



RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002
(713)655-8080
idecker@rcp.com

September 10, 2011

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

Test Contractor:	Contra Costa Inspection -- T29 9/10/2011
Asset Owner:	Pacific Gas and Electric Company -- 41497350-T29
Construction Contractor:	ARB -- 0629-53-3500
Test Section:	PG&E T-29 L-132, MP 10.32 - 13.95
Test Date:	September 9, 2011
Certificate Number:	RCP 61362 - T-29, L-132, MP 10.32 - 13.95

To whom it may concern,

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

The test segment was subjected to a spike pressure test of 660 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 8.58 hour test duration period.

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.58 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 618 psig and the established MAOP is 412 psig.

Pressure decreased 42 psi during the test. 17,856.00 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 3,522.45 ounces, gain, which is equivalent to a 0.82 °F change in pipe temperature and within the error attributed to the temperature measurement instrumentation utilized.

Test pressure did not remain steady even though no leaks were observed. The volumetric gain is attributed to the error characteristic of the temperature measurement instrumentation utilized.

Sincerely,


Randy W. Beggs

cc. file

C:\Users\Beggs\Documents\PG&E Pressure tests\T-29\
RCP 61362, T-29-2 L-132 MP 10.32 - 12.95
Letter



Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41497350-T29
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection	Project No.	T29 9/10/2011
Test Section	PG&E T-29 L-132, MP 10.32 - 13.95		
File Name	RCP 61362 - T-29, L-132, MP 10.32 - 13.95		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Code of Federal Regulations, Title 49, Part 192, Subpart J (Class 3) Test Date: 9-Sep-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-29 L-132, MP 10.32 - 13.95
 From: 0+00 To: 191+02

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	2 ft	30.000 in.	0.375 in.	API5L-X65, DSAW, Arc Weld, Steel	1,625 psi
2	42 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
3	3,278 ft	30.000 in.	0.313 in.	API5L-X52, DSAW, Arc Weld, Steel	1,083 psi
4	5 ft	24.000 in.	0.344 in.	API5L-Grade B, SM, Arc Weld, Steel	1,003 psi
5	1,679 ft	24.000 in.	0.313 in.	API5L-X60, DSAW, Arc Weld, Steel	1,563 psi
6	155 ft	24.000 in.	0.313 in.	API5L-X52, DSAW, Arc Weld, Steel	1,354 psi
7	5 ft	24.000 in.	0.313 in.	API5L-X42, DSAW, Arc Weld, Steel	1,094 psi
8	13,600 ft	24.000 in.	0.281 in.	45ksmys, SM, Arc Weld, Steel	1,054 psi
9	344 ft	24.000 in.	0.281 in.	40ksmys, SM, Arc Weld, Steel	937 psi
10	18 ft	24.000 in.	0.250 in.	API5L-X52, DSAW, Arc Weld, Steel	1,083 psi
11	3 ft	6.625 in.	0.280 in.	API5L-Grade B, SM, Arc Weld, Steel	2,958 psi
12	44 ft	2.375 in.	0.154 in.	API5L-Grade B, SM, Arc Weld, Steel	4,539 psi
13	11 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
14	11 ft	30.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,500 psi

Initial Test Conditions

Pressure at Test Point:	660 psig	Date/Time:	9/9/11 11:40 PM	Pipe Temperature	
Ambient Temperature:	67.0 °F	Elevation @ Test Point:	32.0 ft	Unrestrained:	65.0 °F
Pressure @ High Point (Cal/Measure):	660 psig	Elevation @ High Point:	32.0 ft	Restrained:	63.0 °F
Pressure @ Low Point (Cal/Measure):	673 psig	Elevation @ Low Point:	1.0 ft	Location:	0+00
				Location:	0+00
				Location:	87+97

Final Test Conditions

Pressure at Test Point:	618 psig	Date/Time:	9/10/11 8:15 AM	Pipe Temperature	
Ambient Temperature:	65.0 °F	Elevation @ Test Point:	32.0 ft	Unrestrained:	65.0 °F
Pressure @ High Point (Cal/Measure):	618 psig	Elevation @ High Point:	32.0 ft	Restrained:	63.0 °F
Pressure @ Low Point (Cal/Measure):	631 psig	Elevation @ Low Point:	1.0 ft	Location:	0+00
				Location:	0+00
				Location:	87+97

Total Fluid Injected:	Total Fluid Withdrawn:		Volume gain	
	17856.00 fluid ounces			
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	3,522.45 oz	gain	0.0058%	0.822 °F equivalent

Test Duration: 8.58 hours

Minimum Test Pressure:	615 psig	Max Elevation	615 psig	Min Elevation	628 psig
Maximum Test Pressure:	660 psig		660 psig		673 psig
% SMYS:	60.3%		14.5%		63.9%
Test Segment Observed % SMYS:		Minimum	14.5%	Maximum	70.5%

