



**RCP, Inc**

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Redacted

November 7, 2013

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

Test Contractor: ARB -- T-42 10/14/2011  
Asset Owner: Pacific Gas and Electric Company -- 41474081  
Construction Contractor: ARB -- 0629-53-3500  
Test Section: PG&E T-42, L-147, MP 0.02 - 0.85  
Test Date: October 14, 2011  
Certificate Number: RCP 61362 - T-42, L-147, MP 0.02 - 0.85

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 ARB 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 822 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 8.17 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.17 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 MAOP per 49 CFR 192, Subpart J can be as high as 410 psig. The MAOP established by this test is sufficient to qualify for PG&E's desired MAOP of 400 psig.

Pressure decreased 53 psi during the test. 6,384.00 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 713.24 ounces, gain, which is equivalent to a 0.49 °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	41474081
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	ARB	Project No.	T-42 10/14/2011
Test Section	PG&E T-42, L-147, MP 0.02 - 0.85		
File Name	RCP 61362 - T-42, L-147, MP 0.02 - 0.85		

#### Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: \_\_\_\_\_ Test Date: 14-Oct-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-42, L-147, MP 0.02 - 0.85  
 From: 64+69 To: 0+00

#### Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	32 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
2	4,119 ft	24.000 in.	0.281 in.	40ksmys, SM, Arc Weld, Steel	937 psi
3	1,215 ft	24.000 in.	0.281 in.	45ksmys, SM, Arc Weld, Steel	1,054 psi
4	859 ft	24.000 in.	0.250 in.	API5L-X52, DSAW, Arc Weld, Steel	1,083 psi
5	243 ft	24.000 in.	0.271 in.	API5L-X60, DSAW, Arc Weld, Steel	1,355 psi
6	116 ft	24.000 in.	0.281 in.	API5L-X52, DSAW, Arc Weld, Steel	1,218 psi
7	2 ft	6.625 in.	0.280 in.	API5L-Grade B, SM, Arc Weld, Steel	2,958 psi
8	53 ft	2.375 in.	0.154 in.	API5L-Grade B, SM, Arc Weld, Steel	4,539 psi
9	22 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi

#### Initial Test Conditions

Pressure at Test Point:	822 psig	Date/Time:	10/14/11 4:40 PM	Pipe Temperature	
Ambient Temperature:	81.0 °F	Elevation @ Test Point:	320.0 ft	Unrestrained:	69.0 °F
Pressure @ High Point (Cal/Measure):	669 psig	Elevation @ High Point:	672.0 ft	Restrained:	60.0 °F
Pressure @ Low Point (Cal/Measure):	842 psig	Elevation @ Low Point:	273.0 ft	Location:	64+69
				Location:	31+80
				Location:	60+33

#### Final Test Conditions

Pressure at Test Point:	769 psig	Date/Time:	10/15/11 12:50 AM	Pipe Temperature	
Ambient Temperature:	64.0 °F	Elevation @ Test Point:	320.0 ft	Unrestrained:	68.0 °F
Pressure @ High Point (Cal/Measure):	616 psig	Elevation @ High Point:	672.0 ft	Restrained:	60.0 °F
Pressure @ Low Point (Cal/Measure):	789 psig	Elevation @ Low Point:	273.0 ft	Location:	64+69
				Location:	31+80
				Location:	60+33
Total Fluid Injected:					Volume gain
Total Fluid Withdrawn:	6384.00 fluid ounces				
Net Change in Volume of the Test Section (+ Gain, - Loss):	713.24 oz	gain	0.0037%	0.485 °F equivalent	

Test Duration: 8.17 hours

Minimum Test Pressure:	765 psig	Max Elevation	612 psig	Min Elevation	785 psig
Maximum Test Pressure:	822 psig		669 psig		842 psig
% SMYS :	28.5%		71.5%		89.9%
Test Segment Observed % SMYS :	Minimum	18.6%	Maximum	89.9%	
Minimum Test Pressure (Calculated/Measured):					616 psig
(1)Maximum Allowable Operating Pressure:		DOT Part 192	Test Factor= 1.50	410 psig	

Were leaks observed?	<b>No</b>	Explain:
Acceptable Hydrostatic Test?	<b>Yes</b>	<p>The test segment was subjected to a spike pressure test of 822 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 8.17 hour test duration period.</p> <p>No leaks were observed during the test period. The test section included 6,552 feet of buried and 109 feet of exposed pipe. Pressure lost 53 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment lost 1°F.</p> <p>6,384.00 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 713.24 ounces, gain, which is equivalent to a 0.49 °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 gain is attributed to the error characteristic of the temperature measurement instrumentation utilized.</p>

Remarks: (1) The MAOP established by this test is sufficient to qualify for PG&E's desired MAOP of 400 psig.

