



**RCP, Inc**

801 Louisiana, Ste.200  
Houston, Texas 77002

Redacted

November 15, 2011

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

Test Contractor:	Milbar hydro-test inc. -- FY12-112
Asset Owner:	Pacific Gas and Electric Company -- 41587446
Construction Contractor:	Snelson -- 41474005 -T118 A
Test Section:	PG&E T-118 A , L-300A , MP-239.57 - 241.6
Test Date:	November 13, 2011
Certificate Number:	RCP 61362 - T-118 A, L-300A, MP- 239.57 - 241.6

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 2).

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.25 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 1015 psig and the MAOP per 49 CFR Part 192, Subpart J can be as high as 812 psig. The MAOP established by this test is sufficient to qualify for Pacific Gas and Electric Company's desired MAOP of 803 psig.

Pressure increased 7 psi during the test. 640.00 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 1,245.12 ounces, gain, which is equivalent to a 0.64 °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



### Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41587446
Construction Co.	Snelson	Job Number	41474005-T118 A
Hydro. Test Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-118 A, L-300A, MP-239.57 - 241.6		
File Name	RCP 61362 - T-118 A, L-300A, MP- 239.57 - 241.6		

#### Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 2) Test Date: 13-Nov-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-118 A, L-300A, MP-239.57 - 241.6	
From:	0+00	To: 106+78

#### Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	128 ft	34.000 in.	0.375 in.	API5L-X65, DSAW, Arc Weld, Steel	1,434 psi
2	10,371 ft	34.000 in.	0.375 in.	API5L-X52, DSAW, Arc Weld, Steel	1,147 psi
3	338 ft	34.000 in.	0.500 in.	API5L-X46, DSAW, Arc Weld, Steel	1,353 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:	1,015 psig	Date/Time:	11/13/11 9:29 AM	Pipe Temperature	
Ambient Temperature:	42.0 °F	Elevation @ Test Point:	4,319.0 ft	Unrestrained:	44.0 °F
Pressure @ High Point (Cal/Measure):	1,015 psig	Elevation @ High Point:	4,319.0 ft	Restrained:	49.0 °F
Pressure @ Low Point (Cal/Measure):	1,132 psig	Elevation @ Low Point:	4,050.0 ft	Location:	0+00
				Location:	0+00
				Location:	106+78

#### Final Test Conditions

Pressure at Test Point:	1,022 psig	Date/Time:	11/13/11 5:44 PM	Pipe Temperature	
Ambient Temperature:	42.0 °F	Elevation @ Test Point:	4,319.0 ft	Unrestrained:	47.0 °F
Pressure @ High Point (Cal/Measure):	1,022 psig	Elevation @ High Point:	4,319.0 ft	Restrained:	50.0 °F
Pressure @ Low Point (Cal/Measure):	1,139 psig	Elevation @ Low Point:	4,050.0 ft	Location:	0+00
				Location:	0+00
				Location:	106+78

Total Fluid Injected:

Total Fluid Withdrawn: 640.00 fluid ounces

#### Volume gain

Net Change in Volume of the Test Section ± (+ Gain, - Loss): 1,245.12 oz gain 0.0020% 0.638 °F equivalent

Test Duration: 8.25 hours

Minimum Test Pressure:	1,015 psig	Maximum Test Pressure:	1,023 psig	% SMYS:	53.5%
Test Point	1,015 psig	Test Point	1,023 psig	Test Segment Observed % SMYS:	53.5%
Max Elevation	1,015 psig	Min Elevation	1,140 psig	Minimum	53.5%
Max Elevation	1,023 psig	Min Elevation	1,140 psig	Maximum	99.3%
% SMYS:	53.5%				99.3%

Minimum Test Pressure (Calculated/Measured): 1,015 psig

Maximum Allowable Operating Pressure: DOT Part 192 Test Factor= 1.25 812 psig

The MAOP established by this test is sufficient to qualify for Pacific Gas and Electric Company's desired MAOP of 803 psig.