Minimum Test Pressure (Calculated/Measured): 618 psig

Maximum Allowable Operating Pressure: DOT Part 192 Test Factor= 1.50 412 psig

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	<p>The test segment was subjected to a spike pressure test of 660 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 8.58 hour test duration period.</p> <p>No leaks were observed during the test period. The test section included 19,084 feet of buried and 55 feet of exposed pipe. Pressure lost 42 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment fluid temperature remained steady.</p> <p>17,856.00 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 3,522.45 ounces, gain, which is equivalent to a 0.82 °F change in pipe temperature and within the error attributed to the temperature measurement instrumentation utilized.</p> <p>Test pressure did not remain steady even though no leaks were observed. The volumetric gain is attributed to the error characteristic of the temperature measurement instrumentation utilized.</p>

Remarks

Randy W. Beggs
 Randy W. Beggs
 10-Sep-11



Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497350-T29
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	Contra Costa Inspection	Project No.	T29 9/10/2011
Test Section	PG&E T-29 L-132, MP 10.32 - 13.95		
File Name	RCP 61362 - T-29, L-132, MP 10.32 - 13.95		

Date	9-Sep-11	Test Log	
------	----------	-----------------	--

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
1	9/9/11	11:08 PM	450 psig	67 °F	65 °F	63 °F	Start Spike		
2	9/9/11	11:10 PM	460 psig	67 °F	65 °F	63 °F	Inject		4,959 oz.
3	9/9/11	11:12 PM	470 psig	67 °F	65 °F	63 °F	Inject		3,699 oz.
4	9/9/11	11:14 PM	480 psig	67 °F	65 °F	63 °F	Inject		3,286 oz.
5	9/9/11	11:16 PM	490 psig	67 °F	65 °F	63 °F	Inject		3,294 oz.
6	9/9/11	11:18 PM	500 psig	67 °F	65 °F	63 °F	Inject		4,456 oz.
7	9/9/11	11:20 PM	510 psig	67 °F	65 °F	63 °F	Inject		4,456 oz.
8	9/9/11	11:22 PM	520 psig	67 °F	65 °F	63 °F	Inject		4,539 oz.
9	9/9/11	11:24 PM	530 psig	67 °F	65 °F	63 °F	Inject		4,201 oz.
10	9/9/11	11:26 PM	540 psig	67 °F	65 °F	63 °F	Inject		4,276 oz.
11	9/9/11	11:28 PM	550 psig	67 °F	65 °F	63 °F	Inject		4,141 oz.
12	9/9/11	11:29 PM	560 psig	67 °F	65 °F	63 °F	Inject		4,029 oz.
13	9/9/11	11:30 PM	570 psig	67 °F	65 °F	63 °F	Inject		4,059 oz.
14	9/9/11	11:31 PM	580 psig	67 °F	65 °F	63 °F	Inject		4,014 oz.
15	9/9/11	11:32 PM	590 psig	67 °F	65 °F	63 °F	Inject		3,894 oz.
16	9/9/11	11:33 PM	600 psig	67 °F	65 °F	63 °F	Inject		3,984 oz.
17	9/9/11	11:34 PM	610 psig	67 °F	65 °F	63 °F	Inject		3,594 oz.
18	9/9/11	11:35 PM	620 psig	67 °F	65 °F	63 °F	Inject		3,864 oz.
19	9/9/11	11:36 PM	630 psig	67 °F	65 °F	63 °F	Inject		3,586 oz.
20	9/9/11	11:37 PM	640 psig	67 °F	65 °F	63 °F	Inject		3,616 oz.
21	9/9/11	11:38 PM	650 psig	67 °F	65 °F	63 °F	Inject		3,526 oz.
22	9/9/11	11:39 PM	660 psig	67 °F	65 °F	63 °F	Inject		3,856 oz.
23	9/9/11	11:40 PM	660 psig	67 °F	65 °F	63 °F	On Test		
24	9/9/11	11:50 PM	660 psig	66 °F	65 °F	63 °F			
25	9/10/11	12:00 AM	660 psig	66 °F	65 °F	63 °F			
26	9/10/11	12:10 AM	660 psig	66 °F	65 °F	63 °F	End Spike		
27	9/10/11	12:19 AM	650 psig	66 °F	65 °F	63 °F	Bleed	3,968 oz.	
28	9/10/11	12:25 AM	640 psig	66 °F	65 °F	63 °F	Bleed	3,968 oz.	
29	9/10/11	12:31 AM	630 psig	66 °F	65 °F	63 °F	Bleed	3,968 oz.	
30	9/10/11	12:37 AM	620 psig	66 °F	65 °F	63 °F	Bleed	3,968 oz.	
31	9/10/11	12:45 AM	615 psig	63 °F	64 °F	63 °F	Bleed	1,984 oz.	
32	9/10/11	1:00 AM	615 psig	63 °F	64 °F	63 °F			
33	9/10/11	1:15 AM	615 psig	63 °F	64 °F	63 °F			
34	9/10/11	1:30 AM	615 psig	63 °F	64 °F	63 °F			
35	9/10/11	1:45 AM	615 psig	62 °F	64 °F	63 °F			
36	9/10/11	2:00 AM	615 psig	62 °F	64 °F	63 °F			
37	9/10/11	2:15 AM	616 psig	63 °F	64 °F	63 °F			
38	9/10/11	2:30 AM	616 psig	62 °F	64 °F	63 °F			
39	9/10/11	2:45 AM	616 psig	62 °F	64 °F	63 °F			
40	9/10/11	3:00 AM	616 psig	62 °F	64 °F	63 °F			
41	9/10/11	3:15 AM	616 psig	62 °F	64 °F	63 °F			
42	9/10/11	3:30 AM	616 psig	62 °F	64 °F	63 °F			
43	9/10/11	3:45 AM	616 psig	61 °F	64 °F	63 °F			



Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497350-T29
Construction Co.	ARB	Job Number	0629-53-3500
Testing Co.	Contra Costa Inspection	Project No.	T29 9/10/2011
Test Section	PG&E T-29 L-132, MP 10.32 - 13.95		
File Name	RCP 61362 - T-29, L-132, MP 10.32 - 13.95		

Date	9-Sep-11	<h2>Test Log</h2>
------	----------	-------------------

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
44	9/10/11	4:00 AM	616 psig	61 °F	64 °F	63 °F			
45	9/10/11	4:15 AM	617 psig	61 °F	63 °F	63 °F			
46	9/10/11	4:30 AM	617 psig	61 °F	63 °F	63 °F			
47	9/10/11	4:45 AM	617 psig	61 °F	63 °F	63 °F			
48	9/10/11	5:00 AM	617 psig	60 °F	63 °F	63 °F			
49	9/10/11	5:15 AM	617 psig	60 °F	63 °F	63 °F			
50	9/10/11	5:30 AM	617 psig	60 °F	63 °F	63 °F			
51	9/10/11	5:45 AM	617 psig	60 °F	63 °F	63 °F			
52	9/10/11	6:00 AM	617 psig	60 °F	63 °F	63 °F			
53	9/10/11	6:15 AM	617 psig	60 °F	63 °F	63 °F			
54	9/10/11	6:30 AM	618 psig	60 °F	63 °F	63 °F			
55	9/10/11	6:45 AM	618 psig	60 °F	63 °F	63 °F			
56	9/10/11	7:00 AM	618 psig	60 °F	63 °F	63 °F			
57	9/10/11	7:15 AM	618 psig	60 °F	63 °F	63 °F			
58	9/10/11	7:30 AM	618 psig	62 °F	63 °F	63 °F			
59	9/10/11	7:45 AM	618 psig	62 °F	63 °F	63 °F			
60	9/10/11	8:00 AM	618 psig	64 °F	64 °F	63 °F			
61	9/10/11	8:15 AM	618 psig	65 °F	65 °F	63 °F	End of Test		

Spike Test	83,328.0 oz.
Hydrostatic Test	17,856.0 oz.

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	<table border="1"> <tr> <td>High Test Pressure:</td> <td style="text-align: right;">660 psig</td> </tr> <tr> <td>Low Test Pressure:</td> <td style="text-align: right;">615 psig</td> </tr> </table>	High Test Pressure:	660 psig	Low Test Pressure:	615 psig
High Test Pressure:	660 psig					
Low Test Pressure:	615 psig					



Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497350-T29
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection	Project No.	T29 9/10/2011
Test Section	PG&E T-29 L-132, MP 10.32 - 13.95	WATER	
File Name	RCP 61362 - T-29, L-132, MP 10.32 - 13.95		

General Pipe Data

Description	Segment											
	1	2	3	4	5	6	7	8	9	10	14	
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained
Outside Diameter	30.000 in.	24.000 in.	30.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	30.000 in.
Wall Thickness	0.375 in.	0.375 in.	0.313 in.	0.344 in.	0.313 in.	0.313 in.	0.313 in.	0.281 in.	0.281 in.	0.250 in.	0.375 in.	0.375 in.
Inside Diameter	29.250 in.	23.250 in.	29.375 in.	23.312 in.	23.375 in.	23.375 in.	23.375 in.	23.438 in.	23.438 in.	23.500 in.	29.250 in.	29.250 in.
Spec./Grade	API5L-X65	API5L-X60	API5L-X52	API5L-Grade B	API5L-X60	API5L-X52	API5L-X42	45ksmys	40ksmys	API5L-X52	API5L-X60	API5L-X60
Length Unrestrained	2 ft	42 ft										11 ft
Length Restrained			3,278 ft	5 ft	1,679 ft	155 ft	5 ft	13,600 ft	344 ft	18 ft		
Temperature -- On Test	65 °F	65 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	65.0 °F
Temperature -- End of Test	65 °F	65 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	63.0 °F	65.0 °F
Pressure -- On Test	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig	660 psig
Pressure -- End of Test	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig	618 psig

