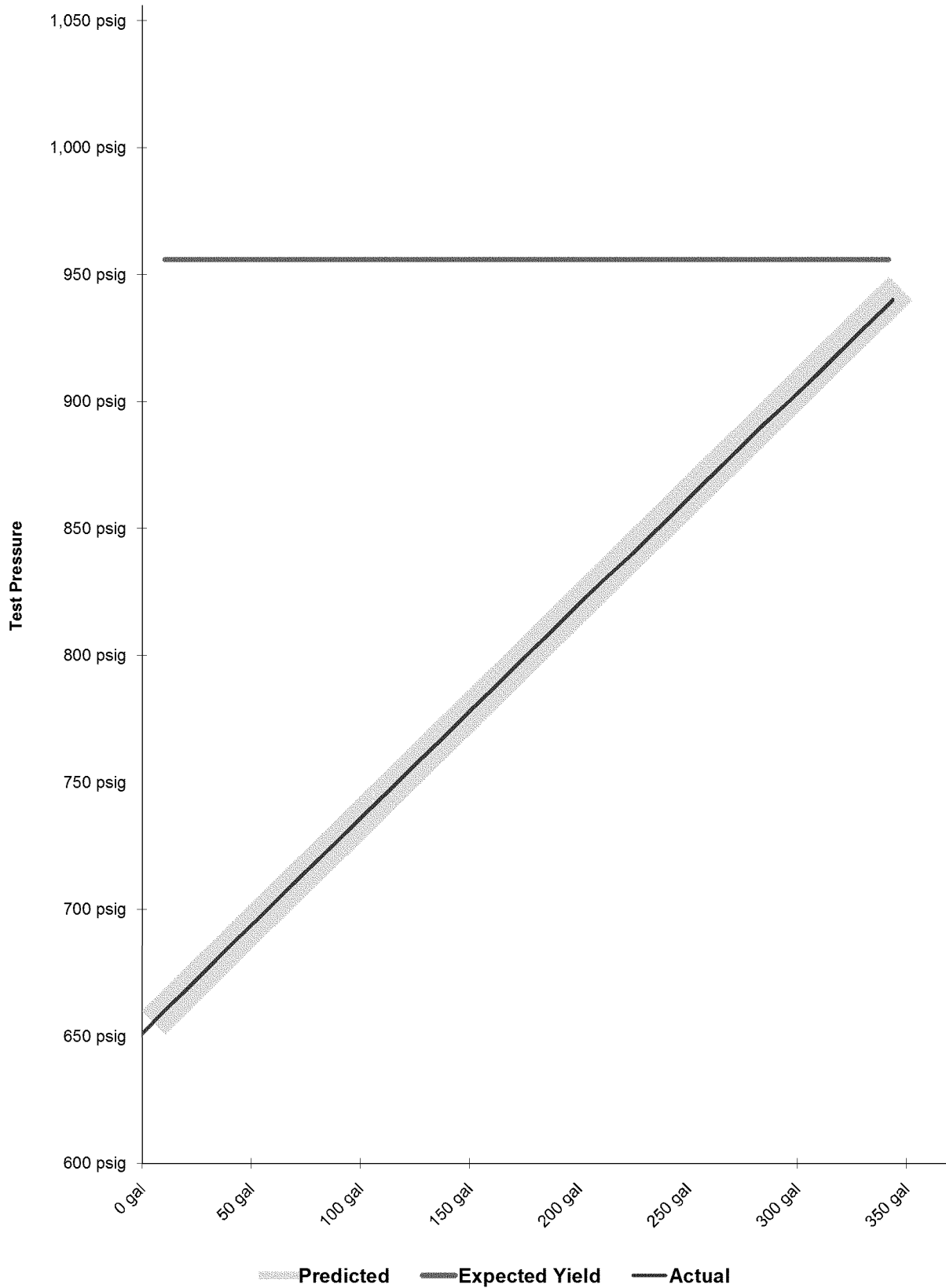
Hydrostatic Test Project Owner & Participants

Owner Company	Pacific Gas and Electric Company	Job Number
Address	3600 Adobe Rd Petaluma, Ca 94954 Attention: Redacted	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: Tommy Minter	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	

