

Redacted

August 26, 2011

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

Test Contractor: Redacted
Asset Owner: Pacific Gas and Electric Company -- 41497332-3
Construction Contractor: Redacted
Test Section: T-76 Test 2, L-300B, MLV 0.45B
Test Date: August 26, 2011
Certificate Number: RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B

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 Redacted met the requirements of the Code of Federal Regulations, Title 49, Part 192, Subpart J (Station).

This hydrostatic test was completed successfully. Pressure was maintained on the test facilities in excess of 8.28 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 1150 psig and the established MAOP is 766 psig.

Pressure increased 10 psi during the test. 576.00 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 21.74 ounces, loss, which is equivalent to a 0.37 °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

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RCP 61362 T-76-2 L-300B MLV 0.45B.xlsm
Letter

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Hydrostatic Test Certification

Company	Pacific Gas and Electric Company	Job Number	41497332-3
Construction Co.	Snelson	Job Number	41497332-T-76-2
Hydro. Test Co.	Redacted	Project No.	FY12-112
Test Section	T-76 Test 2, L-300B, MLV 0.45B		
File Name	RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B		

Hydrostatic Test Pressure

APPLICABLE CODE FOR CERTIFICATION: _____ Test Date: 26-Aug-11

Code of Federal Regulations, Title 49, Part 192, Subpart J (Station)

This is to certify that the pipeline or pipeline section(s) described below was hydrostatically pressure tested in accordance with the following procedure:

Pipeline:	T-76 Test 2, L-300B, MLV 0.45B		
From:	0+00	To:	MP 50.00

Pipe Data

Segment	Length	Diameter	Wall Thickness	Specification	100% SMYS
1	2 ft	34.000 in.	0.500 in.	API5L-X65, DSAW, Arc Weld, Steel	1,912 psi
2	58 ft	34.000 in.	0.500 in.	API5L-X52, DSAW, Arc Weld, Steel	1,529 psi
3	14 ft	1.050 in.	0.133 in.	API5L-Grade B, DSAW, Arc Weld, Steel	8,867 psi

Initial Test Conditions

Pressure at Test Point:	1,150 psig	Date/Time:	8/26/11 8:13 AM	Pipe Temperature	
Ambient Temperature:	95.0 °F	Elevation @ Test Point:	614.0 ft	Unrestrained:	99.0 °F
Pressure @ High Point (Cal/Measure):	1,150 psig	Elevation @ High Point:	614.0 ft	Restrained:	
Pressure @ Low Point (Cal/Measure):	1,150 psig	Elevation @ Low Point:	614.0 ft	Location:	00+00

Final Test Conditions

Pressure at Test Point:	1,160 psig	Date/Time:	8/26/11 4:30 PM	Pipe Temperature	
Ambient Temperature:	119.0 °F	Elevation @ Test Point:	614.0 ft	Unrestrained:	107.0 °F
Pressure @ High Point (Cal/Measure):	1,160 psig	Elevation @ High Point:	614.0 ft	Restrained:	
Pressure @ Low Point (Cal/Measure):	1,160 psig	Elevation @ Low Point:	614.0 ft	Location:	00+00

Total Fluid Injected:				
Total Fluid Withdrawn:	576.00 fluid ounces	Volume loss		
Net Change in Volume of the Test Section ± (+ Gain, - Loss):	(21.74) oz	loss	(0.0064)%	(0.373) °F equivalent

Test Duration: 8.28 hours

Minimum Test Pressure:	1,123 psig	Test Point	1,123 psig	Min Elevation	1,123 psig
Maximum Test Pressure:	1,180 psig	Max Elevation	1,180 psig	Min Elevation	1,180 psig
% SMYS :			5.8%		40.1%
Test Segment Observed % SMYS :	Minimum:	5.8%	Maximum:	40.1%	

Minimum Test Pressure (Calculated/Measured): 1,150 psig

Maximum Allowable Operating Pressure: DOT Part 192 Test Factor= 1.50 766 psig

Were leaks observed?	No	Explain:	
Acceptable Hydrostatic Test?	Yes	<p>No leaks were observed during the test period. The test section included 74 feet of exposed pipe. Pressure gained 10 psi during the test. The exposed pipe segment gained 8°F fluid temperature.</p> <p>576.00 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 21.74 ounces, loss, which is equivalent to a 0.37 °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