Unrestrained Pipe

Sum:	Vo	1,380.10 gal 176,652 oz.	Vtp1	1,384.92 gal 177,270 oz.	Vtp2	1,384.58 gal 177,226 oz.
Vo Unrestrained	70 gal	926 gal				384.0 gal
Fwp 1	1.002020	1.002020				1.002020
Fpp 1	1.002145	1.001705				1.002145
Fpt 1	1.000091	1.000091				1.000091
Fwt 1	1.000467	1.000467				1.000467
Fpwt 1 = Fpt/Fwt	0.999624	0.999624				0.999624
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	70.08 gal	929.41 gal				385.43 gal
Fwp 2	1.001892	1.001892				1.001892
Fpp 2	1.002009	1.001597				1.002009
Fpt 2	1.000091	1.000091				1.000091
Fwt 2	1.000467	1.000467				1.000467
Fpwt = Fpt/Fwt	0.999624	0.999624				0.999624
Vtp = Vo(Fwp)(Fpp)(Fpwt)	70.06 gal	929.19 gal				385.33 gal

Restrained Pipe

Sum:	Vo	469,444.53 gal 60,088,900 oz.	Vtp1	471,092.32 gal 60,299,816 oz.	Vtp2	470,980.68 gal 60,285,526 oz.
Vo Unrestrained		115,405 gal	111 gal	37,429 gal	3,455 gal	111 gal
Fwp 1		1.002020	1.002020	1.002020	1.002020	1.002020
Fpp 1		1.001893	1.001368	1.001508	1.001508	1.001508
Fpt 1		1.000036	1.000036	1.000036	1.000036	1.000036
Fwt 1		1.000267	1.000267	1.000267	1.000267	1.000267
Fpwt 1 = Fpt/Fwt		0.999769	0.999769	0.999769	0.999769	0.999769
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		115,830 gal	111 gal	37,553 gal	3,467 gal	112 gal
Fwp 2		1.001892	1.001892	1.001892	1.001892	1.001892
Fpp 2		1.001773	1.001281	1.001413	1.001413	1.001413
Fpt 2		1.000036	1.000036	1.000036	1.000036	1.000036
Fwt 2		1.000267	1.000267	1.000267	1.000267	1.000267
Fpwt = Fpt/Fwt		0.999769	0.999769	0.999769	0.999769	0.999769
Vtp = Vo(Fwp)(Fpp)(Fpwt)		115,801 gal	111 gal	37,545 gal	3,466 gal	112 gal

Combined Pipe

Sum:	Vo	470,824.63 gal 60,265,552 oz.	Vtp1	472,477.24 gal 60,477,086 oz.	Vtp2	472,365.25 gal 60,462,753 oz.
------	----	----------------------------------	------	----------------------------------	------	----------------------------------



Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41497350-T29
Construction Co.	ARB	Job Number	0629-53-3500
Hydro. Test Co.	Contra Costa Inspection	Project No.	T29 9/10/2011
Test Section	PG&E T-29 L-132, MP 10.32 - 13.95	WATER	
File Name	RCP 61362 - T-29, L-132, MP 10.32 - 13.95		

General Pipe Data

Description	Segment											
	1	2	3	4	5	6	7	8	9	10	14	
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained
Outside Diameter	30.000 in.	24.000 in.	30.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	24.000 in.	30.000 in.
Wall Thickness	0.375 in.	0.375 in.	0.313 in.	0.344 in.	0.313 in.	0.313 in.	0.313 in.	0.281 in.	0.281 in.	0.250 in.	0.250 in.	0.375 in.
Inside Diameter	29.250 in.	23.250 in.	29.375 in.	23.312 in.	23.375 in.	23.375 in.	23.375 in.	23.438 in.	23.438 in.	23.500 in.	23.500 in.	29.250 in.
Spec./Grade	API5L-X65	API5L-X60	API5L-X52	API5L-Grade B	API5L-X60	API5L-X52	API5L-X42	45ksmys	40ksmys	API5L-X52	API5L-X60	API5L-X60
Length Unstrained	2.00 ft	42.00 ft										11 ft
Length Restrained			3,278 ft	5 ft	1,679 ft	155 ft	5 ft	13,600 ft	344 ft	18 ft		
Temperature - On Test	64 °F	64 °F	62 °F	62 °F	62 °F	62 °F	62 °F	62 °F	62 °F	62 °F	62 °F	64 °F
Temperature - End of Test	65 °F	65 °F	63 °F	63 °F	63 °F	63 °F	63 °F	63 °F	63 °F	63 °F	63 °F	65 °F
Pressure - On Test	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig
Pressure - End of Test	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig	639 psig

Unrestrained Pipe

Sum:	Vo	1,380.10 gal 176,652 oz.	Vtp1	1,384.85 gal 177,261 oz.	Vtp2	1,384.75 gal 177,248 oz.
Vo Unrestrained	70 gal	926 gal				384 gal
Fwp 1	1.001956	1.001956				1.001956
Fpp 1	1.002077	1.001651				1.002077
Fpt 1	1.000073	1.000073				1.000073
Fwt 1	1.000375	1.000375				1.000375
Fpwt 1 = Fpt/Fwt	0.999698	0.999698				0.999698
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	70.07 gal	929.37 gal				385 gal
Fwp 2	1.001956	1.001956				1.001956
Fpp 2	1.002077	1.001651				1.002077
Fpt 2	1.000091	1.000091				1.000091
Fwt 2	1.000467	1.000467				1.000467
Fpwt = Fpt/Fwt	0.999624	0.999624				0.999624
Vtp = Vo(Fwp)(Fpp)(Fpwt)	70.07 gal	929.30 gal				385 gal

