RCP, Inc

801 Louisiana, Ste.200
Houston, Texas 77002
Redacted

June 26, 2011

Pacific Gas and Electric Company
3600 Adobe Rd
Petaluma, Ca 94954
Attention: Joel Mannie

Test Contractor:	Contra Costa Inspection Company -- PG&E 5-9-11
Asset Owner:	Pacific Gas and Electric Company -- 41474079
Construction Contractor:	ARB -- 0629-53C
Test Section:	PG&E Line 132A T- 40
Test Date:	May 9, 2011
Certificate Number:	RCP 61362 - 40

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 Company 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 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 610 psig and the established MAOP is 406 psig.

Pressure increased 3 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 195.83 ounces, loss, which is equivalent to a 0.1 °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,

Redacted

cc. file

Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	ARB	Job Number	0629-53C
Hydro. Test Co.	Contra Costa Inspection Company	Project No.	PG&E 5-9-11
Test Section	PG&E Line 132A T- 40		
File Name	RCP 61362 - 40		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: Test Date: 9-May-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 Line 132A T- 40

From: 04+07 To: 78+98

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	118.00 ft	24.000 in.	0.375 in.	API5L-X60, DSAW, Arc Weld, Steel	1,875 psi
2	2,062.00 ft	24.000 in.	0.250 in.	API5L-X42, DSAW, Arc Weld, Steel	875 psi
3	612.00 ft	24.000 in.	0.313 in.	API5L-X52, DSAW, Arc Weld, Steel	1,354 psi
4	40 ft	24.000 in.	0.250 in.	API5L-X52, SM, Arc Weld, Steel	1,083 psi
5	4,400 ft	24.000 in.	0.281 in.	40K, SM, Arc Weld, Steel	937 psi
6	46 ft	24.000 in.	0.286 in.	API5L-X42, DSAW, Arc Weld, Steel	1,001 psi
7	253 ft	24.000 in.	0.313 in.	API5L-X52, DSAW, Arc Weld, Steel	1,354 psi
8	59 ft	24.000 in.	0.375 in.	API5L-Grade B, SM, Arc Weld, Steel	1,094 psi
9	4 ft	24.000 in.	0.500 in.	API5L-X60, DSAW, Arc Weld, Steel	2,500 psi
10	16 ft	24.000 in.	0.281 in.	API5L-X42, SM, Arc Weld, Steel	984 psi
11	43 ft	4.000 in.	0.237 in.	API5L-Grade B, SM, Arc Weld, Steel	4,148 psi

Initial Test Conditions

Pressure at Test Point:	620 psig	Date/Time:	5/9/11 10:00 AM	Pipe Temperature	
Ambient Temperature:	52.0 °F			Unrestrained:	52.0 °F
				Restrained:	64.0 °F
		Elevation @ Test Point:	7.0 ft	Location:	79+65
Pressure @ High Point (Cal/Measure):	610 psig	Elevation @ High Point:	30.0 ft	Location:	03+32
Pressure @ Low Point (Cal/Measure):	621 psig	Elevation @ Low Point:	5.0 ft	Location:	75+50

Final Test Conditions

Pressure at Test Point:	623 psig	Date/Time:	5/9/11 6:00 PM	Pipe Temperature	
Ambient Temperature:	68.0 °F			Unrestrained:	68.0 °F
				Restrained:	64.0 °F
		Elevation @ Test Point:	7.0 ft	Location:	79+65
Pressure @ High Point (Cal/Measure):	613 psig	Elevation @ High Point:	30.0 ft	Location:	03+32
Pressure @ Low Point (Cal/Measure):	624 psig	Elevation @ Low Point:	5.0 ft	Location:	75+50
	Total Fluid Injected:			Volume loss	
	Total Fluid Withdrawn:				
Net Change in Volume of the Test Section ± (+ Gain, - Loss):		(195.83) oz	loss	(0.001)%	(0.098) °F equivalent

Test Duration: 8 hours

Maximum Test Pressure:		623 psig				
% SMYS @:	70.9%	Test Point	69.7%	High Point	71.0%	Low Point
					Minimum Test Pressure (Calculated/Measured):	610 psig

Were leaks observed?	**No**	Explain:
Acceptable Hydrostatic Test?	**Yes**	No leaks were observed during the test period. The test section included 7,429 feet of buried and 224 feet of exposed pipe. Pressure gained 3 psi during the test. The buried pipe segment fluid temperature remained steady and the exposed pipe segment gained 16°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 195.83 ounces, loss, which is equivalent to a 0.1 °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.
Remarks		Pipe temperature chart recorder was determined at mid test to be off calibration by +10°F. This determination was confirmed by utilization of electronic temperature measurement using a Fluke 54II Thermometer. Pipe temperature was corrected by negative 10°F to ensure data accuracy.

