RCP

RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002

Redacted

June 29, 2011

Pacific Gas and Electric Company
3600 Adobe Rd
Petaluma, Ca 94954
Attention: Joel Mannie
Attention:

Test Contractor:	Contra Costa Inspection Co. -- T# 6/29/2011
Asset Owner:	Pacific Gas and Electric Company -- 41474085
Construction Contractor:	ARB -- 0629-53-3500
Test Section:	PG&E T-45 Line 153, MP 9.02-13.61
Test Date:	June 29, 2011
Certificate Number:	RCP 61362 - T-45, L-153

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 Co. 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 793 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 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8 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 736 psig and the established MAOP is 491 psig.

Pressure decreased 50 psi during the test. 35,481.60 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 6,741.05 ounces, gain, which is equivalent to a 1.17 °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 23,198 feet of buried and 172 feet of exposed pipe from a single point on the line.

Sincerely,

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Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41474085
Construction Co.	ARB	Job Number	0620-53-3500
Hydro. Test Co.	Contra Costa Inspection Co.	Project No.	T# 6/29/2011
Test Section	PG&E T-45 Line 153, MP 9.02-13.61		
File Name	RCP 61362 - T-45, L-153		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Test Data: 29-Jun-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-45 Line 153, MP 9.02-13.61		
From:	233+11	To:	00+00

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	138 ft	30.000 in.	0.375 in.	API5L-X65, DSAW, Arc Weld, Steel	1,625 psi
2	143 ft	30.000 in.	0.424 in.	API5L-X65, DSAW, Arc Weld, Steel	1,837 psi
3	2,469 ft	30.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,500 psi
4	20,586 ft	30.000 in.	0.375 in.	API5L-X52, DSAW, Arc Weld, Steel	1,300 psi

Initial Test Conditions

Pressure at Test Point:	793 psig	Date/Time:	6/29/11 10:45 AM	Pipe Temperature Unrestrained:	67.0 °F
Ambient Temperature:	62.0 °F			Restrained:	58.0 °F
		Elevation @ Test Point:	19.0 ft	Location:	233+11
Pressure @ High Point (Cal/Measure):	787 psig	Elevation @ High Point:	34.0 ft	Location:	158+00
Pressure @ Low Point (Cal/Measure):	800 psig	Elevation @ Low Point:	3.0 ft	Location:	20+00

Final Test Conditions

Pressure at Test Point:	743 psig	Date/Time:	6/29/11 7:00 PM	Pipe Temperature Unrestrained:	71.0 °F
Ambient Temperature:	64.0 °F			Restrained:	58.0 °F
		Elevation @ Test Point:	19.0 ft	Location:	233+11
Pressure @ High Point (Cal/Measure):	737 psig	Elevation @ High Point:	34.0 ft	Location:	158+00
Pressure @ Low Point (Cal/Measure):	750 psig	Elevation @ Low Point:	3.0 ft	Location:	20+00

Total Fluid Injected		Volume gain	
Total Fluid Withdrawn:	35481.60 fluid ounces		
Net Change in Volume of the Test Section (+ Gain, - Loss):	6,741.05 oz gain	0.0064%	1.170 °F equivalent

Test Duration: 8 hours

Minimum Test Pressure:	Test Point	737 psig	Max Elevation	731 psig	Min Elevation	744 psig
Maximum Test Pressure:		793 psig		787 psig		800 psig
% SMYS :		61.0%		60.5%		61.5%

Minimum Test Pressure (Calculated/Measured):			737 psig
Maximum Allowable Operating Pressure:	DOT Part 192	Test Factor= 1.50	491 psig

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	The test segment was subjected to a spike pressure test of 793 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 hour test duration period. No leaks were observed during the test period. The test section included 23,198 feet of buried and 172 feet of exposed pipe. Pressure lost 50 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment gained 4°F. 35,481.60 ounces of fluid was intentionally released from the test section. Not corrected volumetric change from beginning of the test to the end of the test is calculated to be 6,741.05 ounces, gain, which is equivalent to a 1.17 °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 23,198 feet of buried and 172 feet of exposed pipe from a single point on the line.
Remarks		

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29-Jun-11

Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474085
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	Contra Costa Inspection Co.	Project No.	T# 6/29/2011
Test Section	PG&E T-45 Line 153, MP 9.02-13.61		
File Name	RCP 61362 - T-45, L-153		

