



RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002

Redacted

October 30, 2011

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

Test Contractor:	ARB -- T-35 10/30/11
Asset Owner:	Pacific Gas and Electric Company -- 41497357-T35
Construction Contractor:	ARB -- 0629-53-3500 T-35
Test Section:	PG&E T-35 , L-132 , Redacted
Test Date:	October 30, 2011
Certificate Number:	RCP 61362 - T-35, L-132, Redacted

To whom it may concern,

This letter is to certify that the hydrostatic test performed on pipe owned by Pacific Gas and Electric Company and tested by ARB met the requirements of the Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3).

The test segment was subjected to a spike pressure test of 716 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 8.25 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.25 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 613 psig and the MAOP per 49 CFR Part 192, Subpart J can be as high as 408 psig. The MAOP established by this test is sufficient to qualify for Pacific Gas and Electric Company's desired MAOP of 400 psig.

Pressure decreased 47 psi during the test. 42,099.20 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 14,100.44 ounces, gain, which is equivalent to a 1.27 °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 21,213 feet of buried and 65 feet of exposed pipe from a single point on the line.

Sincerely,

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Test T-35 10 20 2011
Letter

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Hydrostatic Test Certification

Company	Pacific Gas and Electric Company		Job Number	41497357-T35
Construction Co.	ARB		Job Number	0629-53-3500 T-35
Hydro. Test Co.	ARB		Project No.	T-35 10/30/11
Test Section	PG&E T-35, L-132, Redacted			
File Name	RCP 61362 - T-35, L-			

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3) Test Date: 30-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-35, L-132, MF Redacted
 From: 207+18 To: 0+00

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	18,975 ft	36.000 in.	0.313 in.	API5L-X52, DSAW, Arc Weld, Steel	903 psi
2	3,930 ft	36.000 in.	0.375 in.	API5L-X52, DSAW, Arc Weld, Steel	1,300 psi
3	130 ft	36.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,806 psi
4	2 ft	18.000 in.	0.375 in.	API5L-Grade B, SM, Arc Weld, Steel	1,841 psi
5	4 ft	12.750 in.	0.375 in.	API5L-Grade B, SM, Arc Weld, Steel	2,059 psi
6	2 ft	3.500 in.	0.300 in.	API5L-Grade B, SM, Arc Weld, Steel	6,000 psi
7	34 ft	4.500 in.	0.337 in.	API5L-Grade B, SM, Arc Weld, Steel	5,242 psi
8	43 ft	36.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,806 psi
9	4 ft	30.000 in.	0.375 in.	API5L-X65, DSAW, Arc Weld, Steel	1,825 psi
10	18 ft	36.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,806 psi
11	137 ft	30.000 in.	0.375 in.	API5L-X42, DSAW, Arc Weld, Steel	1,050 psi

Initial Test Conditions

Pressure at Test Point:	716 psig	Date/Time:	10/30/11 1:00 PM	Pipe Temperature	
Ambient Temperature:	79.0 °F	Elevation @ Test Point:	467.0 ft	Unrestrained:	67.0 °F
Pressure @ High Point (Cal/Measure):	660 psig	Elevation @ High Point:	597.0 ft	Restrained:	62.0 °F
Pressure @ Low Point (Cal/Measure):	723 psig	Elevation @ Low Point:	452.0 ft	Location:	207+16
				Location:	44+52
				Location:	194+02

Final Test Conditions

Pressure at Test Point:	660 psig	Date/Time:	10/30/11 8:15 PM	Pipe Temperature	
Ambient Temperature:	59.0 °F	Elevation @ Test Point:	467.0 ft	Unrestrained:	69.0 °F
Pressure @ High Point (Cal/Measure):	613 psig	Elevation @ High Point:	597.0 ft	Restrained:	61.0 °F
Pressure @ Low Point (Cal/Measure):	676 psig	Elevation @ Low Point:	452.0 ft	Location:	207+16
				Location:	44+52
				Location:	194+02
Total Fluid Injected:			Volume gain		
Total Fluid Withdrawn:	42099.20 fluid ounces				
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	14,100.44 oz	gain	0.0108%	1.274 °F equivalent	

Test Duration: 8.25 hours

Minimum Test Pressure:	660 psig	Max Elevation	613 psig	Min Elevation	676 psig
Maximum Test Pressure:	716 psig		660 psig		723 psig
% SMYS:	13.8%		36.5%		80.0%
Test Segment Observed % SMYS:	Minimum	12.0%	Maximum	80.0%	

Minimum Test Pressure (Calculated/Measured): 613 psig

Maximum Allowable Operating Pressure: DOT Part 192 Test Factor: 1.50 408 psig

The MAOP established by this test is sufficient to qualify for Pacific Gas and Electric Company's desired MAOP of 400 psig.

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	<p>The test segment was subjected to a spike pressure test of 716 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 8.25 hour test duration period.</p> <p>No leaks were observed during the test period. The test section included 21,213 feet of buried and 65 feet of exposed pipe. Pressure lost 47 psig during the test. The buried pipe segment lost 1°F fluid temperature and the exposed pipe segment gained 2°F.</p> <p>42,099.20 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 14,100.44 ounces, gain, which is equivalent to a 1.27 °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 21,213 feet of buried and 65 feet of exposed pipe from a single point on the line.</p>

Remarks

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 Test T-35 10 20 2011
 Certification

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497357-T35
Construction Co.	ARB	Job Number	0629-53-3500 T-35
Testing Co.	ARB	Project No.	T-35 10/30/11
Test Section	PG&E T-35, L-132, Redacted		
File Name	RCP 61362 - T-35, L-1		