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26-Jun-11

RCP

Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	ARB	Job Number	0629-53C
Testing Co.	Contra Costa Inspection Company	Project No.	PG&E 5-9-11
Test Section	PG&E Line 132A T- 40		
File Name	RCP 61362 - 40		

Date **9-May-11**

Test Log

Log No.	Test Period		Test Pressure	Temperature °F			REMARKS		
	Date	Time		Ambient	Pipe				
					Unrestrained	Restrained	**Comment**	**Bleed**	**Inject**
1	5/9/11	10:00 AM	620 psig	52 °F	52 °F	64 °F	Cloud Cover On Test		
2	5/9/11	10:15 AM	620 psig	52 °F	53 °F	64 °F	Sun Shine		
3	5/9/11	10:30 AM	620 psig	53 °F	54 °F	64 °F			
4	5/9/11	10:45 AM	620 psig	54 °F	54 °F	64 °F			
5	5/9/11	11:00 AM	620 psig	54 °F	54 °F	64 °F			
6	5/9/11	11:15 AM	620 psig	56 °F	56 °F	64 °F			
7	5/9/11	11:30 AM	621 psig	56 °F	56 °F	64 °F			
8	5/9/11	11:45 AM	621 psig	56 °F	56 °F	64 °F			
9	5/9/11	12:00 PM	621 psig	58 °F	58 °F	64 °F			
10	5/9/11	12:15 PM	621 psig	59 °F	59 °F	64 °F			
11	5/9/11	12:30 PM	621 psig	60 °F	60 °F	64 °F			
12	5/9/11	12:45 PM	621 psig	60 °F	60 °F	64 °F			
13	5/9/11	1:00 PM	622 psig	60 °F	60 °F	64 °F			
14	5/9/11	1:15 PM	622 psig	62 °F	62 °F	64 °F	Sun Shine		
15	5/9/11	1:30 PM	622 psig	63 °F	63 °F	64 °F			
16	5/9/11	1:45 PM	622 psig	68 °F	68 °F	64 °F			
17	5/9/11	2:00 PM	622 psig	67 °F	67 °F	64 °F			
18	5/9/11	2:15 PM	622 psig	67 °F	67 °F	64 °F			
19	5/9/11	2:30 PM	622 psig	68 °F	68 °F	64 °F			
20	5/9/11	2:45 PM	622 psig	68 °F	68 °F	64 °F			
21	5/9/11	3:00 PM	622 psig	69 °F	69 °F	64 °F			
22	5/9/11	3:15 PM	622 psig	69 °F	69 °F	64 °F			
23	5/9/11	3:30 PM	622 psig	70 °F	70 °F	64 °F			
24	5/9/11	3:45 PM	622 psig	69 °F	69 °F	64 °F			
25	5/9/11	4:00 PM	623 psig	69 °F	69 °F	64 °F			
26	5/9/11	4:15 PM	623 psig	69 °F	69 °F	64 °F			
27	5/9/11	4:30 PM	623 psig	69 °F	69 °F	64 °F			
28	5/9/11	4:45 PM	623 psig	69 °F	69 °F	64 °F			
29	5/9/11	5:00 PM	623 psig	69 °F	69 °F	64 °F			
30	5/9/11	5:15 PM	623 psig	68 °F	68 °F	64 °F			
31	5/9/11	5:30 PM	623 psig	68 °F	68 °F	64 °F			
32	5/9/11	5:45 PM	623 psig	67 °F	67 °F	64 °F			
33	5/9/11	6:00 PM	623 psig	68 °F	68 °F	64 °F	End of Test		

Were leaks observed during the test period?	Exposed and buried pipe, no leaks observed.	High Test Pressure:	623 psig
		Low Test Pressure:	620 psig

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Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	ARB	Job Number	0629-53C
Hydro. Test Co.	Contra Costa Inspection Company	Project No.	PG&E 5-9-11
Test Section	PG&E Line 132A T- 40		**WATER**
File Name	RCP 61362 - 40		

General Pipe Data

Description	Segment										
	1	2	3	4	5	6	7	8	9	10	11
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained	Unrestrained	Restrained	Unrestrained
Outside Diameter	24.000 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.	24.000 in.	4.000 in.
Wall Thickness	0.375 in.	0.250 in.	0.313 in.	0.250 in.	0.281 in.	0.286 in.	0.313 in.	0.375 in.	0.500 in.	0.281 in.	0.237 in.
Inside Diameter	23.250 in.	23.500 in.	23.375 in.	23.500 in.	23.438 in.	23.428 in.	23.375 in.	23.250 in.	23.000 in.	23.438 in.	3.526 in.
Spec./Grade	API5L-X60	API5L-X42	API5L-X52	API5L-X52	40K	API5L-X42	API5L-X52	API5L-Grade B	API5L-X60	API5L-X42	API5L-Grade B
Length Unrestrained	118 ft							59 ft	4 ft		43 ft
Length Restrained		2,062 ft	612 ft	40 ft	4,400 ft	46 ft	253 ft			16 ft	
Temperature -- On Test	52 °F	64 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	52.0 °F	52.0 °F	64.0 °F	52.0 °F
Temperature -- End of Test	68 °F	64 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	64.0 °F	68.0 °F	68.0 °F	64.0 °F	68.0 °F
Pressure -- On Test	620 psig	620 psig	620 psig	620 psig	620 psig	620 psig	620 psig	620 psig	620 psig	620 psig	620 psig
Pressure -- End of Test	623 psig	623 psig	623 psig	623 psig	623 psig	623 psig	623 psig	623 psig	623 psig	623 psig	623 psig

Unrestrained Pipe

Sum:	Vo	4,011.86 gal 513,518 oz.	Vtp1	4,027.64 gal 515,537 oz.	Vtp2	4,023.27 gal 514,979 oz.

