



**RCP, Inc**

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Redacted

July 30, 2011

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

Test Contractor:	Milbar Hydro-test Incorporated -- FY12-112
Asset Owner:	Pacific Gas and Electric Company -- 41497313
Construction Contractor:	Snelson -- 41474005-T71
Test Section:	PG&E T-71 Line 300A, MP 490.66 - 493.59
Test Date:	July 29, 2011
Certificate Number:	RCP 61362 - T-71, L-300A

To whom it may concern,

This letter is to certify that the hydrostatic test performed on pipe owned by Pacific Gas and Electric Company and tested by Milbar Hydro-test Incorporated 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 1149 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 8.97 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.97 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 1032 psig and the established MAOP is 688 psig.

Pressure decreased 83 psi during the test. 37,161.60 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 934.79 ounces, loss, which is equivalent to a 0.08 °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 loss is attributed to the error characteristic of the temperature measurement instrumentation utilized.

Sincerely,

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Hydrostatic Test Plan T-71-LD.xlsm  
Letter



# Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41497313
Construction Co.	Snelson	Job Number	41474005-T71
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-71 Line 300A, MP 490.66 - 493.59		
File Name	RCP 61362 - T-71, L-300A		

## Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3) Test Date: 29-Jul-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-71 Line 300A, MP 490.66 - 493.59  
 From: 157+66 To: 0+00

### Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	46 ft	34.000 in.	0.505 in.	API5L-X60, DSAW, Arc Weld, Steel	1,782 psi
2	14,256 ft	34.000 in.	0.500 in.	API5L-X46, DSAW, Arc Weld, Steel	1,353 psi
3	177 ft	34.000 in.	0.562 in.	API5L-X60, DSAW, Arc Weld, Steel	1,984 psi
4	207 ft	34.000 in.	0.380 in.	API5L-X60, DSAW, Arc Weld, Steel	1,341 psi
5	1,155 ft	34.000 in.	0.500 in.	API5L-X60, DSAW, Arc Weld, Steel	1,765 psi
6	1 ft	8.625 in.	0.500 in.	API5L-Grade B, SM, Arc Weld, Steel	4,058 psi
7	3 ft	2.375 in.	0.154 in.	API5L-Grade B, SM, Arc Weld, Steel	4,539 psi
8	9 ft	4.500 in.	0.237 in.	API5L-Grade B, SM, Arc Weld, Steel	3,687 psi
9	2 ft	34.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,324 psi
10	2 ft	1.315 in.	0.154 in.	API5L-Grade B, SM, Arc Weld, Steel	8,198 psi
11	40 ft	34.000 in.	0.500 in.	API5L-X60, DSAW, Arc Weld, Steel	1,912 psi

### Initial Test Conditions

Pressure at Test Point:	1,149 psig	Date/Time:	7/29/11 9:17 PM	Pipe Temperature	
Ambient Temperature:	68.0 °F	Elevation @ Test Point:	123.0 ft	Unrestrained:	71.0 °F
Pressure @ High Point (Cal/Measure):	1,116 psig	Elevation @ High Point:	200.0 ft	Restrained:	73.0 °F
Pressure @ Low Point (Cal/Measure):	1,149 psig	Elevation @ Low Point:	123.0 ft	Location:	157+66

### Final Test Conditions

Pressure at Test Point:	1,066 psig	Date/Time:	7/30/11 6:15 AM	Pipe Temperature	
Ambient Temperature:	61.0 °F	Elevation @ Test Point:	123.0 ft	Unrestrained:	71.0 °F
Pressure @ High Point (Cal/Measure):	1,033 psig	Elevation @ High Point:	200.0 ft	Restrained:	73.0 °F
Pressure @ Low Point (Cal/Measure):	1,066 psig	Elevation @ Low Point:	123.0 ft	Location:	157+66

Total Fluid Injected:	37161.60 fluid ounces	Volume loss	
Total Fluid Withdrawn:			
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	(934.79) oz	loss	(0.0010)% (0.083) °F equivalent

Test Duration: 8.97 hour

Minimum Test Pressure:	1,066 psig	1,033 psig	1,066 psig
Maximum Test Pressure:	1,149 psig	1,116 psig	1,149 psig
% SMYS:	86.8%	84.3%	86.8%

Operating Pressure:	Minimum Test Pressure (Calculated/Measured): 1,033 psig
Maximum Allowable Working Pressure:	DOT Part 192 Test Factor= 1.50 688 psig

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	<p>The test segment was subjected to a spike pressure test of 1149 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 8.97 hour test duration period.</p> <p>No leaks were observed during the test period. The test section included 15,809 feet of buried and 48 feet of exposed pipe. Pressure lost 83 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment fluid temperature remained steady.</p> <p>37,161.60 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 934.79 ounces, loss, which is equivalent to a 0.08 °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 loss is attributed to the error associated with the temperature measurement instrumentation.</p>

Remarks: Redacted

30-Jul-11



# Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497313
Construction Co.	Snelson	Job Number	41474005-T71
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-71 Line 300A, MP 490.66 - 493.59		
File Name	RCP 61362 - T-71, L-300A		