Date	30-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	10/30/11	11:49 AM	492 psig	74 °F	67 °F	61 °F	Start Spike		
2	10/30/11	11:52 AM	502 psig	74 °F	67 °F	61 °F	Inject		7,830 oz.
3	10/30/11	11:55 AM	512 psig	74 °F	67 °F	61 °F	Inject		9,142 oz.
4	10/30/11	11:58 AM	522 psig	76 °F	67 °F	61 °F	Inject		9,734 oz.
5	10/30/11	12:01 PM	532 psig	76 °F	67 °F	61 °F	Inject		8,813 oz.
6	10/30/11	12:04 PM	542 psig	76 °F	67 °F	61 °F	Inject		9,472 oz.
7	10/30/11	12:07 PM	552 psig	76 °F	67 °F	61 °F	Inject		9,301 oz.
8	10/30/11	12:10 PM	562 psig	76 °F	67 °F	61 °F	Inject		9,765 oz.
9	10/30/11	12:13 PM	572 psig	77 °F	67 °F	61 °F	Inject		6,689 oz.
10	10/30/11	12:16 PM	582 psig	77 °F	67 °F	61 °F	Inject		10,790 oz.
11	10/30/11	12:19 PM	592 psig	77 °F	67 °F	61 °F	Inject		9,356 oz.
12	10/30/11	12:22 PM	602 psig	77 °F	67 °F	61 °F	Inject		9,173 oz.
13	10/30/11	12:25 PM	612 psig	77 °F	67 °F	61 °F	Inject		9,008 oz.
14	10/30/11	12:28 PM	622 psig	77 °F	67 °F	61 °F	Inject		9,710 oz.
15	10/30/11	12:31 PM	632 psig	78 °F	67 °F	61 °F	Inject		8,892 oz.
16	10/30/11	12:34 PM	642 psig	78 °F	67 °F	61 °F	Inject		9,722 oz.
17	10/30/11	12:37 PM	652 psig	78 °F	67 °F	61 °F	Inject		8,971 oz.
18	10/30/11	12:40 PM	662 psig	78 °F	67 °F	61 °F	Inject		9,386 oz.
19	10/30/11	12:43 PM	672 psig	79 °F	67 °F	61 °F	Inject		9,002 oz.
20	10/30/11	12:46 PM	682 psig	79 °F	67 °F	61 °F	Inject		8,569 oz.
21	10/30/11	12:49 PM	692 psig	79 °F	67 °F	61 °F	Inject		9,222 oz.
22	10/30/11	12:52 PM	702 psig	80 °F	67 °F	61 °F	Inject		9,063 oz.
23	10/30/11	12:55 PM	712 psig	80 °F	67 °F	61 °F	Inject		9,069 oz.
24	10/30/11	12:56 PM	716 psig	80 °F	67 °F	61 °F	Inject		4,327 oz.
25	10/30/11	1:00 PM	716 psig	79 °F	67 °F	62 °F	On Test		
26	10/30/11	1:10 PM	716 psig	79 °F	67 °F	62 °F			
27	10/30/11	1:20 PM	716 psig	80 °F	68 °F	62 °F			
28	10/30/11	1:30 PM	716 psig	81 °F	68 °F	62 °F	End Spike		
29	10/30/11	1:45 PM	711 psig	80 °F	68 °F	62 °F	Bleed	4,576 oz.	
30	10/30/11	2:00 PM	706 psig	80 °F	68 °F	62 °F	Bleed	4,576 oz.	
31	10/30/11	2:15 PM	682 psig	80 °F	68 °F	62 °F	Bleed	21,965 oz.	
32	10/30/11	2:30 PM	670 psig	80 °F	68 °F	62 °F	Bleed	10,982 oz.	
33	10/30/11	2:45 PM	670 psig	79 °F	68 °F	62 °F			
34	10/30/11	3:00 PM	670 psig	79 °F	68 °F	62 °F	Sun Shine		
35	10/30/11	3:15 PM	670 psig	78 °F	68 °F	62 °F			
36	10/30/11	3:30 PM	670 psig	77 °F	68 °F	62 °F			
37	10/30/11	3:45 PM	670 psig	76 °F	68 °F	62 °F			
38	10/30/11	4:00 PM	670 psig	75 °F	69 °F	62 °F			
39	10/30/11	4:15 PM	670 psig	74 °F	69 °F	62 °F	Sun Shine		
40	10/30/11	4:30 PM	670 psig	74 °F	69 °F	62 °F			
41	10/30/11	4:45 PM	670 psig	73 °F	69 °F	62 °F			
42	10/30/11	5:00 PM	670 psig	72 °F	69 °F	62 °F			
43	10/30/11	5:15 PM	670 psig	71 °F	69 °F	62 °F			
44	10/30/11	5:30 PM	670 psig	70 °F	69 °F	62 °F			
45	10/30/11	5:45 PM	670 psig	67 °F	69 °F	62 °F			
46	10/30/11	6:00 PM	670 psig	67 °F	69 °F	62 °F			
47	10/30/11	6:15 PM	670 psig	65 °F	69 °F	62 °F			

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Test T-35 10 20 2011
Dead Weight Sheet

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497357-T35
Construction Co.	ARB	Job Number	0629-53-3500 T-35
Testing Co.	ARB	Project No.	T-35 10/30/11
Test Section	PG&E T-35, L-132, Redacted		
File Name	RCP 61362 - T-35, L-Redacted		

Date 30-Oct-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
48	10/30/11	6:30 PM	670 psig	63 °F	69 °F	62 °F			
49	10/30/11	6:45 PM	669 psig	61 °F	69 °F	62 °F			
50	10/30/11	7:00 PM	669 psig	60 °F	69 °F	61 °F			
51	10/30/11	7:15 PM	669 psig	60 °F	69 °F	61 °F			
52	10/30/11	7:30 PM	669 psig	60 °F	69 °F	61 °F			
53	10/30/11	7:45 PM	669 psig	60 °F	69 °F	61 °F			
54	10/30/11	8:00 PM	669 psig	60 °F	69 °F	61 °F			
55	10/30/11	8:15 PM	669 psig	59 °F	69 °F	61 °F			
56	10/30/11	8:30 PM	669 psig	59 °F	69 °F	61 °F			
57	10/30/11	8:45 PM	669 psig	59 °F	69 °F	61 °F			
58	10/30/11	9:00 PM	669 psig	59 °F	69 °F	61 °F			
59	10/30/11	9:15 PM	669 psig	59 °F	69 °F	61 °F	End of Test		

Spike Test 205,004.8 oz.