Date 29-Jun-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe Unrestrained	Pipe Restrained	Comment	Bleed	Inject
1	6/29/11	9:50 AM	541 psig	56 °F	65 °F	58 °F	Start Spike		
2	6/29/11	9:52 AM	551 psig	56 °F	65 °F	58 °F	Inject		6,908 oz.
3	6/29/11	9:54 AM	561 psig	56 °F	65 °F	58 °F	Inject		6,296 oz.
4	6/29/11	9:56 AM	571 psig	56 °F	65 °F	58 °F	Inject		7,152 oz.
5	6/29/11	9:58 AM	581 psig	56 °F	65 °F	58 °F	Inject		6,541 oz.
6	6/29/11	10:00 AM	591 psig	56 °F	65 °F	58 °F	Inject		6,724 oz.
7	6/29/11	10:02 AM	601 psig	56 °F	65 °F	58 °F	Inject		6,419 oz.
8	6/29/11	10:04 AM	611 psig	56 °F	65 °F	58 °F	Inject		6,724 oz.
9	6/29/11	10:06 AM	621 psig	56 °F	65 °F	58 °F	Inject		6,663 oz.
10	6/29/11	10:08 AM	631 psig	56 °F	65 °F	58 °F	Inject		6,480 oz.
11	6/29/11	10:10 AM	641 psig	56 °F	65 °F	58 °F	Inject		6,419 oz.
12	6/29/11	10:12 AM	651 psig	56 °F	65 °F	58 °F	Inject		6,602 oz.
13	6/29/11	10:14 AM	661 psig	56 °F	65 °F	58 °F	Inject		6,235 oz.
14	6/29/11	10:16 AM	671 psig	56 °F	65 °F	58 °F	Inject		6,480 oz.
15	6/29/11	10:18 AM	681 psig	56 °F	65 °F	58 °F	Inject		6,296 oz.
16	6/29/11	10:20 AM	691 psig	56 °F	65 °F	58 °F	Inject		6,235 oz.
17	6/29/11	10:28 AM	701 psig	56 °F	65 °F	58 °F	Inject		6,296 oz.
18	6/29/11	10:30 AM	711 psig	56 °F	65 °F	58 °F	Inject		6,358 oz.
19	6/29/11	10:32 AM	721 psig	56 °F	65 °F	58 °F	Inject		5,807 oz.
20	6/29/11	10:34 AM	731 psig	56 °F	65 °F	58 °F	Inject		6,358 oz.
21	6/29/11	10:36 AM	741 psig	56 °F	65 °F	58 °F	Inject		5,930 oz.
22	6/29/11	10:38 AM	751 psig	56 °F	65 °F	58 °F	Inject		6,052 oz.
23	6/29/11	10:40 AM	761 psig	56 °F	65 °F	58 °F	Inject		5,930 oz.
24	6/29/11	10:41 AM	771 psig	56 °F	65 °F	58 °F	Inject		5,930 oz.
25	6/29/11	10:42 AM	781 psig	56 °F	65 °F	58 °F	Inject		5,869 oz.
26	6/29/11	10:44 AM	793 psig	56 °F	67 °F	58 °F	Inject		5,746 oz.
27	6/29/11	10:44 AM	793 psig	62 °F	67 °F	58 °F	Inject		1,217 oz.
28	6/29/11	10:45 AM	793 psig	62 °F	67 °F	58 °F	On Test		
29	6/29/11	10:55 AM	793 psig	62 °F	67 °F	58 °F			
30	6/29/11	11:05 AM	793 psig	63 °F	67 °F	58 °F			
31	6/29/11	11:15 AM	793 psig	64 °F	67 °F	58 °F	End Spike		
32	6/29/11	11:25 AM	792 psig	64 °F	67 °F	58 °F	Bleed	634 oz.	
33	6/29/11	11:35 AM	777 psig	64 °F	67 °F	58 °F		9,504 oz.	
34	6/29/11	11:45 AM	745 psig	64 °F	67 °F	58 °F		20,275 oz.	
35	6/29/11	11:55 AM	740 psig	64 °F	67 °F	58 °F		3,168 oz.	
36	6/29/11	12:01 PM	737 psig	64 °F	67 °F	58 °F		1,901 oz.	
37	6/29/11	12:15 PM	737 psig	64 °F	68 °F	58 °F			
38	6/29/11	12:30 PM	737 psig	64 °F	68 °F	58 °F			
39	6/29/11	12:45 PM	737 psig	65 °F	68 °F	58 °F			
40	6/29/11	1:00 PM	737 psig	66 °F	69 °F	58 °F			
41	6/29/11	1:15 PM	737 psig	66 °F	69 °F	58 °F			
42	6/29/11	1:30 PM	737 psig	67 °F	69 °F	58 °F			
43	6/29/11	1:45 PM	737 psig	67 °F	69 °F	58 °F			

Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474085
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	Contra Costa Inspection Co.	Project No.	T# 6/29/2011
Test Section	PG&E T-45 Line 153, MP 9.02-13.61		
File Name	RCP 61362 - T-45, L-153		

Date 29-Jun-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe Unrestrained	Pipe Restrained	Comment	Bleed	Inject
44	6/29/11	2:00 PM	738 psig	67 °F	69 °F	58 °F			
45	6/29/11	2:15 PM	739 psig	68 °F	69 °F	58 °F			
46	6/29/11	2:30 PM	739 psig	68 °F	69 °F	58 °F			
47	6/29/11	2:45 PM	740 psig	67 °F	69 °F	58 °F			
48	6/29/11	3:00 PM	740 psig	69 °F	70 °F	58 °F			
49	6/29/11	3:15 PM	740 psig	69 °F	70 °F	58 °F			
50	6/29/11	3:30 PM	740 psig	71 °F	70 °F	58 °F			
51	6/29/11	3:45 PM	741 psig	71 °F	70 °F	58 °F			
52	6/29/11	4:00 PM	741 psig	69 °F	70 °F	58 °F			
53	6/29/11	4:15 PM	741 psig	70 °F	70 °F	58 °F			
54	6/29/11	4:30 PM	741 psig	70 °F	70 °F	58 °F			
55	6/29/11	4:45 PM	741 psig	70 °F	70 °F	58 °F			
56	6/29/11	5:00 PM	742 psig	72 °F	70 °F	58 °F			
57	6/29/11	5:15 PM	742 psig	69 °F	70 °F	58 °F			
58	6/29/11	5:30 PM	742 psig	68 °F	70 °F	58 °F			
59	6/29/11	5:45 PM	742 psig	66 °F	70 °F	58 °F			
60	6/29/11	6:00 PM	742 psig	65 °F	70 °F	58 °F			
61	6/29/11	6:15 PM	743 psig	65 °F	70 °F	58 °F			
62	6/29/11	6:30 PM	743 psig	65 °F	71 °F	58 °F			
63	6/29/11	6:45 PM	743 psig	64 °F	71 °F	58 °F			
64	6/29/11	7:00 PM	743 psig	64 °F	71 °F	58 °F	End of Test		
							Spike Test		159,667.2 oz.
							Hydrostatic Test	35,481.6 oz.	

