



RCP, Inc

Redacted

August 29, 2011

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

Test Contractor: Milbar Hydro-Test Inc. -- FY12-112
Asset Owner: Pacific Gas and Electric Company -- 41497333-3
Construction Contractor: Snelson -- 41474005-T-90A
Test Section: PG&E T-90A L-300B, MP 490.94 - 493.90
Test Date: August 28, 2011
Certificate Number: RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90

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 Inc. 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 1136 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 1019 psig and the established MAOP is 679 psig.

Pressure decreased 85 psi during the test. 36,691.20 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 4,859.82 ounces, loss, which is equivalent to a 0.4 °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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PG & E

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RCP				Hydrostatic Test Certification			
Company	Pacific Gas and Electric Company			Job Number	41497333-3		
Construction Co.				Job Number	41474005-T-90A		
Hydro. Test Co.	Milbar Hydro-Test Inc.			Project No.	FY12-112		
Test Section	PG&E T-90A L-300B, MP 490.94 - 493.90						
File Name	RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90						
Hydrostatic Test Pressure							
APPLICABLE CODE FOR CERTIFICATION:				Test Date:		28-Aug-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-90A L-300B, MP 490.94 - 493.90						
From:	158+37	To:	0+00				
Pipe Data							
Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS		
1	51 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi		
2	142 ft	34.000 in.	0.562 in.	API5L-X60, DSAW, Arc Weld, Steel	1,984 psi		
3	36 ft	34.000 in.	0.505 in.	API5L-X65, DSAW, Arc Weld, Steel	1,931 psi		
4	114 ft	34.000 in.	0.500 in.	API5L-X52, DSAW, Arc Weld, Steel	1,529 psi		
5	1,120 ft	34.000 in.	0.438 in.	API5L-X60, DSAW, Arc Weld, Steel	1,544 psi		
6	14,237 ft	34.000 in.	0.438 in.	API5L-X52, DSAW, Arc Weld, Steel	1,338 psi		
7	255 ft	34.000 in.	0.380 in.	API5L-X60, DSAW, Arc Weld, Steel	1,341 psi		
12	40 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi		
Initial Test Conditions							
Pressure at Test Point:	1,136 psig	Date/Time:	8/28/11 6:25 PM		Pipe Temperature		
Ambient Temperature:	82.0 °F	Elevation @ Test Point:	113.0 ft		Unrestrained:	78.0 °F	
Pressure @ High Point (Cal/Measure):	1,104 psig	Elevation @ High Point:	186.0 ft		Restrained:	75.0 °F	
Pressure @ Low Point (Cal/Measure):	1,136 psig	Elevation @ Low Point:	113.0 ft		Location:	158+37	
					Location:	0+00	
					Location:	158+37	
Final Test Conditions							
Pressure at Test Point:	1,051 psig	Date/Time:	8/29/11 3:00 AM		Pipe Temperature		
Ambient Temperature:	65.0 °F	Elevation @ Test Point:	113.0 ft		Unrestrained:	72.0 °F	
Pressure @ High Point (Cal/Measure):	1,019 psig	Elevation @ High Point:	186.0 ft		Restrained:	75.0 °F	
Pressure @ Low Point (Cal/Measure):	1,051 psig	Elevation @ Low Point:	113.0 ft		Location:	158+37	
					Location:	0+00	
					Location:	158+37	
Total Fluid Injected:		Total Fluid Withdrawn:		Volume Loss			
		36591.20 fluid ounces					
Net Change in Volume of the Test Section ± (+ Gain, - Loss):		(-4,859.82) oz		Loss		(0.4) °F equivalent	
Test Duration:		8.58 hours					
Minimum Test Pressure:	1,051 psig	1,019 psig	1,051 psig				
Maximum Test Pressure:	1,136 psig	1,104 psig	1,136 psig				
% SMYS:	83.5%	72.2%	84.9%				
Test Segment Observed % SMYS:		Minimum	25.0%	Maximum	84.9%		
Minimum Test Pressure (Calculated/Measured):				1,019 psig			
Maximum Allowable Operating Pressure:				DOT Part 192	Test Factor= 1.50	679 psig	
Were leaks observed?	No	Explain:					
Acceptable Hydrostatic Test?	Yes	<p>The test segment was subjected to a spike pressure test of 1136 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 15,933 feet of buried and 91 feet of exposed pipe. Pressure lost 85 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment lost 6°F.</p> <p>36,691.20 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 4,859.82 ounces, loss, which is equivalent to a 0.4 °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 characteristic of the temperature measurement instrumentation utilized.</p>					
Remarks	Also included in this test is: 41 ft. of 1.05" x .154wt. Grade B, SMLS pipe and 106ft. of 1.05" x .113 wt. SMLS grade B pipe						

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 C:\Users\Reda\Documents\PG&E test 90A
 RCP_61362_T-90A_L-300B_MP_490.94_493.90
 Certification

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497333-3
Construction Co.	Snelson	Job Number	41474005-T-90A
Testing Co.	Milbar Hydro-Test Inc.	Project No.	FY12-112
Test Section	PG&E T-90A L-300B, MP 490.94 - 493.90		
File Name	RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90		