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	No leaks were observed during the test period. The test section included 10,709 feet of buried and 191 feet of exposed pipe. Pressure gained 7 psi during the test. The buried pipe segment gained 1°F fluid temperature and the exposed pipe segment gained 3°F.  640.00 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 1,245.12 ounces, gain, which is equivalent to a 0.64 °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

15-Nov-11



# Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41587446
Construction Co.	Snelson	Job Number	41474005-T118 A
Testing Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-118 A , L-300A , MP-239.57 - 241.6		
File Name	RCP 61362 - T-118 A, L-300A, MP- 239.57 - 241.6		

Date	13-Nov-11	<b>Test Log</b>		
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Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
1	11/13/11	8:58 AM	753 psig	42 °F	44 °F	49 °F			
2	11/13/11	8:59 AM	763 psig	42 °F	44 °F	49 °F	Inject		3,525 oz.
3	11/13/11	9:00 AM	773 psig	42 °F	44 °F	49 °F	Inject		4,019 oz.
4	11/13/11	9:01 AM	783 psig	42 °F	44 °F	49 °F	Inject		4,089 oz.
5	11/13/11	9:02 AM	793 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
6	11/13/11	9:03 AM	803 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
7	11/13/11	9:04 AM	813 psig	42 °F	44 °F	49 °F	Inject		4,019 oz.
8	11/13/11	9:05 AM	823 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
9	11/13/11	9:06 AM	833 psig	42 °F	44 °F	49 °F	Inject		3,948 oz.
10	11/13/11	9:07 AM	843 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
11	11/13/11	9:08 AM	853 psig	42 °F	44 °F	49 °F	Inject		4,019 oz.
12	11/13/11	9:09 AM	863 psig	42 °F	44 °F	49 °F	Inject		3,948 oz.
13	11/13/11	9:10 AM	873 psig	42 °F	44 °F	49 °F	Inject		3,948 oz.
14	11/13/11	9:11 AM	883 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
15	11/13/11	9:12 AM	893 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
16	11/13/11	9:13 AM	903 psig	42 °F	44 °F	49 °F	Inject		3,948 oz.
17	11/13/11	9:14 AM	913 psig	42 °F	44 °F	49 °F	Inject		3,596 oz.
18	11/13/11	9:15 AM	923 psig	42 °F	44 °F	49 °F	Inject		4,160 oz.
19	11/13/11	9:16 AM	933 psig	42 °F	44 °F	49 °F	Inject		4,089 oz.
20	11/13/11	9:17 AM	943 psig	42 °F	44 °F	49 °F	Inject		3,807 oz.
21	11/13/11	9:18 AM	953 psig	42 °F	44 °F	49 °F	Inject		4,089 oz.
22	11/13/11	9:19 AM	963 psig	42 °F	44 °F	49 °F	Inject		3,878 oz.
23	11/13/11	9:20 AM	973 psig	42 °F	44 °F	49 °F	Inject		3,596 oz.
24	11/13/11	9:21 AM	983 psig	42 °F	44 °F	49 °F	Inject		4,301 oz.
25	11/13/11	9:22 AM	993 psig	42 °F	44 °F	49 °F	Inject		3,807 oz.
26	11/13/11	9:23 AM	1,003 psig	42 °F	44 °F	49 °F	Inject		3,948 oz.
27	11/13/11	9:24 AM	1,013 psig	42 °F	44 °F	49 °F	Inject		4,019 oz.
28	11/13/11	9:25 AM	1,015 psig	42 °F	44 °F	49 °F	Inject		423 oz.
29	11/13/11	9:29 AM	1,015 psig	42 °F	44 °F	49 °F	On Test		
30	11/13/11	9:44 AM	1,015 psig	42 °F	44 °F	49 °F			
31	11/13/11	9:59 AM	1,015 psig	42 °F	45 °F	49 °F			
32	11/13/11	10:14 AM	1,016 psig	42 °F	45 °F	49 °F			
33	11/13/11	10:29 AM	1,016 psig	43 °F	45 °F	49 °F			
34	11/13/11	10:44 AM	1,016 psig	44 °F	46 °F	49 °F			
35	11/13/11	10:59 AM	1,017 psig	44 °F	47 °F	49 °F			
36	11/13/11	11:14 AM	1,017 psig	45 °F	47 °F	49 °F			
37	11/13/11	11:29 AM	1,017 psig	47 °F	49 °F	49 °F			
38	11/13/11	11:44 AM	1,018 psig	48 °F	50 °F	49 °F			
39	11/13/11	11:59 AM	1,018 psig	49 °F	50 °F	49 °F			
40	11/13/11	12:14 PM	1,018 psig	49 °F	50 °F	49 °F			
41	11/13/11	12:29 PM	1,018 psig	49 °F	51 °F	49 °F			
42	11/13/11	12:44 PM	1,020 psig	49 °F	51 °F	49 °F			
43	11/13/11	12:59 PM	1,020 psig	50 °F	51 °F	49 °F			
44	11/13/11	1:14 PM	1,020 psig	50 °F	51 °F	49 °F			
45	11/13/11	1:29 PM	1,021 psig	51 °F	52 °F	49 °F			
46	11/13/11	1:44 PM	1,021 psig	52 °F	53 °F	49 °F			
47	11/13/11	1:59 PM	1,021 psig	51 °F	53 °F	49 °F			





## Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41587446
Construction Co.	Snelson	Job Number	41474005 -T118 A
Hydro. Test Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-118 A , L-300A , MP-239.57 - 241.6	<b>WATER</b>	
File Name	RCP 61362 - T-118 A, L-300A, MP- 239.57 - 241.6		

General Pipe Data							
Description	Segment						
	1	2	3	4	5		
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Unrestrained	Unrestrained		
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.		
Wall Thickness	0.375 in.	0.375 in.	0.500 in.	0.500 in.	0.505 in.		
Inside Diameter	33.250 in.	33.250 in.	33.000 in.	33.000 in.	32.990 in.		
Spec./Grade	API5L-X65	API5L-X52	API5L-X46	API5L-X65	API5L-X60		
Length Unrestrained	128 ft			40 ft	23 ft		
Length Restrained		10,371 ft	338 ft				
Temperature -- On Test	44 °F	49 °F	49.0 °F	44.0 °F	44.0 °F		
Temperature -- End of Test	47 °F	50 °F	50.0 °F	47.0 °F	47.0 °F		
Pressure -- On Test	1,015 psig	1,015 psig	1,015 psig	1,015 psig	1,015 psig		
Pressure -- End of Test	1,022 psig	1,022 psig	1,022 psig	1,022 psig	1,022 psig		

Unrestrained Pipe							
Vo	8,558.68 gal 1,095,512 oz.		Vtp1	8,620.11 gal 1,103,374 oz.		Vtp2	8,620.20 gal 1,103,386 oz.
Vo Unrestrained	5,760 gal			1,777 gal	1,021 gal		
Fwp 1	1.003110			1.003110	1.003110		
Fpp 1	1.003750			1.002791	1.002763		
Fpt 1	0.999709			0.999709	0.999709		
Fwt 1	0.999090			0.999090	0.999090		
Fpwt 1 = Fpt/Fwt	1.000619			1.000619	1.000619		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	5,803.32 gal			1,788.85 gal	1,027.94 gal		
Fwp 2	1.003132			1.003132	1.003132		
Fpp 2	1.003776			1.002811	1.002782		
Fpt 2	0.999763			0.999763	0.999763		
Fwt 2	0.999179			0.999179	0.999179		
Fpwt = Fpt/Fwt	1.000585			1.000585	1.000585		
Vtp = Vo(Fwp)(Fpp)(Fpwt)	5,803.39 gal			1,788.87 gal	1,027.95 gal		

Restrained Pipe							
Vo	482,825.31 gal 61,801,639 oz.		Vtp1	485,914.58 gal 62,197,066 oz.		Vtp2	485,919.21 gal 62,197,659 oz.
Vo Unrestrained		467,808 gal	15,018 gal				
Fwp 1		1.003110	1.003110				
Fpp 1		1.002690	1.001992				
Fpt 1		0.999867	0.999867				
Fwt 1		0.999260	0.999260				
Fpwt 1 = Fpt/Fwt		1.000607	1.000607				
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		470,811 gal	15,104 gal				
Fwp 2		1.003132	1.003132				
Fpp 2		1.002713	1.002010				
Fpt 2		0.999879	0.999879				
Fwt 2		0.999306	0.999306				
Fpwt = Fpt/Fwt		1.000573	1.000573				
Vtp = Vo(Fwp)(Fpp)(Fpwt)		470,816 gal	15,104 gal				

Combined Pipe							
Vo	491,383.99 gal 62,897,151 oz.		Vtp1	484,534.69 gal 63,300,440 oz.		Vtp2	494,539.41 gal 63,301,045 oz.



## Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41587446
Construction Co.	Snelson	Job Number	41474005-T118 A
Hydro. Test Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-118 A, L-300A, MP-239.57 - 241.6	<b>WATER</b>	
File Name	RCP 61362 - T-118 A, L-300A, MP- 239.57 - 241.6		

Description	Segment							
	1	2	3	4	5			
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Unrestrained	Unrestrained			
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.			
Wall Thickness	0.375 in.	0.375 in.	0.500 in.	0.500 in.	0.505 in.			
Inside Diameter	33.250 in.	33.250 in.	33.000 in.	33.000 in.	32.990 in.			
Spec./Grade	API5L-X65	API5L-X52	API5L-X46	API5L-X65	API5L-X60			
Length Unrestrained	128 ft			40 ft	23 ft			
Length Restrained		10,371 ft	338 ft					
Temperature -- On Test	45 °F	49 °F	49 °F	45 °F	45 °F			
Temperature -- End of Test	46 °F	50 °F	50 °F	46 °F	46 °F			
Pressure -- On Test	1,018 psig	1,018 psig	1,018 psig	1,018 psig	1,018 psig			
Pressure -- End of Test	1,018 psig	1,018 psig	1,018 psig	1,018 psig	1,018 psig			

Unrestrained Pipe								
Vo	8,558.68 gal		Vtp1	8,620.22 gal		Vtp2	8,619.83 gal	
	1,095,512 oz.			1,103,388 oz.			1,103,338 oz.	
Vo Unrestrained	5,760 gal			1,777 gal	1,021 gal			
Fwp 1	1.003120			1.003120	1.003120			
Fpp 1	1.003761			1.002800	1.002771			
Fpt 1	0.999727			0.999727	0.999727			
Fwt 1	0.999115			0.999115	0.999115			
Fpwt 1 = Fpt/Fwt	1.000613			1.000613	1.000613			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	5,803.40 gal			1,788.87 gal	1,027.95 gal			
Fwp 2	1.003120			1.003120	1.003120			
Fpp 2	1.003761			1.002800	1.002771			
Fpt 2	0.999745			0.999745	0.999745			
Fwt 2	0.999179			0.999179	0.999179			
Fpwt = Fpt/Fwt	1.000567			1.000567	1.000567			
Vtp = Vo(Fwp)(Fpp)(Fpwt)	5,803.13 gal			1,788.79 gal	1,027.90 gal			

Restrained Pipe								
Vo	482,825.31 gal		Vtp1	485,922.92 gal		Vtp2	485,908.08 gal	
	61,801,639 oz.			62,198,134 oz.			62,196,234 oz.	
Vo Restrained		467,808 gal	15,018 gal					
Fwp 1		1.003120	1.003120					
Fpp 1		1.002698	1.001998					
Fpt 1		0.999867	0.999867					
Fwt 1		0.999260	0.999260					
Fpwt 1 = Fpt/Fwt		1.000607	1.000607					
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		470,819 gal	15,104 gal					
Fwp 2		1.003120	1.003120					
Fpp 2		1.002702	1.002002					
Fpt 2		0.999879	0.999879					
Fwt 2		0.999306	0.999306					
Fpwt = Fpt/Fwt		1.000573	1.000573					
Vtp = Vo(Fwp)(Fpp)(Fpwt)		470,805 gal	15,103 gal					