Restrained Pipe

Sum:	Vo	469,444.53 gal 60,088,900 oz.	Vtp1	471,069.88 gal 60,296,945 oz.	Vtp2	471,036.49 gal 60,292,671 oz.
Vo Restrained		115,405 gal	111 gal	37,429 gal	3,455 gal	111 gal
Fwp 1		1.001956	1.001956	1.001956	1.001956	1.001956
Fpp 1		1.001829	1.001321	1.001457	1.001457	1.001457
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)		115,824 gal	111 gal	37,551 gal	3,467 gal	112 gal
Fwp 2		1.001956	1.001956	1.001956	1.001956	1.001956
Fpp 2		1.001833	1.001324	1.001461	1.001461	1.001461
Fpt 2		1.000036	1.000036	1.000036	1.000036	1.000036
Fwt 2		1.000267	1.000267	1.000267	1.000267	1.000267
Fpwt = Fpt/Fwt		0.999769	0.999769	0.999769	0.999769	0.999769
Vtp = Vo(Fwp)(Fpp)(Fpwt)		115,816 gal	111 gal	37,549 gal	3,466 gal	112 gal

Combined Pipe

Sum:	Vo	470,824.63 gal 60,265,552 oz.	Vtp1	472,454.74 gal 60,474,206 oz.	Vtp2	472,421.24 gal 60,469,919 oz.
1 °F Change	33.49 gal	4,287.33 oz.				



Hydrostatic Test Pipe Data Table

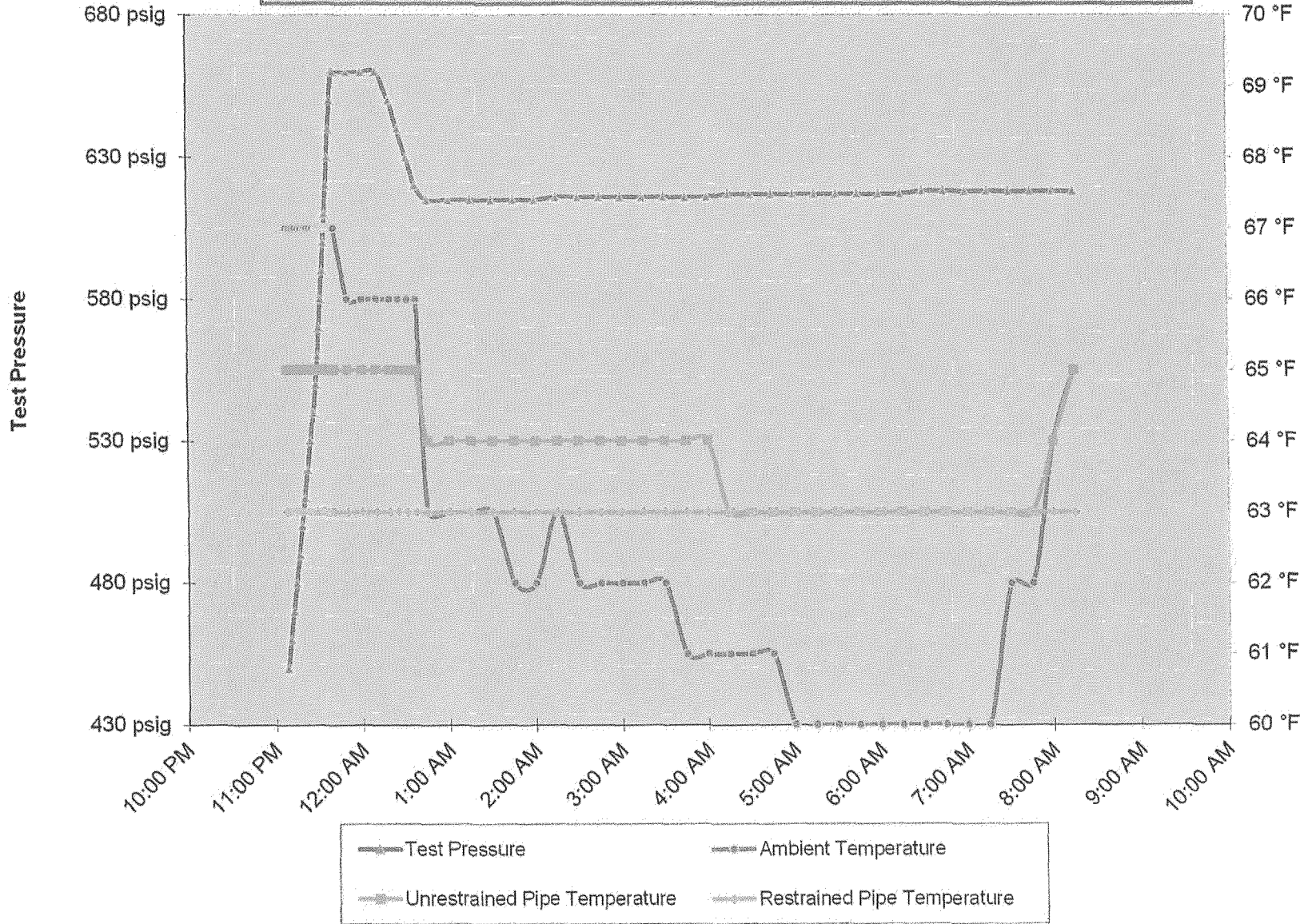
Pipe Type	Length	Restrained / Unrestrained	Outside Diameter	Wall Thickness	Specification & Grade	Pipe Yield Pressure	Material	Joint Type	Seam Type
1	2 ft	Unrestrained	30.000 in.	0.3750 in.	API5L-X65	1,625 psig	Steel	Arc Weld	DSAW
2	42 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
3	3,278 ft	Restrained	30.000 in.	0.3125 in.	API5L-X52	1,083 psig	Steel	Arc Weld	DSAW
4	5 ft	Restrained	24.000 in.	0.3440 in.	API5L-Grade B	1,003 psig	Steel	Arc Weld	SM
5	1,679 ft	Restrained	24.000 in.	0.3125 in.	API5L-X60	1,563 psig	Steel	Arc Weld	DSAW
6	155 ft	Restrained	24.000 in.	0.3125 in.	API5L-X52	1,354 psig	Steel	Arc Weld	DSAW
7	5 ft	Restrained	24.000 in.	0.3125 in.	API5L-X42	1,094 psig	Steel	Arc Weld	DSAW
8	13,600 ft	Restrained	24.000 in.	0.2810 in.	45ksmys	1,054 psig	Steel	Arc Weld	SM
9	344 ft	Restrained	24.000 in.	0.2810 in.	40ksmys	937 psig	Steel	Arc Weld	SM
10	18 ft	Restrained	24.000 in.	0.2500 in.	API5L-X52	1,083 psig	Steel	Arc Weld	DSAW
11	3 ft	Restrained	6.625 in.	0.2800 in.	API5L-Grade B	2,958 psig	Steel	Arc Weld	SM
12	44 ft	Restrained	2.375 in.	0.1540 in.	API5L-Grade B	4,539 psig	Steel	Arc Weld	SM
13	11 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
14	11 ft	Unrestrained	30.000 in.	0.3750 in.	API5L-X60	1,500 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	41497350-T29
Construction Company	ARB	Job Number
Address	1875 Loveridge Road Pittsburg, CA 94565 Attention: T Barnes	0629-53-3500
Hydrostatic Test Co.	Contra Costa Inspection	Project No.
Address	2820 Lajolla Drive Antioch, CA 94531	T29 9/10/2011
Test Section	PG&E T-29 L-132, MP 10.32 - 13.95 From: 0+00 To: 191+02	
File Name	RCP 61362 - T-29, L-132, MP 10.32 - 13.95	

