



RCP, Inc

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Redacted

October 25, 2011

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

Test Contractor: Milbar -- T-109E 10/25/11
Asset Owner: Pacific Gas and Electric Company -- 41474082
Construction Contractor: Snelson -- 41474802 T-109E
Test Section: PG&E T-109E, L-148, MP 14.60 - 17.63
Test Date: October 25, 2011
Certificate Number: RCP 61362 - T-109E, L-148, MP 14.60 - 17.63

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 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 1114 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 8.35 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.35 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 1034 psig and the MAOP per 49 CFR Part 192, Subpart J can be as high as 689 psig. The MAOP established by this test is sufficient to qualify for Pacific Gas and Electric Company's desired MAOP of 675 psig.

Pressure decreased 80 psi during the test. 294.91 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 136.67 ounces, gain, which is equivalent to a 1.32 °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 2,609 feet of buried and 58 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	41474082
Construction Co.	Snelson	Job Number	41474802 T-109E
Hydro. Test Co.	Milbar	Project No.	T-109E 10/25/11
Test Section	PG&E T-109E, L-148, MP 14.60 - 17.63		
File Name	RCP 61362 - T-109E, L-148, MP 14.60 - 17.63		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3) Test Date: 25-Oct-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-109E, L-148, MP 14.60 - 17.63		
From:	158+27	To:	132+47

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	40 ft	8.625 in.	0.188 in.	API5L-X52, ERW-HF, Arc Weld, Steel	2,267 psi
2	2,543 ft	8.625 in.	0.277 in.	API5L-Grade B, SM, Arc Weld, Steel	2,248 psi
3 <i>Test head</i>	18 ft	8.625 in.	0.322 in.	API5L-Grade B, SM, Arc Weld, Steel	2,613 psi
4	66 ft	1.315 in.	0.113 in.	API5L-Grade B, SM, Arc Weld, Steel	6,015 psi

Initial Test Conditions

Pressure at Test Point:	1,114 psig	Date/Time:	10/25/11 1:53 PM	Pipe Temperature	
Ambient Temperature:	72.0 °F	Elevation @ Test Point:	90.0 ft	Unrestrained:	74.0 °F
Pressure @ High Point (Cal/Measure):	1,114 psig	Elevation @ High Point:	90.0 ft	Restrained:	79.0 °F
Pressure @ Low Point (Cal/Measure):	1,115 psig	Elevation @ Low Point:	88.0 ft	Location:	158+27
				Location:	158+27
				Location:	132+47

Final Test Conditions

Pressure at Test Point:	1,034 psig	Date/Time:	10/25/11 10:14 PM	Pipe Temperature	
Ambient Temperature:	61.0 °F	Elevation @ Test Point:	90.0 ft	Unrestrained:	63.0 °F
Pressure @ High Point (Cal/Measure):	1,034 psig	Elevation @ High Point:	90.0 ft	Restrained:	78.0 °F
Pressure @ Low Point (Cal/Measure):	1,035 psig	Elevation @ Low Point:	88.0 ft	Location:	158+27
				Location:	158+27
				Location:	132+47

Total Fluid Injected:

Total Fluid Withdrawn: 294.91 fluid ounces

Volume gain

Net Change in Volume of the Test Section ± (+ Gain, - Loss):	136.67 oz	gain	0.0154%	1.318 °F equivalent
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Test Duration: 8.35 hours

Minimum Test Pressure:	1,034 psig	1,034 psig	1,035 psig	
Maximum Test Pressure:	1,114 psig	1,114 psig	1,115 psig	
% SMYS:		42.6%	49.6%	
Test Segment Observed % SMYS:	Minimum	18.5%	Maximum	49.6%

Minimum Test Pressure (Calculated/Measured): 1,034 psig

Maximum Allowable Operating Pressure: DOT Part 192 Test Factor= 1.50 689 psig

The MAOP established by this test is sufficient to qualify for Pacific Gas and Electric Company's desired MAOP of 675 psig.

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	<p>The test segment was subjected to a spike pressure test of 1114 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 8.35 hour test duration period.</p> <p>No leaks were observed during the test period. The test section included 2,609 feet of buried and 58 feet of exposed pipe. Pressure lost 80 psi during the test. The buried pipe segment lost 1°F fluid temperature and the exposed pipe segment lost 11°F.</p> <p>294.91 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 136.67 ounces, gain, which is equivalent to a 1.32 °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 2,609 feet of buried and 58 feet of exposed pipe from a single point on the line.</p>

Remarks

Redacted

25-Oct-11



Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474082
Construction Co.	Snelson	Job Number	41474802 T-109E
Testing Co.	Milbar	Project No.	T-109E 10/25/11
Test Section	PG&E T-109E, L-148, MP 14.60 - 17.63		
File Name	RCP 61362 - T-109E, L-148, MP 14.60 - 17.63		