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	High Test Pressure:	793 psig
		Low Test Pressure:	737 psig

Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41474005
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection Co.	Project No.	T# 6/29/2011
Test Section	PG&E T-45 Line 153, MP 9.02-13.61		WATER
File Name	RCP 61362 - T-45, L-153		

General Pipe Data

Description	Segment 1	2	3	4	5	6	7	8
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Unrestrained	Unrestrained	Unrestrained	Unrestrained
Outside Diameter	30.000 in.	30.000 in.	30.000 in.	30.000 in.	4.500 in.	3.500 in.	4.500 in.	30.000 in.
Wall Thickness	0.375 in.	0.424 in.	0.375 in.	0.375 in.	0.337 in.	0.216 in.	0.237 in.	0.500 in.
Inside Diameter	29.250 in.	29.152 in.	29.250 in.	29.250 in.	3.826 in.	3.068 in.	4.026 in.	29.000 in.
Spec./Grade	API5L-X65	API5L-X65	API5L-X60	API5L-X52	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X60
Length Unrestrained	138 ft				1 ft	1 ft	10 ft	22 ft
Length Restrained		143 ft	2,469 ft	20,586 ft				
Temperature – On Test	67 °F	58 °F	58.0 °F	58.0 °F	67.0 °F	67.0 °F	67.0 °F	67.0 °F
Temperature – End of Test	71 °F	58 °F	58.0 °F	58.0 °F	71.0 °F	71.0 °F	71.0 °F	71.0 °F
Pressure – On Test	793 psig	793 psig	793 psig	793 psig	793 psig	793 psig	793 psig	793 psig
Pressure – End of Test	743 psig	743 psig	743 psig	743 psig	743 psig	743 psig	743 psig	743 psig

Unrestrained Pipe

Sum:	Vo	5,579.62 gal / 714,192 oz.	Vtp1	5,003.97 gal / 717,300 oz.	Vtp2	5,509.01 gal / 716,788 oz.
Vo Unrestrained	4,817 gal		1 gal	0 gal	7 gal	755 gal
Fwp 1	1.002428		1.002428	1.002428	1.002428	1.002428
Fpp 1	1.002577		1.000375	1.000469	1.000561	1.001916
Fpt 1	1.000127		1.000127	1.000127	1.000127	1.000127
Fwt 1	1.000681		1.000681	1.000681	1.000681	1.000681
Fpwt 1 = Fpt/Fwt	0.999447		0.999447	0.999447	0.999447	0.999447
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	4,838.61 gal		0.60 gal	0.38 gal	6.63 gal	757.74 gal
Fwp 2	1.002275		1.002275	1.002275	1.002275	1.002275
Fpp 2	1.002415		1.000351	1.000440	1.000526	1.001795
Fpt 2	1.000200		1.000200	1.000200	1.000200	1.000200
Fwt 2	1.001170		1.001170	1.001170	1.001170	1.001170
Fpwt = Fpt/Fwt	0.999032		0.999032	0.999032	0.999032	0.999032
Vtp = Vo(Fwp)(Fpp)(Fpwt)	4,835.08 gal		0.60 gal	0.38 gal	6.63 gal	757.22 gal

Restrained Pipe

Sum:	Vo	809,736.14 gal / 103,646,226 oz.		Vtp1	813,346.03 gal / 104,108,292 oz.		Vtp2	813,125.55 gal / 104,080,071 oz.		
Vo Unrestrained		4,958 gal	86,185 gal	718,593 gal						
Fwp 1		1.002428	1.002428	1.002428						
Fpp 1		1.001647	1.001869	1.001859						
Fpt 1		0.999976	0.999976	0.999976						
Fwt 1		0.999819	0.999819	0.999819						
Fpwt 1 = Fpt/Fwt		1.000157	1.000157	1.000157						
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		4,979 gal	86,599 gal	721,797 gal						
Fwp 2		1.002275	1.002275	1.002275						
Fpp 2		1.001542	1.001751	1.001751						
Fpt 2		0.999976	0.999976	0.999976						
Fwt 2		0.999819	0.999819	0.999819						
Fpwt = Fpt/Fwt		1.000157	1.000157	1.000157						
Vtp = Vo(Fwp)(Fpp)(Fpwt)		4,978 gal	86,546 gal	721,602 gal						

Combined Pipe

Sum:	Vo	815,315.76 gal / 104,360,418 oz.	Vtp1	818,950.00 gal / 104,825,600 oz.	Vtp2	818,725.46 gal / 104,796,859 oz.

Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41474085
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection Co.	Project No.	T# 6/29/2011
Test Section	PG&E T-45 Line 153, MP 9.02-13.61		
File Name	RCP 61362 - T-45, L-153		WATER

General Pipe Data

Description	Segment											
	1	2	3	4	5	6	7	8				
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Unrestrained	Unrestrained	Unrestrained	Unrestrained				
Outside Diameter	30.000 in.	30.000 in.	30.000 in.	30.000 in.	4.500 in.	3.500 in.	4.500 in.	30.000 in.				
Wall Thickness	0.375 in.	0.424 in.	0.375 in.	0.375 in.	0.337 in.	0.216 in.	0.237 in.	0.500 in.				
Inside Diameter	29.250 in.	29.152 in.	29.250 in.	29.250 in.	3.826 in.	3.068 in.	4.026 in.	29.000 in.				
Spec./Grade	API5L-X65	API5L-X65	API5L-X60	API5L-X52	API5L - Grade B	API5L-Grade B	API5L - Grade B	API5L-X60				
Length Unstrained	138.00 ft				1 ft	1 ft	10 ft	22 ft				
Length Restrained		143 ft	2,459 ft	20,586 ft								
Temperature -- On Test	68 °F	57 °F	57 °F	57 °F	68 °F	68 °F	68 °F	68 °F				
Temperature -- End of Test	69 °F	58 °F	58 °F	58 °F	69 °F	69 °F	69 °F	69 °F				
Pressure -- On Test	768 psig	768 psig	768 psig	768 psig	768 psig	768 psig	768 psig	768 psig				
Pressure -- End of Test	768 psig	768 psig	768 psig	768 psig	768 psig	768 psig	768 psig	768 psig				