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7-Nov-13



# Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474081
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	ARB	Project No.	T-42 10/14/2011
Test Section	PG&E T-42, L-147, MP 0.02 - 0.85		
File Name	RCP 61362 - T-42, L-147, MP 0.02 - 0.85		

Date 14-Oct-11

## Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained		Comment	Bleed
1	10/14/11	4:10 PM	565 psig	81 °F	69 °F	60 °F	Start Spike		
2	10/14/11	4:11 PM	575 psig	81 °F	69 °F	60 °F	Inject		2,524 oz.
3	10/14/11	4:12 PM	585 psig	81 °F	69 °F	60 °F	Inject		1,521 oz.
4	10/14/11	4:13 PM	595 psig	81 °F	69 °F	60 °F	Inject		1,515 oz.
5	10/14/11	4:14 PM	605 psig	81 °F	69 °F	60 °F	Inject		1,276 oz.
6	10/14/11	4:15 PM	615 psig	81 °F	69 °F	60 °F	Inject		1,317 oz.
7	10/14/11	4:16 PM	625 psig	81 °F	69 °F	60 °F	Inject		1,337 oz.
8	10/14/11	4:17 PM	635 psig	81 °F	69 °F	60 °F	Inject		1,276 oz.
9	10/14/11	4:18 PM	645 psig	81 °F	69 °F	60 °F	Inject		1,187 oz.
10	10/14/11	4:19 PM	655 psig	81 °F	69 °F	60 °F	Inject		1,180 oz.
11	10/14/11	4:20 PM	665 psig	81 °F	69 °F	60 °F	Inject		1,139 oz.
12	10/14/11	4:21 PM	675 psig	81 °F	69 °F	60 °F	Inject		1,098 oz.
13	10/14/11	4:22 PM	685 psig	81 °F	69 °F	60 °F	Inject		1,071 oz.
14	10/14/11	4:23 PM	695 psig	81 °F	69 °F	60 °F	Inject		1,057 oz.
15	10/14/11	4:24 PM	705 psig	81 °F	69 °F	60 °F	Inject		989 oz.
16	10/14/11	4:25 PM	715 psig	81 °F	69 °F	60 °F	Inject		955 oz.
17	10/14/11	4:26 PM	725 psig	81 °F	69 °F	60 °F	Inject		976 oz.
18	10/14/11	4:27 PM	735 psig	81 °F	69 °F	60 °F	Inject		948 oz.
19	10/14/11	4:28 PM	745 psig	81 °F	69 °F	60 °F	Inject		928 oz.
20	10/14/11	4:29 PM	755 psig	81 °F	69 °F	60 °F	Inject		914 oz.
21	10/14/11	4:31 PM	765 psig	81 °F	69 °F	60 °F	Inject		860 oz.
22	10/14/11	4:32 PM	775 psig	81 °F	69 °F	60 °F	Inject		853 oz.
23	10/14/11	4:33 PM	785 psig	81 °F	69 °F	60 °F	Inject		866 oz.
24	10/14/11	4:34 PM	795 psig	81 °F	69 °F	60 °F	Inject		785 oz.
25	10/14/11	4:35 PM	805 psig	81 °F	69 °F	60 °F	Inject		812 oz.
26	10/14/11	4:36 PM	815 psig	81 °F	69 °F	60 °F	Inject		826 oz.
27	10/14/11	4:37 PM	822 psig	81 °F	69 °F	60 °F	Inject		573 oz.
28	10/14/11	4:40 PM	822 psig	81 °F	69 °F	60 °F	On Test		
29	10/14/11	4:50 PM	822 psig	81 °F	69 °F	60 °F			
30	10/14/11	5:00 PM	822 psig	81 °F	69 °F	60 °F			
31	10/14/11	5:10 PM	822 psig	81 °F	69 °F	60 °F	End Spike		
32	10/14/11	5:35 PM	765 psig	82 °F	69 °F	60 °F		6,384 oz.	
33	10/14/11	5:50 PM	766 psig	78 °F	69 °F	60 °F			
34	10/14/11	6:05 PM	766 psig	78 °F	69 °F	60 °F			
35	10/14/11	6:20 PM	766 psig	78 °F	70 °F	60 °F			
36	10/14/11	6:35 PM	766 psig	75 °F	70 °F	60 °F			
37	10/14/11	6:50 PM	766 psig	73 °F	70 °F	60 °F			
38	10/14/11	7:05 PM	766 psig	73 °F	70 °F	60 °F			
39	10/14/11	7:20 PM	767 psig	71 °F	70 °F	60 °F			
40	10/14/11	7:35 PM	767 psig	71 °F	70 °F	60 °F			
41	10/14/11	7:50 PM	767 psig	70 °F	70 °F	60 °F			
42	10/14/11	8:05 PM	767 psig	70 °F	70 °F	60 °F			
43	10/14/11	8:20 PM	767 psig	68 °F	70 °F	60 °F			
44	10/14/11	8:35 PM	767 psig	68 °F	70 °F	60 °F			



# Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474081
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	ARB	Project No.	T-42 10/14/2011
Test Section	PG&E T-42, L-147, MP 0.02 - 0.85		
File Name	RCP 61362 - T-42, L-147, MP 0.02 - 0.85		

Date **14-Oct-11**

## Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
45	10/14/11	8:50 PM	767 psig	67 °F	70 °F	60 °F			
46	10/14/11	9:05 PM	767 psig	68 °F	70 °F	60 °F			
47	10/14/11	9:20 PM	768 psig	67 °F	70 °F	60 °F			
48	10/14/11	9:35 PM	768 psig	67 °F	69 °F	60 °F			
49	10/14/11	9:50 PM	768 psig	67 °F	69 °F	60 °F			
50	10/14/11	10:05 PM	768 psig	66 °F	69 °F	60 °F			
51	10/14/11	10:20 PM	768 psig	66 °F	69 °F	60 °F			
52	10/14/11	10:35 PM	768 psig	66 °F	69 °F	60 °F			
53	10/14/11	10:50 PM	768 psig	65 °F	69 °F	60 °F			
54	10/14/11	11:05 PM	768 psig	65 °F	69 °F	60 °F			
55	10/14/11	11:20 PM	769 psig	65 °F	69 °F	60 °F			
56	10/14/11	11:35 PM	769 psig	65 °F	69 °F	60 °F			
57	10/14/11	11:50 PM	769 psig	64 °F	68 °F	60 °F			
58	10/15/11	12:05 AM	769 psig	64 °F	68 °F	60 °F			
59	10/15/11	12:20 AM	769 psig	64 °F	68 °F	60 °F			
60	10/15/11	12:35 AM	769 psig	64 °F	68 °F	60 °F			
61	10/15/11	12:50 AM	769 psig	64 °F	68 °F	60 °F	End of Test		
							<b>Spike Test</b>		28,784.0 oz.
							<b>Hydrostatic Test</b>	6,384.0 oz.	

Were leaks observed during the test period?

Exposed and buried pipe, no leaks observed.

High Test Pressure:	822 psig
Low Test Pressure:	765 psig



## Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41474081
Construction co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	ARB	Project No.	T-42 10/14/2011
Test Section	PG&E T-42, L-147, MP 0.02 - 0.85		<b>WATER</b>
File Name	RCP 61362 - T-42, L-147, MP 0.02 - 0.85		

### General Pipe Data

Description	Segment								
	1	2	3	4	5	6	7	8	9
Restrained or Unrestrained:	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained	Unrestrained	Unrestrained
Outside Diameter	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	6.625 in.	2.375 in.	24.000 in.
Wall Thickness	0.375 in.	0.281 in.	0.281 in.	0.250 in.	0.271 in.	0.281 in.	0.280 in.	0.154 in.	0.375 in.
Inside Diameter	23.250 in.	23.438 in.	23.438 in.	23.500 in.	23.458 in.	23.438 in.	6.065 in.	2.067 in.	23.250 in.
Spec./Grade	API5L-X60	40ksmys	45ksmys	API5L-X52	API5L-X60	API5L-X52	API5L-Grade B	API5L-Grade B	API5L-X60
Length Unrestrained	32 ft						2 ft	53 ft	22 ft
Length Restrained		4,119 ft	1,215 ft	859 ft	243 ft	116 ft			
Temperature -- On Test	69 °F	60 °F	60.0 °F	60.0 °F	60.0 °F	60.0 °F	68.0 °F	69.0 °F	69.0 °F
Temperature -- End of Test	68 °F	60 °F	60.0 °F	60.0 °F	60.0 °F	60.0 °F	68.0 °F	68.0 °F	68.0 °F
Pressure -- On Test	822 psig	822 psig	822 psig	822 psig	822 psig	822 psig	822 psig	822 psig	822 psig
Pressure -- End of Test	769 psig	769 psig	769 psig	769 psig	769 psig	769 psig	769 psig	769 psig	769 psig

### Unrestrained Pipe

Sum:	Vo	1,203.20 gal 154,010 oz.	Vtp1	1,207.85 gal 154,605 oz.	Vtp2	1,207.62 gal 154,576 oz.
Vo Unrestrained	706 gal				3 gal	9 gal
Fwp 1	1.002518				1.002518	1.002518
Fpp 1	1.002124				1.000742	1.000460
Fpt 1	1.000164				1.000164	1.000164
Fwt 1	1.000929				1.000929	1.000929
Fpwt 1 = Fpt/Fwt	0.999236				0.999236	0.999236
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	708.49 gal				3.01 gal	9.26 gal
Fwp 2	1.002355				1.002355	1.002355
Fpp 2	1.001987				1.000694	1.000430
Fpt 2	1.000146				1.000146	1.000146
Fwt 2	1.000803				1.000803	1.000803
Fpwt = Fpt/Fwt	0.999343				0.999343	0.999343
Vtp = Vo(Fwp)(Fpp)(Fpwt)	708.36 gal				3.01 gal	9.26 gal