Date	25-Oct-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	10/25/11	1:30 PM	760 psig	71 °F	74 °F	79 °F	Start Spike		
2	10/25/11	1:30 PM	770 psig	71 °F	74 °F	79 °F	Inject		29 oz.
3	10/25/11	1:30 PM	780 psig	71 °F	74 °F	79 °F	Inject		47 oz.
4	10/25/11	1:30 PM	790 psig	71 °F	74 °F	79 °F	Inject		41 oz.
5	10/25/11	1:31 PM	800 psig	71 °F	74 °F	79 °F	Inject		35 oz.
6	10/25/11	1:31 PM	810 psig	71 °F	74 °F	79 °F	Inject		47 oz.
7	10/25/11	1:31 PM	820 psig	71 °F	74 °F	79 °F	Inject		41 oz.
8	10/25/11	1:31 PM	830 psig	71 °F	74 °F	79 °F	Inject		41 oz.
9	10/25/11	1:32 PM	840 psig	71 °F	74 °F	79 °F	Inject		41 oz.
10	10/25/11	1:33 PM	850 psig	71 °F	74 °F	79 °F	Inject		41 oz.
11	10/25/11	1:34 PM	860 psig	71 °F	74 °F	79 °F	Inject		41 oz.
12	10/25/11	1:35 PM	870 psig	71 °F	74 °F	79 °F	Inject		41 oz.
13	10/25/11	1:36 PM	880 psig	71 °F	74 °F	79 °F	Inject		41 oz.
14	10/25/11	1:37 PM	890 psig	71 °F	74 °F	79 °F	Inject		35 oz.
15	10/25/11	1:38 PM	900 psig	71 °F	74 °F	79 °F	Inject		47 oz.
16	10/25/11	1:39 PM	910 psig	71 °F	74 °F	79 °F	Inject		41 oz.
17	10/25/11	1:40 PM	920 psig	71 °F	74 °F	79 °F	Inject		41 oz.
18	10/25/11	1:41 PM	930 psig	71 °F	74 °F	79 °F	Inject		41 oz.
19	10/25/11	1:41 PM	940 psig	71 °F	74 °F	79 °F	Inject		41 oz.
20	10/25/11	1:41 PM	950 psig	71 °F	74 °F	79 °F	Inject		41 oz.
21	10/25/11	1:42 PM	960 psig	71 °F	74 °F	79 °F	Inject		41 oz.
22	10/25/11	1:43 PM	970 psig	71 °F	74 °F	79 °F	Inject		35 oz.
23	10/25/11	1:43 PM	980 psig	71 °F	74 °F	79 °F	Inject		41 oz.
24	10/25/11	1:43 PM	990 psig	71 °F	74 °F	79 °F	Inject		47 oz.
25	10/25/11	1:44 PM	1,000 psig	71 °F	74 °F	79 °F	Inject		35 oz.
26	10/25/11	1:44 PM	1,010 psig	71 °F	74 °F	79 °F	Inject		41 oz.
27	10/25/11	1:44 PM	1,020 psig	71 °F	74 °F	79 °F	Inject		41 oz.
28	10/25/11	1:45 PM	1,030 psig	71 °F	74 °F	79 °F	Inject		41 oz.
29	10/25/11	1:46 PM	1,040 psig	71 °F	74 °F	79 °F	Inject		47 oz.
30	10/25/11	1:47 PM	1,050 psig	71 °F	74 °F	79 °F	Inject		35 oz.
31	10/25/11	1:48 PM	1,060 psig	71 °F	74 °F	79 °F	Inject		41 oz.
32	10/25/11	1:49 PM	1,070 psig	71 °F	74 °F	79 °F	Inject		41 oz.
33	10/25/11	1:50 PM	1,080 psig	71 °F	74 °F	79 °F	Inject		41 oz.
34	10/25/11	1:50 PM	1,090 psig	71 °F	74 °F	79 °F	Inject		41 oz.
35	10/25/11	1:50 PM	1,100 psig	71 °F	74 °F	79 °F	Inject		41 oz.
36	10/25/11	1:51 PM	1,110 psig	71 °F	74 °F	79 °F	Inject		41 oz.
37	10/25/11	1:51 PM	1,114 psig	72 °F	74 °F	79 °F	Inject		18 oz.
38	10/25/11	1:53 PM	1,114 psig	72 °F	74 °F	79 °F	On Test		
39	10/25/11	2:03 PM	1,113 psig	72 °F	76 °F	79 °F			
40	10/25/11	2:13 PM	1,112 psig	73 °F	76 °F	79 °F			
41	10/25/11	2:23 PM	1,111 psig	73 °F	76 °F	79 °F	End Spike		
42	10/25/11	2:25 PM	1,101 psig	73 °F	77 °F	79 °F	Bleed	41 oz.	
43	10/25/11	2:27 PM	1,091 psig	73 °F	76 °F	79 °F	Bleed	41 oz.	
44	10/25/11	2:32 PM	1,081 psig	73 °F	76 °F	79 °F	Bleed	41 oz.	
45	10/25/11	2:35 PM	1,071 psig	73 °F	76 °F	79 °F	Bleed	41 oz.	
46	10/25/11	2:38 PM	1,061 psig	73 °F	76 °F	79 °F	Bleed	41 oz.	
47	10/25/11	2:40 PM	1,051 psig	73 °F	76 °F	79 °F	Bleed	41 oz.	
48	10/25/11	2:42 PM	1,041 psig	73 °F	76 °F	79 °F	Bleed	41 oz.	



Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474082
Construction Co.	Snelson	Job Number	41474802 T-109E
Testing Co.	Milbar	Project No.	T-109E 10/25/11
Test Section	PG&E T-109E, L-148, MP 14.60 - 17.63		
File Name	RCP 61362 - T-109E, L-148, MP 14.60 - 17.63		

Date	25-Oct-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			
49	10/25/11	2:44 PM	1,039 psig	73 °F	76 °F	79 °F	Bleed	8 oz.	
50	10/25/11	2:59 PM	1,040 psig	73 °F	77 °F	79 °F			
51	10/25/11	3:14 PM	1,040 psig	73 °F	77 °F	79 °F	Sun Shine		
52	10/25/11	3:29 PM	1,041 psig	73 °F	77 °F	79 °F			
53	10/25/11	3:44 PM	1,041 psig	74 °F	77 °F	79 °F			
54	10/25/11	3:59 PM	1,041 psig	75 °F	78 °F	79 °F			
55	10/25/11	4:14 PM	1,041 psig	75 °F	78 °F	79 °F			
56	10/25/11	4:29 PM	1,041 psig	75 °F	78 °F	79 °F			
57	10/25/11	4:44 PM	1,041 psig	75 °F	78 °F	79 °F			
58	10/25/11	4:59 PM	1,041 psig	74 °F	78 °F	79 °F			
59	10/25/11	5:14 PM	1,041 psig	74 °F	78 °F	79 °F			
60	10/25/11	5:29 PM	1,041 psig	73 °F	77 °F	79 °F			
61	10/25/11	5:44 PM	1,041 psig	73 °F	73 °F	79 °F			
62	10/25/11	5:59 PM	1,041 psig	73 °F	73 °F	79 °F			
63	10/25/11	6:14 PM	1,040 psig	71 °F	73 °F	79 °F			
64	10/25/11	6:29 PM	1,040 psig	70 °F	72 °F	79 °F			
65	10/25/11	6:44 PM	1,039 psig	70 °F	71 °F	79 °F			
66	10/25/11	6:59 PM	1,039 psig	68 °F	71 °F	79 °F			
67	10/25/11	7:14 PM	1,039 psig	68 °F	71 °F	79 °F			
68	10/25/11	7:29 PM	1,038 psig	67 °F	70 °F	79 °F			
69	10/25/11	7:44 PM	1,038 psig	67 °F	70 °F	79 °F			
70	10/25/11	7:59 PM	1,037 psig	65 °F	68 °F	79 °F			
71	10/25/11	8:14 PM	1,037 psig	65 °F	67 °F	79 °F			
72	10/25/11	8:29 PM	1,037 psig	65 °F	67 °F	79 °F			
73	10/25/11	8:44 PM	1,037 psig	64 °F	65 °F	79 °F			
74	10/25/11	8:59 PM	1,036 psig	63 °F	65 °F	79 °F			
75	10/25/11	9:14 PM	1,036 psig	63 °F	65 °F	78 °F			
76	10/25/11	9:29 PM	1,035 psig	63 °F	64 °F	78 °F			
77	10/25/11	9:44 PM	1,035 psig	62 °F	63 °F	78 °F			
78	10/25/11	9:59 PM	1,034 psig	61 °F	63 °F	78 °F			
79	10/25/11	10:14 PM	1,034 psig	61 °F	63 °F	78 °F	End of Test		

Spike Test		1,445.3 oz.
Hydrostatic Test	294.9 oz.	