Unrestrained Pipe

Sum:	Vo	5,579.82 gal 714,192 oz.			Vlp1	5,802.52 gal 717,123 oz.		Vlp2	5,601.92 gal 717,046 oz.			
Vo Unrestrained	4,817 gal				1 gal	0 gal	7 gal	755 gal				
Fwp 1	1.002352				1.002352	1.002352	1.002352	1.002352				
Fpp 1	1.002490				1.000363	1.000455	1.000544	1.001856				
Fpt 1	1.000146				1.000146	1.000146	1.000146	1.000146				
Fwt 1	1.000803				1.000803	1.000803	1.000803	1.000803				
Fpwt 1 = Fpt/Fwt	0.999343				0.999343	0.999343	0.999343	0.999343				
Vlp 1 = Vo(Fwp)(Fpp)(Fpwt)	4,837.35 gal				0.60 gal	0.38 gal	0.63 gal	758 gal				
Fwp 2	1.002352				1.002352	1.002352	1.002352	1.002352				
Fpp 2	1.002490				1.000363	1.000455	1.000544	1.001856				
Fpt 2	1.000164				1.000164	1.000164	1.000164	1.000164				
Fwt 2	1.000929				1.000929	1.000929	1.000929	1.000929				
Fpwt = Fpt/Fwt	0.999236				0.999236	0.999236	0.999236	0.999236				
Vlp = Vo(Fwp)(Fpp)(Fpwt)	4,836.83 gal				0.60 gal	0.38 gal	0.63 gal	757 gal				

Restrained Pipe

Sum:	Vo	809,736.14 gal 103,646,226 oz.		Vlp1	813,280.20 gal 104,099,866 oz.		Vlp2	813,235.76 gal 104,094,180 oz.			
Vo Restrained		4,953 gal	86,185 gal	718,593 gal							
Fwp 1		1.002352	1.002352	1.002352							
Fpp 1		1.001591	1.001806	1.001805							
Fpt 1		0.999964	0.999964	0.999964							
Fwt 1		0.999749	0.999749	0.999749							
Fpwt 1 = Fpt/Fwt		1.000215	1.000215	1.000215							
Vlp 1 = Vo(Fwp)(Fpp)(Fpwt)		4,979 gal	86,562 gal	721,739 gal							
Fwp 2		1.002352	1.002352	1.002352							
Fpp 2		1.001595	1.001810	1.001810							
Fpt 2		0.999970	0.999976	0.999976							
Fwt 2		0.999819	0.999819	0.999819							
Fpwt = Fpt/Fwt		1.000157	1.000157	1.000157							
Vlp = Vo(Fwp)(Fpp)(Fpwt)		4,979 gal	86,558 gal	721,699 gal							

Combined Pipe

Sum:	Vo	815,315.76 gal 104,300,418 oz.	Vlp1	818,882.72 gal 104,816,089 oz.	Vlp2	818,837.70 gal 104,811,226 oz.
1 °F Change	45.02 gal	5,763.07 oz.				