### Restrained Pipe

Sum:	Vo	146,961.35 gal 18,811,053 oz.	Vtp1	147,643.30 gal 18,898,342 oz.	Vtp2	147,599.22 gal 18,892,700 oz.
Vo Unrestrained		92,319 gal	27,232 gal	19,355 gal	5,456 gal	2,600 gal
Fwp 1	1.002518	1.002518	1.002518	1.002518	1.002518	1.002518
Fpp 1	1.002080	1.002080	1.002080	1.002344	1.002158	1.002080
Fpt 1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Fwt 1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Fpwt 1 = Fpt/Fwt	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	92,744 gal	27,357 gal	19,449 gal	5,481 gal	2,612 gal	
Fwp 2	1.002355	1.002355	1.002355	1.002355	1.002355	1.002355
Fpp 2	1.001946	1.001946	1.001946	1.002193	1.002019	1.001946
Fpt 2	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Fwt 2	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Fpwt = Fpt/Fwt	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Vtp = Vo(Fwp)(Fpp)(Fpwt)	92,717 gal	27,349 gal	19,443 gal	5,480 gal	2,611 gal	

### Combined Pipe

Sum:	Vo	148,164.56 gal 18,965,064 oz.	Vtp1	148,851.15 gal 19,052,947 oz.	Vtp2	148,806.84 gal 19,047,276 oz.
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# Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41474081
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	ARB	Project No.	T-42 10/14/2011
Test Section	PG&E T-42, L-147, MP 0.02 - 0.85		
File Name	RCP 61362 - T-42, L-147, MP 0.02 - 0.85		<b>WATER</b>

### General Pipe Data

Description	Segment								
	1	2	3	4	5	6	7	8	9
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained	Unrestrained	Unrestrained
Outside Diameter	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	6.625 in.	2.375 in.	24.000 in.
Wall Thickness	0.375 in.	0.281 in.	0.281 in.	0.250 in.	0.271 in.	0.281 in.	0.280 in.	0.154 in.	0.375 in.
Inside Diameter	23.250 in.	23.438 in.	23.438 in.	23.500 in.	23.458 in.	23.438 in.	6.065 in.	2.067 in.	23.250 in.
Spec./Grade	API5L-X60	40ksmys	45ksmys	API5L-X52	API5L-X60	API5L-X52	API5L-Grade B	API5L-Grade B	API5L-X60
Length Unstrained	32.00 ft						2 ft	53 ft	22 ft
Length Restrained		4,119 ft	1,215 ft	859 ft	243 ft	116 ft			
Temperature -- On Test	68 °F	59 °F	59 °F	59 °F	59 °F	59 °F	68 °F	68 °F	68 °F
Temperature -- End of Test	69 °F	60 °F	60 °F	60 °F	60 °F	60 °F	69 °F	69 °F	69 °F
Pressure -- On Test	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig
Pressure -- End of Test	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig	795 psig

### Unrestrained Pipe

Sum:	Vo	Vtp1			Vtp2		
	1,203.20 gal 154,010 oz.						1,207.67 gal 154,582 oz.
Vo Unrestrained	706 gal				3 gal	9 gal	485 gal
Fwp 1	1.002435				1.002435	1.002435	1.002435
Fpp 1	1.002054				1.000718	1.000445	1.002054
Fpt 1	1.000146				1.000146	1.000146	1.000146
Fwt 1	1.000803				1.000803	1.000803	1.000803
Fpwt 1 = Fpt/Fwt	0.999343				0.999343	0.999343	0.999343
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	708.46 gal				3.01 gal	9 gal	487 gal
Fwp 2	1.002435				1.002435	1.002435	1.002435
Fpp 2	1.002054				1.000718	1.000445	1.002054
Fpt 2	1.000164				1.000164	1.000164	1.000164
Fwt 2	1.000929				1.000929	1.000929	1.000929
Fpwt = Fpt/Fwt	0.999236				0.999236	0.999236	0.999236
Vtp = Vo(Fwp)(Fpp)(Fpwt)	708.39 gal				3.01 gal	9 gal	487 gal

