



RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002

Redacted

8/24/2011

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

Test Contractor:	Milbar hydro-test inc -- FY12-112
Asset Owner:	Pacific Gas and Electric Company -- 414197338-T82
Construction Contractor:	Snelson -- 41474005 -T82
Test Section:	PG&E T-82 L-300B, MP 263.46 - 264.64
Test Date:	8/23/2011
Certificate Number:	RCP 61362 - T-82, L-300B, MP 263.46 - 264.64

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 inc 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 1030 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 8.38 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.38 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 971 psig and the established MAOP is 882 psig.

Pressure decreased 54 psi during the test. 12,480.00 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 4,935.43 ounces, loss, which is equivalent to a 0.92 °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 loss is attributed to the error characteristic of the temperature measurement instrumentation utilized.

Sincerely,

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Letter



Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	414197338-T82
Construction Co.	Snelson	Job Number	41474005-T82
Hydro. Test Co.	Milbar hydro-test inc	Project No.	FY12-112
Test Section	PG&E T-82 L-300B, MP 263.46 - 264.64		
File Name	RCP 61362 - T-82, L-300B, MP 263.46 - 264.64		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 1) Test Date: 23-Aug-11

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-82 L-300B, MP 263.46 - 264.64
 From: 61+95 To: 0+00

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	61 ft	34.000 in.	0.505 in.	API5L-X60, DSAW, Arc Weld, Steel	1,782 psi
2	35 ft	34.000 in.	0.375 in.	API5L-X65, DSAW, Arc Weld, Steel	1,434 psi
3	6,210 ft	34.000 in.	0.344 in.	API5L-X52, DSAW, Arc Weld, Steel	1,052 psi
4	40 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi
5	5 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi

Initial Test Conditions

Pressure at Test Point:	1,030 psig	Date/Time:	10:52:26 AM	Pipe Temperature	
Ambient Temperature:	80.0 °F	Elevation @ Test Point:	352.0 ft	Unrestrained:	85.0 °F
Pressure @ High Point (Cal/Measure):	1,025 psig	Elevation @ High Point:	363.0 ft	Restrained:	89.0 °F
Pressure @ Low Point (Cal/Measure):	1,030 psig	Elevation @ Low Point:	352.0 ft	Location:	61+95
				Location:	0+00
				Location:	61+95

Final Test Conditions

Pressure at Test Point:	976 psig	Date/Time:	7:15:26 PM	Pipe Temperature	
Ambient Temperature:	92.0 °F	Elevation @ Test Point:	352.0 ft	Unrestrained:	87.0 °F
Pressure @ High Point (Cal/Measure):	971 psig	Elevation @ High Point:	363.0 ft	Restrained:	90.0 °F
Pressure @ Low Point (Cal/Measure):	976 psig	Elevation @ Low Point:	352.0 ft	Location:	61+95
				Location:	0+00
				Location:	61+95

Total Fluid Injected:		Volume loss	
Total Fluid Withdrawn:	12480.00 fluid ounces		
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	(4,935.43) oz	loss	(0.0134)% (0.924) °F equivalent

Test Duration: 8.38 hours

Minimum Test Pressure:	965 psig	960 psig	965 psig
Maximum Test Pressure:	1,030 psig	1,025 psig	1,030 psig
% SMYS:		53.6%	97.9%
Test Segment Observed % SMYS	Minimum	53.6%	Maximum
			97%

Minimum Test Pressure (Calculated/Measured): 971 psig

Maximum Allowable Working Pressure: 882 psig (DOT Part 192 Test Factor = 1.10)

Were leaks observed?	No	Explain:
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Acceptable Hydrostatic Test?	Yes	<p>The test segment was subjected to a spike pressure test of 1030 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 8.38 hour test duration period.</p> <p>No leaks were observed during the test period. The test section included 6,210 feet of buried and 141 feet of exposed pipe. Pressure lost 54 psi during the test. The buried pipe segment gained 1°F fluid temperature and the exposed pipe segment gained 2°F.</p> <p>12,480.00 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 4,935.43 ounces, loss, which is equivalent to a 0.92 °F change in pipe temperature and within the error attributed to the temperature measurement instrumentation utilized.</p> <p>Test pressure did not remain steady even though no leaks were observed. The volumetric loss is attributed to the error characteristic of the temperature measurement instrumentation utilized.</p>
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Remarks