Date 29-Jul-11

## Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
1	7/29/11	8:40 PM	786 psig	69 °F	72 °F	73 °F	Start Spike		
2	7/29/11	8:41 PM	790 psig	69 °F	72 °F	73 °F	Inject		1,719 oz.
3	7/29/11	8:42 PM	800 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
4	7/29/11	8:43 PM	810 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
5	7/29/11	8:44 PM	820 psig	69 °F	72 °F	73 °F	Inject		4,881 oz.
6	7/29/11	8:45 PM	830 psig	69 °F	72 °F	73 °F	Inject		4,675 oz.
7	7/29/11	8:46 PM	840 psig	69 °F	72 °F	73 °F	Inject		4,881 oz.
8	7/29/11	8:47 PM	850 psig	69 °F	72 °F	73 °F	Inject		5,018 oz.
9	7/29/11	8:48 PM	860 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
10	7/29/11	8:49 PM	870 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
11	7/29/11	8:50 PM	880 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
12	7/29/11	8:51 PM	890 psig	69 °F	72 °F	73 °F	Inject		4,675 oz.
13	7/29/11	8:52 PM	900 psig	69 °F	72 °F	73 °F	Inject		4,881 oz.
14	7/29/11	8:53 PM	910 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
15	7/29/11	8:54 PM	920 psig	69 °F	72 °F	73 °F	Inject		4,606 oz.
16	7/29/11	8:55 PM	930 psig	69 °F	72 °F	73 °F	Inject		4,950 oz.
17	7/29/11	8:56 PM	940 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
18	7/29/11	8:57 PM	950 psig	69 °F	72 °F	73 °F	Inject		4,881 oz.
19	7/29/11	8:58 PM	960 psig	69 °F	72 °F	73 °F	Inject		4,675 oz.
20	7/29/11	8:59 PM	970 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
21	7/29/11	9:00 PM	980 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
22	7/29/11	9:01 PM	990 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
23	7/29/11	9:02 PM	1,000 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
24	7/29/11	9:03 PM	1,010 psig	69 °F	72 °F	73 °F	Inject		4,881 oz.
25	7/29/11	9:04 PM	1,020 psig	69 °F	72 °F	73 °F	Inject		4,675 oz.
26	7/29/11	9:05 PM	1,030 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
27	7/29/11	9:06 PM	1,040 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
28	7/29/11	9:07 PM	1,050 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
29	7/29/11	9:08 PM	1,060 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
30	7/29/11	9:09 PM	1,070 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
31	7/29/11	9:10 PM	1,080 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
32	7/29/11	9:11 PM	1,090 psig	69 °F	72 °F	73 °F	Inject		4,743 oz.
33	7/29/11	9:12 PM	1,100 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
34	7/29/11	9:13 PM	1,110 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
35	7/29/11	9:14 PM	1,120 psig	69 °F	72 °F	73 °F	Inject		5,431 oz.
36	7/29/11	9:15 PM	1,130 psig	69 °F	72 °F	73 °F	Inject		4,056 oz.
37	7/29/11	9:16 PM	1,140 psig	69 °F	72 °F	73 °F	Inject		4,812 oz.
38	7/29/11	9:17 PM	1,149 psig	68 °F	71 °F	73 °F	Inject		4,331 oz.
39	7/29/11	9:17 PM	1,149 psig	68 °F	71 °F	73 °F	On Test		
40	7/29/11	9:27 PM	1,148 psig	68 °F	70 °F	73 °F			
41	7/29/11	9:37 PM	1,148 psig	67 °F	70 °F	73 °F			
42	7/29/11	9:47 PM	1,148 psig	67 °F	70 °F	73 °F	End Spike		
43	7/29/11	9:52 PM	1,138 psig	67 °F	70 °F	73 °F	Bleed	4,704 oz.	



# Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497313
Construction Co.	Snelson	Job Number	41474005-T71
Testing Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-71 Line 300A, MP 490.66 - 493.59		
File Name	RCP 61362 - T-71, L-300A		

