



**RCP, Inc**

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Redacted

September 16, 2011

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

Test Contractor:	Contra Costa Inspection -- T-19 9/16/2011
Asset Owner:	Pacific Gas and Electric Company -- 41502566
Construction Contractor:	ARB -- 0629-53-3500 T-19
Test Section:	PG&E T-19 L-114, MP 16.5233 - 16.5878
Test Date:	September 16, 2011
Certificate Number:	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878

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 Contra Costa Inspection 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 1105 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 1021 psig and the established MAOP is 681 psig.

Pressure decreased 73 psi during the test. 561.40 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 134.49 ounces, gain, which is equivalent to a 0.95 °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	41502566
Construction Co.	ARB	Job Number	0629-53-3500 T-19
Hydro. Test Co.	Contra Costa Inspection	Project No.	T-19 9/16/2011
Test Section	PG&E T-19 L-114, MP 16.5233 - 16.5878		
File Name	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878		

#### Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: \_\_\_\_\_ Test Date: 16-Sep-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-19 L-114, MP 16.5233 - 16.5878

From: 3+74 To: 0+00

#### Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	22 ft	24.000 in.	0.500 in.	API5L-X80, DSAW, Arc Weld, Steel	2,500 psi
2	19 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
3	316 ft	24.000 in.	0.500 in.	API5L-X42, DSAW, Arc Weld, Steel	1,750 psi
4	72 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
5	25 ft	4.500 in.	0.237 in.	API5L-Grade B, SM, Arc Weld, Steel	3,687 psi
6	9 ft	8.625 in.	0.322 in.	API5L-Grade B, SM, Arc Weld, Steel	2,613 psi
7	3 ft	4.500 in.	0.337 in.	API5L-Grade B, SM, Arc Weld, Steel	5,242 psi
8	1 ft	4.500 in.	0.237 in.	API5L-Grade B, SM, Arc Weld, Steel	3,687 psi
9	22 ft	24.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	2,708 psi

#### Initial Test Conditions

Pressure at Test Point:	1,105 psig	Date/Time:	9/16/11 11:30 AM	Pipe Temperature	
Ambient Temperature:	79.0 °F	Elevation @ Test Point:	128.0 ft	Unrestrained:	75.0 °F
Pressure @ High Point (Cal/Measure):	1,095 psig	Elevation @ High Point:	152.0 ft	Restrained:	69.0 °F
Pressure @ Low Point (Cal/Measure):	1,105 psig	Elevation @ Low Point:	128.0 ft	Location:	3+74
				Location:	0+00
				Location:	3+74

#### Final Test Conditions

Pressure at Test Point:	1,032 psig	Date/Time:	9/16/11 7:40 PM	Pipe Temperature	
Ambient Temperature:	67.0 °F	Elevation @ Test Point:	128.0 ft	Unrestrained:	75.0 °F
Pressure @ High Point (Cal/Measure):	1,022 psig	Elevation @ High Point:	152.0 ft	Restrained:	69.0 °F
Pressure @ Low Point (Cal/Measure):	1,032 psig	Elevation @ Low Point:	128.0 ft	Location:	3+74
				Location:	0+00
				Location:	3+74
Total Fluid Injected:			117.00 fluid ounces	Volume gain	
Total Fluid Withdrawn:			678.40 fluid ounces		
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	134.49 oz	gain	0.0107%	0.947 °F equivalent	

Test Duration: 8.17 hours

Minimum Test Pressure:	1,020 psig	1,010 psig	1,020 psig	
Maximum Test Pressure:	1,109 psig	1,099 psig	1,109 psig	
% SMYS :	21.0%	21.0%	63.4%	
Test Segment Observed % SMYS :	Minimum	21.0%	Maximum	63.4%

Minimum Test Pressure (Calculated/Measured): 1,022 psig

Maximum Allowable Operating Pressure: DOT Part 192 Test Factor= 1.50 681 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 1105 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 426 feet of buried and 63 feet of exposed pipe. Pressure lost 73 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment fluid temperature remained steady.</p> <p>561.40 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 134.49 ounces, gain, which is equivalent to a 0.95 °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	Redacted
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# Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41502566
Construction Co.	ARB	Job Number	0629-53-3500 T 19
Testing Co.	Contra Costa Inspection	Project No.	T-19 9/16/2011
Test Section	PG&E T-19 L-114, MP 16.5233 - 16.5878		
File Name	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878		