Hydrostatic Test 42,099.2 oz.

Were leaks observed during the test period?

Exposed and buried pipe, no leaks observed.

High Test Pressure:	716 psig
Low Test Pressure:	669 psig

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Test T-35 10 20 2011
Dead Weight Sheet

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Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497357-T35
Construction Co.	ARB	Job Number	0629-53-3500 T-35
Hydro. Test Co.	ARB	Project No.	T-35 10/30/11
Test Section	PG&E T-35, L-132	WATER	
File Name	RCP 61362 - T-35, L		

General Pipe Data

Description	Segment							
	1	2	3	4	5	6	7	8
Restrained or Unrestrained?	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained
Outside Diameter	36.000 in.	30.000 in.	36.000 in.	16.000 in.	12.750 in.	3.500 in.	4.500 in.	36.000 in.
Wall Thickness	0.313 in.	0.375 in.	0.500 in.	0.375 in.	0.375 in.	0.300 in.	0.337 in.	0.500 in.
Inside Diameter	35.375 in.	29.250 in.	35.000 in.	15.250 in.	12.000 in.	2.900 in.	3.828 in.	35.000 in.
Spec./Grade	API5L-X52	API5L-X52	API5L-X65	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X65
Length Unrestrained								43 ft
Length Restrained	18,975 ft	3,930 ft	130 ft	2 ft	4 ft	2 ft	34 ft	
Temperature - On Test	62 °F	62 °F	62.0 °F	62.0 °F	62.0 °F	62.0 °F	62.0 °F	67.0 °F
Temperature - End of Test	61 °F	61 °F	61.0 °F	61.0 °F	61.0 °F	61.0 °F	61.0 °F	69.0 °F
Pressure - On Test	716 psig	716 psig	716 psig	716 psig	716 psig	716 psig	716 psig	716 psig
Pressure - End of Test	669 psig	669 psig	669 psig	669 psig	669 psig	669 psig	669 psig	669 psig

Unrestrained Pipe

Vo	3,177.37 gal 408,704 oz.	Vtp1	3,189.28 gal 408,225 oz.	Vtp2	3,187.69 gal 408,024 oz.
Vo Unrestrained					2,124 gal
Fwp 1					1.002192
Fpp 1					1.002088
Fpt 1					1.000127
Fwt 1					1.000681
Fpwt 1 = Fpt/Fwt					0.999447
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)					2,132.07 gal
Fwp 2					1.002048
Fpp 2					1.001951
Fpt 2					1.000164
Fwt 2					1.000929
Fpwt = Fpt/Fwt					0.999236
Vtp = Vo(Fwp)(Fpp)(Fpwt)					2,131.02 gal

Restrained Pipe

Vo	1,015,170.10 gal 129,941,772 oz.	Vtp1	1,019,629.82 gal 130,512,617 oz.	Vtp2	1,019,412.65 gal 130,484,819 oz.
Vo Unrestrained	866,861 gal	137,167 gal	6,497 gal	19 gal	24 gal
Fwp 1	1.002192	1.002192	1.002192	1.002192	1.002192
Fpp 1	1.002466	1.001701	1.001528	1.000890	1.000702
Fpt 1	1.000024	1.000024	1.000024	1.000024	1.000024
Fwt 1	1.000181	1.000181	1.000181	1.000181	1.000181
Fpwt 1 = Fpt/Fwt	0.999844	0.999844	0.999844	0.999844	0.999844
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	870,566 gal	137,680 gal	6,521 gal	19 gal	24 gal
Fwp 2	1.002048	1.002048	1.002048	1.002048	1.002048
Fpp 2	1.002301	1.001586	1.001424	1.000829	1.000653
Fpt 2	1.000012	1.000012	1.000012	1.000012	1.000012
Fwt 2	1.000080	1.000080	1.000080	1.000080	1.000080
Fpwt = Fpt/Fwt	0.999932	0.999932	0.999932	0.999932	0.999932
Vtp = Vo(Fwp)(Fpp)(Fpwt)	870,374 gal	137,656 gal	6,520 gal	19 gal	24 gal

Combined Pipe

Vo	1,018,347.47 gal 130,348,476 oz.	Vtp1	1,022,819.08 gal 130,920,842 oz.	Vtp2	1,022,600.34 gal 130,882,843 oz.
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Test T-35 10 20 2011
Water Calculations

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Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company
Construction Co.	ARB
Hydro. Test Co.	ARB
Test Section	PG&E T-35, L-132, MF Redacted
File Name	RCP 61362 - T-35, L-132 Redacted

General Pipe Data

Description	9	10	11				
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained				
Outside Diameter	30.000 in.	36.000 in.	30.000 in.				
Wall Thickness	0.375 in.	0.500 in.	0.375 in.				
Inside Diameter	29.250 in.	35.000 in.	29.250 in.				
Spec./Grade	API5L-X65	API5L-X65	API5L-X42				
Length Unrestrained	4 ft.	18 ft.					
Length Restrained			137 ft.				
Temperature -- On Test	67.0 °F	67.0 °F	62.0 °F				
Temperature -- End of Test	69.0 °F	69.0 °F	61.0 °F				
Pressure -- On Test	716 psig	716 psig	716 psig				
Pressure -- End of Test	669 psig	669 psig	669 psig				