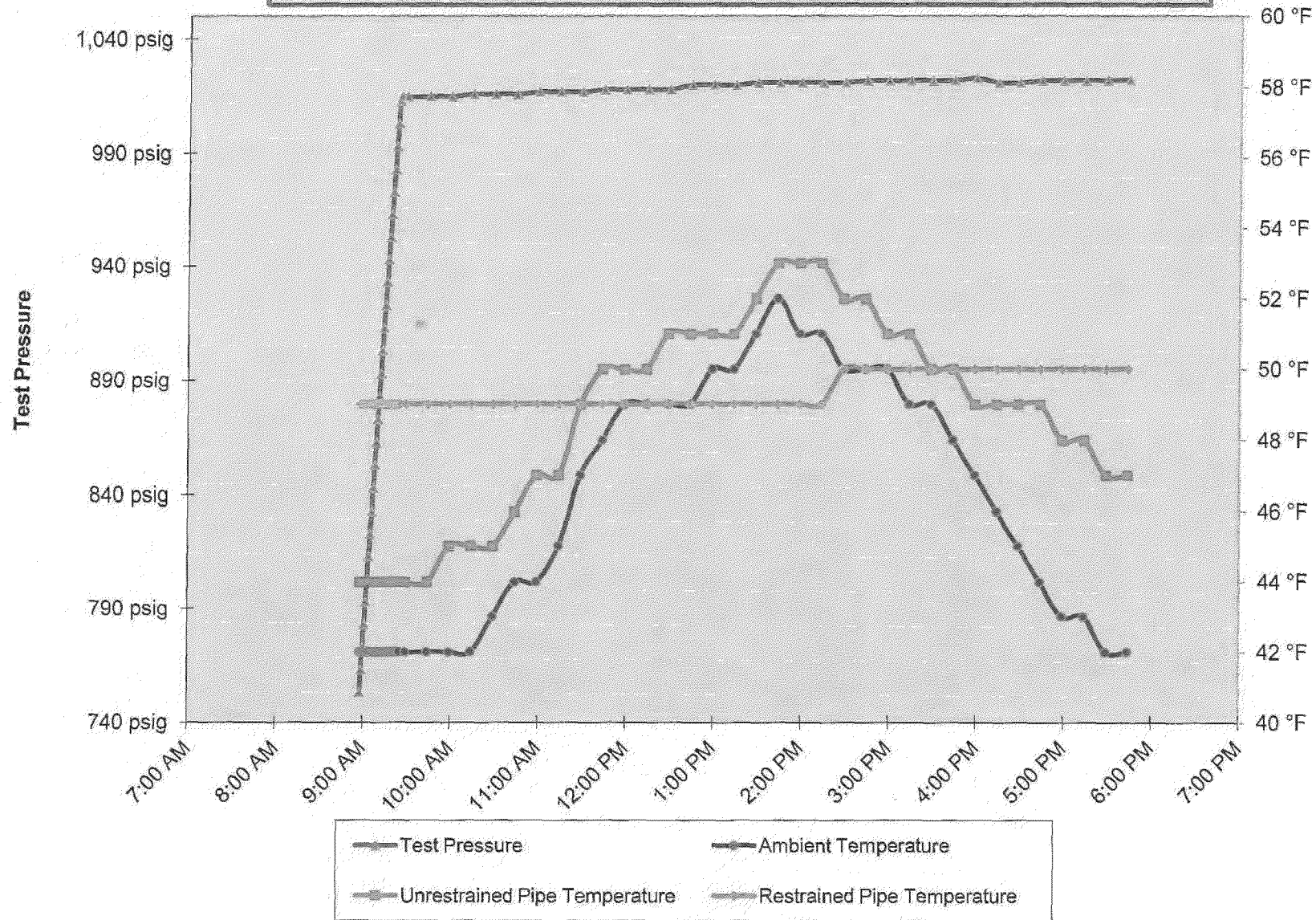
Combined Pipe								
Vo	491,383.99 gal		Vtp1	494,543.14 gal		Vtp2	494,527.91 gal	
	62,897,151 oz.			63,301,522 oz.			63,299,572 oz.	
1 °F Change	15.24 gal		1,950.28 oz.					

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	128 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X65	1,434 psig	Steel	Arc Weld	DSAW
2	10,371 ft	Restrained	34.000 in.	0.3750 in.	API5L-X52	1,147 psig	Steel	Arc Weld	DSAW
3	338 ft	Restrained	34.000 in.	0.5000 in.	API5L-X46	1,353 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	23 ft	Unrestrained	34.000 in.	0.5050 in.	API5L-X60	1,782 psig	Steel	Arc Weld	DSAW

Hydrostatic Test Project Owner & Participants		
Owner Company	Pacific Gas and Electric Company	
Address	350 N. Wiget Walnut Creek, CA 94598 Attention: Scott Clapp	
Job Number	41587446	
Construction Company	Redacted	
Address	Redacted	
Job Number	41474005 -T118 A	
Hydrostatic Test Co.	Redacted	
Address	Redacted	
Project No.	FY12-112	
Test Section	PG&E T-118 A , L-300A , MP-239.57 - 241.6 From: 0+00 To: 106+78	
File Name	RCP 61362 - T-118 A, L-300A, MP- 239.57 - 241.6	