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8/24/2011



Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	414197338-T82
Construction Co.	Snelson	Job Number	41474005 -T82
Testing Co.	Milbar hydro-test inc	Project No.	FY12-112
Test Section	PG&E T-82 L-300B, MP 263.46 - 264.64		
File Name	RCP 61362 - T-82, L-300B, MP 263.46 - 264.64		

Date	8/23/2011	Test Log	
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Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
1	8/23/11	10:20 AM	714 psig	77 °F	84 °F	88 °F	Start Spike		
2	8/23/11	10:21 AM	724 psig	77 °F	84 °F	88 °F	Inject		2,256 oz.
3	8/23/11	10:22 AM	734 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
4	8/23/11	10:23 AM	744 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
5	8/23/11	10:24 AM	754 psig	77 °F	84 °F	88 °F	Inject		2,538 oz.
6	8/23/11	10:25 AM	764 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
7	8/23/11	10:26 AM	774 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
8	8/23/11	10:27 AM	784 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
9	8/23/11	10:28 AM	794 psig	77 °F	84 °F	88 °F	Inject		2,327 oz.
10	8/23/11	10:29 AM	804 psig	77 °F	84 °F	88 °F	Inject		2,538 oz.
11	8/23/11	10:30 AM	814 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
12	8/23/11	10:31 AM	824 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
13	8/23/11	10:32 AM	834 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
14	8/23/11	10:33 AM	844 psig	77 °F	84 °F	88 °F	Inject		2,538 oz.
15	8/23/11	10:34 AM	854 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
16	8/23/11	10:35 AM	864 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
17	8/23/11	10:36 AM	874 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
18	8/23/11	10:37 AM	884 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
19	8/23/11	10:38 AM	894 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
20	8/23/11	10:39 AM	904 psig	77 °F	84 °F	88 °F	Inject		2,327 oz.
21	8/23/11	10:40 AM	914 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
22	8/23/11	10:41 AM	924 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
23	8/23/11	10:42 AM	934 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
24	8/23/11	10:43 AM	944 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
25	8/23/11	10:44 AM	954 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
26	8/23/11	10:45 AM	964 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
27	8/23/11	10:46 AM	974 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
28	8/23/11	10:47 AM	984 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
29	8/23/11	10:48 AM	994 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
30	8/23/11	10:49 AM	1,004 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
31	8/23/11	10:49 AM	1,014 psig	77 °F	84 °F	88 °F	Inject		2,397 oz.
32	8/23/11	10:50 AM	1,024 psig	77 °F	84 °F	88 °F	Inject		2,468 oz.
33	8/23/11	10:51 AM	1,030 psig	77 °F	84 °F	88 °F	Inject		1,410 oz.
34	8/23/11	10:52 AM	1,030 psig	80 °F	85 °F	89 °F	On Test		
35	8/23/11	11:02 AM	1,030 psig	80 °F	85 °F	89 °F			
36	8/23/11	11:12 AM	1,030 psig	81 °F	85 °F	89 °F			
37	8/23/11	11:22 AM	1,030 psig	82 °F	85 °F	89 °F	End Spike		
38	8/23/11	11:23 AM	1,020 psig	82 °F	85 °F	89 °F	Bleed		1,920 oz.
39	8/23/11	11:24 AM	1,010 psig	83 °F	85 °F	89 °F	Bleed		1,920 oz.
40	8/23/11	11:25 AM	1,000 psig	83 °F	85 °F	89 °F	Bleed		1,920 oz.
41	8/23/11	11:26 AM	990 psig	83 °F	85 °F	89 °F	Bleed		1,920 oz.
42	8/23/11	11:27 AM	980 psig	83 °F	85 °F	89 °F	Bleed		1,920 oz.
43	8/23/11	11:28 AM	970 psig	83 °F	85 °F	89 °F	Bleed		1,920 oz.



Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	414197338-T82
Construction Co.	Snelson	Job Number	41474005-T82
Hydro. Test Co.	Milbar hydro-test inc	Project No.	FY12-112
Test Section	PG&E T-82 L-300B, MP 263.46 - 264.64	WATER	
File Name	RCP 61362 - T-82, L-300B, MP 263.46 - 264.64		

Description	Segment				
	1	2	3	4	5
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Unrestrained	Unrestrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.
Wall Thickness	0.505 in.	0.375 in.	0.344 in.	0.500 in.	0.500 in.
Inside Diameter	32.990 in.	33.250 in.	33.312 in.	33.000 in.	33.000 in.
Spec./Grade	API5L-X60	API5L-X65	API5L-X52	API5L-X65	API5L-X65
Length Unrestrained	61 ft	35 ft		40 ft	5 ft
Length Restrained			6,210 ft		
Temperature -- On Test	85 °F	85 °F	89.0 °F	85.0 °F	85.0 °F
Temperature -- End of Test	87 °F	87 °F	90.0 °F	87.0 °F	87.0 °F
Pressure -- On Test	1,030 psig	1,030 psig	1,030 psig	1,030 psig	1,030 psig
Pressure -- End of Test	976 psig	976 psig	976 psig	976 psig	976 psig

Unrestrained Pipe						
Sum:	Vo			Vtp1		
		6,286.79 gal			6,308.71 gal	
		804,710 oz.			807,514 oz.	
Vo Unrestrained	2,709 gal	1,579 gal		1,777 gal	222 gal	
Fwp 1	1.003157	1.003157		1.003157	1.003157	
Fpp 1	1.002804	1.003805		1.002833	1.002833	
Fpt 1	1.000455	1.000455		1.000455	1.000455	
Fwt 1	1.003192	1.003192		1.003192	1.003192	
Fpwt 1 = Fpt/Fwt	0.997272	0.997272		0.997272	0.997272	
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,717.39 gal	1,585.41 gal		1,783.03 gal	222.88 gal	
Fwp 2	1.002991	1.002991		1.002991	1.002991	
Fpp 2	1.002657	1.003606		1.002684	1.002684	
Fpt 2	1.000491	1.000491		1.000491	1.000491	
Fwt 2	1.003557	1.003557		1.003557	1.003557	
Fpwt = Fpt/Fwt	0.996945	0.996945		0.996945	0.996945	
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,715.65 gal	1,584.32 gal		1,781.88 gal	222.74 gal	

Restrained Pipe						
Sum:	Vo			Vtp1		
		281,159.11 gal			281,928.20 gal	
		35,988,366 oz.			36,086,809 oz.	
Vo Unrestrained			281,159 gal			
Fwp 1			1.003157			
Fpp 1			1.003130			
Fpt 1			1.000351			
Fwt 1			1.003903			
Fpwt 1 = Fpt/Fwt			0.996461			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			281,928 gal			
Fwp 2			1.002991			
Fpp 2			1.002975			
Fpt 2			1.000363			
Fwt 2			1.004064			
Fpwt = Fpt/Fwt			0.996314			
Vtp = Vo(Fwp)(Fpp)(Fpwt)			281,796 gal			

Combined Pipe						
Sum:	Vo			Vtp1		
		287,445.91 gal			288,236.90 gal	
		36,793,076 oz.			36,894,323 oz.	
						288,100.84 gal
						36,876,908 oz.



Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	414197338-T82
Construction Co.	Snelson	Job Number	41474005 -T82
Hydro. Test Co.	Milbar hydro-test inc	Project No.	FY12-112
Test Section	PG&E T-82 L-300B, MP 263.46 - 264.64	WATER	
File Name	RCP 61362 - T-82, L-300B, MP 263.46 - 264.64		

General Pipe Data

Description	Segment				
	1	2	3	4	5
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Unrestrained	Unrestrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.
Wall Thickness	0.505 in.	0.375 in.	0.344 in.	0.500 in.	0.500 in.
Inside Diameter	32.990 in.	33.250 in.	33.312 in.	33.000 in.	33.000 in.
Spec./Grade	API5L-X60	API5L-X65	API5L-X52	API5L-X65	API5L-X65
Length Unrestrained	61.00 ft	35.00 ft		40 ft	5 ft
Length Restrained			6,210 ft		
Temperature – On Test	85 °F	85 °F	89 °F	85 °F	85 °F
Temperature – End of Test	86 °F	86 °F	90 °F	86 °F	86 °F
Pressure – On Test	1,003 psig	1,003 psig	1,003 psig	1,003 psig	1,003 psig
Pressure – End of Test	1,003 psig	1,003 psig	1,003 psig	1,003 psig	1,003 psig