Vo Unrestrained	2,602 gal							1,301 gal	86 gal		21.8 gal
Fwp 1	1.001898							1.001898	1.001898		1.001898
Fpp 1	1.001602							1.001602	1.001188		1.000384
Fpt 1	0.999854							0.999854	0.999854		0.999854
Fwt 1	0.999411							0.999411	0.999411		0.999411
Fpwt 1 = Fpt/Fwt	1.000443							1.000443	1.000443		1.000443
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,612.75 gal							1,306.38 gal	86.64 gal		21.87 gal
Fwp 2	1.001907							1.001907	1.001907		1.001907
Fpp 2	1.001609							1.001609	1.001194		1.000386
Fpt 2	1.000146							1.000146	1.000146		1.000146
Fwt 2	1.000803							1.000803	1.000803		1.000803
Fpwt = Fpt/Fwt	0.999343							0.999343	0.999343		0.999343
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,609.92 gal							1,304.96 gal	86.54 gal		21.85 gal

Restrained Pipe

Sum:	Vo	166,650.89 gal 21,331,314 oz.	Vtp1	167,183.22 gal 21,399,452 oz.	Vtp2	167,186.05 gal 21,399,815 oz.

Vo Unrestrained		46,460 gal	13,643 gal	901 gal	98,617 gal	1,030 gal	5,640 gal			359 gal	
Fwp 1		1.001898	1.001898	1.001898	1.001898	1.001898	1.001898			1.001898	
Fpp 1		1.001782	1.001421	1.001782	1.001583	1.001555	1.001421			1.001583	
Fpt 1		1.000048	1.000048	1.000048	1.000048	1.000048	1.000048			1.000048	
Fwt 1		1.000375	1.000375	1.000375	1.000375	1.000375	1.000375			1.000375	
Fpwt 1 = Fpt/Fwt		0.999674	0.999674	0.999674	0.999674	0.999674	0.999674			0.999674	
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		46,616 gal	13,684 gal	904 gal	98,929 gal	1,033 gal	5,657 gal			360 gal	
Fwp 2		1.001907	1.001907	1.001907	1.001907	1.001907	1.001907			1.001907	
Fpp 2		1.001791	1.001428	1.001791	1.001591	1.001562	1.001428			1.001591	
Fpt 2		1.000048	1.000048	1.000048	1.000048	1.000048	1.000048			1.000048	
Fwt 2		1.000375	1.000375	1.000375	1.000375	1.000375	1.000375			1.000375	
Fpwt = Fpt/Fwt		0.999674	0.999674	0.999674	0.999674	0.999674	0.999674			0.999674	
Vtp = Vo(Fwp)(Fpp)(Fpwt)		46,617 gal	13,684 gal	904 gal	98,930 gal	1,033 gal	5,657 gal			360 gal	

Combined Pipe

Sum:	Vo	170,662.75 gal 21,844,832 oz.	Vtp1	171,210.86 gal 21,914,990 oz.	Vtp2	171,209.33 gal 21,914,794 oz.

Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41474079
Construction Co.	ARB	Job Number	0629-53C
Hydro. Test Co.	Contra Costa Inspection Company	Project No.	PG&E 5-9-11
Test Section	PG&E Line 132A T- 40		**WATER**
File Name	RCP 61362 - 40		

General Pipe Data

Description	Segment										
	1	2	3	4	5	6	7	8	9	10	11
Restrained or Unrestrained?	Unrestrained	Restrained	Restrained	Restrained	Restrained	Restrained	Restrained	Unrestrained	Unrestrained	Restrained	Unrestrained
Outside Diameter	24.000 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.	24.000 in.	4.000 in.
Wall Thickness	0.375 in.	0.250 in.	0.313 in.	0.250 in.	0.281 in.	0.286 in.	0.313 in.	0.375 in.	0.500 in.	0.281 in.	0.237 in.
Inside Diameter	23.250 in.	23.500 in.	23.375 in.	23.500 in.	23.438 in.	23.428 in.	23.375 in.	23.250 in.	23.000 in.	23.438 in.	3.526 in.
Spec./Grade	API5L-X60	API5L-X42	API5L-X52	API5L-X52	40K	API5L-X42	API5L-X52	API5L-Grade B	API5L-X60	API5L-X42	API5L-Grade B
Length Unstrained	118.00 ft							59 ft	4 ft		43 ft
Length Restrained		2,062 ft	612 ft	40 ft	4,400 ft	46 ft	253 ft			16 ft	
Temperature -- On Test	59 °F	63 °F	63 °F	63 °F	63 °F	63 °F	63 °F	59 °F	59 °F	63 °F	59 °F
Temperature -- End of Test	60 °F	64 °F	64 °F	64 °F	64 °F	64 °F	64 °F	60 °F	60 °F	64 °F	60 °F
Pressure -- On Test	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig
Pressure -- End of Test	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig	621 psig

Unrestrained Pipe

Sum:	Vo	4,011.86 gal 513,518 oz.	Vtp1	4,026.17 gal 515,350 oz.	Vtp2	4,025.87 gal 515,312 oz.				
Vo Unrestrained	2,602 gal					1,301 gal	86 gal			22 gal
Fwp 1	1.001901					1.001901	1.001901			1.001901
Fpp 1	1.001604					1.001604	1.001190			1.000385
Fpt 1	0.999982					0.999982	0.999982			0.999982
Fwt 1	0.999907					0.999907	0.999907			0.999907
Fpwt 1 = Fpt/Fwt	1.000074					1.000074	1.000074			1.000074
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	2,611.80 gal					1,306 gal	87 gal			22 gal
Fwp 2	1.001901					1.001901	1.001901			1.001901
Fpp 2	1.001604					1.001604	1.001190			1.000385
Fpt 2	1.000000					1.000000	1.000000			1.000000
Fwt 2	1.000000					1.000000	1.000000			1.000000
Fpwt = Fpt/Fwt	1.000000					1.000000	1.000000			1.000000
Vtp = Vo(Fwp)(Fpp)(Fpwt)	2,611.61 gal					1,306 gal	87 gal			22 gal