Date	29-Jul-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			
44	7/29/11	9:57 PM	1,128 psig	67 °F	70 °F	73 °F		4,704 oz.	
45	7/29/11	10:02 PM	1,118 psig	67 °F	70 °F	73 °F		4,704 oz.	
46	7/29/11	10:07 PM	1,108 psig	67 °F	70 °F	73 °F		4,704 oz.	
47	7/29/11	10:12 PM	1,098 psig	67 °F	70 °F	73 °F		4,704 oz.	
48	7/29/11	10:23 PM	1,069 psig	67 °F	70 °F	73 °F	Clear	13,642 oz.	
49	7/29/11	10:30 PM	1,069 psig	67 °F	70 °F	73 °F			
50	7/29/11	10:45 PM	1,069 psig	65 °F	71 °F	73 °F			
51	7/29/11	11:00 PM	1,069 psig	65 °F	72 °F	73 °F			
52	7/29/11	11:15 PM	1,069 psig	65 °F	72 °F	73 °F			
53	7/29/11	11:30 PM	1,069 psig	65 °F	72 °F	73 °F			
54	7/29/11	11:45 PM	1,069 psig	65 °F	72 °F	73 °F			
55	7/30/11	12:00 AM	1,069 psig	64 °F	72 °F	73 °F			
56	7/30/11	12:15 AM	1,068 psig	64 °F	72 °F	73 °F			
57	7/30/11	12:30 AM	1,068 psig	63 °F	72 °F	73 °F			
58	7/30/11	12:45 AM	1,068 psig	63 °F	72 °F	73 °F			
59	7/30/11	1:00 AM	1,068 psig	63 °F	72 °F	73 °F			
60	7/30/11	1:15 AM	1,068 psig	64 °F	72 °F	73 °F			
61	7/30/11	1:30 AM	1,068 psig	65 °F	72 °F	73 °F			
62	7/30/11	1:45 AM	1,068 psig	65 °F	72 °F	73 °F			
63	7/30/11	2:00 AM	1,068 psig	65 °F	72 °F	73 °F			
64	7/30/11	2:15 AM	1,068 psig	64 °F	72 °F	73 °F	Clear		
65	7/30/11	2:30 AM	1,068 psig	64 °F	72 °F	73 °F			
66	7/30/11	2:45 AM	1,067 psig	64 °F	72 °F	73 °F			
67	7/30/11	3:00 AM	1,067 psig	63 °F	71 °F	73 °F			
68	7/30/11	3:15 AM	1,067 psig	64 °F	71 °F	73 °F			
69	7/30/11	3:30 AM	1,067 psig	63 °F	71 °F	73 °F			
70	7/30/11	3:45 AM	1,067 psig	64 °F	71 °F	73 °F			
71	7/30/11	4:00 AM	1,067 psig	63 °F	71 °F	73 °F	Cool		
72	7/30/11	4:15 AM	1,067 psig	63 °F	71 °F	73 °F			
73	7/30/11	4:30 AM	1,067 psig	62 °F	71 °F	73 °F			
74	7/30/11	4:45 AM	1,067 psig	63 °F	71 °F	73 °F			
75	7/30/11	5:00 AM	1,067 psig	62 °F	71 °F	73 °F			
76	7/30/11	5:15 AM	1,067 psig	62 °F	71 °F	73 °F			
77	7/30/11	5:30 AM	1,067 psig	63 °F	71 °F	73 °F			
78	7/30/11	5:45 AM	1,066 psig	63 °F	71 °F	73 °F			
79	7/30/11	6:00 AM	1,066 psig	61 °F	71 °F	73 °F			
80	7/30/11	6:15 AM	1,066 psig	61 °F	71 °F	73 °F	End of Test		
							<b>Spike Test</b>		173,577.6 oz.
							<b>Hydrostatic Test</b>	37,161.6 oz.	

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	High Test Pressure: 1,149 psig	Low Test Pressure: 1,066 psig
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## Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497313
Construction Co.	Snelson	Job Number	41474005-T71
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-71 Line 300A, MP 490.66 - 493.59	<b>WATER</b>	
File Name	RCP 61362 - T-71, L-300A		

Description	General Pipe Data									
	Segment									
	1	2	3	4	5	6	7	8	9	10
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained	Restrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	8.625 in.	2.375 in.	4.500 in.	34.000 in.	1.315 in.
Wall Thickness	0.505 in.	0.500 in.	0.562 in.	0.380 in.	0.500 in.	0.500 in.	0.154 in.	0.237 in.	0.375 in.	0.154 in.
Inside Diameter	32.990 in.	33.000 in.	32.876 in.	33.240 in.	33.000 in.	7.625 in.	2.067 in.	4.026 in.	33.250 in.	1.007 in.
Spec./Grade	API5L-X60	API5L-X46	API5L-X60	API5L-X60	API5L-X60	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X60	API5L-Grade B
Length Unrestrained	46 ft								2 ft	
Length Restrained		14,256 ft	177 ft	207 ft	1,155 ft	1 ft	3 ft	9 ft		2 ft
Temperature - On Test	71 °F	73 °F	73.0 °F	73.0 °F	73.0 °F	73.0 °F	73.0 °F	73.0 °F	71.0 °F	73.0 °F
Temperature - End of Test	71 °F	73 °F	73.0 °F	73.0 °F	73.0 °F	73.0 °F	73.0 °F	73.0 °F	71.0 °F	73.0 °F
Pressure - On Test	1,149 psig	1,149 psig	1,149 psig	1,149 psig	1,149 psig	1,149 psig	1,149 psig	1,149 psig	1,149 psig	1,149 psig
Pressure - End of Test	1,066 psig	1,066 psig	1,066 psig	1,066 psig	1,066 psig	1,066 psig	1,066 psig	1,066 psig	1,066 psig	1,066 psig

Unrestrained Pipe										
Sum:	Vo	2,132.81 gal 272,999 oz.		Vtp1	2,145.03 gal 274,564 oz.			Vtp2	2,144.00 gal 274,432 oz.	
Vo Unrestrained	2,043 gal									90 gal
Fwp 1	1.003523									1.003523
Fpp 1	1.003128									1.004245
Fpt 1	1.000200									1.000200
Fwt 1	1.001170									1.001170
Fpwt 1 = Fpt/Fwt	0.999032									0.999032
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,054.21 gal									90.83 gal
Fwp 2	1.003267									1.003267
Fpp 2	1.002902									1.003938
Fpt 2	1.000200									1.000200
Fwt 2	1.001170									1.001170
Fpwt = Fpt/Fwt	0.999032									0.999032
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,053.22 gal									90.78 gal