### Restrained Pipe

Sum:	Vo	Vtp1			Vtp2		
	146,961.35 gal 18,811,053 oz.						147,620.84 gal 18,895,468 oz.
Vo Restrained	92,319 gal	27,232 gal	19,355 gal	5,456 gal	2,600 gal		
Fwp 1	1.002435	1.002435	1.002435	1.002435	1.002435		
Fpp 1	1.002008	1.002008	1.002263	1.002084	1.002008		
Fpt 1	0.999988	0.999988	0.999988	0.999988	0.999988		
Fwt 1	0.999907	0.999907	0.999907	0.999907	0.999907		
Fpwt 1 = Fpt/Fwt	1.000081	1.000081	1.000081	1.000081	1.000081		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	92,737 gal	27,355 gal	19,447 gal	5,481 gal	2,612 gal		
Fwp 2	1.002435	1.002435	1.002435	1.002435	1.002435		
Fpp 2	1.002011	1.002011	1.002267	1.002087	1.002011		
Fpt 2	1.000000	1.000000	1.000000	1.000000	1.000000		
Fwt 2	1.000000	1.000000	1.000000	1.000000	1.000000		
Fpwt = Fpt/Fwt	1.000000	1.000000	1.000000	1.000000	1.000000		
Vtp = Vo(Fwp)(Fpp)(Fpwt)	92,730 gal	27,353 gal	19,446 gal	5,480 gal	2,611 gal		

### Combined Pipe

Sum:	Vo	Vtp1			Vtp2		
	148,164.56 gal 18,965,064 oz.						148,828.51 gal 19,050,049 oz.
1 °F Change	11.48 gal		1,469.97 oz.				



## Hydrostatic Test Pipe Data Table

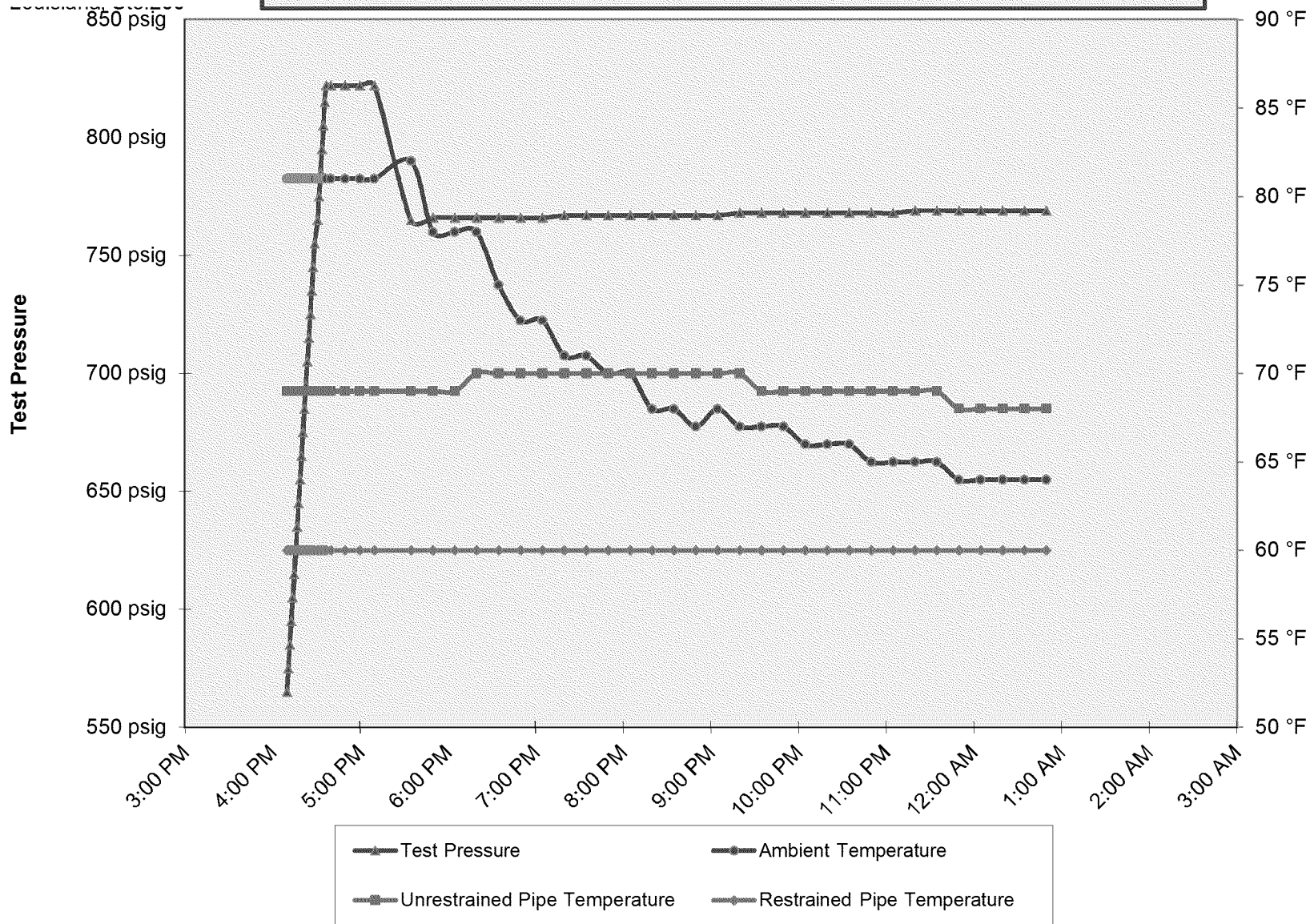
#	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	32 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
2	4,119 ft	Restrained	24.000 in.	0.2810 in.	40ksmys	937 psig	Steel	Arc Weld	SM
3	1,215 ft	Restrained	24.000 in.	0.2810 in.	45ksmys	1,054 psig	Steel	Arc Weld	SM
4	859 ft	Restrained	24.000 in.	0.2500 in.	API5L-X52	1,083 psig	Steel	Arc Weld	DSAW
5	243 ft	Restrained	24.000 in.	0.2710 in.	API5L-X60	1,355 psig	Steel	Arc Weld	DSAW
6	116 ft	Restrained	24.000 in.	0.2810 in.	API5L-X52	1,218 psig	Steel	Arc Weld	DSAW
7	2 ft	Unrestrained	6.625 in.	0.2800 in.	API5L-Grade B	2,958 psig	Steel	Arc Weld	SM
8	53 ft	Unrestrained	2.375 in.	0.1540 in.	API5L-Grade B	4,539 psig	Steel	Arc Weld	SM
9	22 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 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	41474081
Construction Company	ARB	
Address	1875 Loveridge Road Pittsburg, CA 94565 Attention: Redacted	0629-53-3500
Hydrostatic Test Co.	ARB	Project No.
Address	1875 Loveridge Road Pittsburg, Ca. 94565 Attention: Redacted	T-42 10/14/2011
Test Section	PG&E T-42, L-147, MP 0.02 - 0.85 From: 64+69 To: 0+00	
File Name	RCP 61362 - T-42, L-147, MP 0.02 - 0.85	