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Date	28-Aug-11	Test Log
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Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Blood	Inject
					Unrestrained	Restrained			
1	8/28/11	5:47 PM	777 psig	82 °F	78 °F	75 °F	Start Spika		
2	8/28/11	5:49 PM	787 psig	82 °F	78 °F	75 °F	Inject		4,705 oz.
3	8/28/11	5:50 PM	797 psig	82 °F	78 °F	75 °F	Inject		4,935 oz.
4	8/28/11	5:51 PM	807 psig	82 °F	78 °F	75 °F	Inject		5,107 oz.
5	8/28/11	5:52 PM	817 psig	82 °F	78 °F	75 °F	Inject		4,763 oz.
6	8/28/11	5:53 PM	827 psig	82 °F	78 °F	75 °F	Inject		4,820 oz.
7	8/28/11	5:54 PM	837 psig	82 °F	78 °F	75 °F	Inject		4,820 oz.
8	8/28/11	5:55 PM	847 psig	82 °F	78 °F	75 °F	Inject		4,763 oz.
9	8/28/11	5:56 PM	857 psig	82 °F	78 °F	75 °F	Inject		4,648 oz.
10	8/28/11	5:57 PM	867 psig	82 °F	78 °F	75 °F	Inject		4,648 oz.
11	8/28/11	5:58 PM	877 psig	82 °F	78 °F	75 °F	Inject		4,935 oz.
12	8/28/11	5:59 PM	887 psig	82 °F	78 °F	75 °F	Inject		4,935 oz.
13	8/28/11	6:00 PM	897 psig	82 °F	78 °F	75 °F	Inject		4,763 oz.
14	8/28/11	6:01 PM	907 psig	82 °F	78 °F	75 °F	Inject		4,877 oz.
15	8/28/11	6:02 PM	917 psig	82 °F	78 °F	75 °F	Inject		4,705 oz.
16	8/28/11	6:03 PM	927 psig	82 °F	78 °F	75 °F	Inject		4,820 oz.
17	8/28/11	6:04 PM	937 psig	82 °F	78 °F	75 °F	Inject		4,877 oz.
18	8/28/11	6:05 PM	947 psig	82 °F	78 °F	75 °F	Inject		4,476 oz.
19	8/28/11	6:06 PM	957 psig	82 °F	78 °F	75 °F	Inject		4,820 oz.
20	8/28/11	6:07 PM	967 psig	82 °F	78 °F	75 °F	Inject		4,591 oz.
21	8/28/11	6:08 PM	977 psig	82 °F	78 °F	75 °F	Inject		4,935 oz.
22	8/28/11	6:09 PM	987 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
23	8/28/11	6:10 PM	997 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
24	8/28/11	6:11 PM	1,007 psig	82 °F	78 °F	75 °F	Inject		4,648 oz.
25	8/28/11	6:12 PM	1,017 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
26	8/28/11	6:13 PM	1,027 psig	82 °F	78 °F	75 °F	Inject		4,820 oz.
27	8/28/11	6:14 PM	1,037 psig	82 °F	78 °F	75 °F	Inject		4,705 oz.
28	8/28/11	6:15 PM	1,047 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
29	8/28/11	6:16 PM	1,057 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
30	8/28/11	6:17 PM	1,067 psig	82 °F	78 °F	75 °F	Inject		4,648 oz.
31	8/28/11	6:18 PM	1,077 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
32	8/28/11	6:19 PM	1,087 psig	82 °F	78 °F	75 °F	Inject		4,476 oz.
33	8/28/11	6:20 PM	1,097 psig	82 °F	78 °F	75 °F	Inject		4,361 oz.
34	8/28/11	6:21 PM	1,107 psig	82 °F	78 °F	75 °F	Inject		4,533 oz.
35	8/28/11	6:22 PM	1,117 psig	82 °F	78 °F	75 °F	Inject		4,476 oz.
36	8/28/11	6:23 PM	1,127 psig	82 °F	78 °F	75 °F	Inject		4,476 oz.
37	8/28/11	6:24 PM	1,136 psig	82 °F	78 °F	75 °F	Inject		4,591 oz.
38	8/28/11	6:26 PM	1,136 psig	82 °F	78 °F	75 °F	On Test		
39	8/28/11	6:35 PM	1,135 psig	81 °F	77 °F	75 °F			
40	8/28/11	6:45 PM	1,135 psig	80 °F	77 °F	75 °F			
41	8/28/11	6:55 PM	1,135 psig	79 °F	77 °F	75 °F	End Spika		
42	8/28/11	6:59 PM	1,125 psig	79 °F	77 °F	75 °F	Bleed	4,704 oz.	
43	8/28/11	7:04 PM	1,115 psig	79 °F	77 °F	75 °F	Bleed	4,704 oz.	



Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	COPY	Job Number	41497333-3
Construction Co.	Snelson	AUG 29 2011	Job Number	41474005-T-90A
Testing Co.	Milbar Hydro-Test Inc.	PG & E	Project No.	FY12-112
Test Section	PG&E T-90A L-300B, MP 490.94 - 493.90			
File Name	RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90			