Unrestrained Pipe

Sum:	Vo	6,286.79 gal 804,710 oz.	Vtp1	6,307.68 gal 807,383 oz.	Vtp2	6,306.65 gal 807,252 oz.
Vo Unrestrained	2,709 gal	1,579 gal	1,777 gal	222 gal		
Fwp 1	1.003074	1.003074	1.003074	1.003074		
Fpp 1	1.002730	1.003706	1.002758	1.002758		
Fpt 1	1.000455	1.000455	1.000455	1.000455		
Fwt 1	1.003192	1.003192	1.003192	1.003192		
Fpwt 1 = Fpt/Fwt	0.997272	0.997272	0.997272	0.997272		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,716.96 gal	1,585.12 gal	1,782.75 gal	222.84 gal		
Fwp 2	1.003074	1.003074	1.003074	1.003074		
Fpp 2	1.002730	1.003706	1.002758	1.002758		
Fpt 2	1.000473	1.000473	1.000473	1.000473		
Fwt 2	1.003373	1.003373	1.003373	1.003373		
Fpwt = Fpt/Fwt	0.997110	0.997110	0.997110	0.997110		
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,716.52 gal	1,584.87 gal	1,782.46 gal	222.81 gal		

Restrained Pipe

Sum:	Vo	281,159.11 gal 35,988,366 oz.	Vtp1	281,882.58 gal 36,080,970 oz.	Vtp2	281,841.86 gal 36,075,758 oz.
Vo Restrained		281,159 gal				
Fwp 1		1.003074				
Fpp 1		1.003051				
Fpt 1		1.000351				
Fwt 1		1.003903				
Fpwt 1 = Fpt/Fwt		0.996461				
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		281,883 gal				
Fwp 2		1.003074				
Fpp 2		1.003054				
Fpt 2		1.000363				
Fwt 2		1.004064				
Fpwt = Fpt/Fwt		0.996314				
Vtp = Vo(Fwp)(Fpp)(Fpwt)		281,842 gal				

Combined Pipe

Sum:	Vo	287,445.91 gal 36,793,076 oz.	Vtp1	288,190.26 gal 36,888,353 oz.	Vtp2	288,148.51 gal 36,883,010 oz.
1 °F Change	41.75 gal	5,343.54 oz.				