Restrained Pipe										
Sum:	Vo	701,872.11 gal 89,839,630 oz.		Vtp1	705,110.35 gal 90,254,125 oz.			Vtp2	704,813.76 gal 90,216,162 oz.	
Vo Unrestrained		633,410 gal	7,805 gal	9,332 gal	51,318 gal	1 gal	0 gal	6 gal		0 gal
Fwp 1	1.003523	1.003523	1.003523	1.003523	1.003523	1.003523	1.003523	1.003523	1.003523	1.003523
Fpp 1	1.002347	1.002086	1.003096	1.002347	1.000578	1.000515	1.000639	1.000275	1.000275	1.000275
Fpt 1	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157
Fwt 1	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423
Fpwt 1 = Fpt/Fwt	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		636,328 gal	7,839 gal	9,381 gal	51,554 gal	1 gal	0 gal	6 gal		0 gal
Fwp 2	1.003267	1.003267	1.003267	1.003267	1.003267	1.003267	1.003267	1.003267	1.003267	1.003267
Fpp 2	1.002181	1.001938	1.002875	1.002181	1.000540	1.000481	1.000596	1.000258	1.000258	1.000258
Fpt 2	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157
Fwt 2	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423
Fpwt = Fpt/Fwt	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736
Vtp = Vo(Fwp)(Fpp)(Fpwt)		636,060 gal	7,836 gal	9,377 gal	51,533 gal	1 gal	0 gal	6 gal		0 gal

Combined Pipe										
Sum:	Vo	704,004.92 gal 90,112,629 oz.		Vtp1	707,255.39 gal 90,528,690 oz.			Vtp2	706,957.76 gal 90,490,593 oz.	



## Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41497313
Construction Co.	Snelson	Job Number	41474005-171
Hydro. Test Co.	Milbar Hydro-test Incorporated	Project No.	FY12-112
Test Section	PG&E T-71 Line 300A, MP 490.66 - 493.59	WATER	
File Name	RCP 61362 - T-71, L-300A		

Description	Segment									
	1	2	3	4	5	6	7	8	9	10
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained	Restrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	8.625 in.	2.375 in.	4.500 in.	34.000 in.	1.315 in.
Wall Thickness	0.505 in.	0.500 in.	0.562 in.	0.380 in.	0.500 in.	0.500 in.	0.154 in.	0.237 in.	0.375 in.	0.154 in.
Inside Diameter	32.990 in.	33.000 in.	32.876 in.	33.240 in.	33.000 in.	7.625 in.	2.067 in.	4.026 in.	33.250 in.	1.007 in.
Spec./Grade	API5L-X60	API5L-X46	API5L-X60	API5L-X60	API5L-X60	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X60	API5L-Grade B
Length Unrestrained	46.00 ft									2 ft
Length Restrained		14,256 ft	177 ft	207 ft	1,155 ft	1 ft	3 ft	9 ft		2 ft
Temperature - On Test	70 °F	72 °F	72 °F	72 °F	72 °F	72 °F	72 °F	72 °F	70 °F	72 °F
Temperature - End of Test	71 °F	73 °F	73 °F	73 °F	73 °F	73 °F	73 °F	73 °F	71 °F	73 °F
Pressure - On Test	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig
Pressure - End of Test	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig	1,107 psig

Unrestrained Pipe										
Sum:	Vo	2,132.81 gal 272,999 oz.		Vtp1	2,144.76 gal 274,529 oz.		Vtp2	2,144.51 gal 274,497 oz.		
Vo Unrestrained	2,043 gal									90 gal
Fwp 1	1.003393									1.003393
Fpp 1	1.003013									1.004090
Fpt 1	1.000182									1.000182
Fwt 1	1.001036									1.001036
Fpwt 1 = Fpt/Fwt	0.999146									0.999146
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,053.94 gal									91 gal
Fwp 2	1.003393									1.003393
Fpp 2	1.003013									1.004090
Fpt 2	1.000200									1.000200
Fwt 2	1.001170									1.001170
Fpwt = Fpt/Fwt	0.999032									0.999032
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,053.71 gal									91 gal

Restrained Pipe										
Sum:	Vo	701,872.11 gal 89,839,630 oz.		Vtp1	705,047.55 gal 90,246,086 oz.		Vtp2	704,960.25 gal 90,234,912 oz.		
Vo Restrained	633,410 gal	7,805 gal	9,332 gal	51,318 gal	1 gal	0 gal	6 gal			0 gal
Fwp 1	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393
Fpp 1	1.002259	1.002008	1.002980	1.002259	1.000555	1.000494	1.000614			1.000263
Fpt 1	1.000145	1.000145	1.000145	1.000145	1.000145	1.000145	1.000145	1.000145	1.000145	1.000145
Fwt 1	1.001283	1.001283	1.001283	1.001283	1.001283	1.001283	1.001283	1.001283	1.001283	1.001283
Fpwt 1 = Fpt/Fwt	0.998863	0.998863	0.998863	0.998863	0.998863	0.998863	0.998863	0.998863	0.998863	0.998863
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	636,271 gal	7,839 gal	9,380 gal	51,550 gal	1 gal	0 gal	6 gal			0 gal
Fwp 2	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393	1.003393
Fpp 2	1.002263	1.002011	1.002984	1.002263	1.000559	1.000497	1.000617			1.000266
Fpt 2	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157	1.000157
Fwt 2	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423	1.001423
Fpwt = Fpt/Fwt	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736	0.998736
Vtp = Vo(Fwp)(Fpp)(Fpwt)	636,192 gal	7,838 gal	9,379 gal	51,543 gal	1 gal	0 gal	6 gal			0 gal