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	High Test Pressure: 1,114 psig	Low Test Pressure: 1,034 psig
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Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41474082
Construction Co.	Snelson	Job Number	41474802 T-109E
Hydro. Test Co.	Milbar	Project No.	T-109E 10/25/11
Test Section	PG&E T-109E, L-148, MP 14.60 - 17.63	WATER	
File Name	RCP 61362 - T-109E, L-148, MP 14.60 - 17.63		

General Pipe Data							
Description	Segment						
	1	2	3	4			
Restrained or Unrestrained?	Unrestrained	Restrained	Unrestrained	Restrained			
Outside Diameter	8.625 in.	8.625 in.	8.625 in.	1.315 in.			
Wall Thickness	0.188 in.	0.277 in.	0.322 in.	0.113 in.			
Inside Diameter	8.249 in.	8.071 in.	7.981 in.	1.089 in.			
Spec./Grade	API5L-X52	API5L-Grade B	API5L-Grade B	API5L-Grade B			
Length Unrestrained	40 ft		18 ft				
Length Restrained		2,543 ft		66 ft			
Temperature -- On Test	74 °F	79 °F	74.0 °F	79.0 °F			
Temperature -- End of Test	63 °F	78 °F	63.0 °F	78.0 °F			
Pressure -- On Test	1,114 psig	1,114 psig	1,114 psig	1,114 psig			
Pressure -- End of Test	1,034 psig	1,034 psig	1,034 psig	1,034 psig			

Unrestrained Pipe					
Vo	157.83 gal	Vtp1	158.45 gal	Vtp2	158.56 gal
	20,202 oz.		20,281 oz.		20,295 oz.
Vo Unrestrained	111 gal		47 gal		
Fwp 1	1.003415		1.003415		
Fpp 1	1.002037		1.001150		
Fpt 1	1.000255		1.000255		
Fwt 1	1.001542		1.001542		
Fpwt 1 = Fpt/Fwt	0.998715		0.998715		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	111.51 gal		46.93 gal		
Fwp 2	1.003169		1.003169		
Fpp 2	1.001890		1.001068		
Fpt 2	1.000055		1.000055		
Fwt 2	1.000267		1.000267		
Fpwt = Fpt/Fwt	0.999788		0.999788		
Vtp = Vo(Fwp)(Fpp)(Fpwt)	111.59 gal		46.97 gal		

Restrained Pipe					
Vo	6,761.85 gal	Vtp1	6,778.36 gal	Vtp2	6,777.01 gal
	865,516 oz.		867,629 oz.		867,457 oz.
Vo Unrestrained		6,759 gal	3 gal		
Fwp 1		1.003415	1.003415		
Fpp 1		1.001053	1.000394		
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)		6,775 gal	3 gal		
Fwp 2		1.003169	1.003169		
Fpp 2		1.000979	1.000367		
Fpt 2		1.000218	1.000218		
Fwt 2		1.002122	1.002122		
Fpwt = Fpt/Fwt		0.998100	0.998100		
Vtp = Vo(Fwp)(Fpp)(Fpwt)		6,774 gal	3 gal		

Combined Pipe					
Vo	6,919.68 gal	Vtp1	6,936.80 gal	Vtp2	6,935.56 gal
	885,719 oz.		887,910 oz.		887,752 oz.



Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41474082
Construction Co.	Snelson	Job Number	41474802 T-109E
Hydro. Test Co.	Milbar	Project No.	T-109E 10/25/11
Test Section	PG&E T-109E, L-148, MP 14.60 - 17.63	WATER	
File Name	RCP 61362 - T-109E, L-148, MP 14.60 - 17.63		

General Pipe Data

Description	Segment			
	1	2	3	4
Restrained or Unrestrained?	Unrestrained	Restrained	Unrestrained	Restrained
Outside Diameter	8.625 in.	8.625 in.	8.625 in.	1.315 in.
Wall Thickness	0.188 in.	0.277 in.	0.322 in.	0.113 in.
Inside Diameter	8.249 in.	8.071 in.	7.981 in.	1.089 in.
Spec./Grade	API5L-X52	API5L-Grade B	API5L-Grade B	API5L-Grade B
Length Unstrained	40 ft		18 ft	
Length Restrained		2,543 ft		66 ft
Temperature -- On Test	68 °F	78 °F	68 °F	78 °F
Temperature -- End of Test	69 °F	79 °F	69 °F	79 °F
Pressure -- On Test	1,074 psig	1,074 psig	1,074 psig	1,074 psig
Pressure -- End of Test	1,074 psig	1,074 psig	1,074 psig	1,074 psig

Unrestrained Pipe

Vo	157.83 gal 20,202 oz.	Vtp1	158.52 gal 20,290 oz.	Vtp2	158.50 gal 20,288 oz.
Vo Unrestrained	111 gal		47 gal		
Fwp 1	1.003292		1.003292		
Fpp 1	1.001964		1.001109		
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)	111.56 gal		46.95 gal		
Fwp 2	1.003292		1.003292		
Fpp 2	1.001964		1.001109		
Fpt 2	1.000164		1.000164		
Fwt 2	1.000929		1.000929		
Fpwt = Fpt/Fwt	0.999236		0.999236		
Vtp = Vo(Fwp)(Fpp)(Fpwt)	111.55 gal		46.95 gal		