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26-Aug-11

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497332-3
Construction Co.	Redacted	Job Number	41497332-T-76-2
Testing Co.	Redacted	Project No.	FY12-112
Test Section	T-76 Test 2, L-300B, MLV 0.45B		
File Name	RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B		

Date	26-Aug-11	<h1>Test Log</h1>
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Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
1	8/26/11	8:13 AM	1,150 psig	95 °F	99 °F		On Test		
2	8/26/11	8:30 AM	1,150 psig	97 °F	98 °F				
3	8/26/11	8:45 AM	1,153 psig	98 °F	99 °F				
4	8/26/11	9:00 AM	1,160 psig	99 °F	99 °F				
5	8/26/11	9:15 AM	1,165 psig	100 °F	100 °F				
6	8/26/11	9:30 AM	1,171 psig	101 °F	100 °F				
7	8/26/11	9:45 AM	1,179 psig	104 °F	100 °F				
8	8/26/11	9:48 AM	1,179 psig	104 °F	100 °F		Bleed	96.00 oz.	
9	8/26/11	9:50 AM	1,123 psig	104 °F	100 °F				
10	8/26/11	10:00 AM	1,130 psig	104 °F	100 °F				
11	8/26/11	10:15 AM	1,139 psig	104 °F	101 °F				
12	8/26/11	10:30 AM	1,157 psig	108 °F	102 °F				
13	8/26/11	10:45 AM	1,164 psig	109 °F	102 °F				
14	8/26/11	11:00 AM	1,174 psig	109 °F	102 °F				
15	8/26/11	11:06 AM	1,180 psig	109 °F	102 °F		Bleed	96.00 oz.	
16	8/26/11	11:09 AM	1,125 psig	110 °F	102 °F				
17	8/26/11	11:15 AM	1,140 psig	110 °F	102 °F				
18	8/26/11	11:30 AM	1,152 psig	110 °F	102 °F				
19	8/26/11	11:45 AM	1,163 psig	112 °F	102 °F				
20	8/26/11	12:00 PM	1,176 psig	112 °F	102 °F				
21	8/26/11	12:07 PM	1,180 psig	112 °F	102 °F		Bleed	96.00 oz.	
22	8/26/11	12:09 PM	1,125 psig	112 °F	102 °F				
23	8/26/11	12:15 PM	1,141 psig	113 °F	102 °F				
24	8/26/11	12:30 PM	1,154 psig	113 °F	102 °F				
25	8/26/11	12:45 PM	1,168 psig	113 °F	102 °F				
26	8/26/11	1:00 PM	1,176 psig	114 °F	102 °F				
27	8/26/11	1:03 PM	1,180 psig	114 °F	102 °F				
28	8/26/11	1:05 PM	1,125 psig	114 °F	102 °F		Bleed	96 oz.	
29	8/26/11	1:15 PM	1,148 psig	115 °F	102 °F				
30	8/26/11	1:30 PM	1,157 psig	116 °F	103 °F				
31	8/26/11	1:45 PM	1,163 psig	116 °F	103 °F				
32	8/26/11	2:00 PM	1,172 psig	117 °F	103 °F				
33	8/26/11	2:13 PM	1,180 psig	118 °F	103 °F		Bleed	96 oz.	
34	8/26/11	2:14 PM	1,125 psig	118 °F	104 °F				
35	8/26/11	2:30 PM	1,150 psig	118 °F	104 °F				
36	8/26/11	2:45 PM	1,157 psig	118 °F	104 °F				
37	8/26/11	3:00 PM	1,167 psig	118 °F	104 °F				
38	8/26/11	3:15 PM	1,172 psig	118 °F	105 °F				
39	8/26/11	3:30 PM	1,180 psig	119 °F	106 °F		Bleed	96 oz.	
40	8/26/11	3:31 PM	1,125 psig	119 °F	106 °F				
41	8/26/11	3:45 PM	1,147 psig	117 °F	106 °F				
42	8/26/11	4:00 PM	1,151 psig	118 °F	106 °F				
43	8/26/11	4:15 PM	1,156 psig	118 °F	106 °F				

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RCP 61362 T-76-2 L-300B MLV 0.45B.xlsm