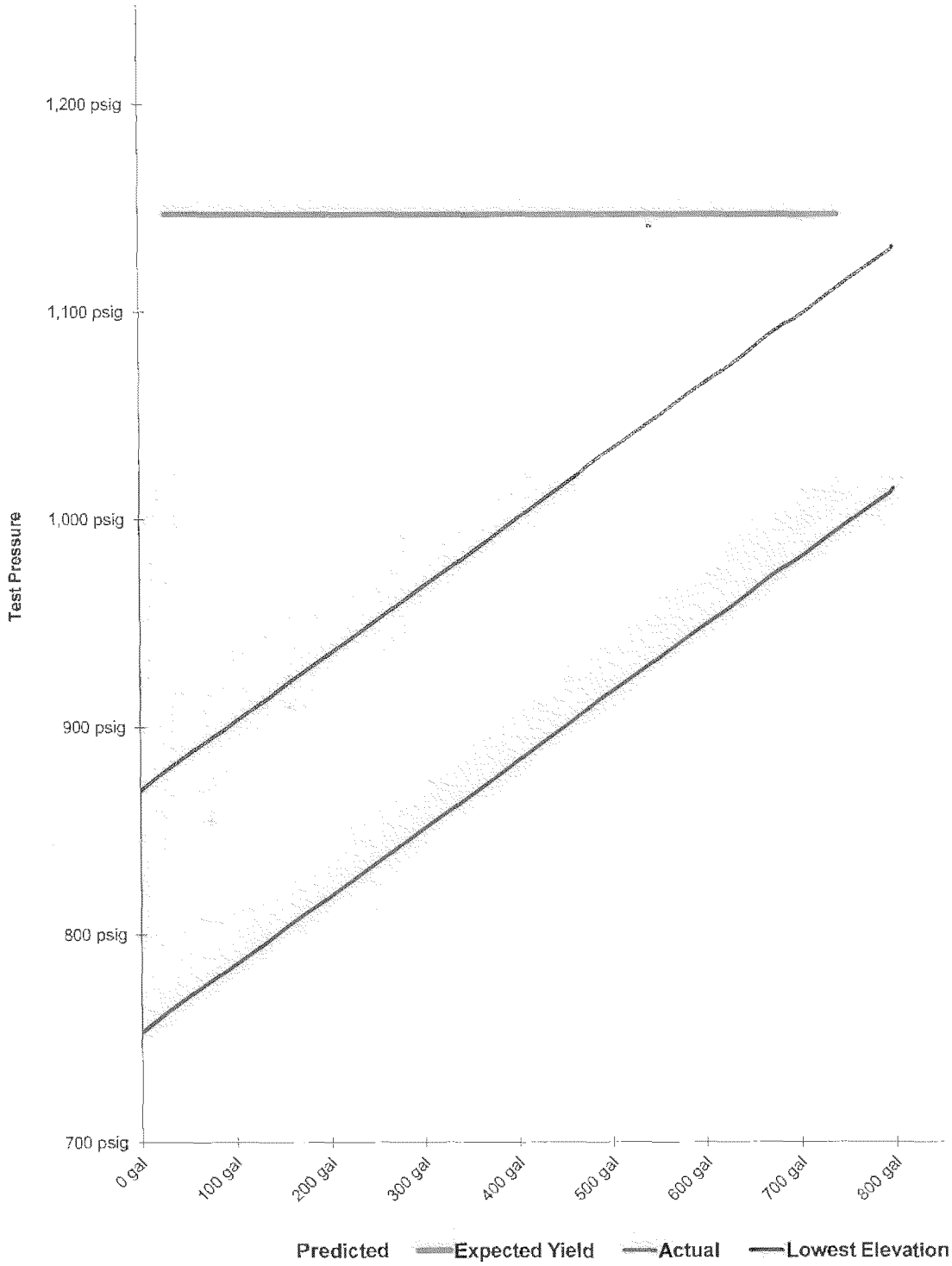
Part II - Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)				Note: Minimum test pressure and duration are not to be changed without written approval.			
Time and Date Test Pressure Reached	11/13/11 9:29 AM	Elevation at Test Point	4,319 ft	Min. Required Test Press At Test Point (1)	1,004.00 psig	Max. Allowable Test Press at Test Point (4)	1,028.43 psig
Time and Date Test Ended	11/13/11 5:44 PM	Max. Elevation in Test Section	4,319 ft	Min. Indicated Test Pressure (2)	1,015.00 psig	Max. Indicated Test Pressure (5)	1,023.00 psig
Actual Duration of Test	8 hours 15 minutes	Min. Elevation in Test Section	4,050 ft	Min. Test Pressure at Max. Elevation (3)	1,015.00 psig	Max. Test Pressure at Min. Elevation (6)	1,139.57 psig