Date 28-Aug-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks			
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject	
					Unrestrained	Restrained				
44	8/28/11	7:08 PM	1,105 psig	79 °F	77 °F	75 °F	Bleed	4,704 oz.		
45	8/28/11	7:12 PM	1,095 psig	79 °F	77 °F	75 °F	Bleed	4,704 oz.		
46	8/28/11	7:16 PM	1,085 psig	79 °F	77 °F	75 °F	Bleed	4,704 oz.		
47	8/28/11	7:20 PM	1,075 psig	79 °F	77 °F	75 °F	Bleed	4,704 oz.		
48	8/28/11	7:24 PM	1,065 psig	77 °F	77 °F	75 °F	Bleed	4,704 oz.		
49	8/28/11	7:27 PM	1,057 psig	77 °F	77 °F	75 °F	Bleed	3,763 oz.		
50	8/28/11	7:30 PM	1,057 psig	75 °F	77 °F	75 °F				
51	8/28/11	7:45 PM	1,057 psig	74 °F	77 °F	75 °F				
52	8/28/11	8:00 PM	1,057 psig	73 °F	77 °F	75 °F				
53	8/28/11	8:15 PM	1,057 psig	72 °F	77 °F	75 °F				
54	8/28/11	8:30 PM	1,056 psig	71 °F	76 °F	75 °F				
55	8/28/11	8:45 PM	1,056 psig	71 °F	76 °F	75 °F				
56	8/28/11	9:00 PM	1,056 psig	70 °F	76 °F	75 °F				
57	8/28/11	9:15 PM	1,056 psig	70 °F	75 °F	75 °F				
58	8/28/11	9:30 PM	1,055 psig	69 °F	75 °F	75 °F				
59	8/28/11	9:45 PM	1,055 psig	69 °F	75 °F	75 °F				
60	8/28/11	10:00 PM	1,055 psig	68 °F	75 °F	75 °F				
61	8/28/11	10:15 PM	1,055 psig	68 °F	75 °F	75 °F				
62	8/28/11	10:30 PM	1,055 psig	69 °F	75 °F	75 °F				
63	8/28/11	10:45 PM	1,055 psig	69 °F	74 °F	75 °F				
64	8/28/11	11:00 PM	1,054 psig	68 °F	74 °F	75 °F				
65	8/28/11	11:15 PM	1,054 psig	68 °F	74 °F	75 °F				
66	8/28/11	11:30 PM	1,054 psig	68 °F	74 °F	75 °F				
67	8/28/11	11:45 PM	1,054 psig	67 °F	73 °F	75 °F				
68	8/29/11	12:00 AM	1,053 psig	68 °F	73 °F	75 °F				
69	8/29/11	12:15 AM	1,053 psig	66 °F	73 °F	75 °F				
70	8/29/11	12:30 AM	1,053 psig	67 °F	73 °F	75 °F				
71	8/29/11	12:45 AM	1,053 psig	65 °F	73 °F	75 °F				
72	8/29/11	1:00 AM	1,053 psig	66 °F	73 °F	75 °F				
73	8/29/11	1:15 AM	1,052 psig	66 °F	73 °F	75 °F				
74	8/29/11	1:30 AM	1,052 psig	66 °F	73 °F	75 °F				
75	8/29/11	1:45 AM	1,052 psig	66 °F	73 °F	75 °F				
76	8/29/11	2:00 AM	1,052 psig	65 °F	72 °F	75 °F				
77	8/29/11	2:15 AM	1,052 psig	65 °F	72 °F	75 °F				
78	8/29/11	2:30 AM	1,051 psig	64 °F	72 °F	75 °F				
79	8/29/11	2:45 AM	1,051 psig	64 °F	72 °F	75 °F				
80	8/29/11	3:00 AM	1,051 psig	65 °F	72 °F	75 °F	End of Test			
								Spiko Test		168,873.6 oz.
								Hydrostatic Test	36,691.2 oz.	

Were leaks observed during the test period?

Exposed and buried pipe, no leaks observed.

High Test Pressure:	1,136 psig
Low Test Pressure:	1,051 psig



Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497333-3
Construction Co.	Snelson	Job Number	41474005-T-90A
Hydro. Test Co.	Milbar Hydro-Test Inc.	Project No.	FY12-112
Test Section	PG&E T-90A L-300B, MP 490.94 - 493.90	WATER	
File Name	RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90		

Description	General Pipe Data											
	Segment											
	1	2	3	4	5	6	7	8	9	10	12	
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained
Outside Diameter	34,000 in.	34,000 in.	34,000 in.	34,000 in.	34,000 in.	34,000 in.	34,000 in.	24,000 in.	8,625 in.	4,500 in.	34,000 in.	
Wall Thickness	0.500 in.	0.562 in.	0.505 in.	0.500 in.	0.438 in.	0.438 in.	0.360 in.	0.500 in.	0.322 in.	0.237 in.	0.500 in.	
Inside Diameter	33,000 in.	32,876 in.	32,990 in.	33,000 in.	33,125 in.	33,125 in.	33,240 in.	23,000 in.	7,931 in.	4,026 in.	33,000 in.	
Spec./Grade	API5L-X65	API5L-X60	API5L-X65	API5L-X52	API5L-X60	API5L-X52	API5L-X60	API5L-X60	API5L-Grade B	API5L-Grade B	API5L-X65	
Length Unrestrained	51 ft										40 ft	
Length Restrained		142 ft	36 ft	114 ft	1,120 ft	14,237 ft	255 ft	15 ft	2 ft	12 ft		
Temperature -- On Test	78 °F	75 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	78.0 °F	
Temperature -- End of Test	72 °F	75 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	75.0 °F	72.0 °F	
Pressure -- On Test	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	1,138 psig	
Pressure -- End of Test	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	1,051 psig	