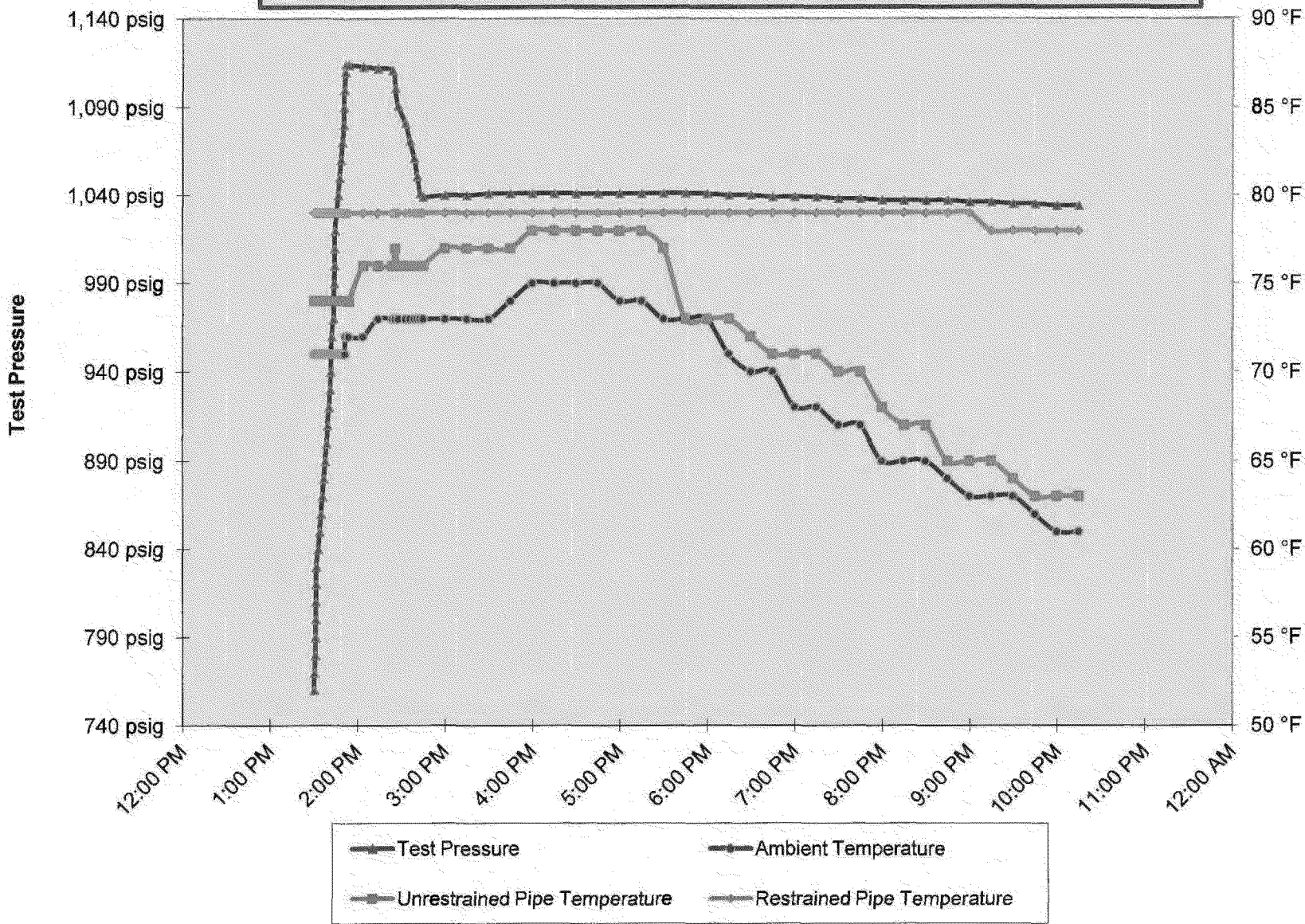
Restrained Pipe

Vo	6,761.85 gal 865,516 oz.	Vtp1	6,778.08 gal 867,594 oz.	Vtp2	6,777.29 gal 867,492 oz.
Vo Restrained		6,759 gal	3 gal		
Fwp 1		1.003292	1.003292		
Fpp 1		1.001014	1.000379		
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)		6,775 gal	3 gal		
Fwp 2		1.003292	1.003292		
Fpp 2		1.001018	1.000382		
Fpt 2		1.000230	1.000230		
Fwt 2		1.002255	1.002255		
Fpwt = Fpt/Fwt		0.997979	0.997979		
Vtp = Vo(Fwp)(Fpp)(Fpwt)		6,774 gal	3 gal		