Dead Weight Sheet

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Dead Weight Log Sheet

Owner Company	Pacific Gas and Electric Company	Job Number	41497332-3
Construction Co.	Redacted	Job Number	41497332-T-76-2
Testing Co.		Project No.	FY12-112
Test Section	T-76 Test 2, L-300B, MLV 0.45B		
File Name	RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B		

Date	26-Aug-11	<h2>Test Log</h2>
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Log No.	Test Period		Test Pressure	Temperature °F			Remarks		
	Date	Time		Ambient	Pipe		Comment	Bleed	Inject
					Unrestrained	Restrained			
44	8/26/11	4:30 PM	1,160 psig	119 °F	107 °F		End of Test		
Spike Test									
Hydrostatic Test							576.0 oz.		

Were leaks observed during the test period?	All pipe exposed, no leaks observed.	<table border="1"> <tr> <td>High Test Pressure:</td> <td>1,180 psig</td> </tr> <tr> <td>Low Test Pressure:</td> <td>1,123 psig</td> </tr> </table>	High Test Pressure:	1,180 psig	Low Test Pressure:	1,123 psig
High Test Pressure:	1,180 psig					
Low Test Pressure:	1,123 psig					

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Pipe Segment Volume Calculations

Company	Pacific Gas and Electric Company	Job Number	41497332-3
Construction Co.	Redacted	Job Number	41497332-T-76-2
Hydro. Test Co.		Project No.	FY12-112
Test Section	T-76 Test 2, L-300B, MLV 0.45B		WATER
File Name	RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B		

General Pipe Data

Description	Segment								
	1	2	3						
Restrained or Unrestrained?	Unrestrained	Unrestrained	Unrestrained						
Outside Diameter	34.000 in.	34.000 in.	1.050 in.						
Wall Thickness	0.500 in.	0.500 in.	0.133 in.						
Inside Diameter	33.000 in.	33.000 in.	0.784 in.						
Spec./Grade	API5L-X65	API5L-X52	API5L-Grade B						
Length Unrestrained	2 ft	58 ft	14 ft						
Length Restrained									
Temperature -- On Test	99 °F	99 °F	99.0 °F						
Temperature -- End of Test	107 °F	107 °F	107.0 °F						
Pressure -- On Test	1,150 psig	1,150 psig	1,150 psig						
Pressure -- End of Test	1,160 psig	1,160 psig	1,160 psig						

Unrestrained Pipe

Sum:	Vo	2,666.22 gal 341,276 oz.	Vtp1	2,670.52 gal 341,827 oz.	Vtp2	2,665.85 gal 341,229 oz.
Vo Unrestrained	89 gal	2,577 gal	0 gal			
Fwp 1	1.003526	1.003526	1.003526			
Fpp 1	1.003163	1.003163	1.000282			
Fpt 1	1.000710	1.000710	1.000710			
Fwt 1	1.005788	1.005788	1.005788			
Fpwt 1 = Fpt/Fwt	0.994951	0.994951	0.994951			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	89.01 gal	2,581.17 gal	0.35 gal			
Fwp 2	1.003556	1.003556	1.003556			
Fpp 2	1.003190	1.003190	1.000285			
Fpt 2	1.000855	1.000855	1.000855			
Fwt 2	1.007755	1.007755	1.007755			
Fpwt = Fpt/Fwt	0.993153	0.993153	0.993153			
Vtp = Vo(Fwp)(Fpp)(Fpwt)	88.85 gal	2,576.65 gal	0.35 gal			

Restrained Pipe

Sum:	Vo	Vtp1	Vtp2
Vo Unrestrained			
Fwp 1			
Fpp 1			
Fpt 1			
Fwt 1			
Fpwt 1 = Fpt/Fwt			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			
Fwp 2			
Fpp 2			
Fpt 2			
Fwt 2			
Fpwt = Fpt/Fwt			
Vtp = Vo(Fwp)(Fpp)(Fpwt)			

Combined Pipe

Sum:	Vo	2,666.22 gal 341,276 oz.	Vtp1	2,670.52 gal 341,827 oz.	Vtp2	2,665.85 gal 341,229 oz.
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Pipe Segment Volume Allowance Calculations