Date	16-Sep-11	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	9/16/11	10:53 AM	761 psig	79 °F	75 °F	69 °F	Start Spike		
2	9/16/11	10:54 AM	771 psig	79 °F	75 °F	69 °F	Inject		59 oz.
3	9/16/11	10:55 AM	781 psig	79 °F	75 °F	69 °F	Inject		59 oz.
4	9/16/11	10:56 AM	791 psig	79 °F	75 °F	69 °F	Inject		59 oz.
5	9/16/11	10:57 AM	801 psig	79 °F	75 °F	69 °F	Inject		59 oz.
6	9/16/11	10:58 AM	811 psig	79 °F	75 °F	69 °F	Inject		59 oz.
7	9/16/11	10:59 AM	821 psig	79 °F	75 °F	69 °F	Inject		59 oz.
8	9/16/11	11:00 AM	831 psig	79 °F	75 °F	69 °F	Inject		59 oz.
9	9/16/11	11:01 AM	841 psig	79 °F	75 °F	69 °F	Inject		59 oz.
10	9/16/11	11:02 AM	851 psig	79 °F	75 °F	69 °F	Inject		59 oz.
11	9/16/11	11:03 AM	861 psig	79 °F	75 °F	69 °F	Inject		59 oz.
12	9/16/11	11:04 AM	871 psig	79 °F	75 °F	69 °F	Inject		59 oz.
13	9/16/11	11:05 AM	881 psig	79 °F	75 °F	69 °F	Inject		59 oz.
14	9/16/11	11:06 AM	891 psig	79 °F	75 °F	69 °F	Inject		59 oz.
15	9/16/11	11:07 AM	901 psig	79 °F	75 °F	69 °F	Inject		59 oz.
16	9/16/11	11:08 AM	911 psig	79 °F	75 °F	69 °F	Inject		59 oz.
17	9/16/11	11:09 AM	921 psig	79 °F	75 °F	69 °F	Inject		59 oz.
18	9/16/11	11:10 AM	931 psig	79 °F	75 °F	69 °F	Inject		59 oz.
19	9/16/11	11:11 AM	941 psig	79 °F	75 °F	69 °F	Inject		59 oz.
20	9/16/11	11:12 AM	951 psig	79 °F	75 °F	69 °F	Inject		59 oz.
21	9/16/11	11:13 AM	961 psig	79 °F	75 °F	69 °F	Inject		59 oz.
22	9/16/11	11:14 AM	971 psig	79 °F	75 °F	69 °F	Inject		59 oz.
23	9/16/11	11:15 AM	981 psig	79 °F	75 °F	69 °F	Inject		59 oz.
24	9/16/11	11:16 AM	991 psig	79 °F	75 °F	69 °F	Inject		59 oz.
25	9/16/11	11:17 AM	1,001 psig	79 °F	75 °F	69 °F	Inject		59 oz.
26	9/16/11	11:18 AM	1,011 psig	79 °F	75 °F	69 °F	Inject		59 oz.
27	9/16/11	11:19 AM	1,021 psig	79 °F	75 °F	69 °F	Inject		59 oz.
28	9/16/11	11:20 AM	1,031 psig	79 °F	75 °F	69 °F	Inject		59 oz.
29	9/16/11	11:21 AM	1,041 psig	79 °F	75 °F	69 °F	Inject		59 oz.
30	9/16/11	11:22 AM	1,051 psig	79 °F	75 °F	69 °F	Inject		59 oz.
31	9/16/11	11:23 AM	1,061 psig	79 °F	75 °F	69 °F	Inject		59 oz.
32	9/16/11	11:24 AM	1,071 psig	79 °F	75 °F	69 °F	Inject		59 oz.
33	9/16/11	11:25 AM	1,081 psig	79 °F	75 °F	69 °F	Inject		59 oz.
34	9/16/11	11:26 AM	1,091 psig	79 °F	75 °F	69 °F	Inject		59 oz.
35	9/16/11	11:27 AM	1,101 psig	79 °F	75 °F	69 °F	Inject		59 oz.
36	9/16/11	11:28 AM	1,105 psig	79 °F	75 °F	69 °F	Inject		25 oz.
37	9/16/11	11:30 AM	1,105 psig	79 °F	75 °F	69 °F	On Test		
38	9/16/11	11:40 AM	1,106 psig	80 °F	75 °F	69 °F			
39	9/16/11	11:50 AM	1,107 psig	80 °F	75 °F	69 °F			
40	9/16/11	12:00 PM	1,109 psig	80 °F	75 °F	69 °F	End Spike		
41	9/16/11	12:02 PM	1,099 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
42	9/16/11	12:03 PM	1,089 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
43	9/16/11	12:04 PM	1,079 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
44	9/16/11	12:05 PM	1,069 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
45	9/16/11	12:06 PM	1,059 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
46	9/16/11	12:07 PM	1,049 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
47	9/16/11	12:08 PM	1,039 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
48	9/16/11	12:09 PM	1,029 psig	80 °F	75 °F	69 °F	Bleed	59 oz.	
49	9/16/11	12:10 PM	1,020 psig	81 °F	76 °F	69 °F	Bleed	53 oz.	



## Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41502566
Construction Co.	ARB	Job Number	0629-53-3500 T-19
Testing Co.	Contra Costa Inspection	Project No.	T-19 9/16/2011
Test Section	PG&E T-19 L-114, MP 16.5233 - 16.5878		
File Name	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878		

Date	16-Sep-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			
50	9/16/11	12:25 PM	1,020 psig	82 °F	76 °F	69 °F	Sun Shine		
51	9/16/11	12:40 PM	1,022 psig	83 °F	77 °F	69 °F			
52	9/16/11	12:55 PM	1,022 psig	84 °F	77 °F	69 °F	Sun Shine		
53	9/16/11	1:10 PM	1,022 psig	85 °F	78 °F	69 °F			
54	9/16/11	1:25 PM	1,022 psig	86 °F	79 °F	69 °F			
55	9/16/11	1:40 PM	1,032 psig	87 °F	79 °F	69 °F			
56	9/16/11	1:55 PM	1,036 psig	85 °F	80 °F	69 °F			
57	9/16/11	2:10 PM	1,037 psig	82 °F	81 °F	69 °F			
58	9/16/11	2:25 PM	1,040 psig	86 °F	81 °F	69 °F			
59	9/16/11	2:40 PM	1,043 psig	89 °F	81 °F	69 °F	Sun Shine		
60	9/16/11	2:55 PM	1,049 psig	87 °F	80 °F	69 °F			
61	9/16/11	3:10 PM	1,021 psig	87 °F	81 °F	69 °F	Bleed	153.60 oz.	
62	9/16/11	3:25 PM	1,021 psig	87 °F	81 °F	69 °F			
63	9/16/11	3:40 PM	1,025 psig	85 °F	81 °F	69 °F	Sun Shine		
64	9/16/11	3:55 PM	1,026 psig	85 °F	81 °F	69 °F			
65	9/16/11	4:10 PM	1,028 psig	84 °F	81 °F	69 °F			
66	9/16/11	4:25 PM	1,029 psig	84 °F	81 °F	69 °F	Sun Shine		
67	9/16/11	4:40 PM	1,030 psig	83 °F	81 °F	69 °F			
68	9/16/11	4:55 PM	1,030 psig	80 °F	81 °F	69 °F			
69	9/16/11	5:10 PM	1,030 psig	80 °F	81 °F	69 °F			
70	9/16/11	5:25 PM	1,031 psig	78 °F	80 °F	69 °F			
71	9/16/11	5:40 PM	1,030 psig	78 °F	80 °F	69 °F			
72	9/16/11	5:55 PM	1,030 psig	77 °F	79 °F	69 °F			
73	9/16/11	6:10 PM	1,029 psig	75 °F	79 °F	69 °F			
74	9/16/11	6:25 PM	1,028 psig	73 °F	77 °F	69 °F			
75	9/16/11	6:40 PM	1,025 psig	71 °F	76 °F	69 °F			
76	9/16/11	6:55 PM	1,023 psig	70 °F	76 °F	69 °F			
77	9/16/11	7:10 PM	1,038 psig	69 °F	75 °F	69 °F			117 oz.
78	9/16/11	7:25 PM	1,035 psig	67 °F	75 °F	69 °F			
79	9/16/11	7:40 PM	1,032 psig	67 °F	75 °F	69 °F	End of Test		

	<b>Spike Test</b>		2,028.4 oz.
	<b>Hydrostatic Test</b>		678.4 oz.    117.0 oz.

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">High Test Pressure:</td> <td style="width: 40%; text-align: center;">1,109 psig</td> </tr> <tr> <td>Low Test Pressure:</td> <td style="text-align: center;">1,020 psig</td> </tr> </table>	High Test Pressure:	1,109 psig	Low Test Pressure:	1,020 psig
High Test Pressure:	1,109 psig					
Low Test Pressure:	1,020 psig					



## Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41502566
Construction Co.	ARB	Job Number	0629-53-3500 T-19
Hydro. Test Co.	Contra Costa Inspection	Project No.	T-19 9/16/2011
Test Section	PG&E T-19 L-114, MP 16.5233 - 16.5878	<b>WATER</b>	
File Name	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878		

