RCP

RCP, Inc

Redacted

August 16, 2011

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

Test Contractor:	Milbar hydro-test inc. – FY12-112
Asset Owner:	Pacific Gas and Electric Company – 414197331-4
Construction Contractor:	Snelson – 41474005 -T89S
Test Section:	PG&E T-89S L-300B, MP 484.0126 -484.72
Test Date:	August 16, 2011
Certificate Number:	RCP 61362 - T-89S, L-300B

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).

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 961 psig and the established MAOP is 640 psig.

Pressure decreased 6 psi during the test. No fluid was intentionally injected or released from the test section. Net corrected volumetric change from beginning of the test to the end of the test is calculated to be 1,685.38 ounces, gain, which is equivalent to a 0.7 °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,

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Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	414197331-4
Construction Co.	Snelson	Job Number	41474005 -T89S
Hydro. Test Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-89S L-300B, MP 484.0126 -484.72		
File Name	RCP 61362 - T-89S, L-300B		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Test Date: 16-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-89S L-300B, MP 484.0126 -484.72		
From:	0+00	To:	35+18

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	45 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi
2	42 ft	34.000 in.	0.375 in.	API5L-X65, DSAW, Arc Weld, Steel	1,434 psi
3	3,858 ft	34.000 in.	0.344 in.	API5L-X52, DSAW, Arc Weld, Steel	1,052 psi
4	114 ft	12.750 in.	0.375 in.	API5L-Grade B, SM, Arc Weld, Steel	2,059 psi
5	19 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi
6	19 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi

Initial Test Conditions

Pressure at Test Point:	988 psig	Date/Time:	8/16/11 2:40 PM	Pipe Temperature Unrestrained:	82.0 °F
Ambient Temperature:	89.0 °F			Restrained:	74.0 °F
		Elevation @ Test Point:	1,309.0 ft	Location:	0+00
Pressure @ High Point (Cal/Measure):	967 psig	Elevation @ High Point:	1,357.0 ft	Location:	34+86
Pressure @ Low Point (Cal/Measure):	1,017 psig	Elevation @ Low Point:	1,243.0 ft	Location:	23+91

Final Test Conditions

Pressure at Test Point:	982 psig	Date/Time:	8/16/11 10:55 PM	Pipe Temperature Unrestrained:	80.0 °F
Ambient Temperature:	62.0 °F			Restrained:	73.0 °F
		Elevation @ Test Point:	1,309.0 ft	Location:	0+00
Pressure @ High Point (Cal/Measure):	961 psig	Elevation @ High Point:	1,357.0 ft	Location:	34+86
Pressure @ Low Point (Cal/Measure):	1,011 psig	Elevation @ Low Point:	1,243.0 ft	Location:	23+91
Total Fluid Injected:				Volume gain	
Total Fluid Withdrawn:					
Net Change in Volume of the Test Section ± (+ Gain, - Loss):		1,685.38 oz	gain	0.0072%	0.698 °F equivalent

Test Duration: 8.25 hours

Minimum Test Pressure:	Test Point	982 psig	Max Elevation	961 psig	Min Elevation	1,011 psig
Maximum Test Pressure:		989 psig		968 psig		1,018 psig
% SMYS :				47.0%		96.7%

Test Segment Observed % SMYS :		Minimum	47.0%	Maximum	96.7%
				Minimum Test Pressure (Calculated/Measured):	961 psig
Maximum Allowable Operating Pressure:			DOT Part 192	Test Factor= 1.50	640 psig

Were leaks observed?	No	Explain:
Acceptable Hydrostatic Test?	Yes	No leaks were observed during the test period. The test section included 3,972 feet of buried and 125 feet of exposed pipe. Pressure lost 6 psi during the test. The buried pipe segment lost 1°F fluid temperature and the exposed pipe segment lost 2°F. No fluid was intentionally injected or released from the test section. Net corrected volumetric change from beginning of the test to the end of the test is calculated to be 1,685.38 ounces, gain, which is equivalent to a 0.7 °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.
Remarks		

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16-Aug-11

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	414197331-4
Construction Co.	Snelson	Job Number	41474005 - T89S
Testing Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-89S L-300B, MP 484.0126 -484.72		
File Name	RCP 61362 - T-89S, L-300B		