Company	Pacific Gas and Electric Company	Job Number	41497332-3
Construction Co.	Redacted	Job Number	41497332-T-76-2
Hydro. Test Co.	Redacted	Project No.	FY12-112
Test Section	T-76 Test 2, L-300B, MLV 0.45B	WATER	
File Name	RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B		

General Pipe Data

Description	Segment								
	1	2	3						
Restrained or Unrestrained?	Unrestrained	Unrestrained	Unrestrained						
Outside Diameter	34.000 in.	34.000 in.	1.050 in.						
Wall Thickness	0.500 in.	0.500 in.	0.133 in.						
Inside Diameter	33.000 in.	33.000 in.	0.784 in.						
Spec./Grade	API5L-X65	API5L-X52	API5L-Grade B						
Length Unstrained	2.00 ft	58.00 ft	14.00 ft						
Length Restrained									
Temperature -- On Test	102 °F	102 °F	102 °F						
Temperature -- End of Test	103 °F	103 °F	103 °F						
Pressure -- On Test	1,155 psig	1,155 psig	1,155 psig						
Pressure -- End of Test	1,155 psig	1,155 psig	1,155 psig						

Unrestrained Pipe

Sum:	Vo	2,666.22 gal 341,276 oz.	Vtp1	2,669.07 gal 341,641 oz.	Vtp2	2,668.61 gal 341,583 oz.
Vo Unrestrained	89 gal	2,577 gal	0 gal			
Fwp 1	1.003541	1.003541	1.003541			
Fpp 1	1.003176	1.003176	1.000284			
Fpt 1	1.000764	1.000764	1.000764			
Fwt 1	1.006421	1.006421	1.006421			
Fpwt 1 = Fpt/Fwt	0.994380	0.994380	0.994380			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)	88.96 gal	2,579.76 gal	0.35 gal			
Fwp 2	1.003541	1.003541	1.003541			
Fpp 2	1.003176	1.003176	1.000284			
Fpt 2	1.000783	1.000783	1.000783			
Fwt 2	1.006611	1.006611	1.006611			
Fpwt = Fpt/Fwt	0.994210	0.994210	0.994210			
Vtp = Vo(Fwp)(Fpp)(Fpwt)	88.94 gal	2,579.32 gal	0.35 gal			

Restrained Pipe

Sum:	Vo	Vtp1	Vtp2
Vo Restrained			
Fwp 1			
Fpp 1			
Fpt 1			
Fwt 1			
Fpwt 1 = Fpt/Fwt			
Vtp 1 = Vo(Fwp)(Fpp)(Fpwt)			
Fwp 2			
Fpp 2			
Fpt 2			
Fwt 2			
Fpwt = Fpt/Fwt			
Vtp = Vo(Fwp)(Fpp)(Fpwt)			

Combined Pipe

Sum:	Vo	2,666.22 gal 341,276 oz.	Vtp1	2,669.07 gal 341,641 oz.	Vtp2	2,668.61 gal 341,583 oz.
1 °F Change	0.46 gal					58.31 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	2 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X65	1,912 psig	Steel	Arc Weld	DSAW
2	472.58 ft	Unrestrained	34.000 in.	0.5000 in.	API5L-X52	1,529 psig	Steel	Arc Weld	DSAW
3	14 ft	Unrestrained	1.050 in.	0.1330 in.	API5L-Grade B	8,867 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	41497332-3
Construction Company	Redacted	Job Number
Address		41497332-T-76-2
Hydrostatic Test Co.		Project No.
Address	Attention: T-76 Test 2, L-300B, MLV 0.45B From: 0+00 To: 00+50	FY12-112
File Name	RCP 61362 - T-76 Test 2, L-300B, MLV 0.45B	