PG&E T-118 A , L-300A , MP-239.57 - 241.6





**Spike Pressure Test**  
**Stress Strain Curve -- PG&E T-118 A , L-300A , MP-239.57 - 241.6**







Test Headers & Pressure Recorder



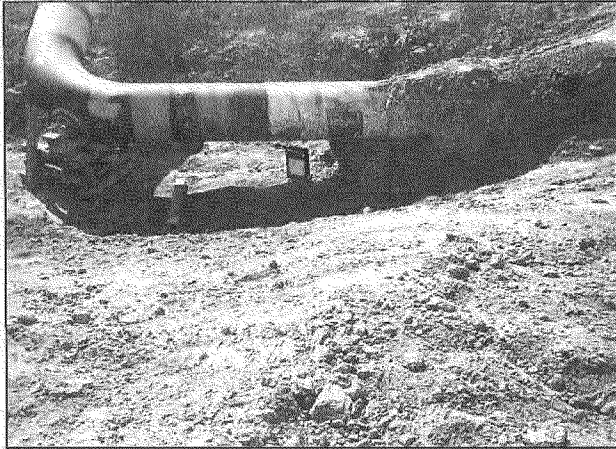
Unrestrained Pipe Temperature



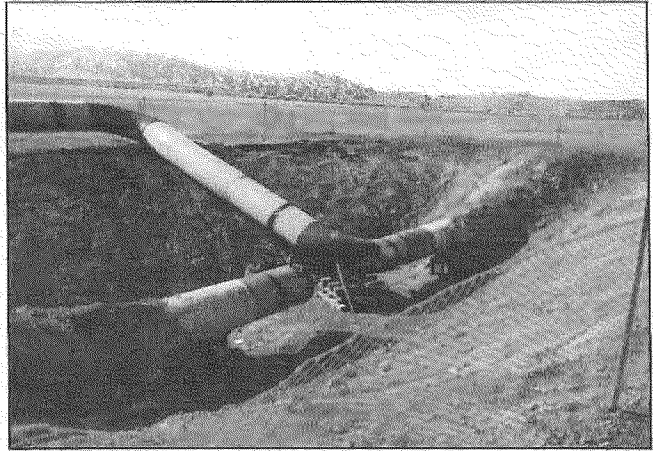
Test Cabin & PD Pump



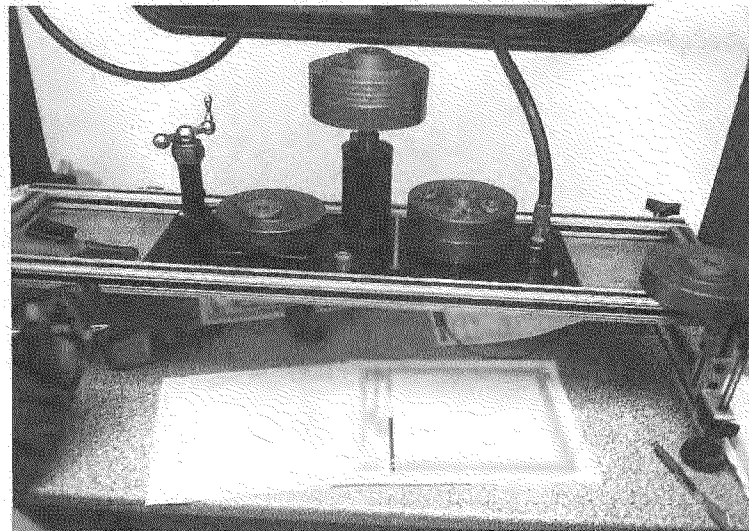
Ambient Chart Recorder



Restrained Chart Recorder



Pipe - Bell Hole



Brass Deadweights