RCP

Hydrostatic Test Pipe Data Table

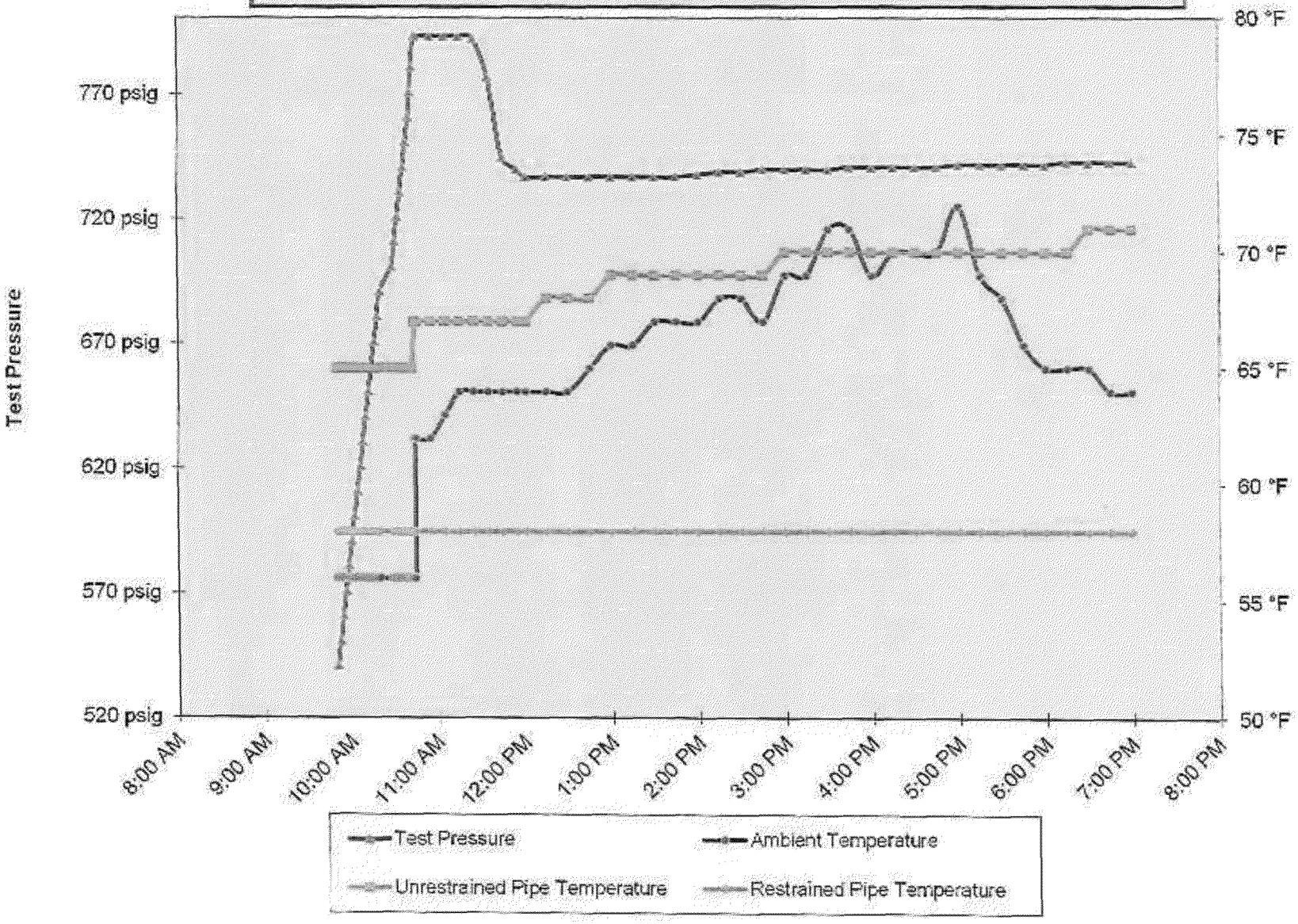
Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	138 ft	Unrestrained	30.000 in.	0.3750 in.	API5L-X65	1,625 psig	Steel	Arc Weld	DSAW
2	143 ft	Restrained	30.000 in.	0.4240 in.	API5L-X65	1,837 psig	Steel	Arc Weld	DSAW
3	2,469 ft	Restrained	30.000 in.	0.3750 in.	API5L-X60	1,500 psig	Steel	Arc Weld	DSAW
4	20,586 ft	Restrained	30.000 in.	0.3750 in.	API5L-X52	1,300 psig	Steel	Arc Weld	DSAW
5	1 ft	Unrestrained	4.500 in.	0.3370 in.	API5L-Grade B	5,242 psig	Steel	Arc Weld	SM
6	1 ft	Unrestrained	3.500 in.	0.2160 in.	API5L-Grade B	4,320 psig	Steel	Arc Weld	SM
7	10 ft	Unrestrained	4.500 in.	0.2370 in.	API5L-Grade B	3,687 psig	Steel	Arc Weld	SM
8	22 ft	Unrestrained	30.000 in.	0.5000 in.	API5L-X60	2,000 psig	Steel	Arc Weld	DSAW

Hydrostatic Test Project Owner & Participants

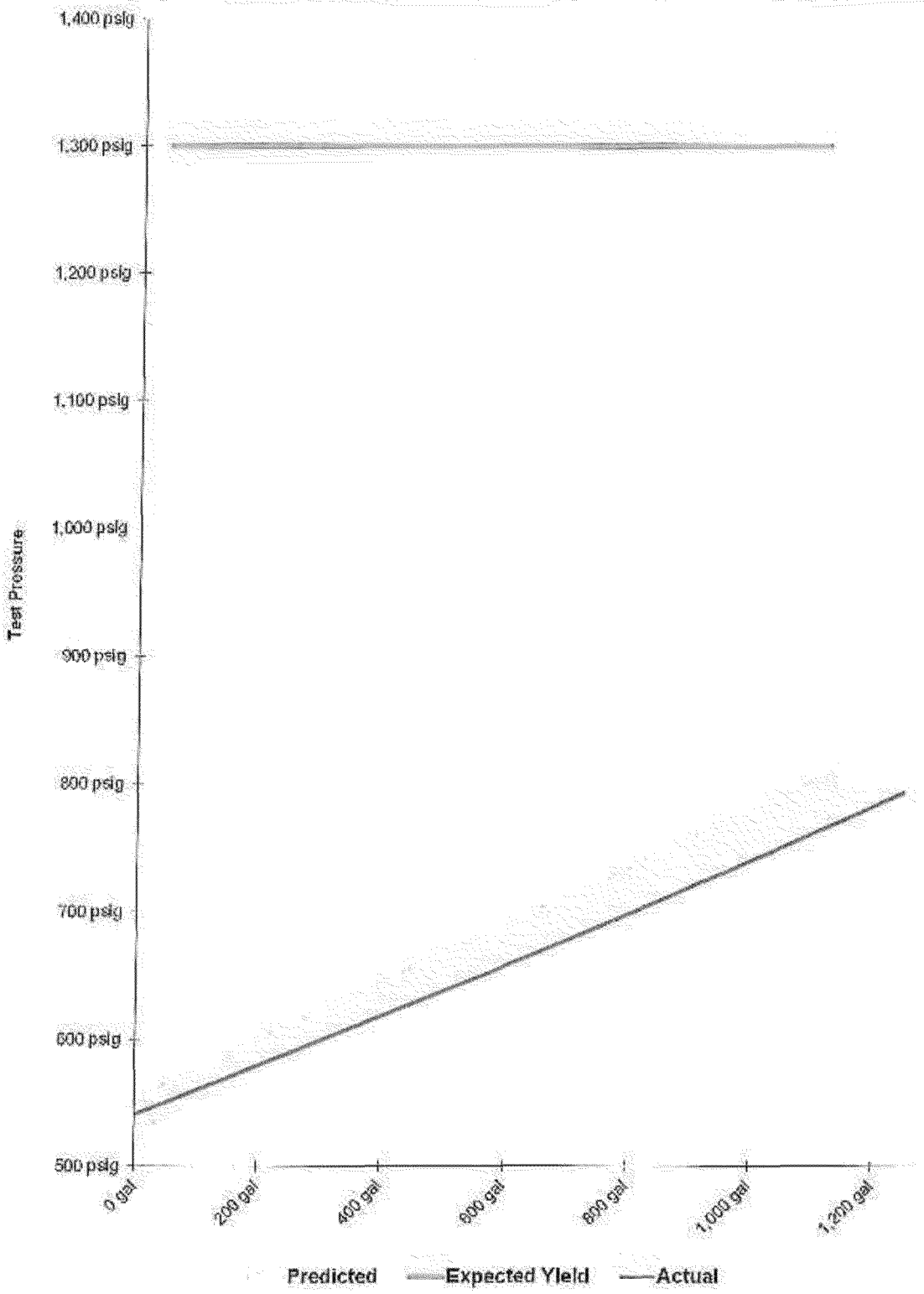
Owner Company	Pacific Gas and Electric Company	Job Number
Address	3600 Adobe Rd Petaluma, Ca 94954 Attention: Joel Mannie	41474085
Construction Company	ARB	Job Number
Address	1875 Loveridge Road Pittsburg, CA 94565 Attention: T. Barnes	0629-53-3500
Hydrostatic Test Co.	Contra Costa Inspection Co.	Project No.
Address	2820 LaJolla Drive Antioch, Ca. 94531 Attention: Redacted	T# 6/29/2011
Test Section	PG&E T-45 Line 153, MP 9.02-13.61 From: 233+11 To. 00+00	
File Name	RCP 61362 - T-45, L-153	