Restrained Pipe

Sum:	Vo	166,650.89 gal 21,331,314 oz.		Vtp1	167,199.51 gal 21,401,537 oz.		Vtp2	167,184.17 gal 21,399,573 oz.			
Vo Restrained		46,460 gal	13,643 gal	901 gal	98,617 gal	1,030 gal	5,640 gal			359 gal	
Fwp 1		1.001901	1.001901	1.001901	1.001901	1.001901	1.001901			1.001901	
Fpp 1		1.001781	1.001420	1.001781	1.001582	1.001554	1.001420			1.001582	
Fpt 1		1.000036	1.000036	1.000036	1.000036	1.000036	1.000036			1.000036	
Fwt 1		1.000267	1.000267	1.000267	1.000267	1.000267	1.000267			1.000267	
Fpwt 1 = Fpt/Fwt		0.999769	0.999769	0.999769	0.999769	0.999769	0.999769			0.999769	
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)		46,621 gal	13,685 gal	904 gal	98,938 gal	1,033 gal	5,657 gal			360 gal	
Fwp 2		1.001901	1.001901	1.001901	1.001901	1.001901	1.001901			1.001901	
Fpp 2		1.001785	1.001423	1.001785	1.001586	1.001557	1.001423			1.001586	
Fpt 2		1.000048	1.000048	1.000048	1.000048	1.000048	1.000048			1.000048	
Fwt 2		1.000375	1.000375	1.000375	1.000375	1.000375	1.000375			1.000375	
Fpwt = Fpt/Fwt		0.999674	0.999674	0.999674	0.999674	0.999674	0.999674			0.999674	
Vtp = Vo(Fwp)(Fpp)(Fpwt)		46,617 gal	13,684 gal	904 gal	98,929 gal	1,033 gal	5,657 gal			360 gal	

Combined Pipe

Sum:	Vo	170,662.75 gal 21,844,832 oz.	Vtp1	171,225.68 gal 21,916,887 oz.	Vtp2	171,210.04 gal 21,914,885 oz.
1 °F Change	15.64 gal	2,002.31 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	118 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-X60	1,875 psig	Steel	Arc Weld	DSAW
2	2,062 ft	Restrained	24.000 in.	0.2500 in.	API5L-X42	875 psig	Steel	Arc Weld	DSAW
3	612 ft	Restrained	24.000 in.	0.3125 in.	API5L-X52	1,354 psig	Steel	Arc Weld	DSAW
4	40 ft	Restrained	24.000 in.	0.2500 in.	API5L-X52	1,083 psig	Steel	Arc Weld	SM
5	4,400 ft	Restrained	24.000 in.	0.2810 in.	40K	937 psig	Steel	Arc Weld	SM
6	46 ft	Restrained	24.000 in.	0.2860 in.	API5L-X42	1,001 psig	Steel	Arc Weld	DSAW
7	253 ft	Restrained	24.000 in.	0.3125 in.	API5L-X52	1,354 psig	Steel	Arc Weld	DSAW
8	59 ft	Unrestrained	24.000 in.	0.3750 in.	API5L-Grade B	1,094 psig	Steel	Arc Weld	SM
9	4 ft	Unrestrained	24.000 in.	0.5000 in.	API5L-X60	2,500 psig	Steel	Arc Weld	DSAW
10	16.0 ft	Restrained	24.000 in.	0.281 in.	API5L-X42	984 psig	Steel	Arc Weld	SM
11	43 ft	Unrestrained	4.000 in.	0.237 in.	API5L-Grade B	4,148 psig	Steel	Arc Weld	SM

Hydrostatic Test Project Owner & Participants

Owner Company	Pacific Gas and Electric Company	Job Number
Address	3600 Adobe Rd Petaluma, Ca 94954 Attention: Joel Mannie	41474079
Construction Company	ARB	Job Number
Address	1875 Loveridge Road Pittsburg, CA 94565 Attention: T Barnes	0629-53C
Hydrostatic Test Co.	Contra Costa Inspection Company	Project No.
Address	2820 La Jolla Drive Antioch, California 94531 Attention Redacted	PG&E 5-9-11
Test Section	PG&E Line 132A T- 40 From: 04+07 To: 78+98	
File Name	RCP 61362 - 40	