Unrestrained Pipe

Vo							
Vo Unrestrained	154 gal	900 gal					
Fwp 1	1.002192	1.002192					
Fpp 1	1.002327	1.002088					
Fpt 1	1.000127	1.000127					
Fwt 1	1.000681	1.000681					
Fpwt 1 = Fpt/Fwt	0.999447	0.999447					
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	154.20 gal	902.99 gal					
Fwp 2	1.002048	1.002048					
Fpp 2	1.002174	1.001951					
Fpt 2	1.000184	1.000184					
Fwt 2	1.000929	1.000929					
Fpwt = Fpt/Fwt	0.999236	0.999236					
Vtp = Vo(Fwp)(Fpp)(Fpwt)	154.12 gal	902.55 gal					

Restrained Pipe

Vo							
Vo Unrestrained			4,782 gal				
Fwp 1			1.002192				
Fpp 1			1.001701				
Fpt 1			1.000024				
Fwt 1			1.000181				
Fpwt 1 = Fpt/Fwt			0.999844				
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			4,800 gal				
Fwp 2			1.002048				
Fpp 2			1.001586				
Fpt 2			1.000012				
Fwt 2			1.000080				
Fpwt = Fpt/Fwt			0.999932				
Vtp = Vo(Fwp)(Fpp)(Fpwt)			4,799 gal				

Combined Pipe

Vo							
Vo							

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Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41497357-T35
Construction Co.	ARB	Job Number	082B-53-3500 T-35
Hydro. Test Co.	ARB	Project No.	T-35 10/30/11
Test Section	PG&E T-35, L-132, MP	WATER	
File Name	RCP B1362 - T-35, L-132, Redacted		

General Pipe Data

Description	Segment							
	1	2	3	4	5	6	7	8
Restrainted or Unrestrainted?	Restrainted	Restrainted	Restrainted	Restrainted	Restrainted	Restrainted	Restrainted	Unrestrainted
Outside Diameter	36.000 in.	30.000 in.	38.000 in.	18.000 in.	12.750 in.	3.500 in.	4.500 in.	36.000 in.
Wall Thickness	0.313 in.	0.375 in.	0.500 in.	0.375 in.	0.375 in.	0.300 in.	0.337 in.	0.500 in.
Inside Diameter	35.375 in.	29.250 in.	35.000 in.	15.250 in.	12.000 in.	2.900 in.	3.826 in.	35.000 in.
Spec./Grade	API5L-X52	API5L-X52	API5L-X65	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-Grade B	API5L-X65
Length Unstrained								43 ft
Length Restrainted	16,975 ft	3,930 ft	130 ft	2 ft	4 ft	2 ft	34 ft	
Temperature - On Test	61 °F	61 °F	61 °F	61 °F	61 °F	61 °F	61 °F	67 °F
Temperature - End of Test	62 °F	62 °F	62 °F	62 °F	62 °F	62 °F	62 °F	68 °F
Pressure - On Test	692 psig	692 psig	692 psig	692 psig	692 psig	692 psig	692 psig	692 psig
Pressure - End of Test	692 psig	692 psig	692 psig	692 psig	692 psig	692 psig	692 psig	692 psig

Unrestrainted Pipe

Vo	3,177.37 gal 406,704 oz.	Vtp1	3,188.80 gal 408,167 oz.	Vtp2	3,188.47 gal 408,124 oz.
Vo Unrestrainted					2,124 gal
Fwp 1					1.002119
Fpp 1					1.002018
Fpt 1					1.000127
Fwt 1					1.000881
Fpwt 1 = Fpt/Fwt					0.999447
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)					2,131.76 gal
Fwp 2					1.002119
Fpp 2					1.002018
Fpt 2					1.000146
Fwt 2					1.000803
Fpwt 2 = Fpt/Fwt					0.999343
Vtp 2 = Vo(Fwp)(Fpp)(Fpwt)					2,131.54 gal

Restrainted Pipe

Vo	1,015,170.10 gal 129,941,772 oz.	Vtp1	1,018,561.07 gal 130,503,817 oz.	Vtp2	1,018,474.93 gal 130,492,791 oz.
Vo Restrainted	886,661 gal	137,187 gal	6,497 gal	19 gal	24 gal
Fwp 1	1.002119	1.002119	1.002119	1.002119	1.002119
Fpp 1	1.002380	1.001841	1.001473	1.000857	1.000675
Fpt 1	1.000012	1.000012	1.000012	1.000012	1.000012
Fwt 1	1.000080	1.000080	1.000080	1.000080	1.000080
Fpwt 1 = Fpt/Fwt	0.999932	0.999932	0.999932	0.999932	0.999932
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	870,504 gal	137,673 gal	6,520 gal	19 gal	24 gal
Fwp 2	1.002119	1.002119	1.002119	1.002119	1.002119
Fpp 2	1.002383	1.001644	1.001477	1.000861	1.000679
Fpt 2	1.000024	1.000024	1.000024	1.000024	1.000024
Fwt 2	1.000181	1.000181	1.000181	1.000181	1.000181
Fpwt 2 = Fpt/Fwt	0.999844	0.999844	0.999844	0.999844	0.999844
Vtp 2 = Vo(Fwp)(Fpp)(Fpwt)	870,430 gal	137,662 gal	6,520 gal	19 gal	24 gal

Combined Pipe

Vo	1,018,347.47 gal 130,348,478 oz.	Vtp1	1,022,749.87 gal 130,911,984 oz.	Vtp2	1,022,663.40 gal 130,900,915 oz.
1 °F Change	86.48 gal		11,068.83 oz.		