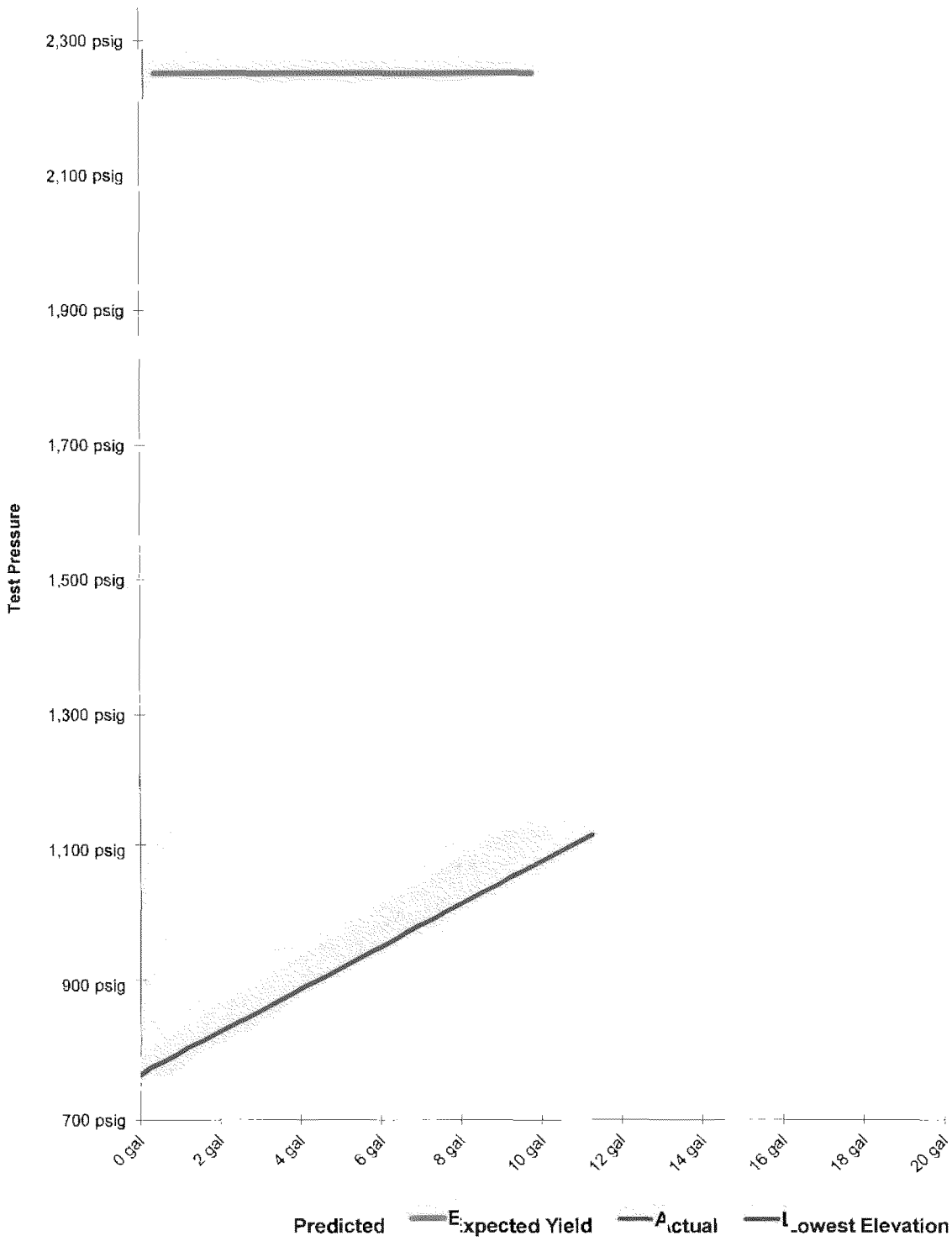
Combined Pipe

Vo	6,919.68 gal 885,719 oz.	Vtp1	6,936.59 gal 887,884 oz.	Vtp2	6,935.78 gal 887,780 oz.
1 °F Change	0.81 gal		103.70 oz.		