RCP

PG&E T-45 Line 153, MP 9.02-13.61



Spike Pressure Test
Stress Strain Curve -- PG&E T-45 Line 153, MP 9.02-13.61



RCP

Spike Pressure Test
Stress Strain Curve -- PG&E T-45 Line 153, MP 9.02-13.61

Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted
541 psig	0	0.00 gal		0	0.00 gal
551 psig	1130	53.97 gal	44.37 gal	5.397	4.437
561 psig	2160	103.18 gal	88.75 gal	4.919	4.437
571 psig	3330	159.04 gal	133.12 gal	5.568	4.438
581 psig	4400	210.14 gal	177.50 gal	5.110	4.438
591 psig	5500	262.67 gal	221.89 gal	5.253	4.438
601 psig	6550	312.82 gal	266.27 gal	5.015	4.439
611 psig	7650	365.35 gal	310.66 gal	5.253	4.439
621 psig	8740	417.41 gal	355.05 gal	5.206	4.439
631 psig	9800	468.03 gal	399.45 gal	5.062	4.439
641 psig	10850	518.18 gal	443.84 gal	5.015	4.440
651 psig	11930	569.76 gal	488.24 gal	5.158	4.440
661 psig	12950	618.47 gal	532.64 gal	4.871	4.440
671 psig	14010	669.09 gal	577.05 gal	5.062	4.440
681 psig	15040	718.29 gal	621.46 gal	4.919	4.441
691 psig	16060	767.00 gal	665.87 gal	4.871	4.441
701 psig	17090	816.19 gal	710.28 gal	4.919	4.441
711 psig	18130	865.86 gal	754.69 gal	4.967	4.442
721 psig	19080	911.23 gal	799.11 gal	4.537	4.442
731 psig	20120	960.90 gal	843.53 gal	4.967	4.442
741 psig	21090	1,007.22 gal	887.96 gal	4.633	4.442
751 psig	22080	1,054.50 gal	932.38 gal	4.728	4.443
761 psig	23050	1,100.83 gal	976.81 gal	4.633	4.443
771 psig	24020	1,147.16 gal	1,021.24 gal	4.633	4.443
781 psig	24980	1,193.00 gal	1,065.68 gal	4.585	4.443
791 psig	25920	1,237.90 gal	1,110.12 gal	4.489	4.444
793 psig	26119	1,247.40 gal	1,119.00 gal	4.752	4.444
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
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793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000
793 psig		1,247.40 gal	1,119.00 gal	0.000	0.000

Pump gal per stroke	0.056 gal/stroke
Pump Piston Diameter	1.250 in
Pump Piston Stroke	3.50 in
Pump Cylinders	3 ea
Volume check gal per stroke	0.048 gal/stroke
Volume Released (gallons)	277.20 gal
Pressure Reduced (psi)	56 psi
Maximum2	1,310 gal
Minimum2	0 gal
Maximum1	1,400 psig
Minimum1	500 psig
Gallons/Stroke Used	0.048 gal/stroke
Predicted Gallons/Stroke	0.043 gal/stroke
Pressure Increment	10 psi
Max Pressure	793 psig
Buried Pipe Temperature	58 °F
Exposed Pipe Temperature	65 °F

ASME B31.8 Appendix N-5

Average Actual Elastic Slope	4.937
Average Predicted Elastic Slope	4.441
Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	9.381
Established Minimum Yield Pressure B31.8 N-5 (c)(2)	793 psig
Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal

Redacted

6/29/2011
Date

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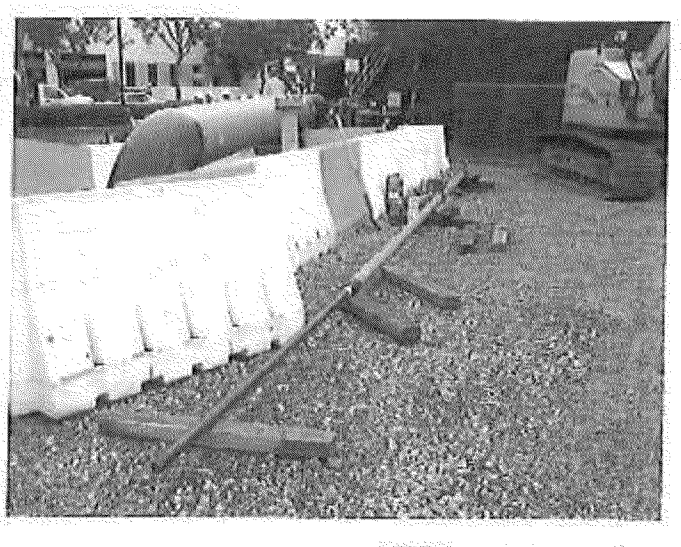
Pump Data

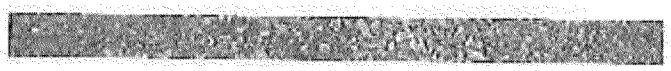
Restrained Temp. Probe

Location A Test head

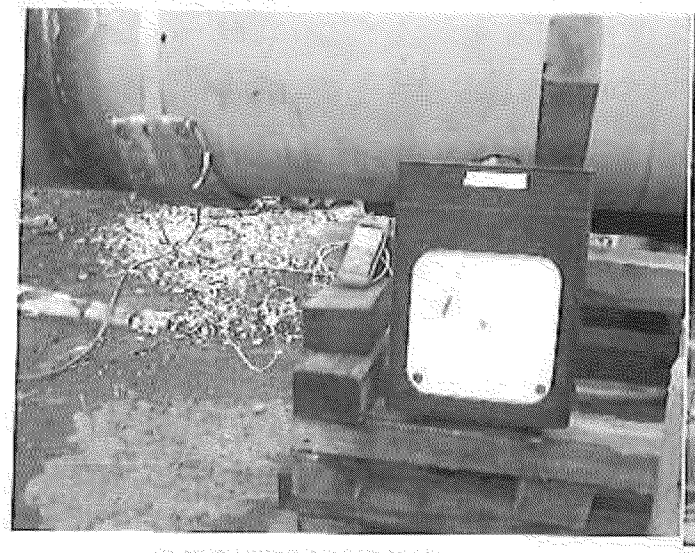
Location A Test Head



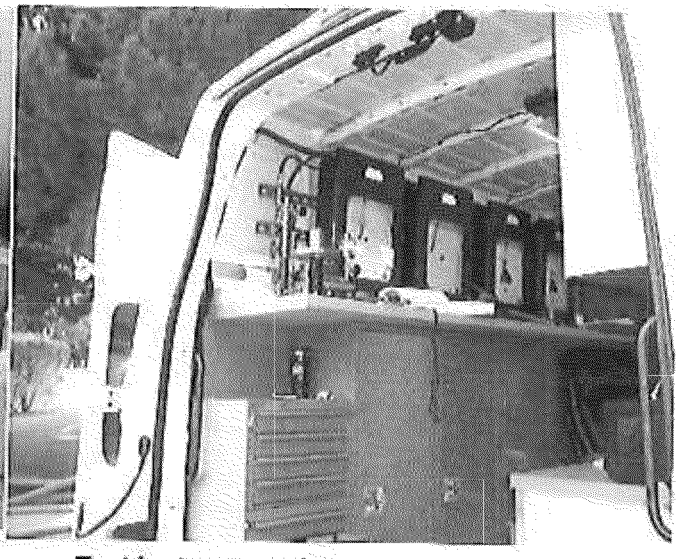
Location A Test Head



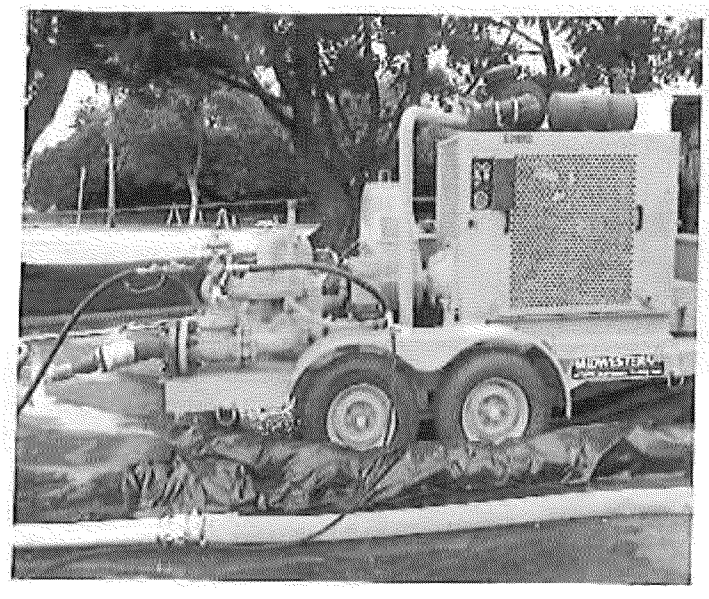
3.5" and 2" Included in Test



Unrestrained Tem. Probe



Test Instrumentation



Pressure Pump

Hydrostatic Test Log Sheet

Owner Company	PG&E	Job Number	41474085-45
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	CCI	Job Number	T# 6/29/2011