Unrestrained Pipe						
Sum:	Vo	4,043.23 gal		Vp1	4,062.70 gal	
		517,533 oz.			520,025 oz.	
Vo Unrestrained	2,265 gal					1,777.2 gal
Fwp 1	1.003483					1.003483
Fpp 1	1.003124					1.003124
Fpt 1	1.000328					1.000328
Fwt 1	1.002122					1.002122
Fpwt 1 = Fpp/Fwt	0.998209					0.998209
Vp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,276.90 gal					1,785.80 gal
Fwp 2	1.003221					1.003221
Fpp 2	1.002890					1.002890
Fpt 2	1.000218					1.000218
Fwt 2	1.001283					1.001283
Fpwt 2 = Fpp/Fwt	0.998037					0.998037
Vp 2 = Vo(Fwp)(Fpp)(Fpwt)	2,277.43 gal					1,788.22 gal

Restrained Pipe													
Sum:	Vo	712,265.08 gal				Vp1	715,569.25 gal				Vp2	715,243.69 gal	
		91,169,930 oz.					91,592,804 oz.					91,551,191 oz.	
Vo Unrestrained		6,262 gal	1,599 gal	5,065 gal	50,141 gal	637,307 gal	11,495 gal	324 gal	5 gal	8 gal			
Fwp 1	1.003483	1.003483	1.003483	1.003483	1.003483	1.003483	1.003483	1.003483	1.003483	1.003483			
Fpp 1	1.002070	1.002305	1.002328	1.002663	1.002663	1.003069	1.001639	1.000908	1.000639				
Fpt 1	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182				
Fwt 1	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688				
Fpwt 1 = Fpp/Fwt	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496				
Vp 1 = Vo(Fwp)(Fpp)(Fpwt)		6,287 gal	1,605 gal	5,097 gal	50,373 gal	640,325 gal	11,653 gal	326 gal	5 gal	8 gal			
Fwp 2	1.003221	1.003221	1.003221	1.003221	1.003221	1.003221	1.003221	1.003221	1.003221				
Fpp 2	1.001919	1.002137	1.002158	1.002408	1.002408	1.002468	1.002843	1.001520	1.000644	1.000590			
Fpt 2	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182				
Fwt 2	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688				
Fpwt 2 = Fpp/Fwt	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496	0.998496				
Vp 2 = Vo(Fwp)(Fpp)(Fpwt)		6,285 gal	1,605 gal	5,085 gal	50,350 gal	640,034 gal	11,548 gal	325 gal	5 gal	8 gal			

Combined Pipe													
Sum:	Vo	710,308.31 gal				Vp1	710,631.95 gal				Vp2	710,307.33 gal	
		91,087,464 oz.					92,112,889 oz.					92,071,338 oz.	



Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41497333-3
Construction Co.	Snelson	Job Number	41474005-T-90A
Hydro. Test Co.	Mibar Hydro-Test Inc.	Project No.	FY12-112
Test Section	PG&E T-90A L-300B, MP 490.94 - 493.00		
File Name	RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90		WATER

General Pipe Data

Description	Segment											
	1	2	3	4	5	6	7	8	9	10	12	
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	34.000 in.	24.000 in.	8.025 in.	4.500 in.	34.000 in.	
Wall Thickness	0.500 in.	0.562 in.	0.505 in.	0.500 in.	0.438 in.	0.438 in.	0.380 in.	0.500 in.	0.322 in.	0.237 in.	0.500 in.	
Inside Diameter	33.000 in.	32.876 in.	32.993 in.	33.000 in.	33.125 in.	33.125 in.	33.240 in.	23.000 in.	7.981 in.	4.026 in.	33.000 in.	
Spec./Grade	API5L-X65	API5L-X60	API5L-X65	API5L-X52	API5L-X60	API5L-X52	API5L-X60	API5L-X60	API5L-Grade B	API5L-Grade B	API5L-X65	
Length Unrestrained	51.00 ft										40 ft	
Length Restrained		142 ft	38 ft	114 ft	1,120 ft	14,237 ft	255 ft	15 ft	2 ft	12 ft		
Temperature -- On Test	74 °F	74 °F	74 °F	74 °F	74 °F	74 °F	74 °F	74 °F	74 °F	74 °F	74 °F	
Temperature -- End of Test	75 °F	75 °F	75 °F	75 °F	75 °F	75 °F	75 °F	75 °F	75 °F	75 °F	75 °F	
Pressure -- On Test	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	
Pressure -- End of Test	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	1,093 psig	

Unrestrained Pipe

Sum:	Vo	4,043.23 gal 517,533 oz.	Vip1	4,063.74 gal 520,159 oz.	Vip2	4,063.22 gal 520,092 oz.
Vo Unrestrained	2,268 gal					1,777 gal
Fwp 1	1.003350					1.003350
Fpp 1	1.003006					1.003006
Fpt 1	1.000255					1.000255
Fwt 1	1.001542					1.001542
Fpwt 1 = Fp1/Fwt	0.998715					0.998715
Vip 1 = Vo(Fwp)(Fpp)(Fpwt)	2,277.48 gal					1,788 gal
Fwp 2	1.003350					1.003350
Fpp 2	1.003006					1.003006
Fpt 2	1.000273					1.000273
Fwt 2	1.001688					1.001688
Fpwt 2 = Fp2/Fwt	0.998587					0.998587
Vip 2 = Vo(Fwp)(Fpp)(Fpwt)	2,277.19 gal					1,788 gal