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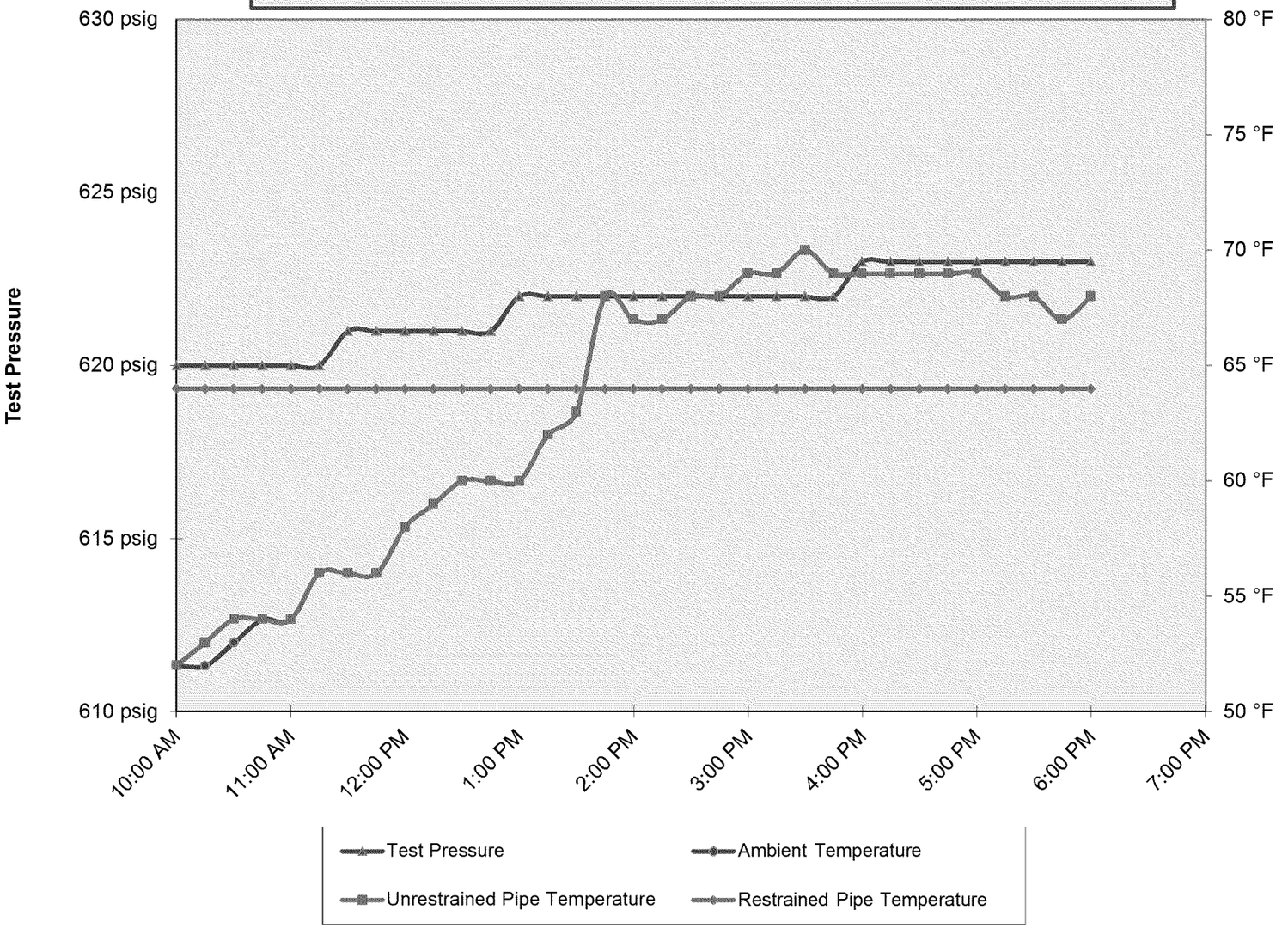
PG&E Line 132A T- 40



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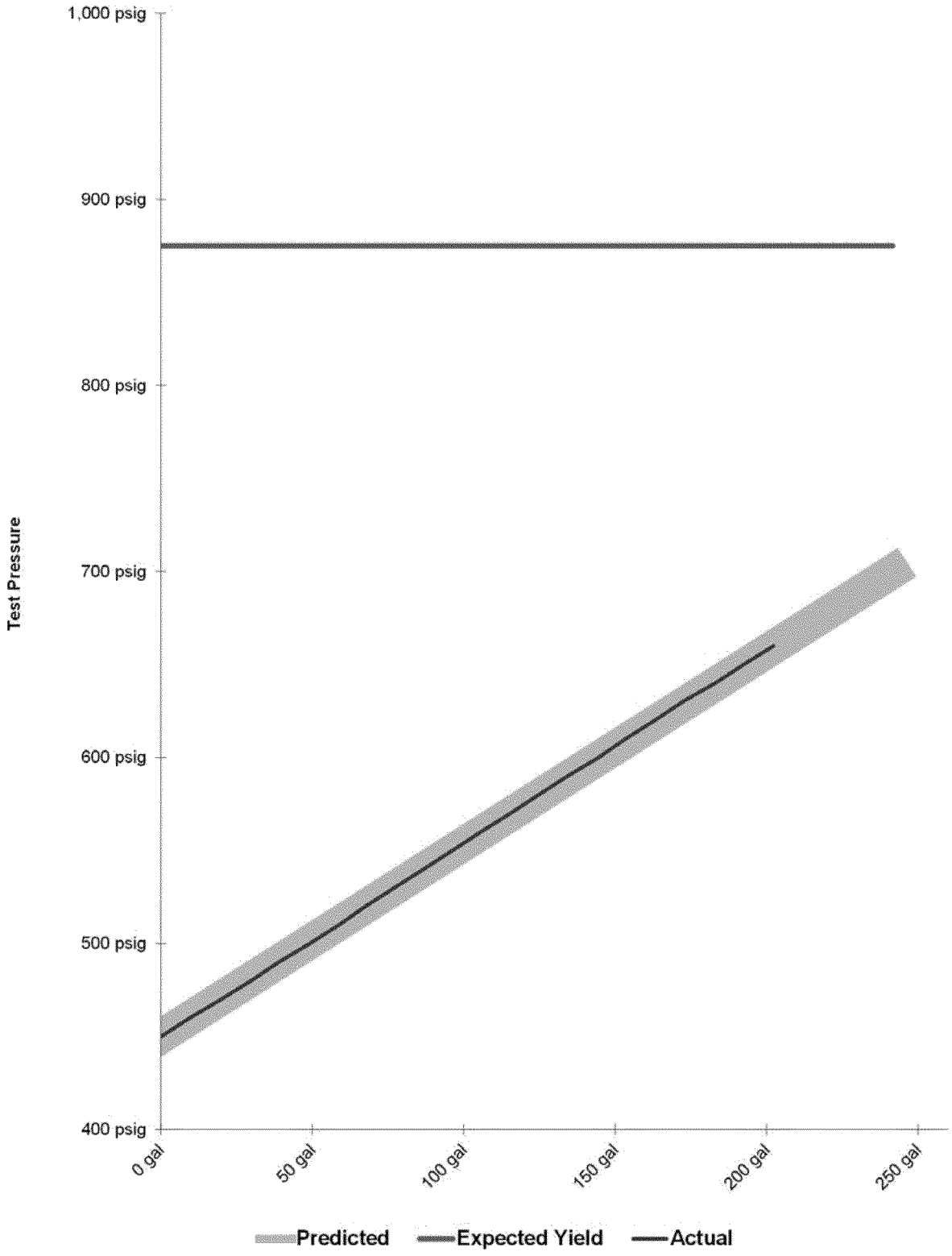
Stress Strain Curve -- PG&E Line 132A T- 40