Test Section

	Name		
		Station (0+00)	Elevation (Feet)
Test Location		233+11	19'
Begin		233+11	19'
End		00+00	5'
High Elevation		158+00	34'
Low Elevation		20+00	3'

Pipe Data

Section	Length (ft.)	O. D. (in.)	W.T. (in.)	Restrained (ft.)	Unrestrained (ft.)	Grade	Seam/Joint Type
1	138	30.00	.375		138	X-65	DSAW, Arc Weld
2	143	30.00	.424	143		X-65	DSAW, Arc Weld
3	2469	30.00	.375	2469		X-60	DSAW, Arc Weld
4	20,586	30.00	.375	20,586		X-52	DSAW, Arc Weld
5	1	4.50	.337		1	60-B	SML, Arc Weld
6	1	3.50	.216		1	60-B	SML, Arc Weld
7	10'	4.50	.237		10	60-B	SML, Arc Weld
8	22'	30.00	.500		22	X-60	DSAW Arc Weld
9							
10							
11							

Test Period	Date	Time	Test Medium	
Begin	6/29/2011	10:45 AM		Water ☑
End	6-29-11	7:00 P		Nitrogen ☐
				Other ☐

Test Instrumentation

Description	Calibration Checked	Serial Number	Date Calibrated/Certified	Installation Correct
Dead Weight Pressure Tester		HL-6301	6-7-11	☑ Yes
Pressure Recorder	☑ Yes	1720	6-10-11	☑ Yes
Ambient Temperature Recorder	☑ Yes	FLUKE	Daily	☑ Yes
Restrained Pipe Temperature Recorder	☑ Yes	782406	3-2-11	☑ Yes
Unrestrained Pipe Temperature Recorder	☑ Yes	1701	5-2-11	☑ Yes

Hydrostatic Test Log

Log No.	Time	Test Pressure (psig)	Temperature (°F)			Volume ☐ Ounces ☑ Gallons		Comments	Model Check: Is test good?
			Ambient	Pipe					
				Restrained	Unrestrained	Bleed	Inject		
1	1045	793	62	58	67			START	
2	1055	793	62	58	67				☑ Yes ☐ No
3	1105	793	63	58	67				☑ Yes ☐ No
4	1115	793	64	58	67				☑ Yes ☐ No
5	1130	792	63	58	67				☑ Yes ☐ No
6	1145	777	64	58	67				☑ Yes ☐ No
7	1200	745	64	58	67	-277.2	BAL.		☑ Yes ☐ No
8	1215	737	64	58	68				☑ Yes ☐ No
9	1230	737	64	58	68				☑ Yes ☐ No
10	1245	737	65	58	68				☑ Yes ☐ No
11	1300	737	64	58	69				☑ Yes ☐ No

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Hydrostatic Test Log

Log No.	Time	Test Pressure (psig)	Temperature (°F)			Volume ☐ Ounces ☐ Gallons		Comments	Model Check: Is test good?
			Ambient	Pipe					
				Restrained	Unrestrained	Blood	Inject		
12	1315	737	66	58	69				☑ Yes ☐ No
13	1330	737	67	58	69				☑ Yes ☐ No
14	1345	737	67	58	69				☑ Yes ☐ No
15	1400	738	67	58	69				☑ Yes ☐ No
16	1415	739	68	58	69				☑ Yes ☐ No
17	1430	739	68	58	69				☑ Yes ☐ No
18	1445	740	67	58	69				☑ Yes ☐ No
19	1500	740	69	58	70				☑ Yes ☐ No
20	1515	740	69	58	70				☑ Yes ☐ No
21	1530	740	71	58	70				☑ Yes ☐ No
22	1545	741	71	58	70				☑ Yes ☐ No
23	1600	741	69	58	70				☑ Yes ☐ No
24	1615	741	70	58	70				☑ Yes ☐ No
25	1630	741	70	58	70				☑ Yes ☐ No
26	1645	741	70	58	70				☑ Yes ☐ No
27	1700	742	72	58	70				☑ Yes ☐ No
28	1715	742	69	58	70				☑ Yes ☐ No
29	1730	742	68	58	70				☑ Yes ☐ No
30	1745	742	66	58	70				☑ Yes ☐ No
31	1800	742	65	58	70				☑ Yes ☐ No
32	1815	743	65	58	70				☑ Yes ☐ No
33	1830	743	65	58	71				☑ Yes ☐ No
34	1845	743	64	58	71				☑ Yes ☐ No
35	1900	743	64	58	71			END	☐ Yes ☐ No
36									☐ Yes ☐ No
37									☐ Yes ☐ No
38									☐ Yes ☐ No
39									☐ Yes ☐ No
40									☐ Yes ☐ No
41									☐ Yes ☐ No
42									☐ Yes ☐ No
43									☐ Yes ☐ No
44									☐ Yes ☐ No
45									☐ Yes ☐ No
46									☐ Yes ☐ No
47									☐ Yes ☐ No
48									☐ Yes ☐ No

Was a leak observed during test Period? ☐ Yes ☒ No

If "Yes", Explain:

High Test Pressure: 793

Low Test Pressure: 737

Certification:

Test Supervisor: Redacted

Signature CG

Date: 6/29/2011

Company Representative: Redacted RCP Inc.

Signature

COPY

STAGE 1 PACKAGE, TRANSMITTAL

T- 45 LINE # 153

DIVISION/DEPARTMENT: CONSTRUCTION MANAGEMENT	DATE: 7-6-11	Job Number: 4147 4085
ADDRESS	SUBJECT: STAGE 1 PACKAGE	
RECEIVED BY: Redacted		PHONE NUMBER: Redacted

COPIES	DESCRIPTION	CIRCLE ONE OR BOTH
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