Combined Pipe										
Sum:	Vo	704,004.92 gal 90,112,629 oz.		Vtp1	707,192.30 gal 90,520,615 oz.		Vtp2	707,104.76 gal 90,509,410 oz.		
1 °F Change	87.54 gal									11,205.22 oz.



## Hydrostatic Test Pipe Data Table

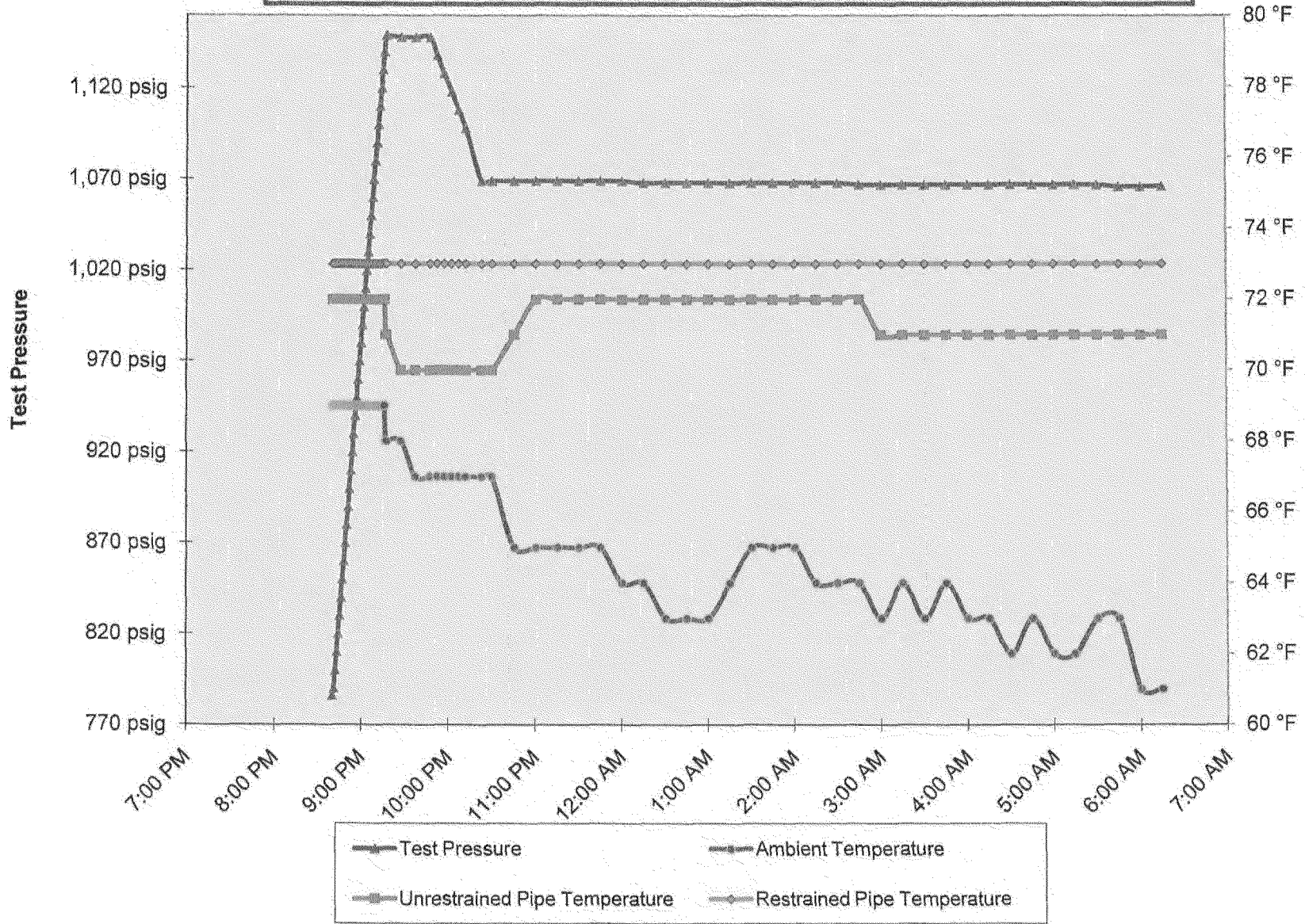
Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	46 ft	Unrestrained	34.000 in.	0.5050 in.	API5L-X60	1,782 psig	Steel	Arc Weld	DSAW
2	14,256 ft	Restrained	34.000 in.	0.5000 in.	API5L-X46	1,353 psig	Steel	Arc Weld	DSAW
3	177 ft	Restrained	34.000 in.	0.5620 in.	API5L-X60	1,984 psig	Steel	Arc Weld	DSAW
4	207 ft	Restrained	34.000 in.	0.3800 in.	API5L-X60	1,341 psig	Steel	Arc Weld	DSAW
5	1,155 ft	Restrained	34.000 in.	0.5000 in.	API5L-X60	1,765 psig	Steel	Arc Weld	DSAW
6	1 ft	Restrained	8.625 in.	0.5000 in.	API5L-Grade B	4,058 psig	Steel	Arc Weld	SM
7	3 ft	Restrained	2.375 in.	0.1540 in.	API5L-Grade B	4,539 psig	Steel	Arc Weld	SM
8	9 ft	Restrained	4.500 in.	0.2370 in.	API5L-Grade B	3,687 psig	Steel	Arc Weld	SM
9	2 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X60	1,324 psig	Steel	Arc Weld	DSAW
10	2 ft	Restrained	1.315 in.	0.1540 in.	API5L-Grade B	8,198 psig	Steel	Arc Weld	SM
11	40 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 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	41497313
Construction Company	Snelson	Job Number
Address	601 West State Street Sedro-Woolley, WA 98284 Attention: Jeff Elliott	41474005-T71
Hydrostatic Test Co.	Milbar Hydro-test Incorporated	Project No.
Address	P.O. Box 7701 Shreveport, Louisiana 71137-7701	FY12-112
Test Section	PG&E T-71 Line 300A, MP 490.66 - 493.59 From: 157+66 To: 0+00	
File Name	RCP 61362 - T-71, L-300A	