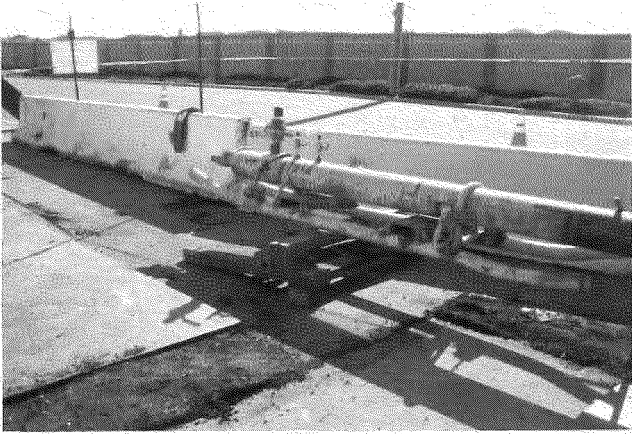
PG&E T-109E, L-148, MP 14.60 - 17.63



Spike Pressure Test
Stress Strain Curve -- PG&E T-109E, L-148, MP 14.60 - 17.63



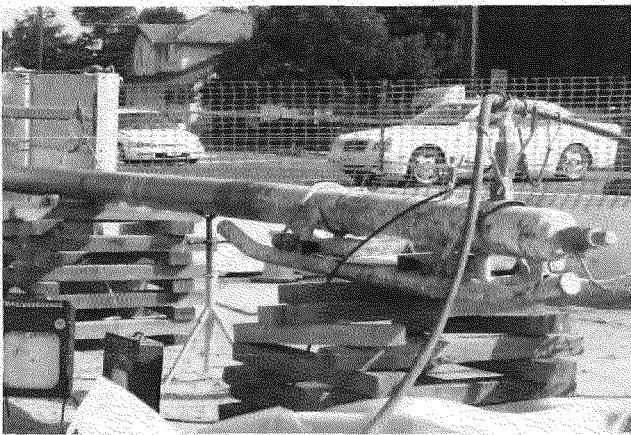
Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-109E, L-148, MP 14.60 - 17.63	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
760 psig	0	0.00 gal		0	0.000	39250	0.046 gal/stroke
770 psig	5	0.23 gal	0.27 gal	0.023	0.027	Pump Piston Diameter	1.500 in
780 psig	13	0.60 gal	0.55 gal	0.037	0.027	Pump Piston Stroke	6.00 in
790 psig	20	0.92 gal	0.82 gal	0.032	0.027	Pump Cylinders	1 ea
800 psig	26	1.19 gal	1.10 gal	0.028	0.027	Volume check gal per stroke	0.046 gal/stroke
810 psig	34	1.56 gal	1.37 gal	0.037	0.027	Volume Released (gallons)	0.32 gal
820 psig	41	1.88 gal	1.65 gal	0.032	0.027	Pressure Reduced (psi)	10 psi
830 psig	48	2.20 gal	1.92 gal	0.032	0.027	Maximum2	20 gal
840 psig	55	2.52 gal	2.20 gal	0.032	0.027	Minimum2	0 gal
850 psig	62	2.85 gal	2.47 gal	0.032	0.028	Maximum1	2,349 psig
860 psig	69	3.17 gal	2.75 gal	0.032	0.028	Minimum1	700 psig
870 psig	76	3.49 gal	3.02 gal	0.032	0.028	Gallons/Stroke Used	0.046 gal/stroke
880 psig	83	3.81 gal	3.30 gal	0.032	0.028	Predicted Gallons/Stroke	0.040 gal/stroke
890 psig	89	4.09 gal	3.57 gal	0.028	0.028	Pressure Increment	10 psi
900 psig	97	4.45 gal	3.85 gal	0.037	0.028	Max Pressure	1,114 psig
910 psig	104	4.77 gal	4.12 gal	0.032	0.028	Buried Pipe Temperature	63 °F
920 psig	111	5.09 gal	4.40 gal	0.032	0.028	Exposed Pipe Temperature	74 °F
930 psig	118	5.42 gal	4.68 gal	0.032	0.028	ASME B31.8 Appendix N-5	
940 psig	125	5.74 gal	4.95 gal	0.032	0.028		
950 psig	132	6.06 gal	5.23 gal	0.032	0.028	Average Actual Elastic Slope	0.023
960 psig	139	6.38 gal	5.50 gal	0.032	0.028	Average Predicted Elastic Slope	0.028
970 psig	145	6.66 gal	5.78 gal	0.028	0.028	Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	0.044
980 psig	152	6.98 gal	6.05 gal	0.032	0.028	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	1,114 psig
990 psig	160	7.34 gal	6.33 gal	0.037	0.028	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
1,000 psig	166	7.62 gal	6.60 gal	0.028	0.028	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
1,010 psig	173	7.94 gal	6.88 gal	0.032	0.028	<div style="border: 1px solid black; width: 150px; height: 40px; display: flex; align-items: center; justify-content: center;"> Redacted </div> <div style="text-align: right; margin-top: 10px;"> 10/25/2011 Date </div>	
1,020 psig	180	8.26 gal	7.15 gal	0.032	0.028		
1,030 psig	187	8.58 gal	7.43 gal	0.032	0.028		
1,040 psig	195	8.95 gal	7.70 gal	0.037	0.028		
1,050 psig	201	9.23 gal	7.98 gal	0.028	0.028		
1,060 psig	208	9.55 gal	8.25 gal	0.032	0.028		
1,070 psig	215	9.87 gal	8.53 gal	0.032	0.028		
1,080 psig	222	10.19 gal	8.80 gal	0.032	0.028		
1,090 psig	229	10.51 gal	9.08 gal	0.032	0.028		
1,100 psig	236	10.83 gal	9.35 gal	0.032	0.028		
1,110 psig	243	11.15 gal	9.63 gal	0.032	0.028		
1,114 psig	246	11.29 gal	9.74 gal	0.034	0.028		
1,114 psig		11.29 gal	9.74 gal	0.000	0.000		
1,114 psig		11.29 gal	9.74 gal	0.000	0.000		
1,114 psig		11.29 gal	9.74 gal	0.000	0.000		
1,114 psig		11.29 gal	9.74 gal	0.000	0.000		
1,114 psig		11.29 gal	9.74 gal	0.000	0.000		
1,114 psig		11.29 gal	9.74 gal	0.000	0.000		