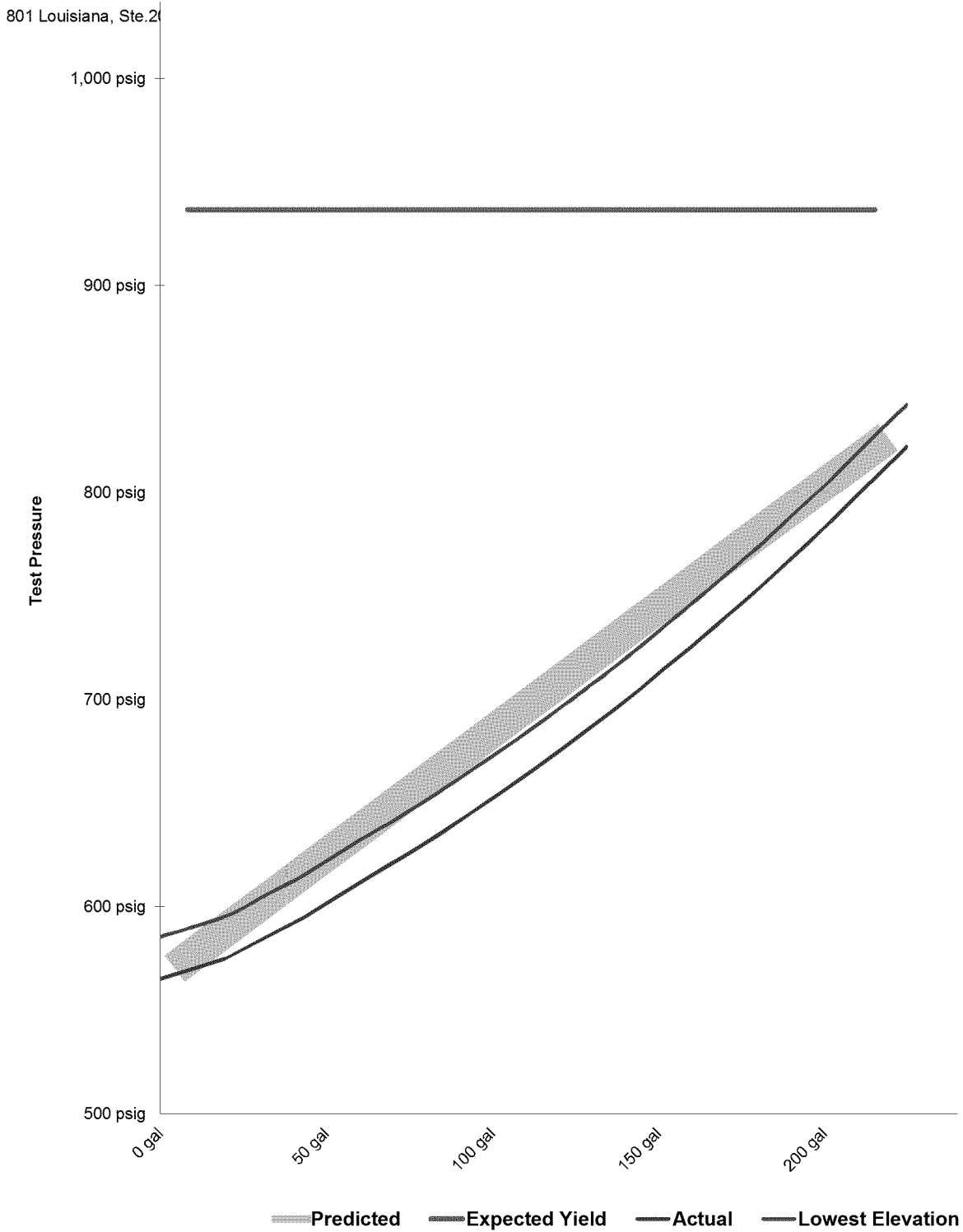
Part II – Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)				Note: Minimum test pressure and duration are not to be changed without written approval.			
Time and Date Test Pressure Reached	10/14/11 4:40 PM	Elevation at Test Point	320 ft	Min. Required Test Press At Test Point (1)	752.53 psig	Max. Allowable Test Press at Test Point (4)	822.63 psig
Time and Date Test Ended	10/15/11 12:50 AM	Max. Elevation in Test Section	672 ft	Min. Indicated Test Pressure (2)	765.00 psig	Max. Indicated Test Pressure (5)	822.00 psig
Actual Duration of Test	8 hours 10 minutes	Min. Elevation in Test Section	273 ft	Min. Test Pressure at Max. Elevation (3)	612.47 psig	Max. Test Pressure at Min. Elevation (6)	842.37 psig