### General Pipe Data

Description	Segment									
	1	2	3	4	5	6	7	8	9	
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained
Outside Diameter	24.000 in.	24.000 in.	24.000 in.	24.000 in.	4.500 in.	8.625 in.	4.500 in.	4.500 in.	24.000 in.	
Wall Thickness	0.500 in.	0.375 in.	0.500 in.	0.375 in.	0.237 in.	0.322 in.	0.337 in.	0.237 in.	0.500 in.	
Inside Diameter	23.000 in.	23.250 in.	23.000 in.	23.250 in.	4.026 in.	7.981 in.	3.826 in.	4.026 in.	23.000 in.	
Spec./Grade	API5L-X60	API5L-X60	API5L-X42	API5L-X60	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X65	
Length Unrestrained	22 ft	19 ft							22 ft	
Length Restrained			316 ft	72 ft	25 ft	9 ft	3 ft	1 ft		
Temperature -- On Test	75 °F	75 °F	69.0 °F	69.0 °F	69.0 °F	69.0 °F	69.0 °F	69.0 °F	75.0 °F	
Temperature -- End of Test	75 °F	75 °F	69.0 °F	69.0 °F	69.0 °F	69.0 °F	69.0 °F	69.0 °F	75.0 °F	
Pressure -- On Test	1,105 psig	1,105 psig	1,105 psig	1,105 psig	1,105 psig	1,105 psig	1,105 psig	1,105 psig	1,105 psig	
Pressure -- End of Test	1,032 psig	1,032 psig	1,032 psig	1,032 psig	1,032 psig	1,032 psig	1,032 psig	1,032 psig	1,032 psig	

### Unrestrained Pipe

Sum:	Vo	1,368.70 gal 175,194 oz.		Vtp1	1,374.61 gal 175,950 oz.			Vtp2	1,374.09 gal 175,884 oz.	
Vo Unrestrained	475 gal	419 gal							475 gal	
Fwp 1	1.003387	1.003387							1.003387	
Fpp 1	1.002118	1.002855							1.002118	
Fpt 1	1.000273	1.000273							1.000273	
Fwt 1	1.001688	1.001688							1.001688	
Fpwt 1 = Fpt/Fwt	0.998587	0.998587							0.998587	
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	476.77 gal	421.07 gal							476.77 gal	
Fwp 2	1.003163	1.003163							1.003163	
Fpp 2	1.001978	1.002666							1.001978	
Fpt 2	1.000273	1.000273							1.000273	
Fwt 2	1.001688	1.001688							1.001688	
Fpwt = Fpt/Fwt	0.998587	0.998587							0.998587	
Vtp = Vo(Fwp)(Fpp)(Fpwt)	476.60 gal	420.89 gal							476.60 gal	

### Restrained Pipe

Sum:	Vo	8,450.60 gal 1,081,677 oz.		Vtp1	8,486.44 gal 1,086,264 oz.			Vtp2	8,483.62 gal 1,085,903 oz.	
Vo Unrestrained			6,820 gal	1,588 gal	17 gal	23 gal	2 gal	1 gal		
Fwp 1			1.003387	1.003387	1.003387	1.003387	1.003387	1.003387		
Fpp 1			1.001574	1.002111	1.000602	1.000863	1.000413	1.000602		
Fpt 1			1.000109	1.000109	1.000109	1.000109	1.000109	1.000109		
Fwt 1			1.000929	1.000929	1.000929	1.000929	1.000929	1.000929		
Fpwt 1 = Fpt/Fwt			0.999181	0.999181	0.999181	0.999181	0.999181	0.999181		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			6,849 gal	1,595 gal	17 gal	23 gal	2 gal	1 gal		
Fwp 2			1.003163	1.003163	1.003163	1.003163	1.003163	1.003163		
Fpp 2			1.001472	1.001973	1.000564	1.000808	1.000388	1.000564		
Fpt 2			1.000109	1.000109	1.000109	1.000109	1.000109	1.000109		
Fwt 2			1.000929	1.000929	1.000929	1.000929	1.000929	1.000929		
Fpwt = Fpt/Fwt			0.999181	0.999181	0.999181	0.999181	0.999181	0.999181		
Vtp = Vo(Fwp)(Fpp)(Fpwt)			6,846 gal	1,595 gal	17 gal	23 gal	2 gal	1 gal		

### Combined Pipe

Sum:	Vo	9,819.30 gal 1,256,871 oz.		Vtp1	9,861.05 gal 1,262,214 oz.			Vtp2	9,857.71 gal 1,261,787 oz.	
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## Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41502566
Construction Co.	ARB	Job Number	0629-53-3500 T-19
Hydro. Test Co.	Contra Costa Inspection	Project No.	T-19 9/16/2011
Test Section	PG&E T-19 L-114, MP 16.5233 - 16.5878	<b>WATER</b>	
File Name	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878		