PG&E T-51 Line 300A MP 121.87 - 122.68

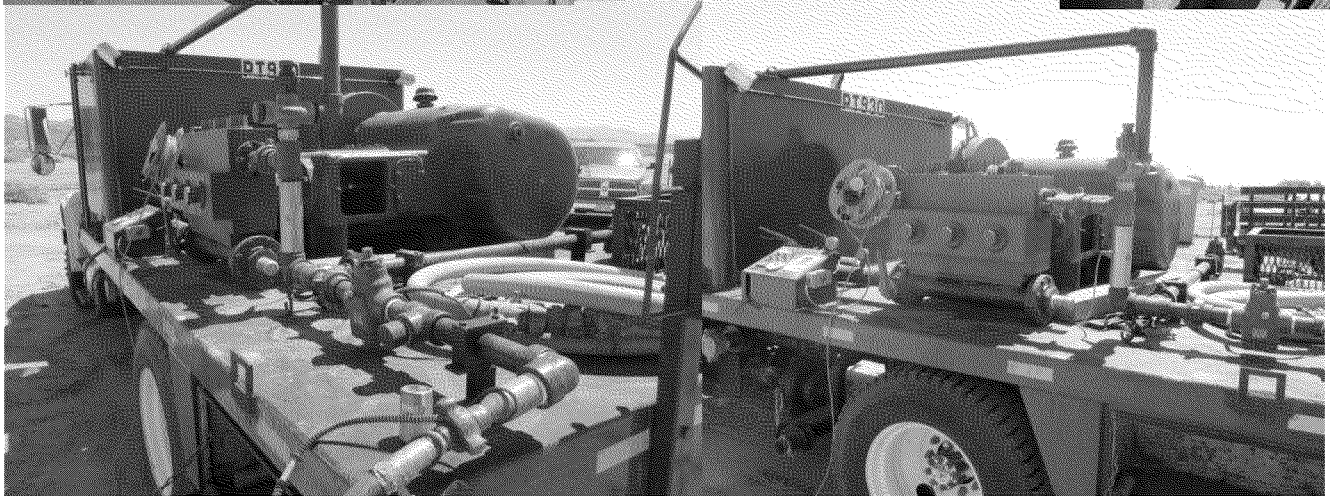


Spike Pressure Test
Stress Strain Curve -- PG&E T-51 Line 300A MP 121.87 - 122.68