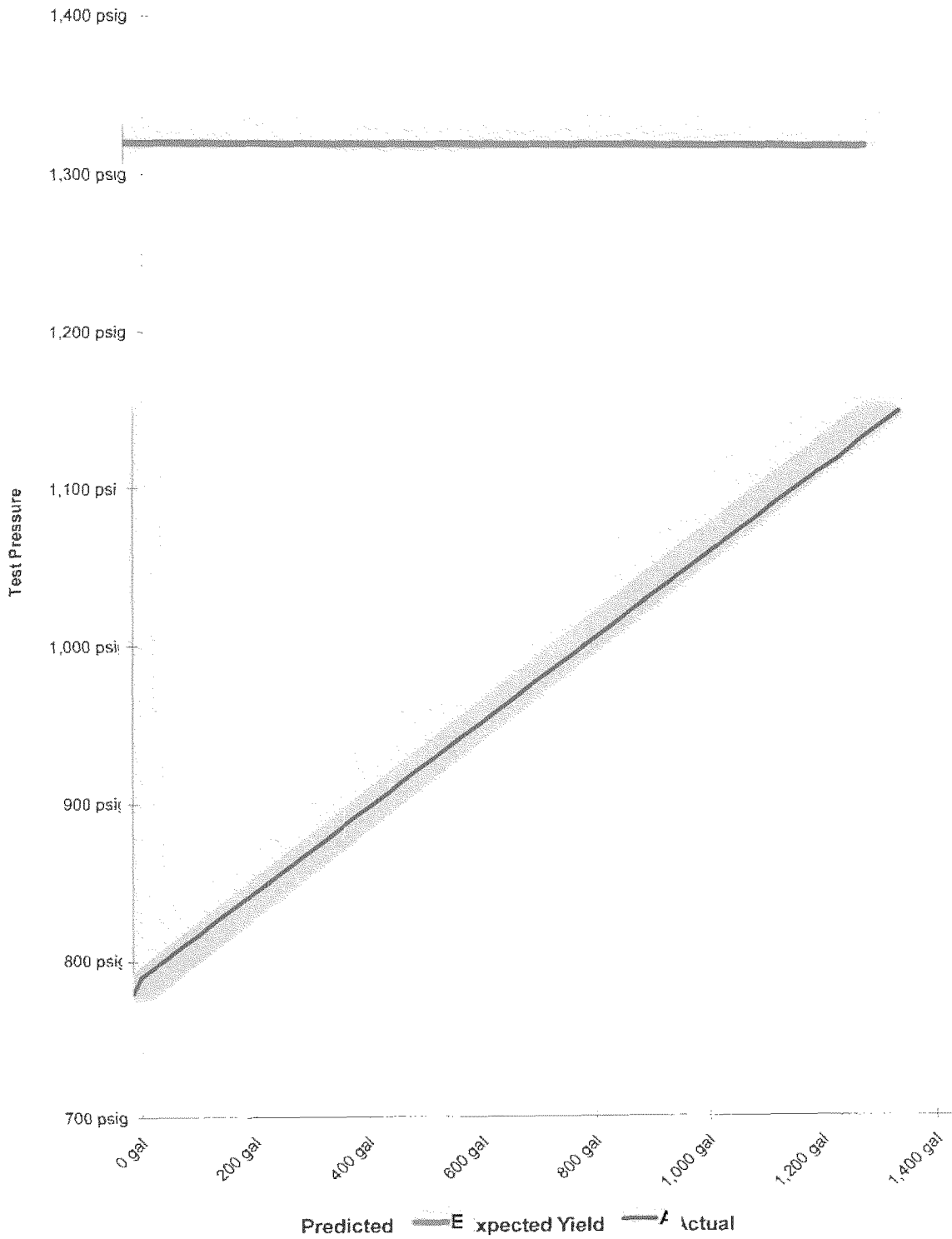
Part II - Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)				Note: Minimum test pressure and duration are not to be charged without written approval.			
Time and Date Test Pressure Reached	7/29/11 9:17 PM	Elevation at Test Point	123 ft	Min. Required Test Press At Test Point (1)	1,048.00 psig	Max. Allowable Test Press at Test Point (4)	1,150.00 psig
Time and Date Test Ended	7/30/11 6:15 AM	Max. Elevation in Test Section	200 ft	Min. Indicated Test Pressure (2)	1,066.00 psig	Max. Indicated Test Pressure (5)	1,149.00 psig
Actual Duration of Test	8 hours 58 minutes	Min. Elevation in Test Section	123 ft	Min. Test Pressure at Max. Elevation (3)	1,032.63 psig	Max. Test Pressure at Min. Elevation (6)	1,149.00 psig