### General Pipe Data

Description	Segment								
	1	2	3	4	5	6	7	8	9
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained
Outside Diameter	24.000 in.	24.000 in.	24.000 in.	24.000 in.	4.500 in.	8.625 in.	4.500 in.	4.500 in.	24.000 in.
Wall Thickness	0.500 in.	0.375 in.	0.500 in.	0.375 in.	0.237 in.	0.322 in.	0.337 in.	0.237 in.	0.500 in.
Inside Diameter	23.000 in.	23.250 in.	23.000 in.	23.250 in.	4.026 in.	7.981 in.	3.826 in.	4.026 in.	23.000 in.
Spec./Grade	API5L-X60	API5L-X60	API5L-X42	API5L-X60	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X65
Length Unstrained	22.00 ft	19.00 ft							22 ft
Length Restrained			316 ft	72 ft	25 ft	9 ft	3 ft	1 ft	
Temperature -- On Test	74 °F	74 °F	68 °F	68 °F	68 °F	68 °F	68 °F	68 °F	74 °F
Temperature -- End of Test	75 °F	75 °F	69 °F	69 °F	69 °F	69 °F	69 °F	69 °F	75 °F
Pressure -- On Test	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig
Pressure -- End of Test	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig	1,068 psig

### Unrestrained Pipe

Sum:	Vo	1,368.70 gal 175,194 oz.		Vtp1	1,374.52 gal 175,939 oz.		Vtp2	1,374.35 gal 175,916 oz.	
Vo Unrestrained	475 gal	419 gal						475 gal	
Fwp 1	1.003273	1.003273						1.003273	
Fpp 1	1.002047	1.002759						1.002047	
Fpt 1	1.000255	1.000255						1.000255	
Fwt 1	1.001542	1.001542						1.001542	
Fpwt 1 = Fpt/Fwt	0.998715	0.998715						0.998715	
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	476.75 gal	421.03 gal						477 gal	
Fwp 2	1.003273	1.003273						1.003273	
Fpp 2	1.002047	1.002759						1.002047	
Fpt 2	1.000273	1.000273						1.000273	
Fwt 2	1.001688	1.001688						1.001688	
Fpwt = Fpt/Fwt	0.998587	0.998587						0.998587	
Vtp = Vo(Fwp)(Fpp)(Fpwt)	476.68 gal	420.98 gal						477 gal	

### Restrained Pipe

Sum:	Vo	8,450.60 gal 1,081,677 oz.		Vtp1	8,485.94 gal 1,086,201 oz.		Vtp2	8,485.01 gal 1,086,081 oz.	
Vo Restrained		6,820 gal	1,588 gal	17 gal	23 gal	2 gal		1 gal	
Fwp 1		1.003273	1.003273	1.003273	1.003273	1.003273	1.003273	1.003273	
Fpp 1		1.001519	1.002037	1.000579	1.000832	1.000397	1.000579	1.000579	
Fpt 1		1.000097	1.000097	1.000097	1.000097	1.000097	1.000097	1.000097	
Fwt 1		1.000803	1.000803	1.000803	1.000803	1.000803	1.000803	1.000803	
Fpwt 1 = Fpt/Fwt		0.999294	0.999294	0.999294	0.999294	0.999294	0.999294	0.999294	
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		6,848 gal	1,595 gal	17 gal	23 gal	2 gal		1 gal	
Fwp 2		1.003273	1.003273	1.003273	1.003273	1.003273	1.003273	1.003273	
Fpp 2		1.001523	1.002041	1.000583	1.000835	1.000400	1.000583	1.000583	
Fpt 2		1.000109	1.000109	1.000109	1.000109	1.000109	1.000109	1.000109	
Fwt 2		1.000929	1.000929	1.000929	1.000929	1.000929	1.000929	1.000929	
Fpwt = Fpt/Fwt		0.999181	0.999181	0.999181	0.999181	0.999181	0.999181	0.999181	
Vtp = Vo(Fwp)(Fpp)(Fpwt)		6,847 gal	1,595 gal	17 gal	23 gal	2 gal		1 gal	

### Combined Pipe

Sum:	Vo	9,819.30 gal 1,256,871 oz.		Vtp1	9,860.47 gal 1,262,140 oz.		Vtp2	9,859.36 gal 1,261,998 oz.	
1 °F Change	1.11 gal	142.08 oz.							