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Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company
Construction Co.	ARB
Hydro. Test Co.	ARB
Test Section	PG&E T-35, L-132,
File Name	RCP 01362 - T-35, L-132,

General Pipe Data

Description	9			10			11		
	9	10	11	9	10	11	9	10	11
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained						
Outside Diameter	30.000 in.	36.000 in.	30.000 in.						
Wall Thickness	0.375 in.	0.500 in.	0.375 in.						
Inside Diameter	29.250 in.	35.000 in.	29.250 in.						
Spec./Grade	API5L-X65	API5L-X65	API5L-X42						
Length Unrestrained	4 ft	18 ft							
Length Restrained			137 ft						
Temperature - On Test	87 °F	67 °F	61 °F						
Temperature - End of Test	88 °F	68 °F	62 °F						
Pressure - On Test	692 psig	692 psig	692 psig						
Pressure - End of Test	692 psig	692 psig	692 psig						

Unrestrained Pipe

Unrestrained Pipe									
Vo	9			10			11		
Vo Unrestrained	154 gal	900 gal							
Fwp 1	1.002119	1.002119							
Fpp 1	1.002249	1.002018							
Fpt 1	1.000127	1.000127							
Fwt 1	1.000881	1.000881							
Fpwt 1 = Fpt/Fwt	0.999447	0.999447							
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	154.18 gal	902.86 gal							
Fwp 2	1.002119	1.002119							
Fpp 2	1.002249	1.002018							
Fpt 2	1.000146	1.000146							
Fwt 2	1.000803	1.000803							
Fpwt 2 = Fpt/Fwt	0.999343	0.999343							
Vtp 2 = Vo(Fwp)(Fpp)(Fpwt)	154.16 gal	902.77 gal							

Restrained Pipe

Restrained Pipe									
Vo	9			10			11		
Vo Restrained			4,782 gal						
Fwp 1			1.002119						
Fpp 1			1.001841						
Fpt 1			1.000012						
Fwt 1			1.000080						
Fpwt 1 = Fpt/Fwt			0.999832						
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			4,800 gal						
Fwp 2			1.002119						
Fpp 2			1.001644						
Fpt 2			1.000024						
Fwt 2			1.000181						
Fpwt 2 = Fpt/Fwt			0.999844						
Vtp 2 = Vo(Fwp)(Fpp)(Fpwt)			4,800 gal						

Combined Pipe

Combined Pipe									
Vo	9			10			11		
1 °F Change									

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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	16,974.50 ft	Restrained	36.000 in.	0.3125 in.	API5L-X52	903 psig	Steel	Arc Weld	DSAW	
2	3,929.50 ft	Restrained	30.000 in.	0.3750 in.	API5L-X52	1,300 psig	Steel	Arc Weld	DSAW	
3	130.00 ft	Restrained	36.000 in.	0.5000 in.	API5L-X65	1,806 psig	Steel	Arc Weld	DSAW	
4	2.00 ft	Restrained	16.000 in.	0.3750 in.	API5L-Grade B	1,641 psig	Steel	Arc Weld	SM	
5	4.00 ft	Restrained	12.750 in.	0.3750 in.	API5L-Grade B	2,059 psig	Steel	Arc Weld	SM	
6	1.70 ft	Restrained	3.500 in.	0.3000 in.	API5L-Grade B	6,000 psig	Steel	Arc Weld	SM	
7	34.00 ft	Restrained	4.500 in.	0.3370 in.	API5L-Grade B	5,242 psig	Steel	Arc Weld	SM	
8	42.50 ft	Unrestrained	36.000 in.	0.5000 in.	API5L-X65	1,806 psig	Steel	Arc Weld	DSAW	
9	4.40 ft	Unrestrained	30.000 in.	0.3750 in.	API5L-X65	1,625 psig	Steel	Arc Weld	DSAW	
10	18.00 ft	Unrestrained	36.000 in.	0.5000 in.	API5L-X65	1,806 psig	Steel	Arc Weld	DSAW	
11	137.00 ft	Restrained	30.000 in.	0.3750 in.	API5L-X42	1,050 psig	Steel	Arc Weld	DSAW	

Hydrostatic Test Project Owner & Participants			
Owner Company	Pacific Gas and Electric Company		Job Number
Address	350 N. Wiget Walnut Creek, CA 94598 Attention: Redacted		41497357-T35
Construction Company	ARB		Job Number
Address	1875 Loveridge Road Pittsburg, CA 94565 Attention: T. Barnes		0629-53-3500 T-35
Hydrostatic Test Co.	ARB		Project No.
Address	1875 Loveridge Road Pittsburg, CA 84565 Attention: T. Barnes		T-35 10/30/11
Test Section	PG&E T-35, L-132, MP Redacted From: 207+16 To: 0+00		
File Name	RCP 61362 - T-35, L-132, Redacted		