Date 16-Aug-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	Comment	Bleed	Inject
1	8/16/11	2:05 PM	730 psig	89 °F	82 °F	74 °F			
2	8/16/11	2:07 PM	740 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
3	8/16/11	2:09 PM	750 psig	89 °F	82 °F	74 °F	Inject		1,951 oz.
4	8/16/11	2:10 PM	760 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
5	8/16/11	2:11 PM	770 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
6	8/16/11	2:12 PM	780 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
7	8/16/11	2:14 PM	790 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
8	8/16/11	2:15 PM	800 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
9	8/16/11	2:16 PM	810 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
10	8/16/11	2:17 PM	820 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
11	8/16/11	2:18 PM	830 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
12	8/16/11	2:20 PM	840 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
13	8/16/11	2:21 PM	850 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
14	8/16/11	2:22 PM	860 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
15	8/16/11	2:23 PM	870 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
16	8/16/11	2:24 PM	880 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
17	8/16/11	2:25 PM	890 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
18	8/16/11	2:26 PM	900 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
19	8/16/11	2:27 PM	910 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
20	8/16/11	2:28 PM	920 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
21	8/16/11	2:29 PM	930 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
22	8/16/11	2:30 PM	940 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
23	8/16/11	2:31 PM	950 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
24	8/16/11	2:32 PM	960 psig	89 °F	82 °F	74 °F	Inject		1,345 oz.
25	8/16/11	2:34 PM	970 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
26	8/16/11	2:36 PM	980 psig	89 °F	82 °F	74 °F	Inject		1,413 oz.
27	8/16/11	2:37 PM	988 psig	89 °F	82 °F	74 °F	Inject		1,009 oz.
28	8/16/11	2:39 PM	988 psig	89 °F	82 °F	74 °F			
29	8/16/11	2:40 PM	988 psig	89 °F	82 °F	74 °F	On Test		
30	8/16/11	2:55 PM	988 psig	89 °F	83 °F	73 °F	Sun Shine		
31	8/16/11	3:10 PM	988 psig	90 °F	84 °F	74 °F	Warm		
32	8/16/11	3:25 PM	988 psig	88 °F	84 °F	73 °F			
33	8/16/11	3:40 PM	988 psig	88 °F	84 °F	73 °F	Sun Shine		
34	8/16/11	3:55 PM	988 psig	87 °F	85 °F	73 °F	Warm		
35	8/16/11	4:10 PM	988 psig	86 °F	85 °F	73 °F			
36	8/16/11	4:25 PM	989 psig	86 °F	86 °F	73 °F			
37	8/16/11	4:40 PM	989 psig	86 °F	86 °F	73 °F			
38	8/16/11	4:55 PM	989 psig	85 °F	86 °F	73 °F			
39	8/16/11	5:10 PM	989 psig	85 °F	87 °F	74 °F			
40	8/16/11	5:25 PM	989 psig	83 °F	87 °F	74 °F			
41	8/16/11	5:40 PM	989 psig	82 °F	87 °F	74 °F			
42	8/16/11	5:55 PM	989 psig	80 °F	87 °F	74 °F			
43	8/16/11	6:10 PM	989 psig	79 °F	87 °F	74 °F			

Dead Weight Log Sheet

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Owner Company	Pacific Gas and Electric Company	Job Number	414197331-4
Construction Co.	Snelson	Job Number	41474005 - T89S
Testing Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-89S L-300B, MP 484.0126 -484.72		
File Name	RCP 61362 - T-89S, L-300B		