## Hydrostatic Test Pipe Data Table

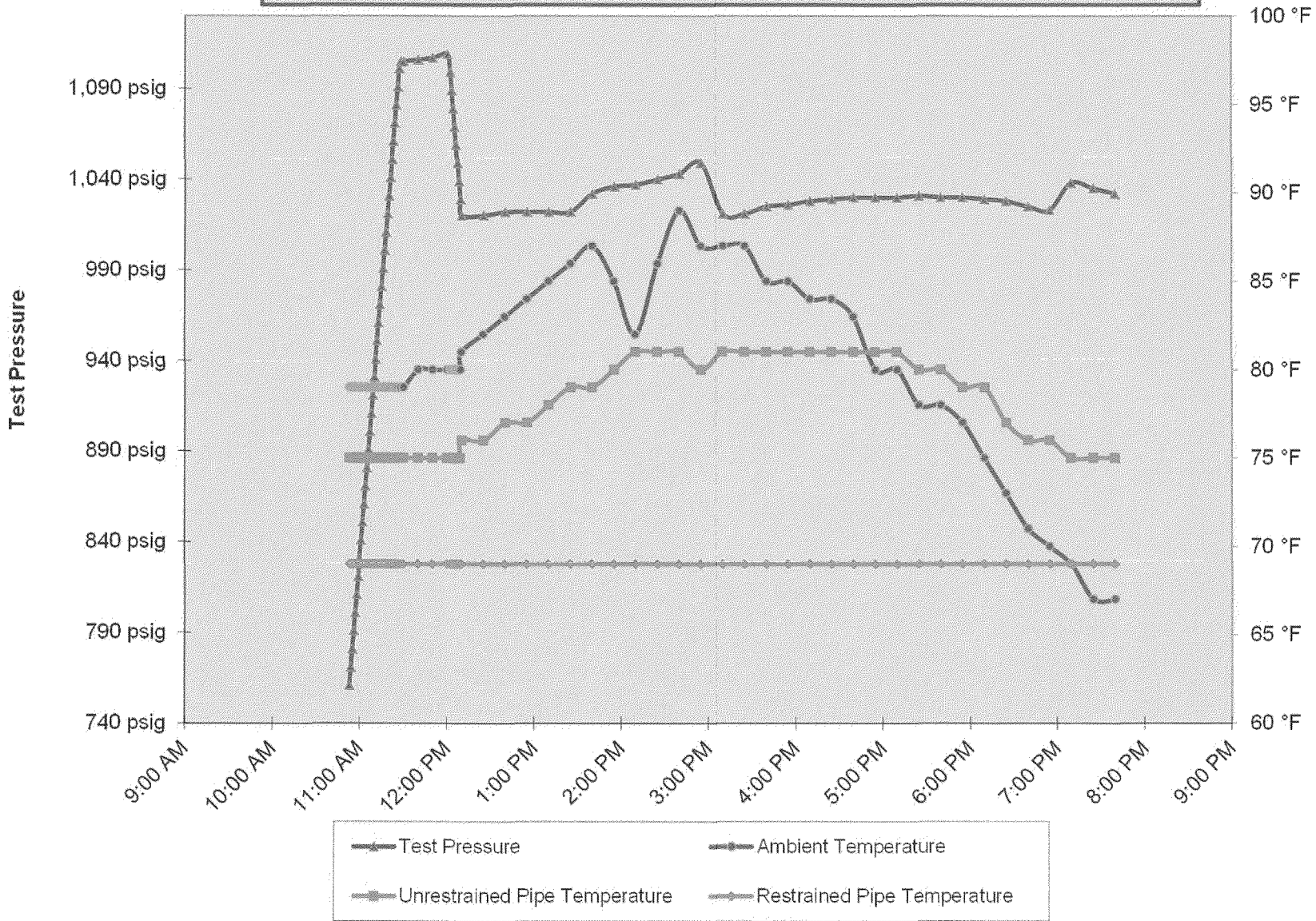
Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	22 ft	Unrestrained	24.000 in.	0.5000 in.	API5L-X60	2,500 psig	Steel	Arc Weld	DSAW
2	19 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
3	316 ft	Restrained	24.000 in.	0.5000 in.	API5L-X42	1,750 psig	Steel	Arc Weld	DSAW
4	72 ft	Restrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
5	25 ft	Restrained	4.500 in.	0.2370 in.	API5L-Grade B	3,687 psig	Steel	Arc Weld	SM
6	9 ft	Restrained	8.625 in.	0.3220 in.	API5L-Grade B	2,613 psig	Steel	Arc Weld	SM
7	3 ft	Restrained	4.500 in.	0.3370 in.	API5L-Grade B	5,242 psig	Steel	Arc Weld	SM
8	1 ft	Restrained	4.500 in.	0.2370 in.	API5L-Grade B	3,687 psig	Steel	Arc Weld	SM
9	22 ft	Unrestrained	24.000 in.	0.5000 in.	API5L-X65	2,708 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: Scott Clapp	41502566
Construction Company	ARB	Job Number
Address	1875 Loveridge Road Pittsburg, CA 94565 Attention: T. Barnes	0629-53-3500 T-19
Hydrostatic Test Co.	Contra Costa Inspection	Project No.
Address	2820 LaJolla Drive Pittsburg, CA 94565 Attention: D. Dawson	T-19 9/16/2011
Test Section	PG&E T-19 L-114, MP 16.5233 - 16.5878 From: 3+74 To: 0+00	
File Name	RCP 61362 - T-19, L-114, MP 16.5233 - 16.5878	