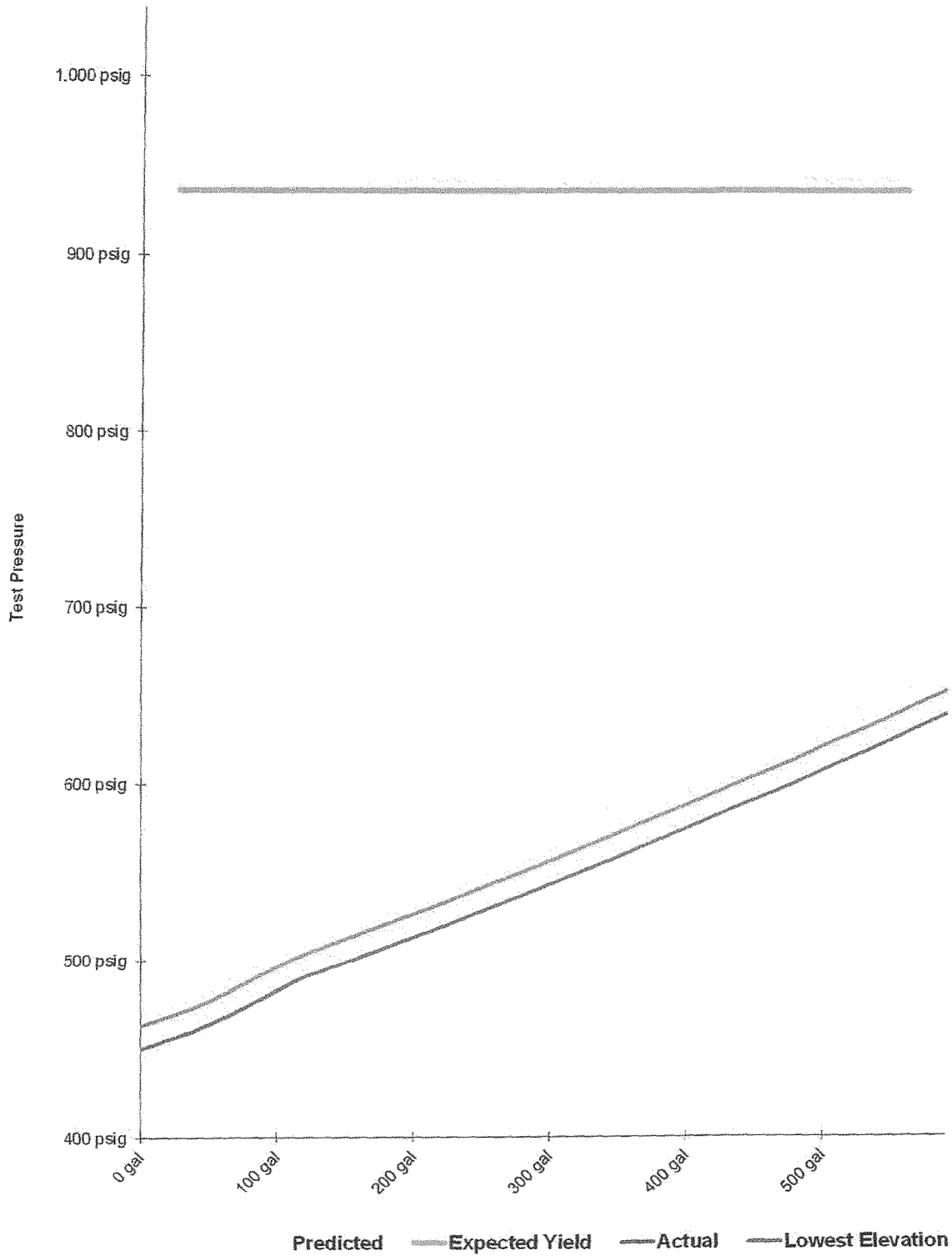
Part II – Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)				Note: Minimum test pressure and duration are not to be changed without written approval.			
Time and Date Test Pressure Reached	9/9/11 11:40 PM	Elevation at Test Point	32 ft	Min. Required Test Press At Test Point (1)	600.00 psig	Max. Allowable Test Press at Test Point (4)	666.57 psig
Time and Date Test Ended	9/10/11 8:15 AM	Max. Elevation in Test Section	32 ft	Min. Indicated Test Pressure (2)	615.00 psig	Max. Indicated Test Pressure (5)	660.00 psig
Actual Duration of Test	8 hours 35 minutes	Min. Elevation in Test Section	1 ft	Min. Test Pressure at Max. Elevation (3)	615.00 psig	Max. Test Pressure at Min. Elevation (6)	673.43 psig