Date 16-Aug-11

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
				Ambient	Pipe				
	Date	Time			Unrestrained	Restrained	Comment	Bleed	Inject
44	8/16/11 6:25 PM		989 psig	79 °F	87 °F	74 °F			
45	8/16/11 6:40 PM		989 psig	78 °F	87 °F	74 °F			
46	8/16/11 6:55 PM		989 psig	77 °F	86 °F	74 °F			
47	8/16/11 7:10 PM		989 psig	75 °F	86 °F	74 °F			
48	8/16/11 7:25 PM		989 psig	74 °F	86 °F	74 °F			
49	8/16/11 7:40 PM		989 psig	73 °F	85 °F	74 °F			
50	8/16/11 7:55 PM		988 psig	73 °F	84 °F	74 °F			
51	8/16/11 8:10 PM		987 psig	70 °F	84 °F	73 °F	Clear		
52	8/16/11 8:25 PM		987 psig	68 °F	84 °F	73 °F	Cool		
53	8/16/11 8:40 PM		987 psig	67 °F	83 °F	73 °F			
54	8/16/11 8:55 PM		986 psig	67 °F	83 °F	73 °F			
55	8/16/11 9:10 PM		986 psig	66 °F	82 °F	73 °F			
56	8/16/11 9:25 PM		985 psig	65 °F	82 °F	73 °F			
57	8/16/11 9:40 PM		984 psig	65 °F	82 °F	74 °F			
58	8/16/11 9:55 PM		984 psig	64 °F	81 °F	74 °F			
59	8/16/11 10:10 PM		983 psig	63 °F	81 °F	73 °F			
60	8/16/11 10:25 PM		983 psig	63 °F	80 °F	73 °F			
61	8/16/11 10:40 PM		982 psig	63 °F	80 °F	73 °F			
62	8/16/11 10:55 PM		982 psig	62 °F	80 °F	73 °F	End of Test		

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Spike Test		
Hydrostatic Test		

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	High Test Pressure:	989 psig
		Low Test Pressure:	982 psig

Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	414197331-4
Construction Co.	Snelson	Job Number	41474005 -T89S
Hydro. Test Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-89S L-300B, MP 484.0126 -484.72		WATER
File Name	RCP 61362 - T-89S, L-300B		

General Pipe Data

Description	Segment 1	2	3	4	5	6
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Restrained	Unrestrained	Unrestrained
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	12.750 in.	34.000 in.	34.000 in.
Wall Thickness	0.500 in.	0.375 in.	0.344 in.	0.375 in.	0.500 in.	0.500 in.
Inside Diameter	33.000 in.	33.250 in.	33.312 in.	12.000 in.	33.000 in.	33.000 in.
Spec./Grade	API5L-X65	API5L-X65	API5L-X52	API5L-Grade B	API5L-X65	API5L-X65
Length Unrestrained	45 ft	42 ft			19 ft	19 ft
Length Restrained			3,858 ft	114 ft		
Temperature – On Test	82 °F	82 °F	74.0 °F	74.0 °F	82.0 °F	82.0 °F
Temperature – End of Test	80 °F	80 °F	73.0 °F	73.0 °F	80.0 °F	80.0 °F
Pressure – On Test	988 psig	988 psig	988 psig	988 psig	988 psig	988 psig
Pressure – End of Test	982 psig	982 psig	982 psig	982 psig	982 psig	982 psig

Unrestrained Pipe

Sum:	Vo	5,582.27 gal / 714,530 oz.	Vtp1	5,603.13 gal / 717,201 oz.	Vtp2	5,604.44 gal / 717,369 oz.

Vo Unrestrained	1,999 gal	1,894 gal			844 gal	844 gal
Fwp 1	1.003027	1.003027			1.003027	1.003027
Fpp 1	1.002717	1.003650			1.002717	1.002717
Fpt 1	1.000400	1.000400			1.000400	1.000400
Fwt 1	1.002725	1.002725			1.002725	1.002725
Fpwt 1 = Fpt/Fwt	0.997682	0.997682			0.997682	0.997682
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,006.24 gal	1,902.74 gal			847.08 gal	847.08 gal
Fwp 2	1.003009	1.003009			1.003009	1.003009
Fpp 2	1.002701	1.003628			1.002701	1.002701
Fpt 2	1.000364	1.000364			1.000364	1.000364
Fwt 2	1.002418	1.002418			1.002418	1.002418
Fpwt = Fpt/Fwt	0.997951	0.997951			0.997951	0.997951
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,006.71 gal	1,903.17 gal			847.28 gal	847.28 gal

Restrained Pipe

Sum:	Vo	175,341.57 gal / 22,443,721 oz.	Vtp1	176,148.63 gal / 22,547,025 oz.	Vtp2	176,160.49 gal / 22,548,543 oz.