Restrained Pipe

Sum:	Vo	712,265.03 gal 91,169,930 oz.	Vip1	715,497.80 gal 91,583,719 oz.	Vip2	715,404.53 gal 91,571,779 oz.
Vo Restrained		6,262 gal	1,599 gal	5,055 gal	50,141 gal	637,367 gal
Fwp 1	1.003350	1.003350	1.003350	1.003350	1.003350	1.003350
Fpp 1	1.001990	1.002216	1.002239	1.002561	1.002951	1.001575
Fpt 1	1.000169	1.000169	1.000169	1.000169	1.000169	1.000169
Fwt 1	1.001542	1.001542	1.001542	1.001542	1.001542	1.001542
Fpwt 1 = Fp1/Fwt	0.998630	0.998630	0.998630	0.998630	0.998630	0.998630
Vip 1 = Vo(Fwp)(Fpp)(Fpwt)		6,287 gal	1,605 gal	5,987 gal	50,368 gal	640,291 gal
Fwp 2	1.003350	1.003350	1.003350	1.003350	1.003350	1.003350
Fpp 2	1.001993	1.002220	1.002242	1.002564	1.002954	1.001579
Fpt 2	1.000182	1.000182	1.000182	1.000182	1.000182	1.000182
Fwt 2	1.001688	1.001688	1.001688	1.001688	1.001688	1.001688
Fpwt 2 = Fp2/Fwt	0.998498	0.998498	0.998498	0.998498	0.998498	0.998498
Vip 2 = Vo(Fwp)(Fpp)(Fpwt)		6,288 gal	1,605 gal	5,088 gal	50,362 gal	640,178 gal

Combined Pipe

Sum:	Vo	716,308.31 gal 91,587,464 oz.	Vip1	719,561.54 gal 92,103,878 oz.	Vip2	719,467.75 gal 92,091,872 oz.
1 °F Change	93.80 gal					12,005.99 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	51 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW
2	142 ft	Restrained	34.000 in.	0.5620 in.	API5L-X60	1,984 psig	Steel	Arc Weld	DSAW
3	36 ft	Restrained	34.000 in.	0.5050 in.	API5L-X65	1,931 psig	Steel	Arc Weld	DSAW
4	114 ft	Restrained	34.000 in.	0.5000 in.	API5L-X52	1,529 psig	Steel	Arc Weld	DSAW
5	1,120 ft	Restrained	34.000 in.	0.4375 in.	API5L-X60	1,544 psig	Steel	Arc Weld	DSAW
6	14,237 ft	Restrained	34.000 in.	0.4375 in.	API5L-X52	1,338 psig	Steel	Arc Weld	DSAW
7	255 ft	Restrained	34.000 in.	0.3800 in.	API5L-X60	1,341 psig	Steel	Arc Weld	DSAW
8	15 ft	Restrained	24.000 in.	0.5000 in.	API5L-X60	2,500 psig	Steel	Arc Weld	DSAW
9	2 ft	Restrained	8.625 in.	0.3220 in.	API5L-Grade B	2,613 psig	Steel	Arc Weld	SM
10	12 ft	Restrained	4.500 in.	0.2370 in.	API5L-Grade B	3,687 psig	Steel	Arc Weld	SM
11	4 ft	Restrained	2.375 in.	0.1540 in.	API5L-Grade B	4,539 psig	Steel	Arc Weld	SM
12	40 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW

Hydrostatic Test Project Owner & Participants

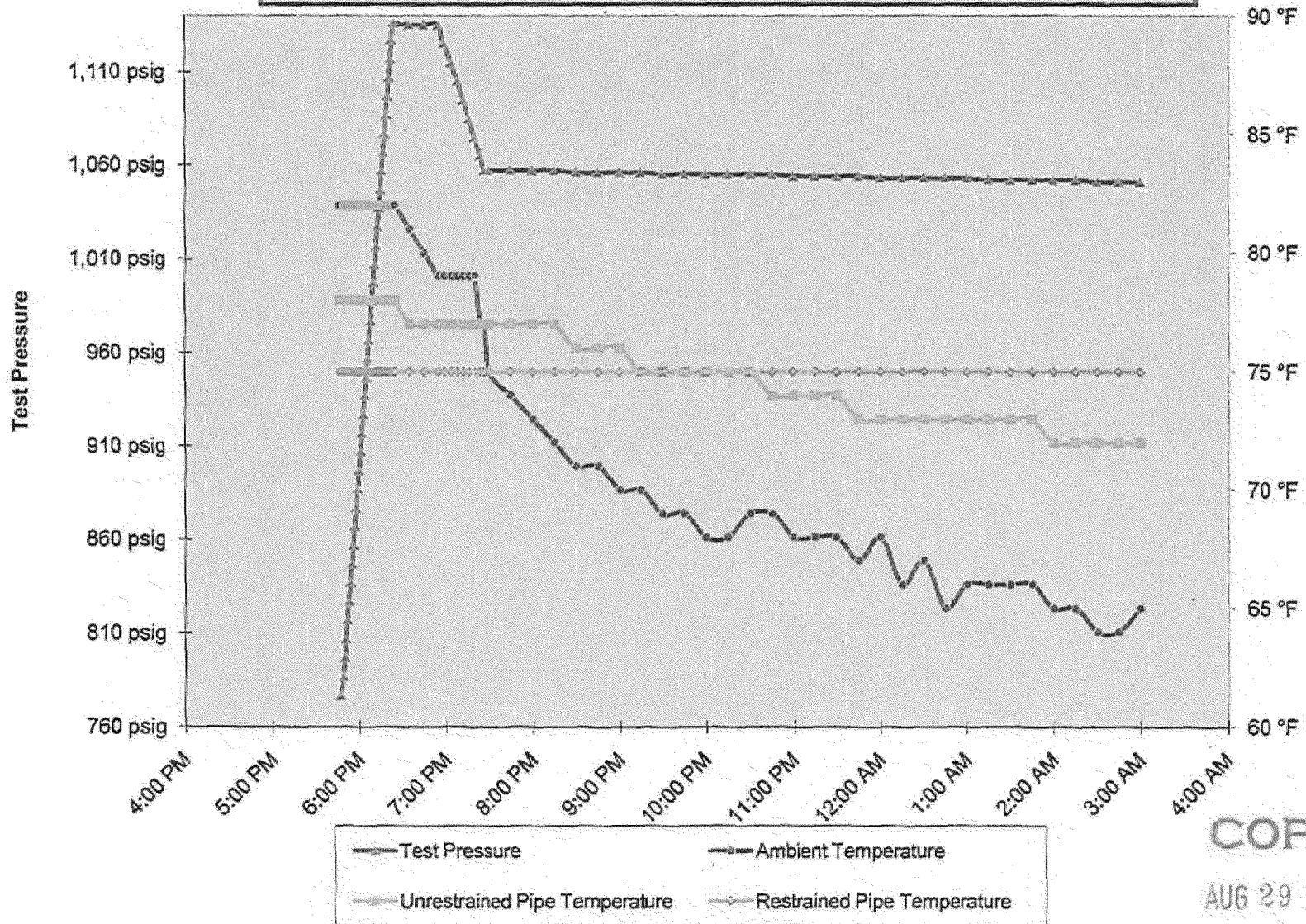
Owner Company	Pacific Gas and Electric Company	Job Number
Address	350 N. Wiget Walnut Creek, CA 94598 Attention: Redacted	41497333-3
Construction Company	Snelson	Job Number
Address	601 West State Street Sedro-Woolly, WA 98284 Attention: Redacted	41474005-T-90A
Hydrostatic Test Co.	Milbar Hydro-Test Inc.	Project No.
Address	P.O. Box 7701 Shreveport, LA 71137-7701 Attention:	FY12-112
Test Section	PG&E T-90A L-300B, MP 490.94 - 493.90 From: 158+37 To: 0+00	
File Name	RCP 61362 - T-90A, L-300B, MP 490.94 - 493.90	

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	8/28/11 6:25 PM	Elevation at Test Point	113 ft	Min. Required Test Press At Test Point (1)	1,035.63 psig	Max. Allowable Test Press at Test Point (4)	1,140.00 psig
Time and Date Test Ended	8/29/11 3:00 AM	Max. Elevation in Test Section	186 ft	Min. Indicated Test Pressure (2)	1,051.00 psig	Max. Indicated Test Pressure (5)	1,136.00 psig
Actual Duration of Test	8 hours 35 minutes	Min. Elevation in Test Section	113 ft	Min. Test Pressure at Max. Elevation (3)	1,019.37 psig	Max. Test Pressure at Min. Elevation (6)	1,136.00 psig

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RCP_61362_T-90A_L-300B_MP_490.94_493.90
Pipe