PG&E T-29 L-132, MP 10.32 - 13.95






Spike Pressure Test
Stress Strain Curve -- PG&E T-29 L-132, MP 10.32 - 13.95

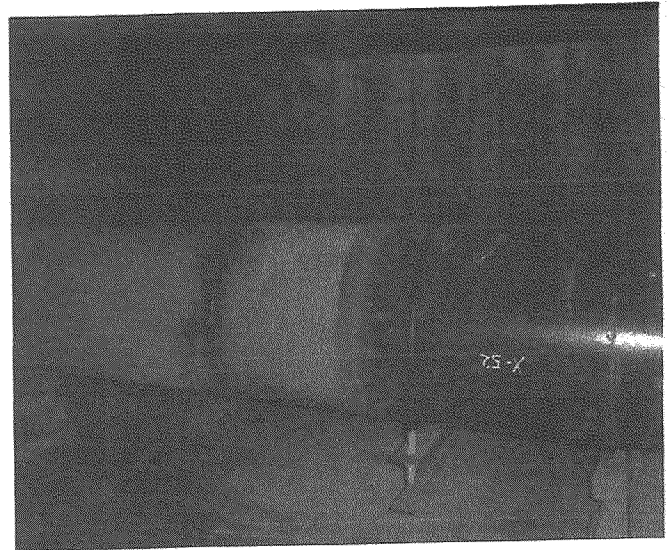




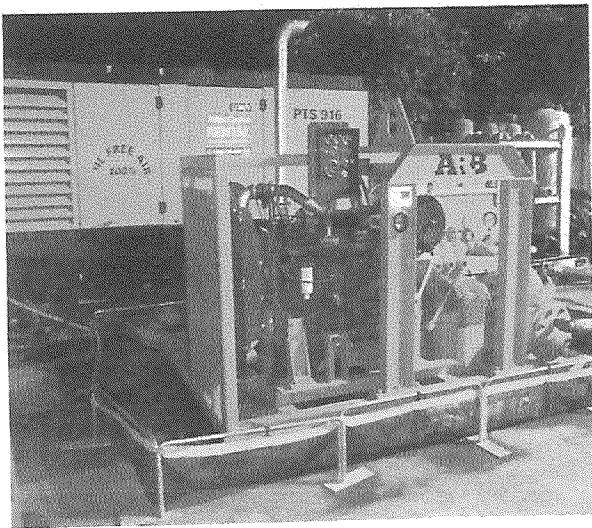
Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-29 L-132, MP 10.32 - 13.95	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
450 psig	0	0.00 gal		0	0.000	Pump gal per stroke	0.067 gal/stroke
460 psig	661	38.74 gal	26.64 gal	3.874	2.664	Pump Piston Diameter	1.375 in
470 psig	1154	67.64 gal	53.27 gal	2.890	2.664	Pump Piston Stroke	3.50 in
480 psig	1592	93.31 gal	79.91 gal	2.567	2.664	Pump Cylinders	3 ea
490 psig	2031	119.04 gal	106.56 gal	2.573	2.664	Volume check gal per stroke	0.059 gal/stroke
500 psig	2625	153.86 gal	133.20 gal	3.482	2.664	Volume Released (gallons)	31.00 gal
510 psig	3219	188.67 gal	159.84 gal	3.482	2.664	Pressure Reduced (psi)	10 psi
520 psig	3824	224.13 gal	186.49 gal	3.546	2.665	Maximum2	690 gal
530 psig	4384	256.95 gal	213.14 gal	3.282	2.665	Minimum2	0 gal
540 psig	4954	290.36 gal	239.79 gal	3.341	2.665	Maximum1	1,037 psig
550 psig	5506	322.72 gal	266.44 gal	3.235	2.665	Minimum 1	400 psig
560 psig	6043	354.19 gal	293.09 gal	3.147	2.665	Gallons/Stroke Used	0.059 gal/stroke
570 psig	6584	385.90 gal	319.74 gal	3.171	2.665	Predicted Gallons/Stroke	0.050 gal/stroke
580 psig	7119	417.26 gal	346.40 gal	3.136	2.666	Pressure Increment	10 psi