Vo Unrestrained			174,672 gal	670 gal		
Fwp 1			1.003027	1.003027		
Fpp 1			1.002953	1.001009		
Fpt 1			1.000169	1.000169		
Fwt 1			1.001542	1.001542		
Fpwt 1 = Fpt/Fwt			0.998630	0.998630		
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			175,477 gal	672 gal		
Fwp 2			1.003009	1.003009		
Fpp 2			1.002931	1.001000		
Fpt 2			1.000157	1.000157		
Fwt 2			1.001423	1.001423		
Fpwt = Fpt/Fwt			0.998736	0.998736		
Vtp = Vo(Fwp)(Fpp)(Fpwt)			175,489 gal	672 gal		

Combined Pipe

Sum:	Vo	180,923.84 gal / 23,158,251 oz.	Vtp1	181,751.77 gal / 23,264,226 oz.	Vtp2	181,764.94 gal / 23,265,912 oz.

Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	414197331-4
Construction Co.	Snelson	Job Number	41474005 -T89S
Hydro. Test Co.	Milbar hydro-test inc.	Project No.	FY12-112
Test Section	PG&E T-89S L-300B, MP 484.0126 -484.72		WATER
File Name	RCP 61362 - T-89S, L-300B		

General Pipe Data

Description	Segment										
	1	2	3	4	5	6					
Restrained or Unrestrained?	Unrestrained	Unrestrained	Restrained	Restrained	Unrestrained	Unrestrained					
Outside Diameter	34.000 in.	34.000 in.	34.000 in.	12.750 in.	34.000 in.	34.000 in.					
Wall Thickness	0.500 in.	0.375 in.	0.344 in.	0.375 in.	0.500 in.	0.500 in.					
Inside Diameter	33.000 in.	33.250 in.	33.312 in.	12.000 in.	33.000 in.	33.000 in.					
Spec./Grade	API5L-X65	API5L-X65	API5L-X52	API5L-Grade B	API5L-X65	API5L-X65					
Length Unstrained	45.00 ft	42.00 ft			19 ft	19 ft					
Length Restrained			3,858 ft	114 ft							
Temperature – On Test	80 °F	80 °F	73 °F	73 °F	80 °F	80 °F					
Temperature – End of Test	81 °F	81 °F	74 °F	74 °F	81 °F	81 °F					
Pressure – On Test	985 psig	985 psig	985 psig	985 psig	985 psig	985 psig					
Pressure – End of Test	985 psig	985 psig	985 psig	985 psig	985 psig	985 psig					

Unrestrained Pipe

Sum:	Vo	5,582.27 gal 714,530 oz.		Vtp1	5,604.55 gal 717,382 oz.		Vtp2	5,603.87 gal 717,296 oz.			
Vo Unrestrained	1,999 gal	1,894 gal			844 gal	844 gal					
Fwp 1	1.003018	1.003018			1.003018	1.003018					
Fpp 1	1.002709	1.003639			1.002709	1.002709					
Fpt 1	1.000364	1.000364			1.000364	1.000364					
Fwt 1	1.002418	1.002418			1.002418	1.002418					
Fpwt 1 = Fpt/Fwt	0.997951	0.997951			0.997951	0.997951					
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,006.75 gal	1,903.21 gal			847.29 gal	847.29 gal					
Fwp 2	1.003018	1.003018			1.003018	1.003018					
Fpp 2	1.002709	1.003639			1.002709	1.002709					
Fpt 2	1.000382	1.000382			1.000382	1.000382					
Fwt 2	1.002556	1.002556			1.002556	1.002556					
Fpwt = Fpt/Fwt	0.997832	0.997832			0.997832	0.997832					
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,006.51 gal	1,902.99 gal			847.19 gal	847.19 gal					

Restrained Pipe

Sum:	Vo	175,341.57 gal 22,443,721 oz.		Vtp1	176,163.66 gal 22,548,948 oz.		Vtp2	176,145.47 gal 22,546,620 oz.			
Vo Restrained			174,672 gal	670 gal							
Fwp 1			1.003018	1.003018							
Fpp 1			1.002940	1.001003							
Fpt 1			1.000157	1.000157							
Fwt 1			1.001423	1.001423							
Fpwt 1 = Fpt/Fwt			0.998736	0.998736							
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			175,492 gal	672 gal							
Fwp 2			1.003018	1.003018							
Fpp 2			1.002944	1.001007							
Fpt 2			1.000169	1.000169							
Fwt 2			1.001542	1.001542							
Fpwt = Fpt/Fwt			0.998630	0.998630							
Vtp = Vo(Fwp)(Fpp)(Fpwt)			175,474 gal	672 gal							

Combined Pipe

Sum:	Vo	180,923.84 gal 23,158,251 oz.		Vtp1	181,768.20 gal 23,266,330 oz.		Vtp2	181,749.34 gal 23,263,916 oz.			
1 °F Change	18.86 gal		2,413.66 oz.								