RCP

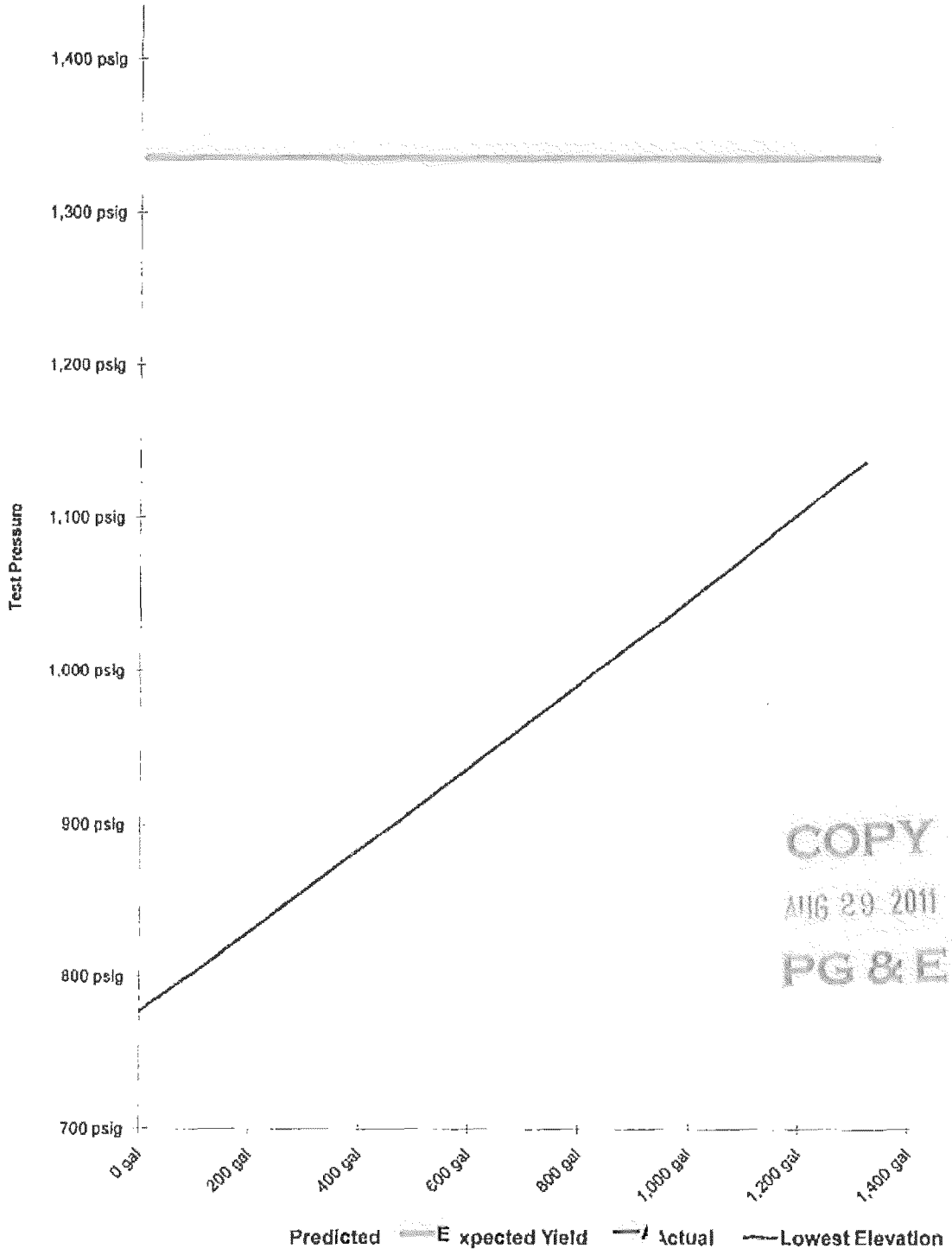
PG&E T-90A L-300B, MP 490.94 - 493.90



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PlotT

Spike Pressure Test
Stress Strain Curve -- PG&E T-90A L-300B, MP 490.94 - 493.90





Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope		Spike Pressure Test Stress Strain Curve -- PG&E T-90A L-300B, MP 490.94 - 493.90	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted		
777 psig	0	0.00 gal		0	0.000	Pump gal per stroke	0.551 gal/stroke
787 psig	82	36.76 gal	35.52 gal	3.676	3.852	Pump Piston Diameter	3.000 in
797 psig	168	75.31 gal	77.04 gal	3.855	3.852	Pump Piston Stroke	6.00 in
807 psig	257	115.21 gal	115.56 gal	3.990	3.852	Pump Cylinders	3 ea
817 psig	340	152.42 gal	154.09 gal	3.721	3.853	Volume check gal per stroke	0.448 gal/stroke
827 psig	424	190.08 gal	192.62 gal	3.766	3.853	Volume Released (gallons)	36.76 gal
837 psig	508	227.73 gal	231.16 gal	3.766	3.853	Pressure Reduced (psi)	10 psi
847 psig	591	284.04 gal	289.69 gal	3.721	3.853	Maximum2	1,460 gal
857 psig	672	301.25 gal	308.22 gal	3.631	3.854	Minimum2	0 gal
867 psig	753	337.56 gal	346.70 gal	3.631	3.854	Maximum1	1,439 psig
877 psig	839	376.12 gal	385.30 gal	3.855	3.854	Minimum1	700 psig
887 psig	925	414.67 gal	423.84 gal	3.855	3.854	Gallons/Stroke Used	0.448 gal/stroke
897 psig	1008	451.88 gal	462.30 gal	3.721	3.855	Predicted Gallons/Stroke	0.470 gal/stroke
907 psig	1093	489.98 gal	500.93 gal	3.810	3.855	Pressure Increment	10 psi
917 psig	1175	526.74 gal	539.48 gal	3.676	3.855	Max Pressure	1,136 psig
927 psig	1259	564.40 gal	578.03 gal	3.766	3.855	Buried Pipe Temperature	75 °F
937 psig	1344	602.51 gal	616.59 gal	3.810	3.855	Exposed Pipe Temperature	77 °F
947 psig	1422	637.47 gal	655.16 gal	3.497	3.856	ASME B31.8 Appendix N-5	
957 psig	1506	675.13 gal	693.71 gal	3.766	3.856		
967 psig	1586	710.99 gal	732.27 gal	3.586	3.856	Average Actual Elastic Slope	3.676
977 psig	1672	749.55 gal	770.83 gal	3.855	3.856	Average Predicted Elastic Slope	3.856
987 psig	1751	784.96 gal	809.40 gal	3.542	3.857	Code Prescribed Minimum Yield Slope (less 10% B31.8 N-5 (c)(2))	6.984
997 psig	1830	820.38 gal	847.97 gal	3.542	3.857	Established Minimum Yield Pressure B31.8 N-5 (c)(2)	1,130 psig
1,007 psig	1911	856.69 gal	888.54 gal	3.631	3.857	Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	416 gal
1,017 psig	1990	892.10 gal	925.11 gal	3.542	3.857	Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal
1,027 psig	2074	929.76 gal	963.69 gal	3.766	3.858	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Redacted</div> <div style="text-align: right; margin-top: 10px;">8/29/11 Date</div>	
1,037 psig	2158	966.52 gal	1,002.26 gal	3.676	3.858		
1,047 psig	2235	1,001.93 gal	1,040.85 gal	3.542	3.858		
1,057 psig	2314	1,037.35 gal	1,079.43 gal	3.542	3.858		
1,067 psig	2395	1,073.66 gal	1,118.01 gal	3.631	3.859		
1,077 psig	2474	1,109.08 gal	1,156.60 gal	3.542	3.859		
1,087 psig	2552	1,144.04 gal	1,195.19 gal	3.497	3.859		
1,097 psig	2628	1,178.11 gal	1,233.78 gal	3.407	3.859		
1,107 psig	2707	1,213.53 gal	1,272.38 gal	3.542	3.859		
1,117 psig	2785	1,248.49 gal	1,310.98 gal	3.497	3.860		
1,127 psig	2863	1,283.46 gal	1,349.57 gal	3.497	3.860		
1,136 psig	2943	1,319.33 gal	1,384.32 gal	3.985	3.860		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		
1,136 psig		1,319.33 gal	1,384.32 gal	0.000	0.000		