590 psig	7638	447.68 gal	373.06 gal	3.042	2.666	Max Pressure	660 psig
600 psig	8169	478.80 gal	399.72 gal	3.112	2.666	Buried Pipe Temperature	63 °F
610 psig	8648	506.87 gal	426.38 gal	2.807	2.666	Exposed Pipe Temperature	65 °F
620 psig	9163	537.06 gal	453.04 gal	3.019	2.666	ASME B31.8 Appendix N-5	
630 psig	9641	565.08 gal	479.70 gal	2.802	2.666		
640 psig	10123	593.33 gal	506.37 gal	2.825	2.667	Average Actual Elastic Slope	3.100
650 psig	10593	620.87 gal	533.04 gal	2.755	2.667	Average Predicted Elastic Slope	2.665
660 psig	11107	651.00 gal	559.71 gal	3.013	2.667	Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	5.890
660 psig		651.00 gal	559.71 gal	0.000	0.000	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	660 psig
660 psig		651.00 gal	559.71 gal	0.000	0.000	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
660 psig		651.00 gal	559.71 gal	0.000	0.000	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
660 psig		651.00 gal	559.71 gal	0.000	0.000	 Randy W. Beggs 9/10/11 Date	
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		
660 psig		651.00 gal	559.71 gal	0.000	0.000		



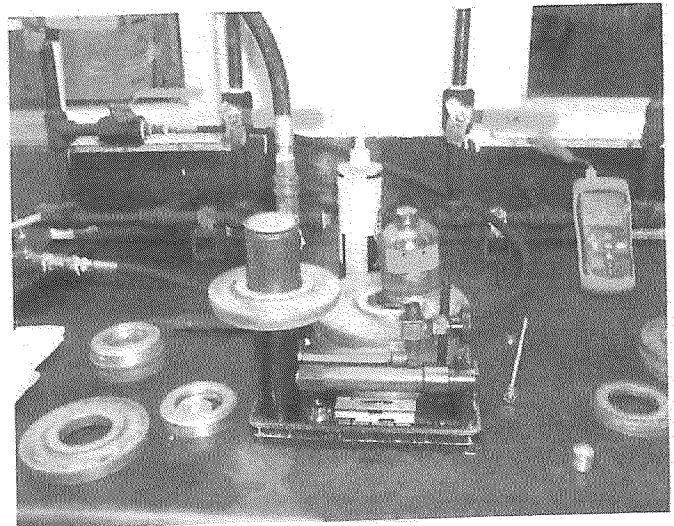
Test Tree at Location B



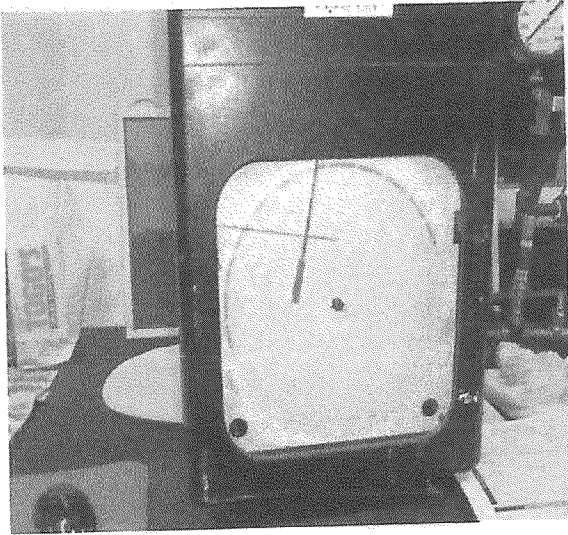
Test Header at Location B



Pressure Pump



Deaweight Test Equipment



Pressure Chart Recorder



Restrained Temp. Chart Recorder



Unrestrained Temp Chart Recorder