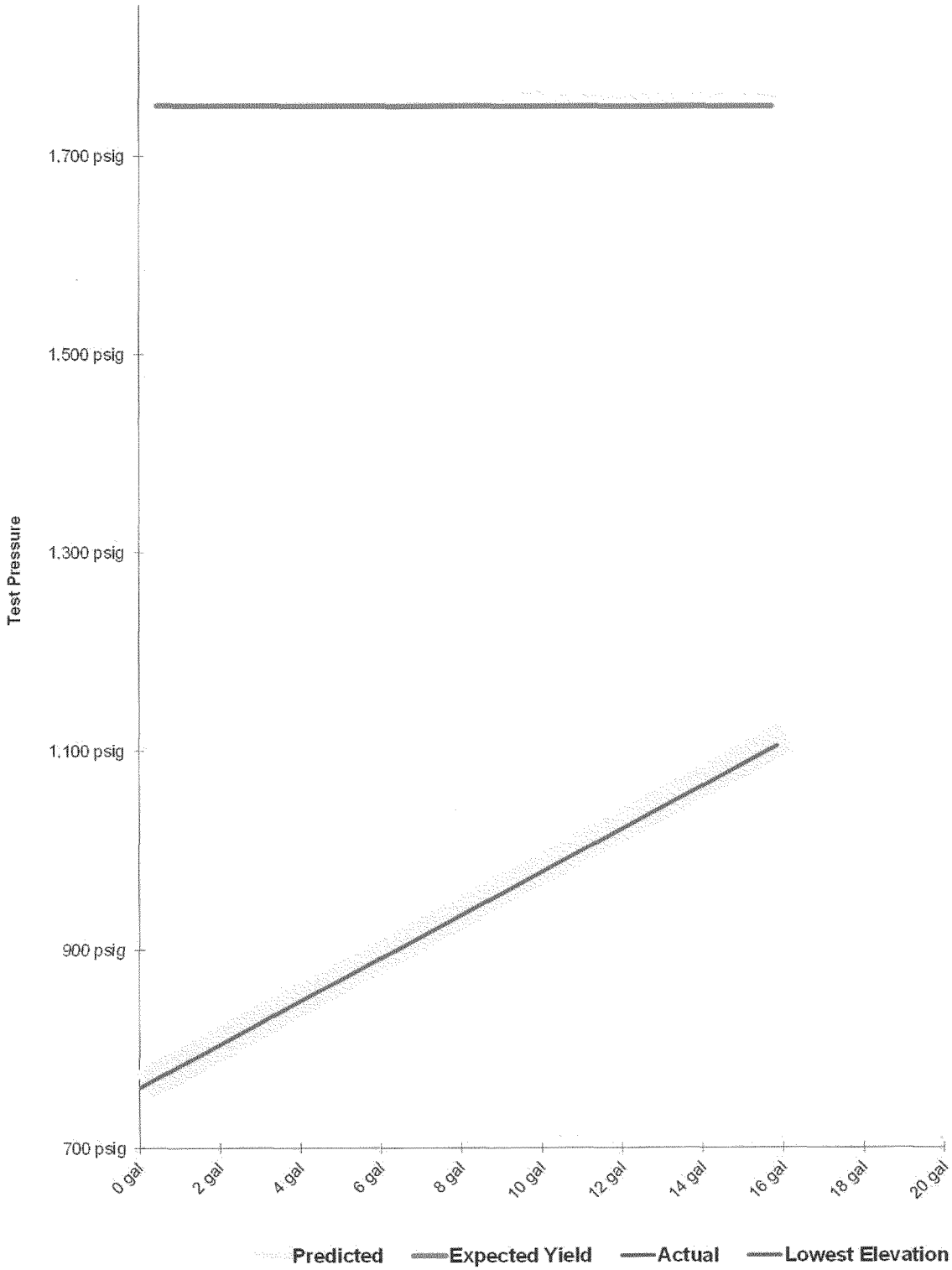
Part II – Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)				Note: Minimum test pressure and duration are not to be changed without written approval.			
Time and Date Test Pressure Reached	9/16/11 11:30 AM	Elevation at Test Point	128 ft	Min. Required Test Press At Test Point (1)	1,015.40 psig	Max. Allowable Test Press at Test Point (4)	1,110.00 psig
Time and Date Test Ended	9/16/11 7:40 PM	Max. Elevation in Test Section	152 ft	Min. Indicated Test Pressure (2)	1,020.00 psig	Max. Indicated Test Pressure (5)	1,109.00 psig
Actual Duration of Test	8 hours 10 minutes	Min. Elevation in Test Section	128 ft	Min. Test Pressure at Max. Elevation (3)	1,009.60 psig	Max. Test Pressure at Min. Elevation (6)	1,109.00 psig