RCP Actual Pressure Volume Plot Data			Predicted Pressure Volume Plot Data	Slope	
Pressure	Strokes	Gallons	Gallons	Actual	Predicted
450 psig	0	0.00 gal	0.00 gal		
460 psig	120	9.66 gal	9.66 gal	0.966	0.966
470 psig	248	19.97 gal	19.31 gal	1.031	0.966
480 psig	370	29.80 gal	28.97 gal	0.982	0.966
490 psig	484	38.98 gal	38.63 gal	0.918	0.966
500 psig	610	49.12 gal	48.29 gal	1.015	0.966
510 psig	730	58.79 gal	57.95 gal	0.966	0.966
520 psig	840	67.65 gal	67.61 gal	0.886	0.966
530 psig	958	77.15 gal	77.27 gal	0.950	0.966
540 psig	1078	86.81 gal	86.93 gal	0.966	0.966
550 psig	1195	96.23 gal	96.59 gal	0.942	0.966
560 psig	1312	105.66 gal	106.25 gal	0.942	0.966
570 psig	1434	115.48 gal	115.92 gal	0.982	0.966
580 psig	1550	124.82 gal	125.58 gal	0.934	0.966
590 psig	1668	134.32 gal	135.25 gal	0.950	0.966
600 psig	1795	144.55 gal	144.91 gal	1.023	0.966
610 psig	1905	153.41 gal	154.58 gal	0.886	0.967
620 psig	2025	163.07 gal	164.24 gal	0.966	0.967
630 psig	2141	172.42 gal	173.91 gal	0.934	0.967
640 psig	2274	183.13 gal	183.58 gal	1.071	0.967
650 psig	2390	192.47 gal	193.24 gal	0.934	0.967
660 psig	2512	202.29 gal	202.91 gal	0.982	0.967
670 psig		202.29 gal	212.58 gal	0.000	0.967
680 psig		202.29 gal	222.25 gal	0.000	0.967
690 psig		202.29 gal	231.92 gal	0.000	0.967
700 psig		202.29 gal	241.59 gal	0.000	0.967
700 psig		202.29 gal	241.59 gal	0.000	0.000
700 psig		202.29 gal	241.59 gal	0.000	0.000
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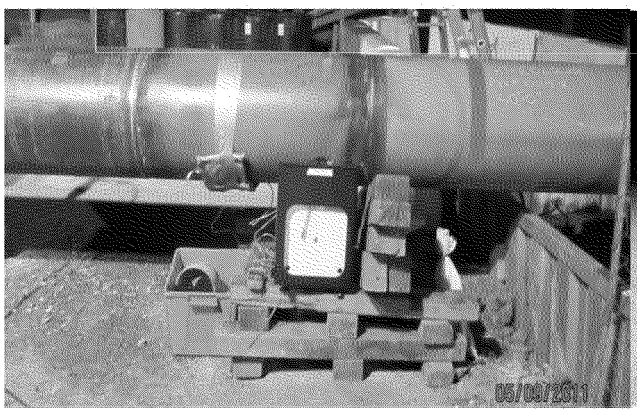
700 psig		202.29 gal	241.59 gal	0.000	0.000