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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	45 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW
2	42 ft	Unrestrained	34.000 in.	0.3750 in.	API5L-X65	1,434 psig	Steel	Arc Weld	DSAW
3	3,858 ft	Restrained	34.000 in.	0.3440 in.	API5L-X52	1,052 psig	Steel	Arc Weld	DSAW
4	114 ft	Restrained	12.750 in.	0.3750 in.	API5L-Grade B	2,059 psig	Steel	Arc Weld	SM
5	19 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW
6	19 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	414197331-4
	Walnut Creek, CA 94598	
	Attention: Scott Clapp	
Construction Company	Snelson	Job Number
Address	601 West State Street	41474005 -T89S
	Sedro-Wooley, WA 98284	
	Attention: Redacted	
Hydrostatic Test Co.	Milbar hydro-test inc.	Project No.
Address	P O Box 7701	FY12-112
	Shreveport, La. 71137-7701	
Test Section	PG&E T-89S L-300B, MP 484.0126 -484.72	
	From: 0+00	
	To: 35+18	
File Name	RCP 61362 - T-89S, L-300B	

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	8/16/11 2:40 PM	Elevation at Test Point	1,309 ft	Min. Required Test Press At Test Point (1)	967.80 psig	Max. Allowable Test Press at Test Point (4)	1,008.40 psig
Time and Date Test Ended	8/16/11 10:55 PM	Max. Elevation in Test Section	1,357 ft	Min. Indicated Test Pressure (2)	982.00 psig	Max. Indicated Test Pressure (5)	989.00 psig
Actual Duration of Test	8 hours 15 *minutes*	Min. Elevation in *Test Section*	1,243 ft	Min. Test Pressure at *Max. Elevation* (3)	961.20 psig	Max. Test Pressure at *Min. Elevation* (6)	1,017.60 psig

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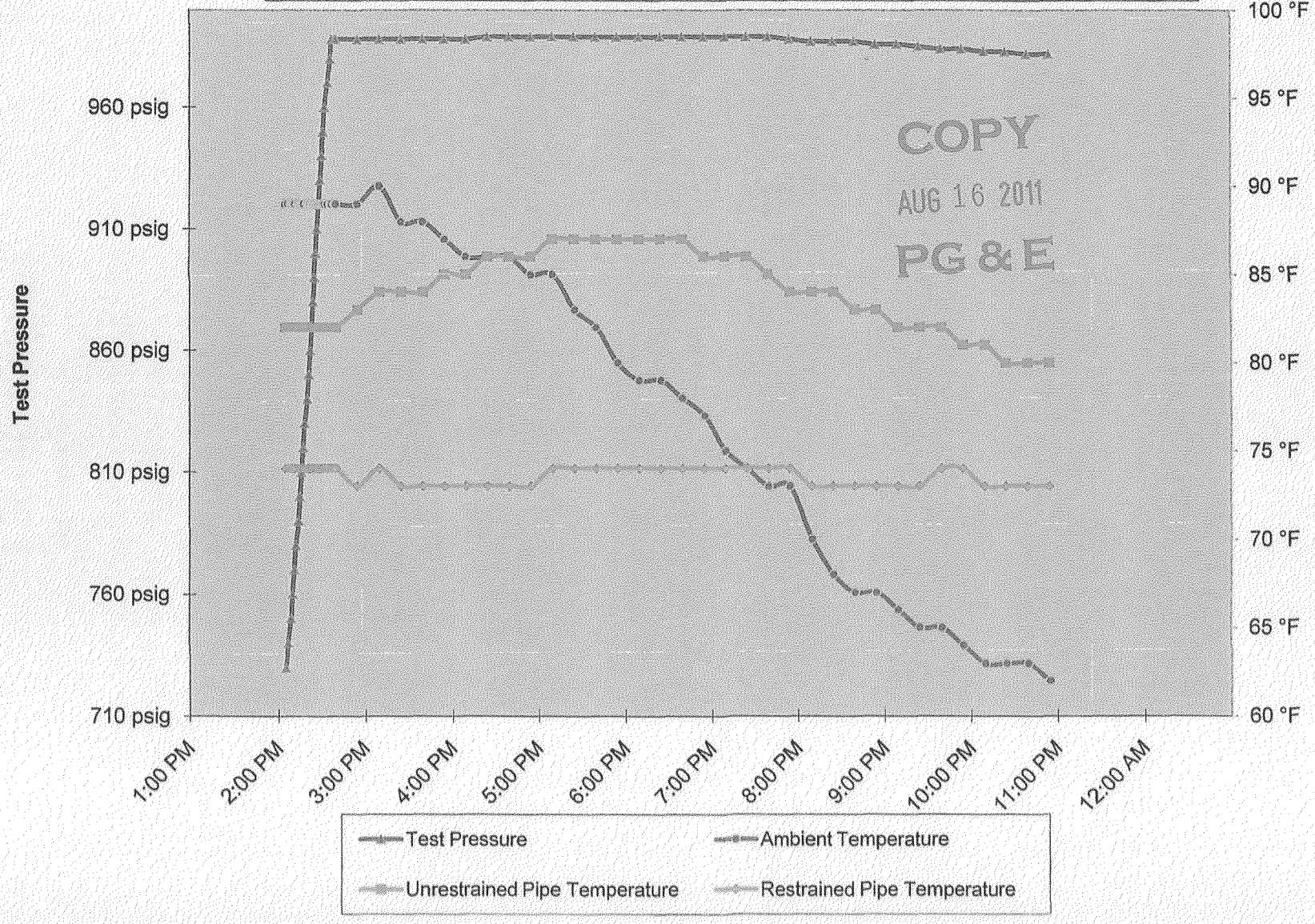
PG&E T-89S L-300B, MP 484.0126 -484.72