Hydrostatic Test Pipe Data Table

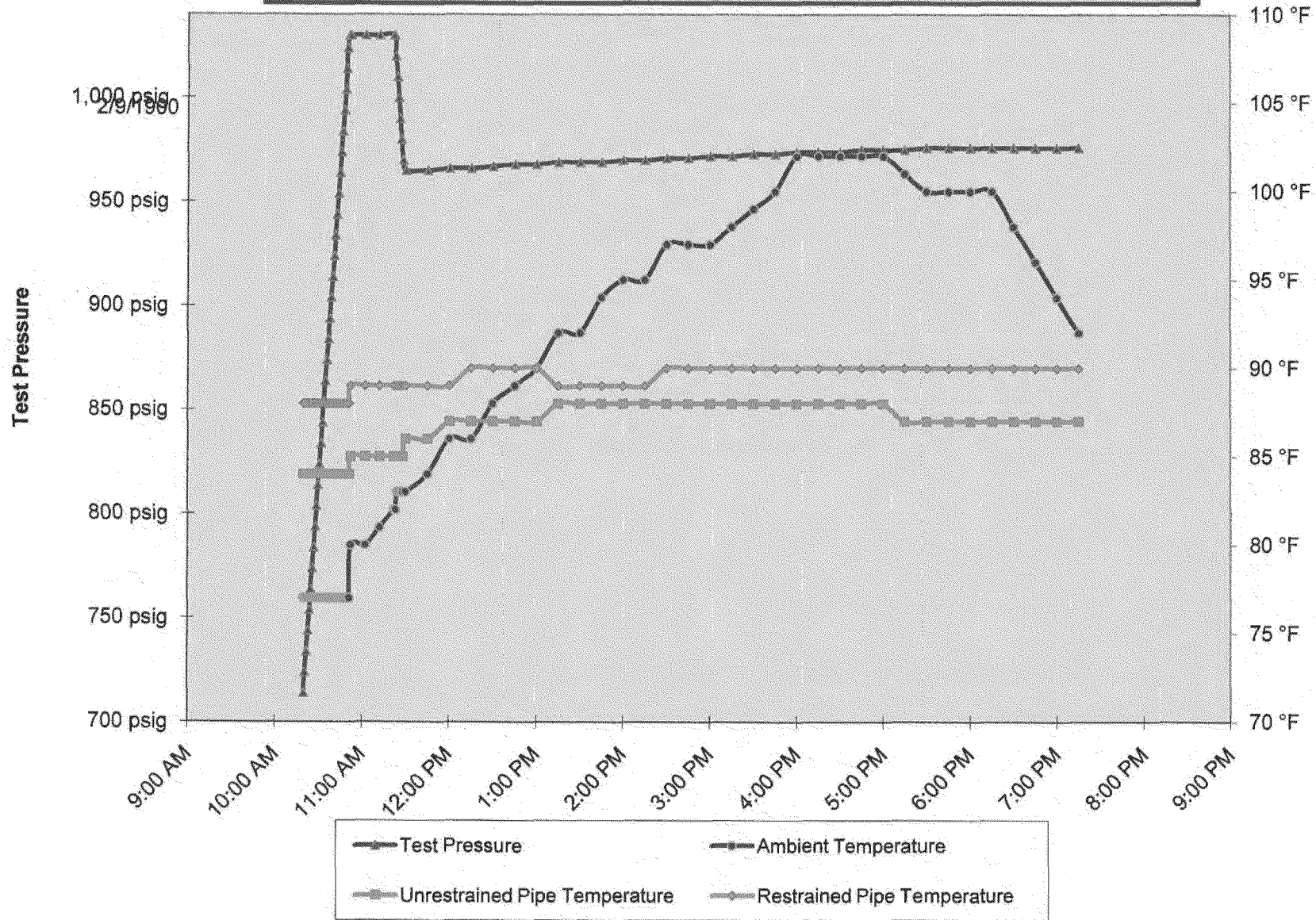
Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	61 ft	Unrestrained	34.000 in.	0.5050 in.	API5L-X60	1,782 psig	Steel	Arc Weld	DSAW
2	35 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X65	1,434 psig	Steel	Arc Weld	DSAW
3	6,210 ft	Restrained	34.000 in.	0.3440 in.	API5L-X52	1,052 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	5 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW

Hydrostatic Test Project Owner & Participants

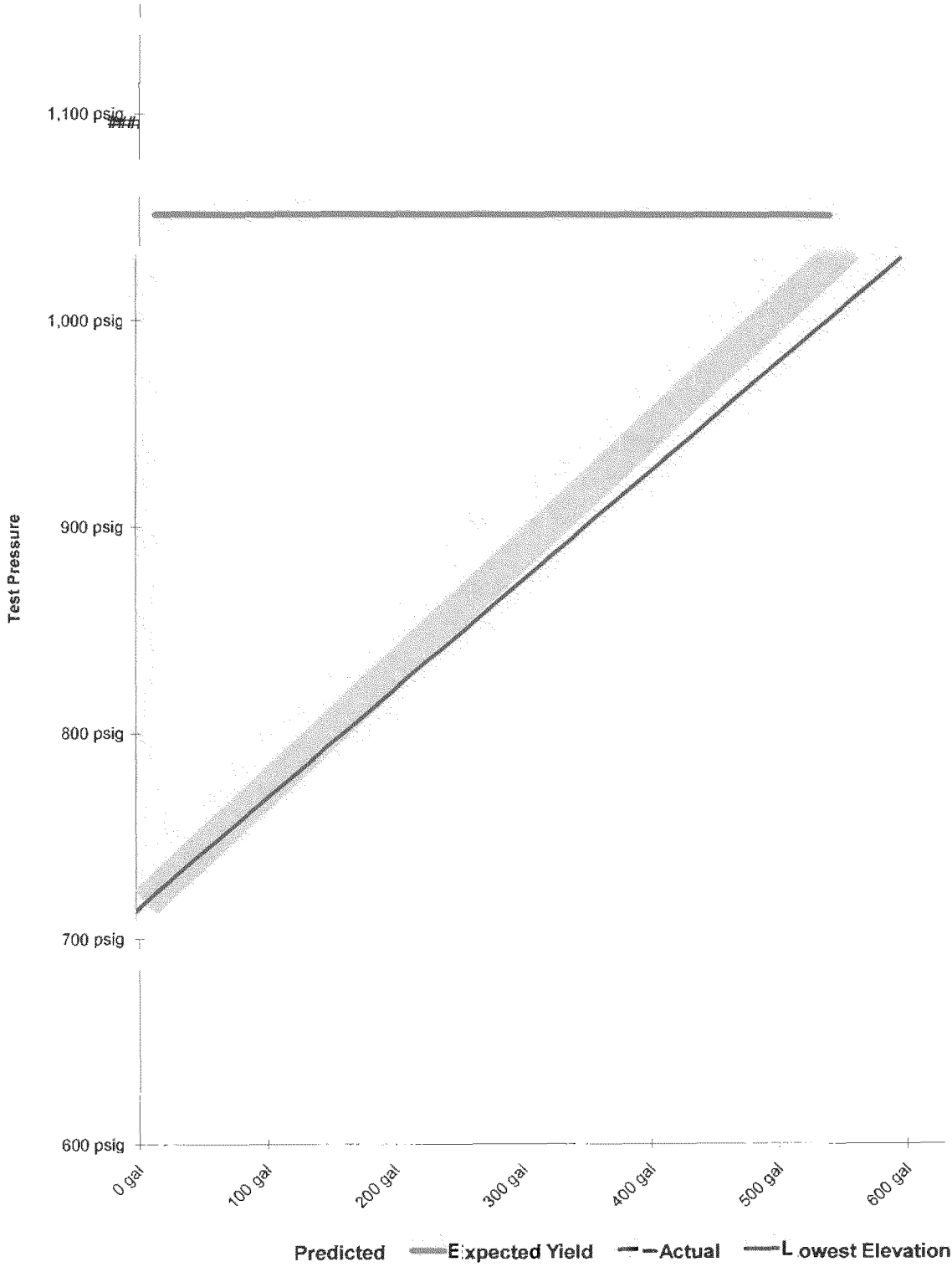
Owner Company	Pacific Gas and Electric Company	Job Number
Address	350 N. Wiget Walnut Creek, CA 94598 Attention: Redacted	414197338-T82
Construction Company	Snelson	Job Number
Address	601 West State Street Sedro-Woolley, WA 98284 Attention: Redacted	41474005 -T82
Hydrostatic Test Co.	Milbar hydro-test inc	Project No.
Address	P O Box 7701 Shreveport, La. 71137-7701	FY12-112
Test Section	PG&E T-82 L-300B, MP 263.46 - 264.64 From: 61+95 To: 0+00	
File Name	RCP 61362 - T-82, L-300B, MP 263.46 - 264.64	

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	8/23/11 10:52 AM	Elevation at Test Point	352 ft	Min. Required Test Press At Test Point (1)	951.77 psig	Max. Allowable Test Press at Test Point (4)	1,035.00 psig
Time and Date Test Ended	8/23/11 7:15 PM	Max. Elevation in Test Section	363 ft	Min. Indicated Test Pressure (2)	965.00 psig	Max. Indicated Test Pressure (5)	1,030.00 psig
Actual Duration of Test	8 hours 23 minutes	Min. Elevation in Test Section	352 ft	Min. Test Pressure at Max. Elevation (3)	960.23 psig	Max. Test Pressure at Min. Elevation (6)	1,030.00 psig

PG&E T-82 L-300B, MP 263.46 - 264.64



Spike Pressure Test
Stress Strain Curve -- PG&E T-82 L-300B, MP 263.46 - 264.64





T-82 Test Head



T-82 Test Head



T-82 Unrestrained & Alt Rest. Temp



T-82 Restrained Temp