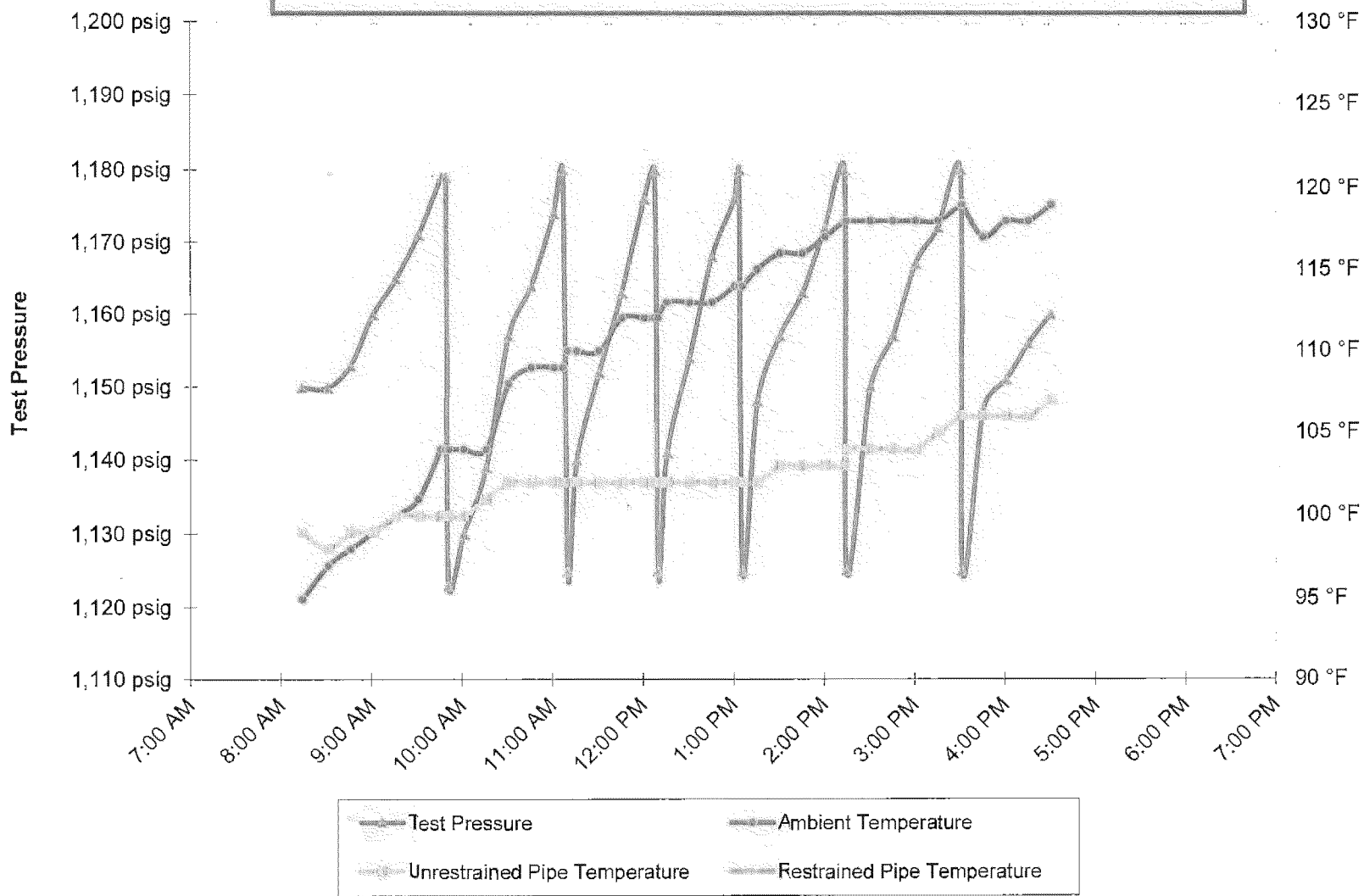
Part II – Test Data (TO BE PREPARED BY PERSON SUPERVISING TEST AT TIME OF TEST)

Note: Minimum test pressure and duration are not to be charged without written approval.

Time and Date Test Pressure Reached	8/26/11 8:13 AM	Elevation at Test Point	614 ft	Min. Required Test Press At Test Point (1)	1,118.00 psig	Max. Allowable Test Press at Test Point (4)	1,180.00 psig
Time and Date Test Ended	8/26/11 4:30 PM	Max. Elevation in Test Section	614 ft	Min. Indicated Test Pressure (2)	1,123.00 psig	Max. Indicated Test Pressure (5)	1,180.00 psig
Actual Duration of Test	8 hours 17 minutes	Min. Elevation in Test Section	614 ft	Min. Test Pressure at Max. Elevation (3)	1,123.00 psig	Max. Test Pressure at Min. Elevation (6)	1,180.00 psig