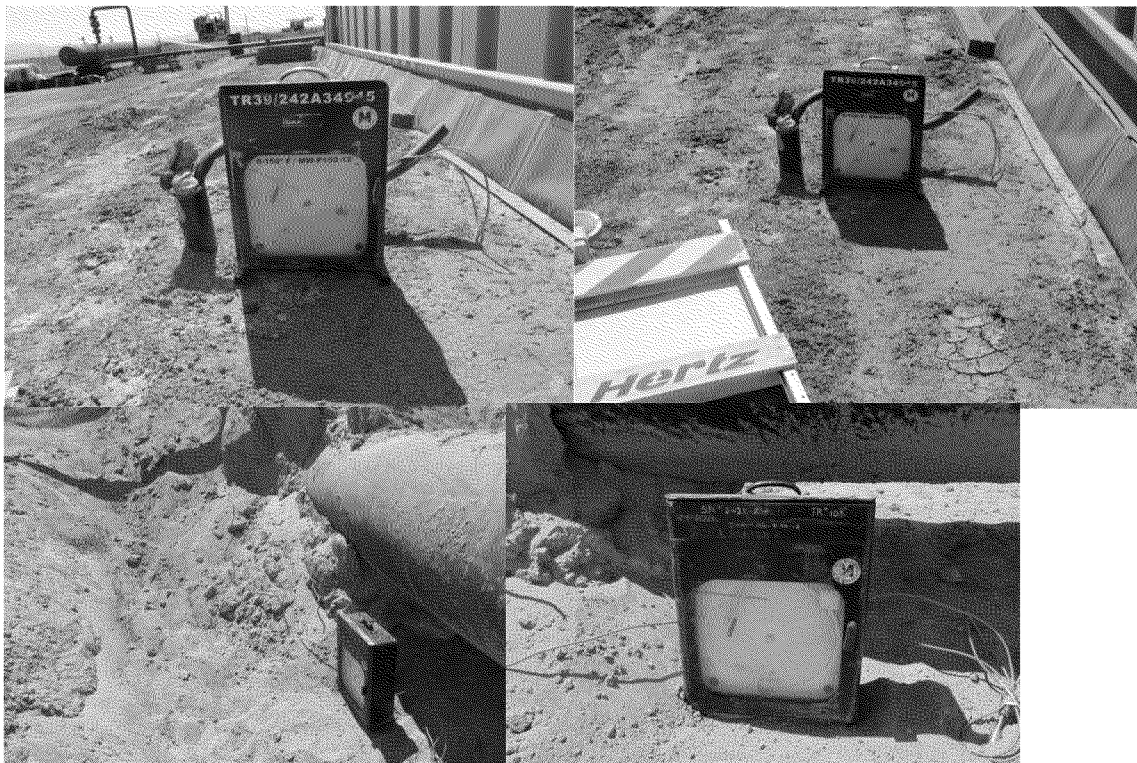




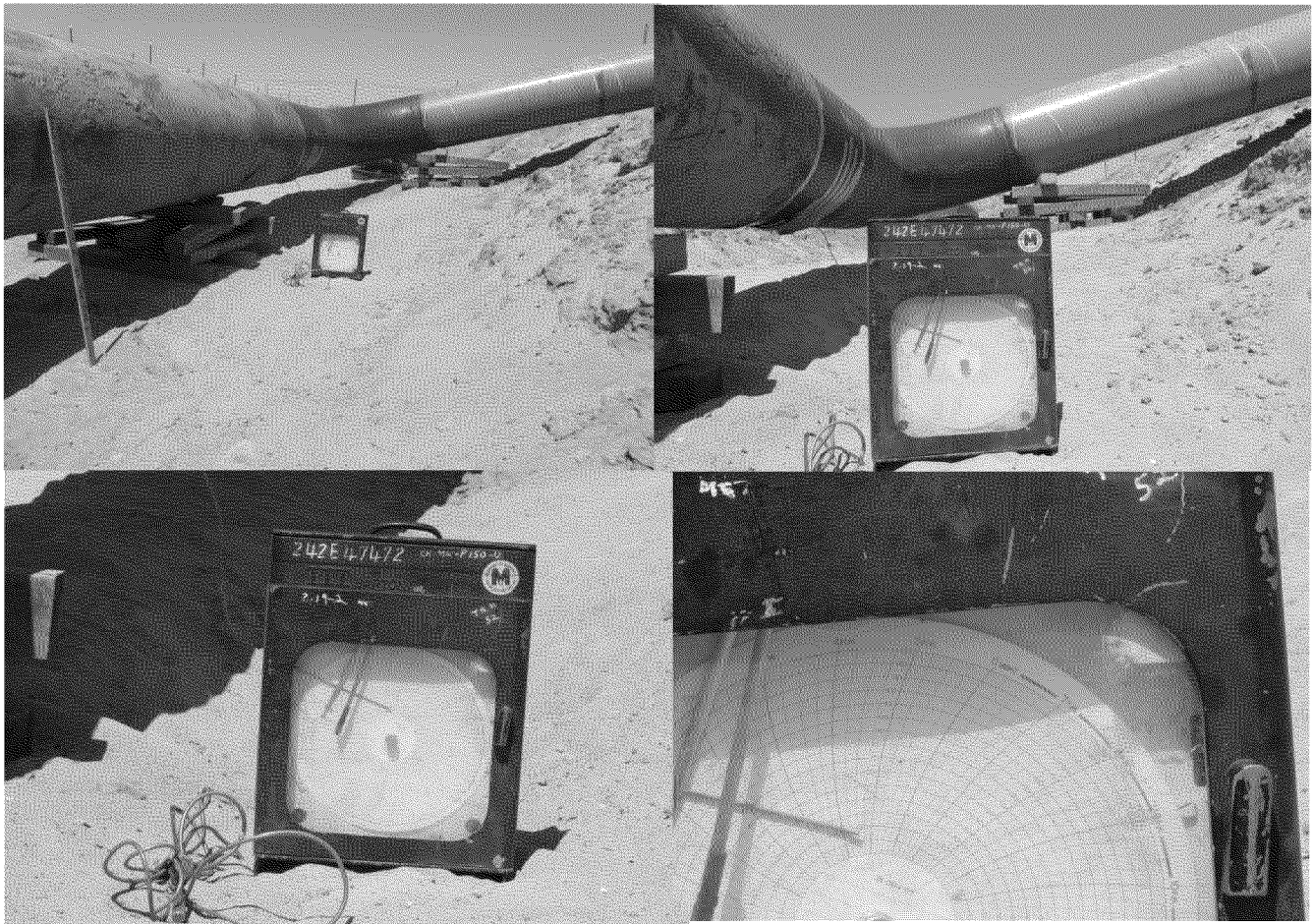
Exposed Test Headers and Piping



Test Pressure Pump



Buried Pipe Temperature Recorders



Exposed Pipe Temperature Recorder



Deadweight and Pressure recording Chart