PG&E T-42, L-147, MP 0.02 - 0.85

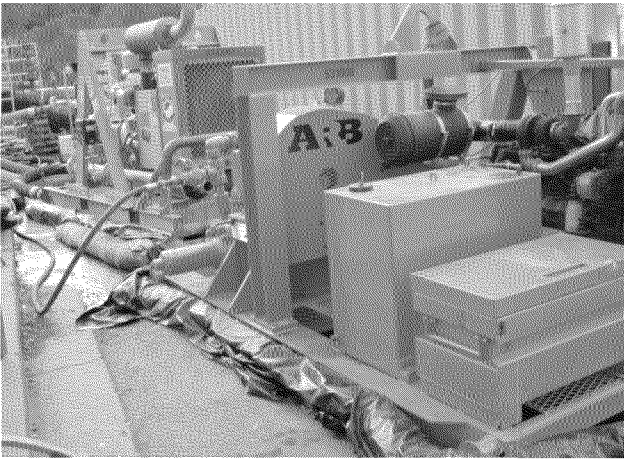




**Spike Pressure Test  
Stress Strain Curve -- PG&E T-42, L-147, MP 0.02 - 0.85**



Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-42, L-147, MP 0.02 - 0.85	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
565 psig	0	0.00 gal		0	0.000	Pump gal per stroke	0.094 gal/stroke
575 psig	370	19.72 gal	8.37 gal	1.972	0.837	Pump Piston Diameter	1.625 in
585 psig	593	31.61 gal	16.74 gal	1.189	0.837	Pump Piston Stroke	3.50 in
595 psig	815	43.44 gal	25.12 gal	1.183	0.837	Pump Cylinders	3 ea
605 psig	1002	53.41 gal	33.49 gal	0.997	0.837	Volume check gal per stroke	0.053 gal/stroke
615 psig	1195	63.69 gal	41.86 gal	1.029	0.837	Volume Released (gallons)	8.75 gal
625 psig	1391	74.14 gal	50.24 gal	1.045	0.837	Pressure Reduced (psi)	10 psi
635 psig	1578	84.11 gal	58.61 gal	0.997	0.837	Maximum2	240 gal
645 psig	1752	93.38 gal	66.99 gal	0.927	0.838	Minimum2	0 gal
655 psig	1925	102.60 gal	75.36 gal	0.922	0.838	Maximum1	1,037 psig
665 psig	2092	111.50 gal	83.74 gal	0.890	0.838	Minimum1	500 psig
675 psig	2253	120.09 gal	92.11 gal	0.858	0.838	Gallons/Stroke Used	0.053 gal/stroke
685 psig	2410	128.45 gal	100.49 gal	0.837	0.838	Predicted Gallons/Stroke	0.051 gal/stroke
695 psig	2565	136.72 gal	108.87 gal	0.826	0.838	Pressure Increment	10 psi
705 psig	2710	144.44 gal	117.25 gal	0.773	0.838	Max Pressure	822 psig
715 psig	2850	151.91 gal	125.63 gal	0.746	0.838	Buried Pipe Temperature	63 °F
725 psig	2993	159.53 gal	134.00 gal	0.762	0.838	Exposed Pipe Temperature	60 °F
735 psig	3132	166.94 gal	142.38 gal	0.741	0.838	<b>ASME B31.8 Appendix N-5</b>	
745 psig	3268	174.19 gal	150.76 gal	0.725	0.838		
755 psig	3402	181.33 gal	159.15 gal	0.714	0.838	Average Actual Elastic Slope	0.872
765 psig	3528	188.04 gal	167.53 gal	0.672	0.838	Average Predicted Elastic Slope	0.838
775 psig	3653	194.71 gal	175.91 gal	0.666	0.838	Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	1.657
785 psig	3780	201.48 gal	184.29 gal	0.677	0.838	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	822 psig
795 psig	3895	207.61 gal	192.67 gal	0.613	0.838	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
805 psig	4014	213.95 gal	201.06 gal	0.634	0.838	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
815 psig	4135	220.40 gal	209.44 gal	0.645	0.838	<p>Revision 2 – The formula calculating Established Minimum Yield Pressure B31.8 N-5(c)(2) was typed over with an incorrect pressure. The pipe was exposed to 822 psig without evidence of yielding; therefore, establishing that the pipe did not yield at 822 psig.</p> <p>The plotted stress/strain curves bend to the left indicating that the test segment contained a significant volume of free air. The curve bends to the left as free air is absorbed into the water. Typically air will be absorbed until the water saturates with air. This stabilization can be observed after 765 psig.</p> <p>The curve would bend severely to the right (the opposite direction) to indicate yielding; which, it did not.</p>	
822 psig	4219	224.88 gal	215.31 gal	0.640	0.838		
						_____ <input type="text" value="Redacted"/> _____	_____ Date _____