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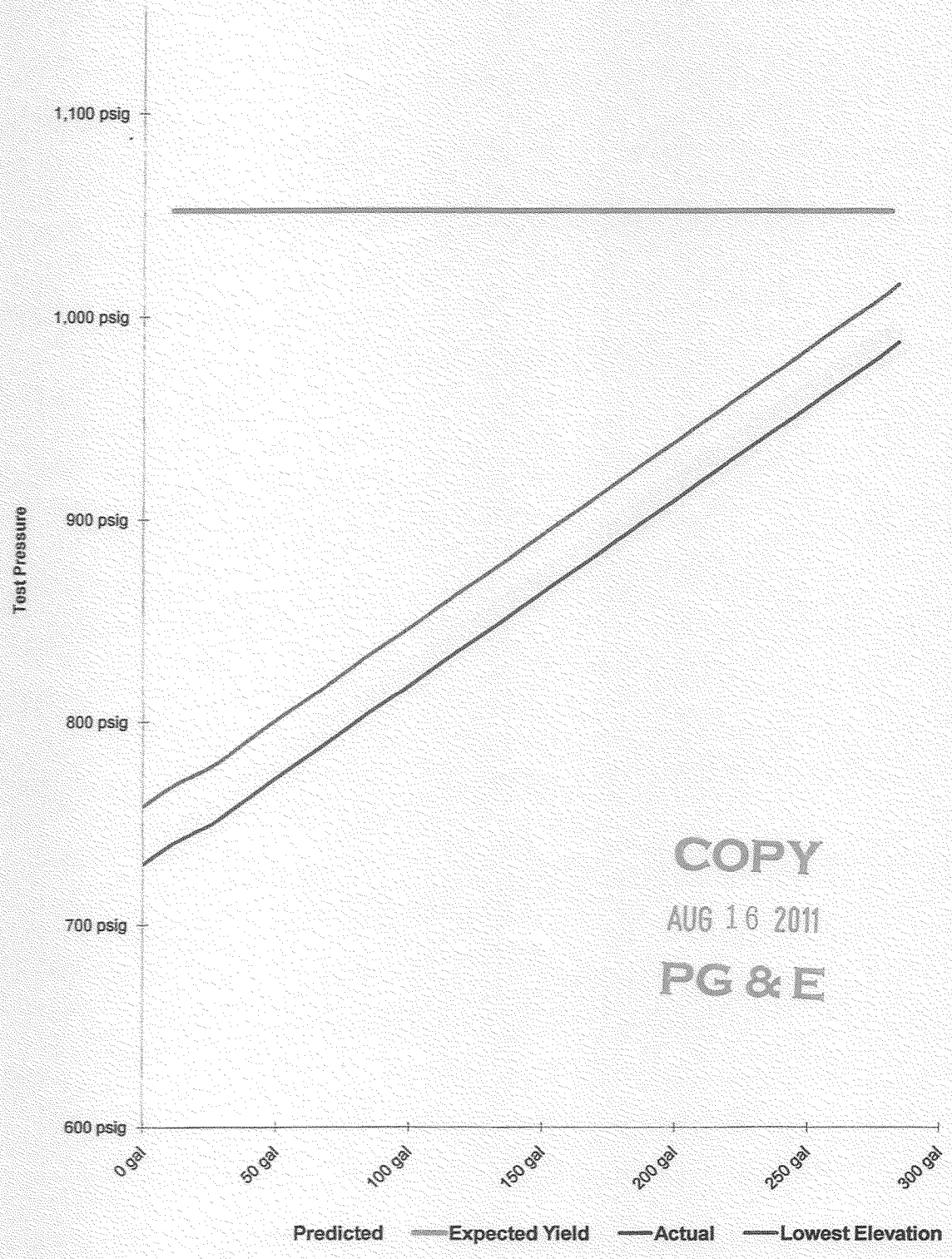
Spike Pressure Test
Stress Strain Curve -- PG&E T-89S L-300B, MP 484.0126 -484.72