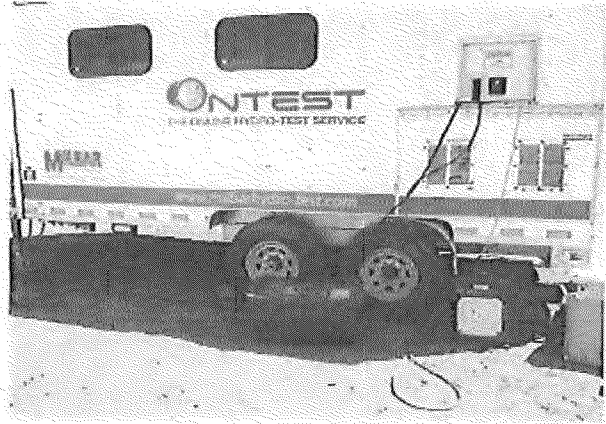
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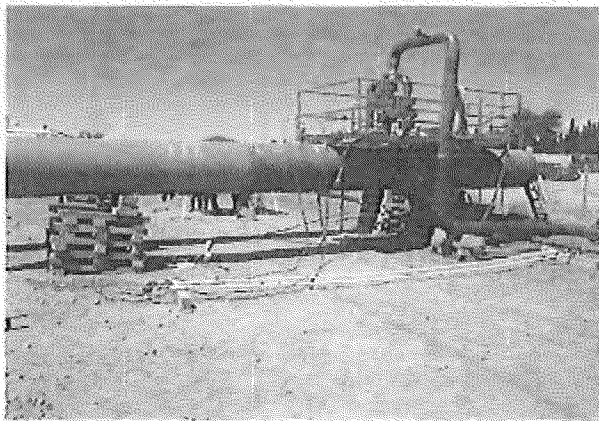
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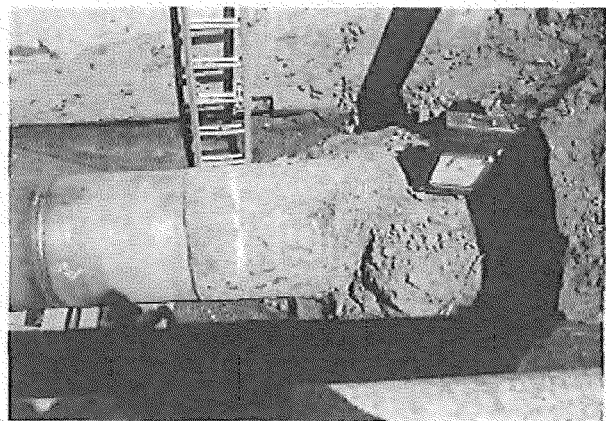
Test 90A testhead at Loc. E



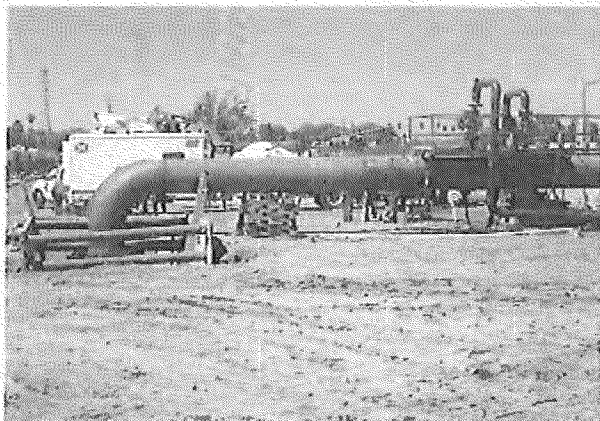
test 90A pressure chart recorder at Loc.D



test 90A testhead at Loc. D plus 3/4" pipe in test



test 90A restrained pipe temp. recorder at Loc.D



test 90A test head at Loc. D



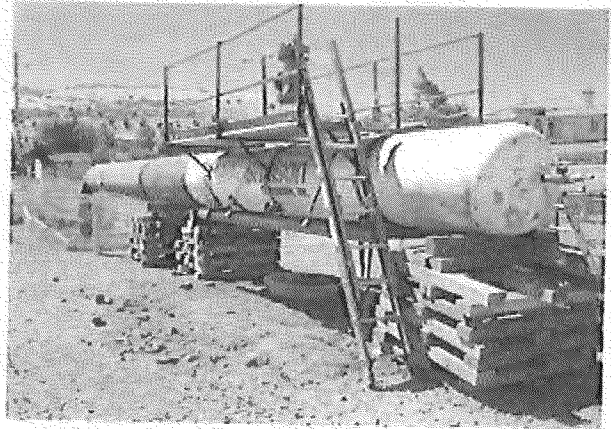
test 90A remote temp. recorder at Loc. D

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test 90A Milbar pump truck at loc. D



test 90A testhead at loc.E

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