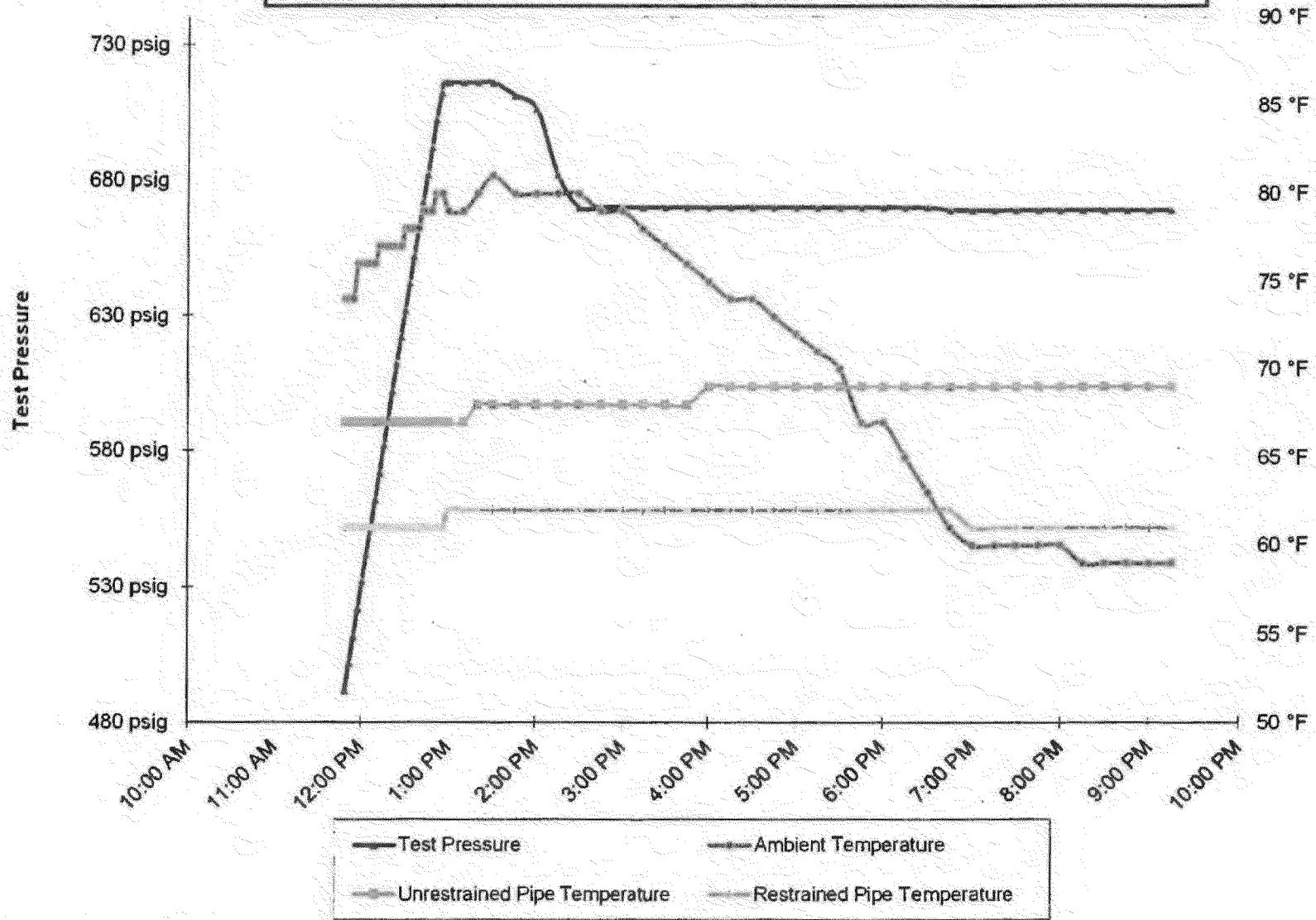
Part II - Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)				Note: Minimum test pressure and duration are not to be changed without written approval.			
Time and Date Test Pressure Reached	10/30/11 1:00 PM	Elevation at Test Point	467 ft	Min. Required Test Press At Test Point (1)	656.33 psig	Max. Allowable Test Press at Test Point (4)	718.50 psig
Time and Date Test Ended	10/30/11 9:15 PM	Max. Elevation in Test Section	597 ft	Min. Indicated Test Pressure (2)	669.00 psig	Max. Indicated Test Pressure (5)	716.00 psig
Actual Duration of Test	8 hours 15 minutes	Min. Elevation in Test Section	452 ft	Min. Test Pressure at Max. Elevation (3)	612.67 psig	Max. Test Pressure at Min. Elevation (6)	722.50 psig

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PG&E T-35 , L-132 , Redacted