RCP

Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted
730 psig		0.00 gal		0	0.000
740 psig	21	11.04 gal	10.88 gal	1.104	1.088
750 psig	50	26.28 gal	21.77 gal	1.524	1.088
760 psig	70	36.79 gal	32.65 gal	1.051	1.089
770 psig	90	47.30 gal	43.54 gal	1.051	1.089
780 psig	111	58.34 gal	54.43 gal	1.104	1.089
790 psig	132	69.37 gal	65.31 gal	1.104	1.089
800 psig	152	79.88 gal	76.20 gal	1.051	1.089
810 psig	173	90.92 gal	87.09 gal	1.104	1.089
820 psig	194	101.96 gal	97.98 gal	1.104	1.089
830 psig	214	112.47 gal	108.87 gal	1.051	1.089
840 psig	235	123.51 gal	119.76 gal	1.104	1.089
850 psig	256	134.54 gal	130.65 gal	1.104	1.089
860 psig	276	145.05 gal	141.54 gal	1.051	1.089
870 psig	297	156.09 gal	152.44 gal	1.104	1.089
880 psig	318	167.13 gal	163.33 gal	1.104	1.089
890 psig	338	177.64 gal	174.22 gal	1.051	1.089
900 psig	359	188.67 gal	185.12 gal	1.104	1.089
910 psig	380	199.71 gal	196.01 gal	1.104	1.090
920 psig	400	210.22 gal	206.91 gal	1.051	1.090
930 psig	421	221.26 gal	217.81 gal	1.104	1.090
940 psig	442	232.30 gal	228.70 gal	1.104	1.090
950 psig	463	243.33 gal	239.60 gal	1.104	1.090
960 psig	483	253.84 gal	250.50 gal	1.051	1.090
970 psig	504	264.88 gal	261.40 gal	1.104	1.090
980 psig	525	275.92 gal	272.30 gal	1.104	1.090
988 psig	540	283.80 gal	281.02 gal	0.985	1.090
988 psig		283.80 gal	281.02 gal	0.000	0.000
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Pump gal per stroke	0.551 gal/stroke
Pump Piston Diameter	3.000 in
Pump Piston Stroke	6.00 in
Pump Cylinders	3 ea
Volume check gal per stroke	0.526 gal/stroke
Volume Released (gallons)	11.00 gal
Pressure Reduced (psi)	10 psi
Maximum2	300 gal
Minimum2	0 gal
Maximum1	1,153 psig
Minimum1	600 psig
Gallons/Stroke Used	0.526 gal/stroke
Predicted Gallons/Stroke	0.520 gal/stroke
Pressure Increment	10 psi
Max Pressure	988 psig
Buried Pipe Temperature	74 °F
Exposed Pipe Temperature	83 °F

ASME B31.8 Appendix N-5

Average Actual Elastic Slope	1.104
Average Predicted Elastic Slope	1.089
Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	2.097
Established Minimum Yield Pressure B31.8 N-5 (c)(2)	988 psig
Maximum Allowed Volume (After Slope Deviation) B31.8 N-5 (c)(2)	418 gal
Volume (After Slope Deviation) B31.8 N-5 (c)(2)	0 gal