T 109E Test End



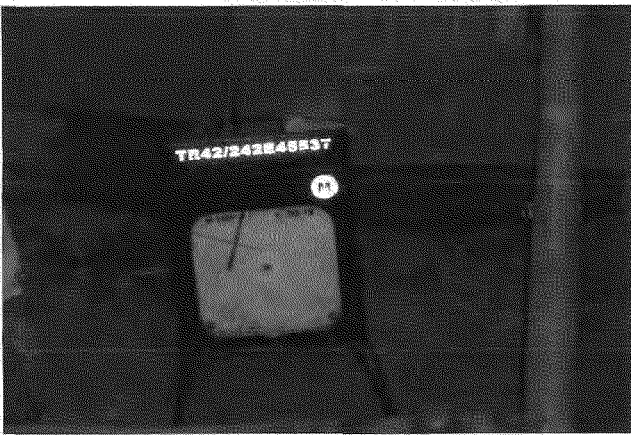
Restrained Temp Recorder Test End



Test Head



Tie In Pipe Test Head



Restrained Temp Recorder

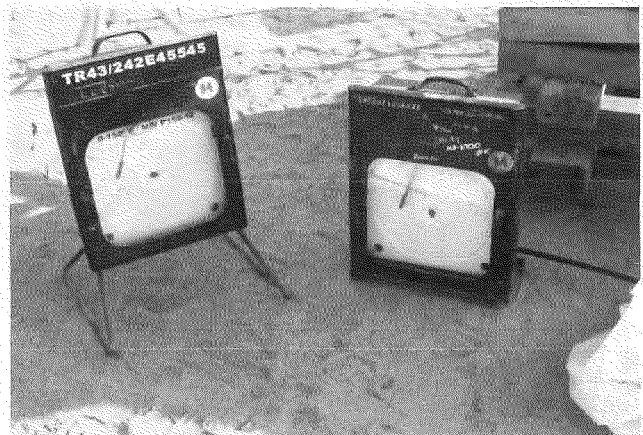
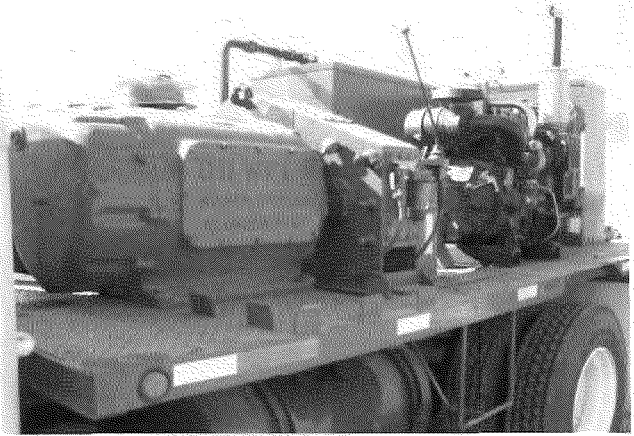
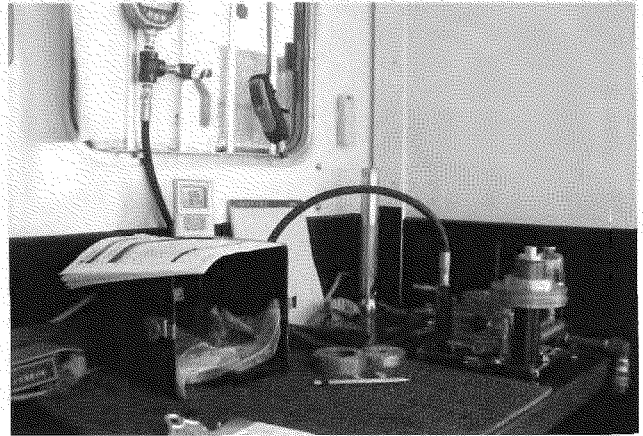


Chart Temp and Pressure Recorders



Pressure Pump



Dead Weight Test Equipment