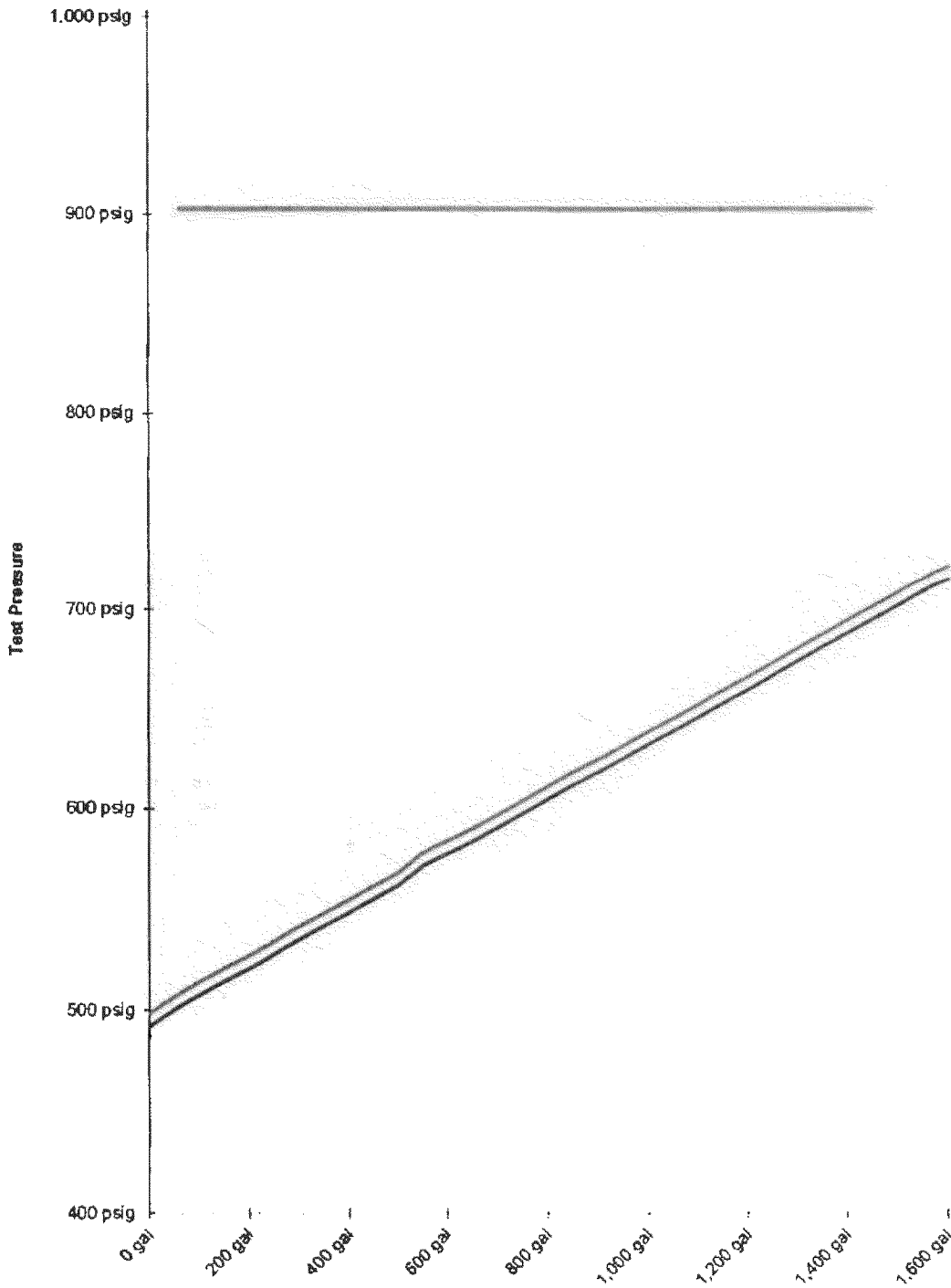


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Test T-35 10 20 2011
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Spike Pressure Test
Stress Strain Curve -- PG&E T-35 , L-132 , [Redacted]



Predicted — Expected Yield — Actual — Lowest Elevation

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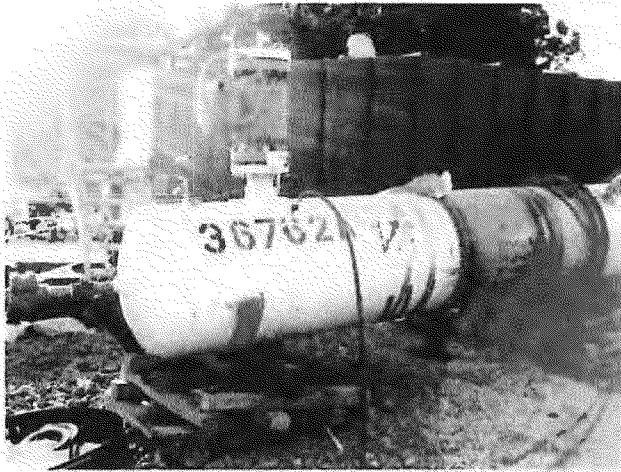
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Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-35, L-132, Redacted	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
492 psig	0	0.00 gal		0	0.000	39250	0.056 gal/stroke
502 psig	1283	81.17 gal	64.56 gal	6.117	6.456	Pump Piston Diameter	1.250 in
512 psig	2781	132.60 gal	129.13 gal	7.142	6.457	Pump Piston Stroke	3.50 in
522 psig	4376	208.65 gal	193.71 gal	7.605	6.457	Pump Cylinders	3 ea
532 psig	5820	277.49 gal	258.28 gal	6.885	6.458	Volume check gal per stroke	0.048 gal/stroke
542 psig	7372	351.49 gal	322.86 gal	7.400	6.458	Volume Released (gallons)	71.50 gal
552 psig	8896	424.16 gal	387.45 gal	7.266	6.458	Pressure Reduced (psi)	10 psi
562 psig	10496	500.44 gal	452.04 gal	7.629	6.459	Maximum2	1,690 gal
572 psig	11992	552.70 gal	516.63 gal	5.226	6.459	Minimum2	0 gal
582 psig	13360	637.00 gal	581.23 gal	8.430	6.460	Maximum1	1,003 psig
592 psig	14893	710.09 gal	645.83 gal	7.309	6.460	Minimum1	400 psig
602 psig	16396	781.75 gal	710.43 gal	7.166	6.460	Gallons/Stroke Used	0.048 gal/stroke
612 psig	17872	852.13 gal	775.04 gal	7.037	6.461	Predicted Gallons/Stroke	0.043 gal/stroke
622 psig	19463	927.98 gal	839.65 gal	7.586	6.461		
632 psig	20920	997.45 gal	904.27 gal	6.947	6.462	Pressure Increment	10 psi
642 psig	22513	1,073.41 gal	968.89 gal	7.585	6.462		
652 psig	23983	1,143.50 gal	1,033.51 gal	7.009	6.462	Max Pressure	716 psig
662 psig	25521	1,216.83 gal	1,096.14 gal	7.333	6.463		
672 psig	26996	1,287.15 gal	1,162.77 gal	7.033	6.463	Buried Pipe Temperature	61 F
682 psig	28400	1,354.10 gal	1,227.41 gal	6.694	6.464		
692 psig	29911	1,426.14 gal	1,292.05 gal	7.204	6.464	Exposed Pipe Temperature	84 F
702 psig	31396	1,496.94 gal	1,356.69 gal	7.080	6.464		
712 psig	32882	1,567.80 gal	1,421.34 gal	7.085	6.465		
716 psig	33591	1,601.60 gal	1,447.20 gal	8.451	6.465		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000	Average Actual Elastic Slope	7.064
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000	Average Predicted Elastic Slope	6.461
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000	Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	13.422
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	716 psig
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		
716 psig		1,601.60 gal	1,447.20 gal	0.000	0.000		