Redacted

8/16/11
Date

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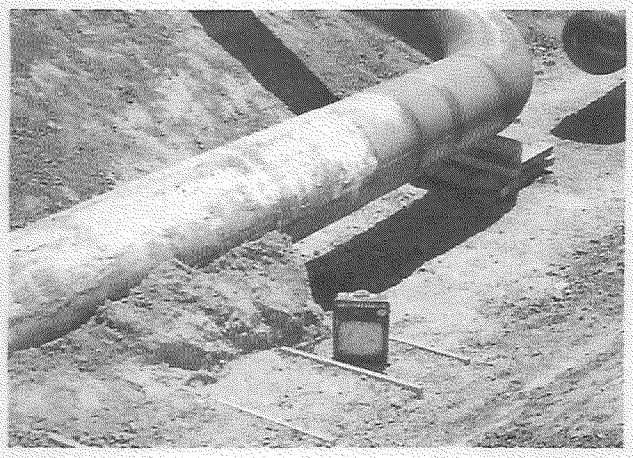
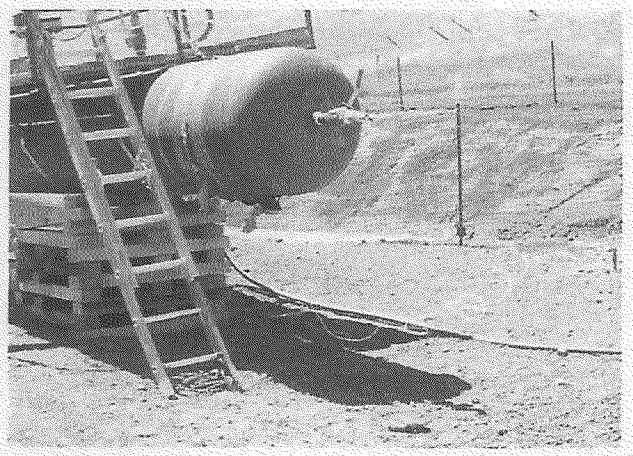
AUG 16 2011
PG&E

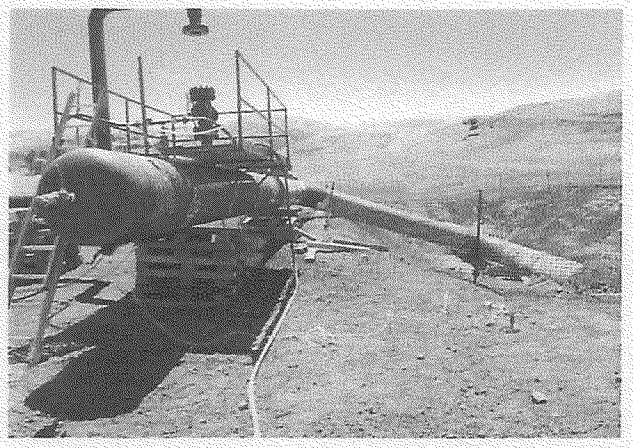


Test 89S restrained temp. recorder -Loc E

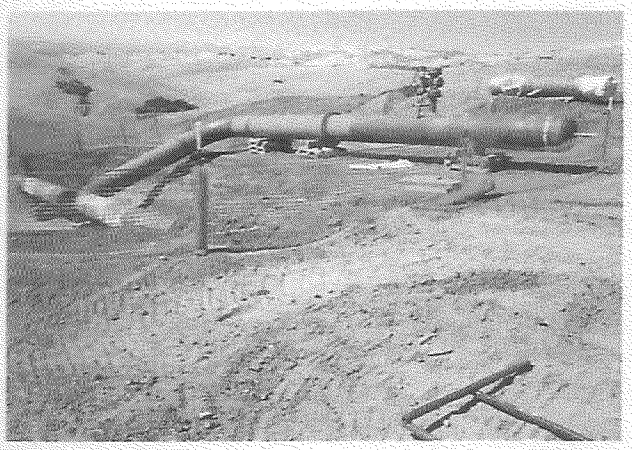


Test 89S Unrestrained temp. transmitter Loc. E

Test 89S remote restrained temp. transmitter



Test 89S testhead at location E



Test 89S testhead at location D

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