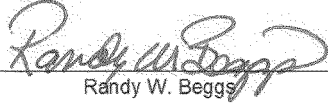
PG&E T-19 L-114, MP 16.5233 - 16.5878





**Spike Pressure Test**  
**Stress Strain Curve -- PG&E T-19 L-114, MP 16.5233 - 16.5878**



Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-19 L-114, MP 16.5233 - 16.5878	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
761 psig	0	0.00 gal		0	0.000	Pump gal per stroke	0.067 gal/stroke
771 psig	7	0.46 gal	0.46 gal	0.046	0.046	Pump Piston Diameter	1.375 in
781 psig	14	0.92 gal	0.91 gal	0.046	0.046	Pump Piston Stroke	3.50 in
791 psig	21	1.38 gal	1.37 gal	0.046	0.046	Pump Cylinders	3 ea
801 psig	28	1.84 gal	1.83 gal	0.046	0.046	Volume check gal per stroke	0.066 gal/stroke
811 psig	35	2.30 gal	2.28 gal	0.046	0.046	Volume Released (gallons)	4.10 gal
821 psig	42	2.76 gal	2.74 gal	0.046	0.046	Pressure Reduced (psi)	89 psi
831 psig	49	3.22 gal	3.20 gal	0.046	0.046	Maximum2	20 gal
841 psig	56	3.68 gal	3.65 gal	0.046	0.046	Minimum2	0 gal
851 psig	63	4.14 gal	4.11 gal	0.046	0.046	Maximum1	1,850 psig
861 psig	70	4.60 gal	4.57 gal	0.046	0.046	Minimum1	700 psig
871 psig	77	5.06 gal	5.02 gal	0.046	0.046	Gallons/Stroke Used	0.066 gal/stroke
881 psig	84	5.52 gal	5.48 gal	0.046	0.046	Predicted Gallons/Stroke	0.065 gal/stroke
891 psig	91	5.98 gal	5.94 gal	0.046	0.046	Pressure Increment	10 psi
901 psig	98	6.44 gal	6.39 gal	0.046	0.046	Max Pressure	1,105 psig
911 psig	105	6.90 gal	6.85 gal	0.046	0.046	Buried Pipe Temperature	69 °F
921 psig	112	7.36 gal	7.31 gal	0.046	0.046	Exposed Pipe Temperature	75 °F
931 psig	119	7.82 gal	7.76 gal	0.046	0.046	ASME B31.8 Appendix N-5	
941 psig	126	8.29 gal	8.22 gal	0.046	0.046		
951 psig	133	8.75 gal	8.68 gal	0.046	0.046	Average Actual Elastic Slope	0.046
961 psig	140	9.21 gal	9.13 gal	0.046	0.046	Average Predicted Elastic Slope	0.046
971 psig	147	9.67 gal	9.59 gal	0.046	0.046	Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	0.088
981 psig	154	10.13 gal	10.05 gal	0.046	0.046	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	1,105 psig
991 psig	161	10.59 gal	10.50 gal	0.046	0.046	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
1,001 psig	168	11.05 gal	10.96 gal	0.046	0.046	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
1,011 psig	175	11.51 gal	11.42 gal	0.046	0.046	 Randy W. Beggs Date	
1,021 psig	182	11.97 gal	11.88 gal	0.046	0.046		
1,031 psig	189	12.43 gal	12.33 gal	0.046	0.046		
1,041 psig	196	12.89 gal	12.79 gal	0.046	0.046		
1,051 psig	203	13.35 gal	13.25 gal	0.046	0.046		
1,061 psig	210	13.81 gal	13.70 gal	0.046	0.046		
1,071 psig	217	14.27 gal	14.16 gal	0.046	0.046		
1,081 psig	224	14.73 gal	14.62 gal	0.046	0.046		
1,091 psig	231	15.19 gal	15.08 gal	0.046	0.046		
1,101 psig	238	15.65 gal	15.53 gal	0.046	0.046		
1,105 psig	241	15.85 gal	15.72 gal	0.049	0.046		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		
1,105 psig		15.85 gal	15.72 gal	0.000	0.000		