Test 42 Loc.B test pumps



Test 42 Loc.B pressure recorder outside trailer



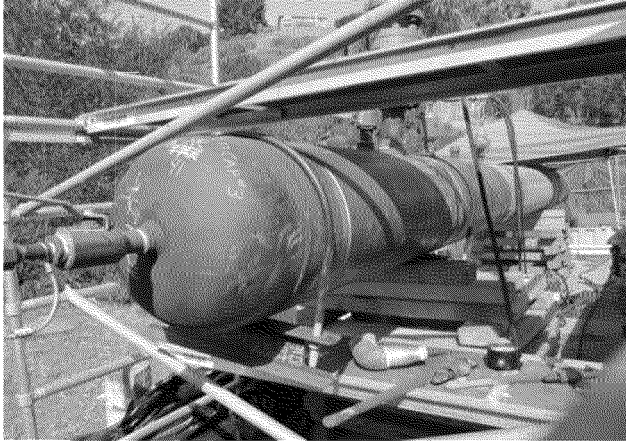
Test 42 Loc.B dead weights and counter



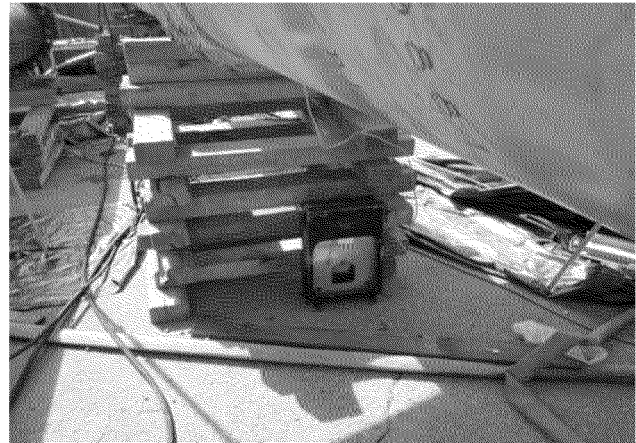
Test 42 Loc.B remote restrained temp. recorder



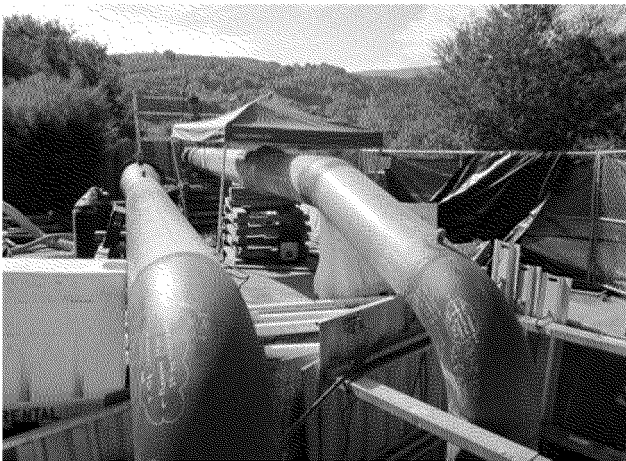
Test 42 Loc.B restrained pipe temp. recorder



Test 42 Loc,B 24" test head



Test 42 Loc. B unrestrained pipe temp. recorder



test 42 loc. B riser and test head on right