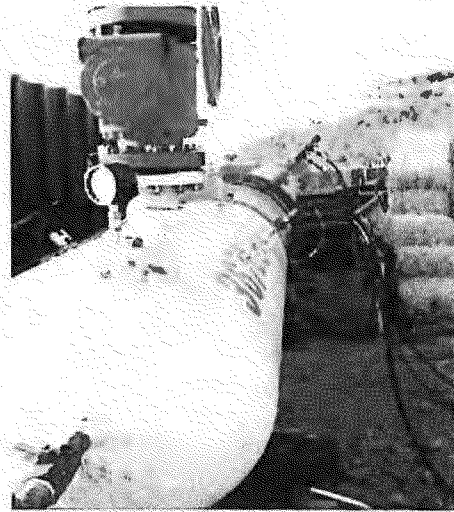
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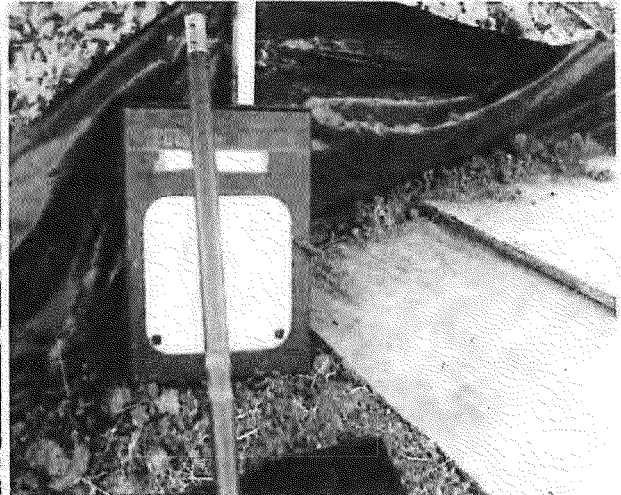
Test Header at Location A



Test Header Location A



Unrestrained Temp. Recorder

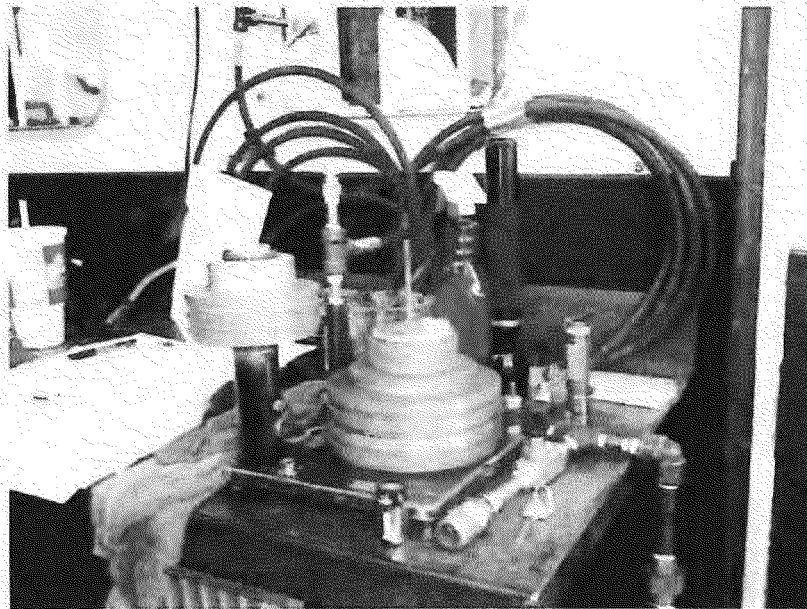


Restrained Temp. Recorder

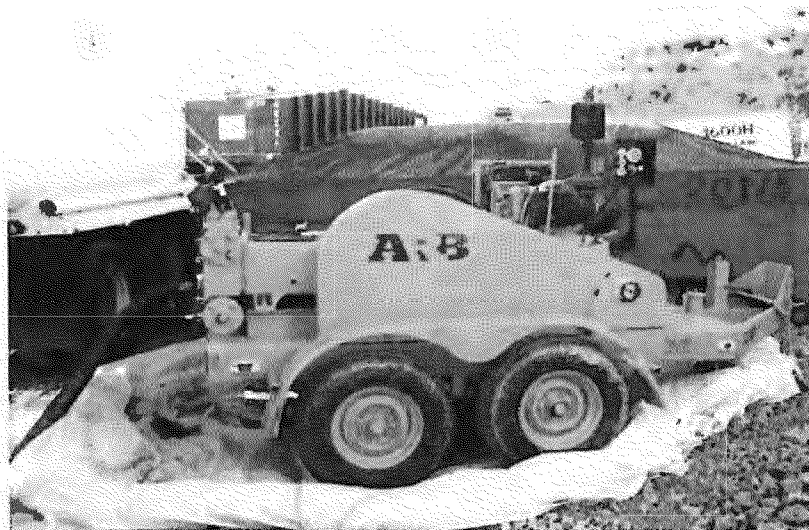
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Deadweight Testing Equipment



Pressure Pump

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