PG&E T-71 Line 300A, MP 490.66 - 493.59





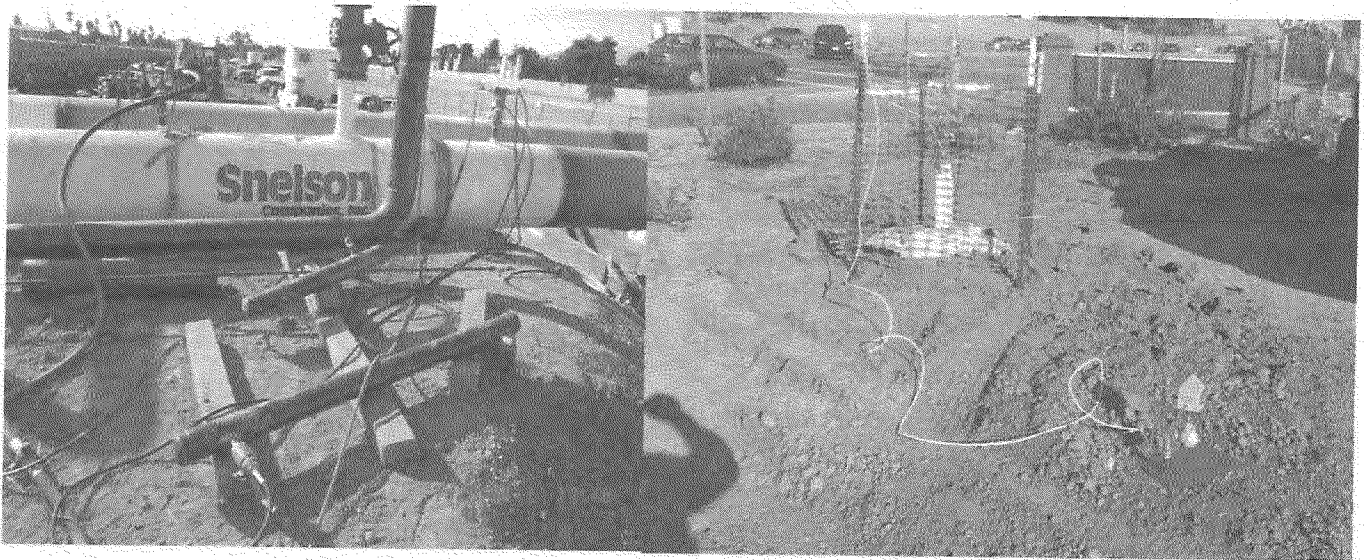
**Spike Pressure Test**  
**Stress Strain Curve -- PG&E T-71 Line 300A, MP 490.66 - 493.59**



Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-71 Line 300A, MP 490.66 - 493.59	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
780 psig	0	0.00 gal		0	0.00 gal	Pump gal per stroke	0.551 gal/stroke
790 psig	25	13.43 gal	35.83 gal	1.343	3.583	Pump Piston Diameter	3.000 in
800 psig	94	50.48 gal	71.66 gal	3.706	3.583	Pump Piston Stroke	6.00 in
810 psig	163	87.54 gal	107.50 gal	3.706	3.583	Pump Cylinders	3 ea
820 psig	234	125.67 gal	143.33 gal	3.813	3.584	Volume check gal per stroke	0.537 gal/stroke
830 psig	302	162.19 gal	179.17 gal	3.652	3.584	Volume Released (gallons)	36.75 gal
840 psig	373	200.32 gal	215.01 gal	3.813	3.584	Pressure Reduced (psi)	10 psi
850 psig	446	239.53 gal	250.86 gal	3.921	3.584	Maximum2	1,430 gal
860 psig	515	276.59 gal	286.70 gal	3.706	3.585	Minimum2	0 gal
870 psig	585	314.18 gal	322.55 gal	3.759	3.585	Maximum1	1,424 psig
880 psig	654	351.24 gal	358.40 gal	3.706	3.585	Minimum1	700 psig
890 psig	722	387.76 gal	394.25 gal	3.652	3.585	Gallons/Stroke Used	0.537 gal/stroke
900 psig	793	425.89 gal	430.10 gal	3.813	3.585	Predicted Gallons/Stroke	0.524 gal/stroke
910 psig	863	463.48 gal	465.96 gal	3.759	3.586	1160	10 psi
920 psig	930	499.47 gal	501.82 gal	3.598	3.586		
930 psig	1002	538.13 gal	537.68 gal	3.867	3.586	Max Pressure	1,149 psig
940 psig	1071	575.19 gal	573.54 gal	3.706	3.586		
950 psig	1142	613.32 gal	609.41 gal	3.813	3.586	Buried Pipe Temperature	70 °F
960 psig	1210	649.84 gal	645.27 gal	3.652	3.587		
970 psig	1280	687.44 gal	681.14 gal	3.759	3.587	Exposed Pipe Temperature	73 °F
980 psig	1350	725.03 gal	717.01 gal	3.759	3.587		
990 psig	1420	762.62 gal	752.89 gal	3.759	3.587		
1,000 psig	1490	800.22 gal	788.76 gal	3.759	3.588	ASME B31.8 Appendix N-5	
1,010 psig	1561	838.35 gal	824.64 gal	3.813	3.588	Average Actual Elastic Slope	1.343
1,020 psig	1629	874.87 gal	860.52 gal	3.652	3.588		
1,030 psig	1699	912.46 gal	896.41 gal	3.759	3.588	Average Predicted Elastic Slope	3.579
1,040 psig	1769	950.06 gal	932.29 gal	3.759	3.588		
1,050 psig	1838	987.12 gal	968.18 gal	3.706	3.589	Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	2.551
1,060 psig	1907	1,024.17 gal	1,004.07 gal	3.706	3.589		
1,070 psig	1976	1,061.23 gal	1,039.96 gal	3.706	3.589	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	790 psig
1,080 psig	2045	1,098.29 gal	1,075.85 gal	3.706	3.589		
1,090 psig	2114	1,135.34 gal	1,111.75 gal	3.706	3.590	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
1,100 psig	2184	1,172.94 gal	1,147.64 gal	3.759	3.590		
1,110 psig	2254	1,210.53 gal	1,183.55 gal	3.759	3.590	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
1,120 psig	2333	1,252.96 gal	1,219.45 gal	4.243	3.590		
1,130 psig	2392	1,284.65 gal	1,255.35 gal	3.169	3.590		
1,140 psig	2462	1,322.24 gal	1,291.26 gal	3.759	3.591		
1,149 psig	2525	1,356.08 gal	1,323.58 gal	3.759	3.591		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		
1,149 psig		1,356.08 gal	1,323.58 gal	0.000	0.000		

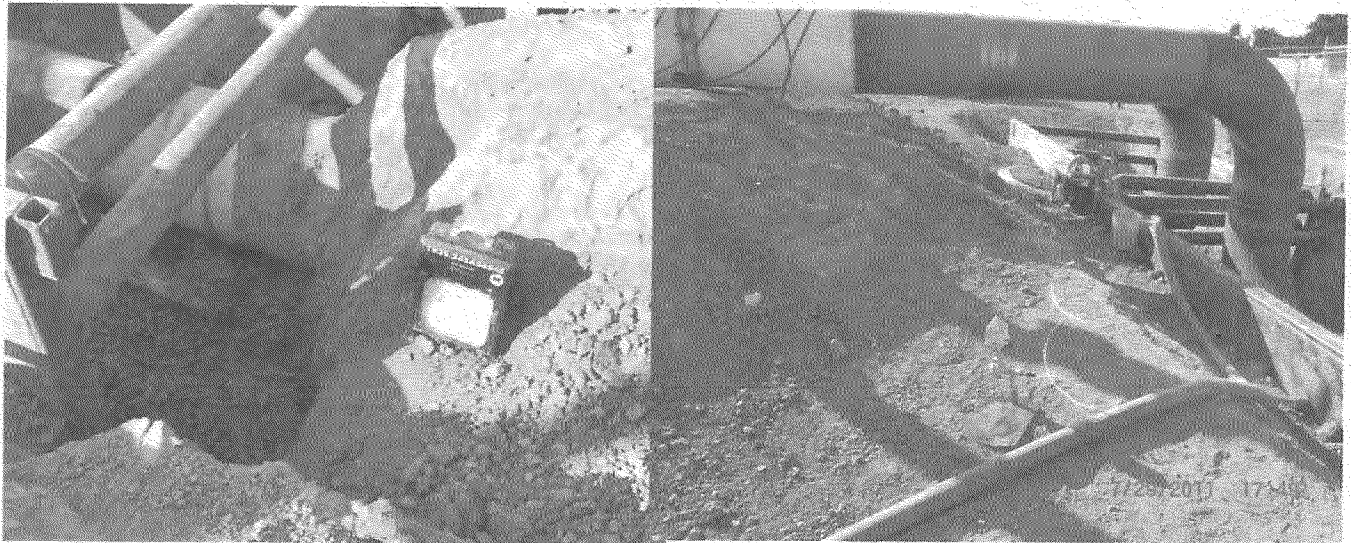
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7-30-11  
Date



Test Location Test Header

Restrained Temp. Rec.



Alternate Restrained Temp. Rec.

Unrestrained Temp. recorder



Injection pump



Test Trailer



Test Head Cross over piping