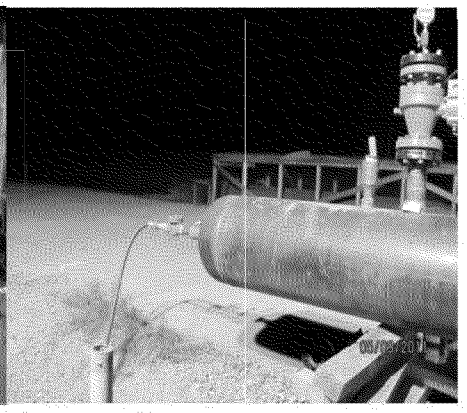
Stress Strain Curve – PG&E Line 132A T- 40	
Pump Piston Diameter	1.380 in
Pump Piston Stroke	4.15 in
Pump Cylinders	3 ea
Maximum2	260 gal
Minimum2	0 gal
Maximum1	1,000 psig
Minimum1	400 psig
Cubic Inches/Stroke	18.60
Pressure Increment	10 psi
Max Pressure	700 psig
Ground Temperature	64 °F
Ambient Temperature	52 °F
ASME B31.8 Appendix N-5	
Average Actual Elastic Slope	0.963
Average Predicted Elastic Slope	0.966
Code Prescribed Minimum Yield Slope (less 10%) B31.8 N-5 (c)(2)	1.830
Established Minimum Yield Pressure B31.8 N-5 (c)(2)	660 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

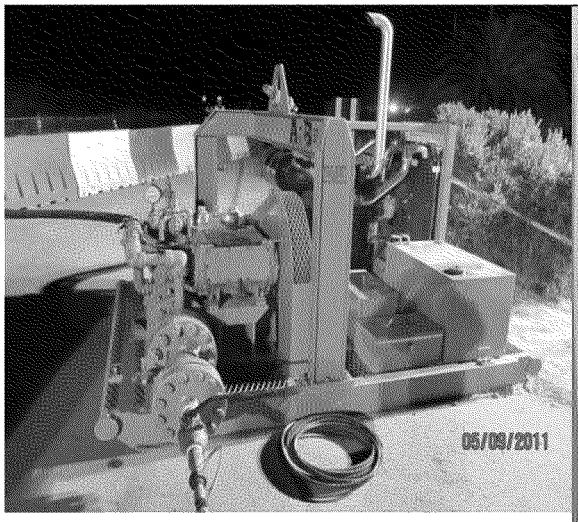
Redacted

June 26, 2011
Date

Test Head and Valving with Unrestrained Temperature Recorder



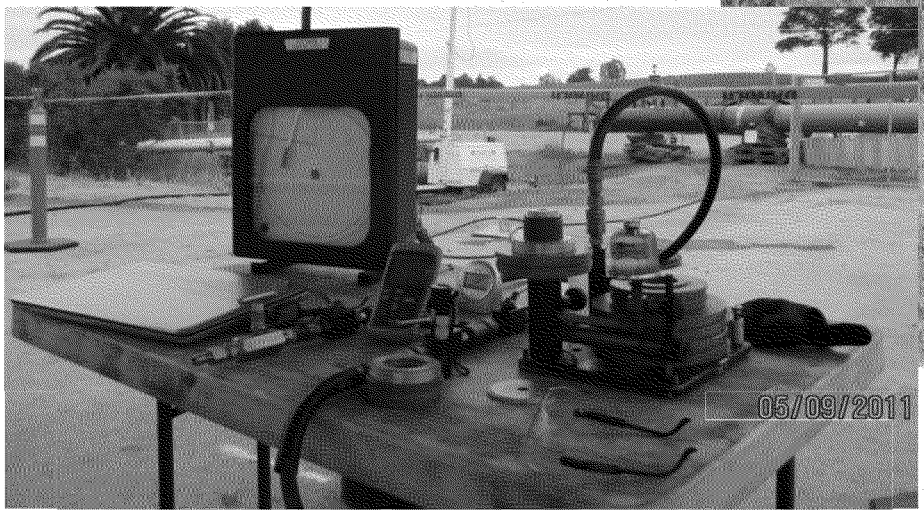




Piston/Stroke Data sheet and nameplate were determined to be 18% short when utilized to calculate pressure volume. This determination was established by measuring liquid released from test segment to

RCP **Restrained pipe Temperature Recorder.**

Pipe temperature chart recorder was determined at mid test to be off calibration by +10°F. This determination was confirmed by utilization of electronic temperature measurement using a Fluke 54II Thermometer. Pipe temperature was corrected by negative 10°F to ensure data accuracy.



Test Pressure Recorder and Deadweight

Unrestrained Pipe Segment at Test Instrumentation Location

CCIC

PIPELINE SAFETY DIVISION
HYDROSTATIC TEST RESULTS

PIPELINE DATA

TEST DATE 5/9/2011	CSFM TEST ID # N/A
PIPELINE OPERATOR P. G. & E.	INDEPENDENT TESTING FIRM CONTRA COSTA INSPECTION CO. CSFM# 1011-104

KIND OF TEST
() ANNUAL ( ) 2 YEAR ( ) 3 YEAR ( ) 5 YEAR ( ) 10 YEAR
( ) PRE-TESTED PIPE (X) NEW ( ) REPLACEMENT () STATION PIPING ( ) OTHER

PIPELINE IDENTIFICATION (DESCRIPTION, LINE NUMBER, NAME, PRE-TESTED PIPE, ECT.)
HYDROTEST L-132A FROM MP 0.0057-1.489, T-40 MOUNTAIN VIEW,CA

PIPELINE LOCATION (MILE POST, STREET, STATION, ECT.)
FROM: L-132A FROM MP0.0057-1.489, MOUNTAIN VEIW, CA

TO: L-132A FROM MP0.0057-1.489, MOUNTAIN VEIW, CA

NORMAL PRODUCT TRANSPORTED
NATURAL

TEST MEDIUM
(X) WATER ( ) DIESEL ( ) FUEL OIL () JP5 ( ) OTHER

LOCATION OF DEAD WEIGHT TESTER L-132A FROM MP0.0057-1.489, MOUNTAIN VEIW, CA	ELEVATION 0 FT.
ELEVATION OF PIPELINE-HIGH POINT 0 FT.	ELEVATION OF PIPELINE-LOW POINT 0 FT.

MAXIMUM OPERATING PRESSURE (BASED ON 80% OF MINIMUM TEST PRESSURE)
769.6 PSI

PIPE DATA

PIPE O.D.	WALL THICKNESS	GRADE & SPEC.	LENGTH OF PIPE TESTED	BARRELS
24	0.375 IN.	API 5L, GR X-60, DSAW	181 FT.	95.05 BLS.
4.5	0.237	API 5L, GR.B,SMLS	43	0.68 BLS.
24	0.3125	API , X-52, DSAW	865	459.12 BLS.
24	0.25	API 5L, X-52, DSAW	2102	1,127.66 BLS.
24	0.281	API 5L, GR X-60, DSAW	4462	2,381.12 BLS.

TEST EQUIPMENT

MAKE OF DEAD WEIGHT TESTER AMETEK	SERIAL # HL-2845	DATE LAST CALIBRATED 11/29/2010
MAKE OF PRESSURE CHART RECORDER CLP	SERIAL # 1703	DATE LAST CALIBRATED 5/2/2011
MAKE OF TEMPERATURE RECORDER CLP	SERIAL # 1701	DATE LAST CALIBRATED 5/2/2011

TEST DATA CSFM# N/A

DATE	TIME	DEAD WEIGHT PRES.	CHART PRES.	PIPE WALL TEMP.	AMBIENT TEMP.	MEDIEM TEMP.	TEST MEDIUM CHANGE	COMMENTS
5/9/2011	900	620	620	60	54		0.00	GAL.
5/9/2011	910	620	620	60	56		0.00	GAL.
5/9/2011	920	620	620	60	56		0.00	GAL.
5/9/2011	930	620	620	60	55		0.00	GAL.
5/9/2011	940	620	620	60	57		0.00	GAL.
5/9/2011	950	620	620	60	57		0.00	GAL.
5/9/2011	1000	620	620	60	58		0.00	GAL.
5/9/2011	1015	620	620	60	59		0.00	GAL.
5/9/2011	1030	620	620	60	60		0.00	GAL.
5/9/2011	1045	620	620	60	60		0.00	GAL.
5/9/2011	1100	620	620	60	60		0.00	GAL.
5/9/2011	1115	620	620	60	62		0.00	GAL.
5/9/2011	1130	621	621	60	62		0.00	GAL.
5/9/2011	1145	621	621	60	62		0.00	GAL.
5/9/2011	1200	621	621	60	63		0.00	GAL.
5/9/2011	1215	621	621	60	63		0.00	GAL.
5/9/2011	1230	621	621	60	64		0.00	GAL.
NET CHANGE:		1	1	0	10	0	0	Gal.

FAILURES DURING TEST

LOCATION	CAUSE

CERTIFICATION

NAME OF COMPANY CONDUCTING TEST P. G. & E.	DATE 5/9/2011
NAME OF INDEPENDENT TESTING FIRM WITNESSING TEST CONTRA COSTA INSPECTION CO. CSFM# 1011-104	DATE 5/9/2011
NAME OF CERTIFIED INDEPENDENT WITNESS ON SITE Redacted	DATE 5/9/2011
PIPELINE OPERATOR'S REPRESENTATIVE ON SITE DAVE-ARB SEND TEST TO Redacted	DATE 5/9/2011
NAME OF PERSON CERTIFYING TEST DATA FOR WITNESSING FIRM Redacted	DATE 5/9/2011

CCIC

Hydrostatic Test Calculation Worksheet

CSFM Test ID#	N/A		
Enter initial temperature:	64.0	Enter initial pressure:	620.0
Enter final temperature:	64.0	Enter final pressure:	623.0
Water added (Subtracted):	0.000	Gallons	

Stationing:	Pipe O.D. (in)	Wall Thickness (in)	Length (ft)	Line Fill (gals)	Kp Calculation initial	CPSA Loss
	24.000	0.375	181.0	3992	928	0.08
	4.500	0.237	43.0	28	159	0.00
	24.000	0.313	865.0	19283	4786	0.38
	24.000	0.250	2102.0	47362	12909	0.94
	24.000	0.281	4462.0	100007	25906	1.98
	1.000	1.000	0.0	0	0	0.00
	1.000	1.000	0.0	0	0	0.00
	1.000	1.000	0.0	0	0	0.00
TOTALS			7653.0	170673	5.84	-4.38

CPSA Allowable Hourly Loss -4.382 gals

Press Change	¬P =	3.00	psi	
Temp Change	¬T =	0.00	deg. F	
Add/Sub Gals.		0.00	gals	
Calculated average for use in table:		64.00	deg. F	621.50 PSI
Bulk Modulus (From table)		316	psix10^3	
Liquid Volumetric Expansion Coefficient		10.00	x10^-5	
(From Table)	Kt =	-8.05	x10^-5	
	Kp =	5.84	x10^-6	

¬V/V =Kp¬P + Kt¬T

Net Vol Change (¬V):	2.990	gal.
Net Vol Change (gph):	0.374	gal./hr
CPSA Allowable Loss:	-4.382	gal.

Pass

CSFMTEST 9-11-98