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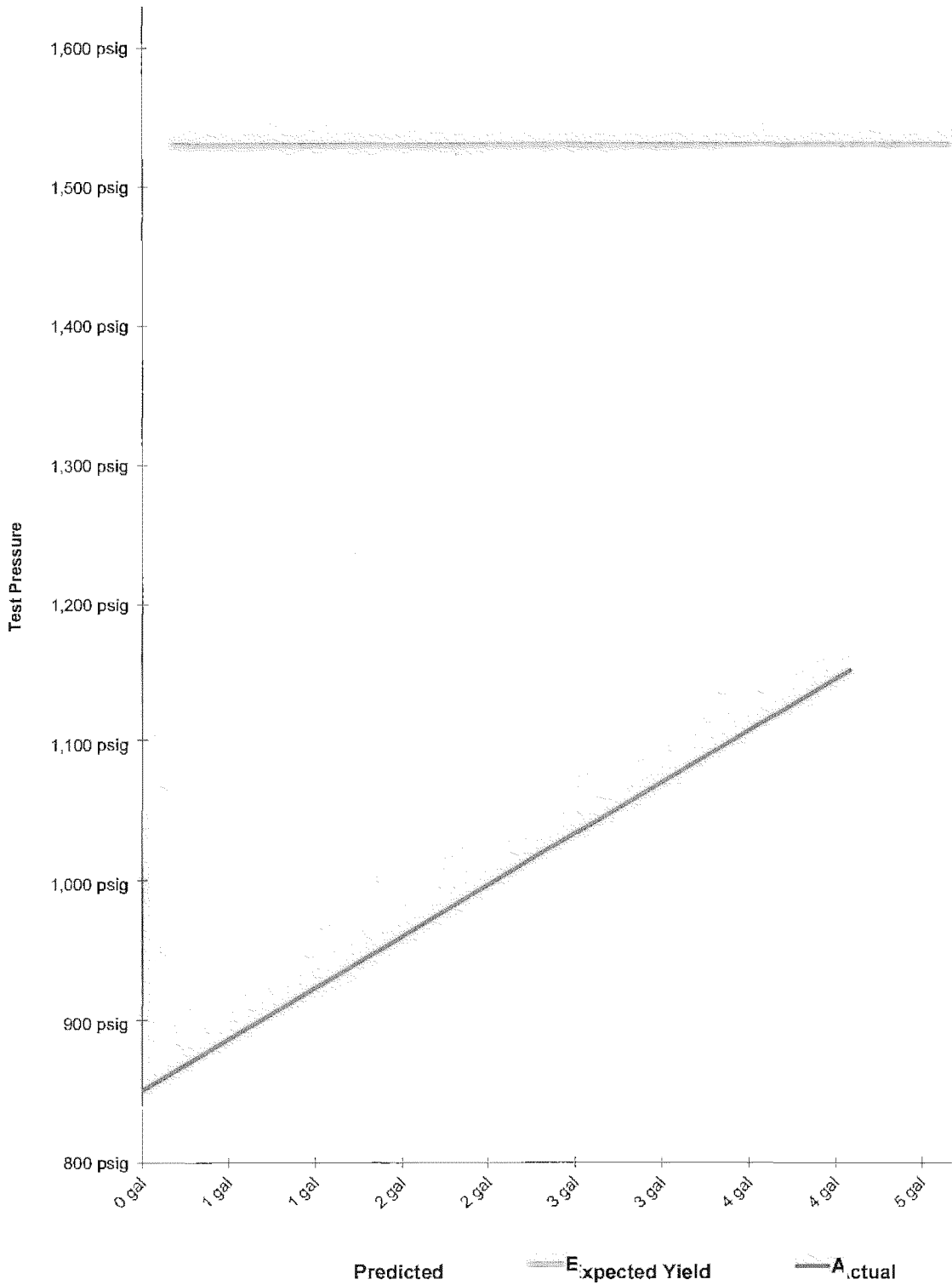
T-76 Test 2, L-300B, MLV 0.45B



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RCP 61362 T-76-2 L-300B MLV 0.45B.xlsm
PlotT

**Spike Pressure Test
Stress Strain Curve -- T-76 Test 2, L-300B, MLV 0.45B**



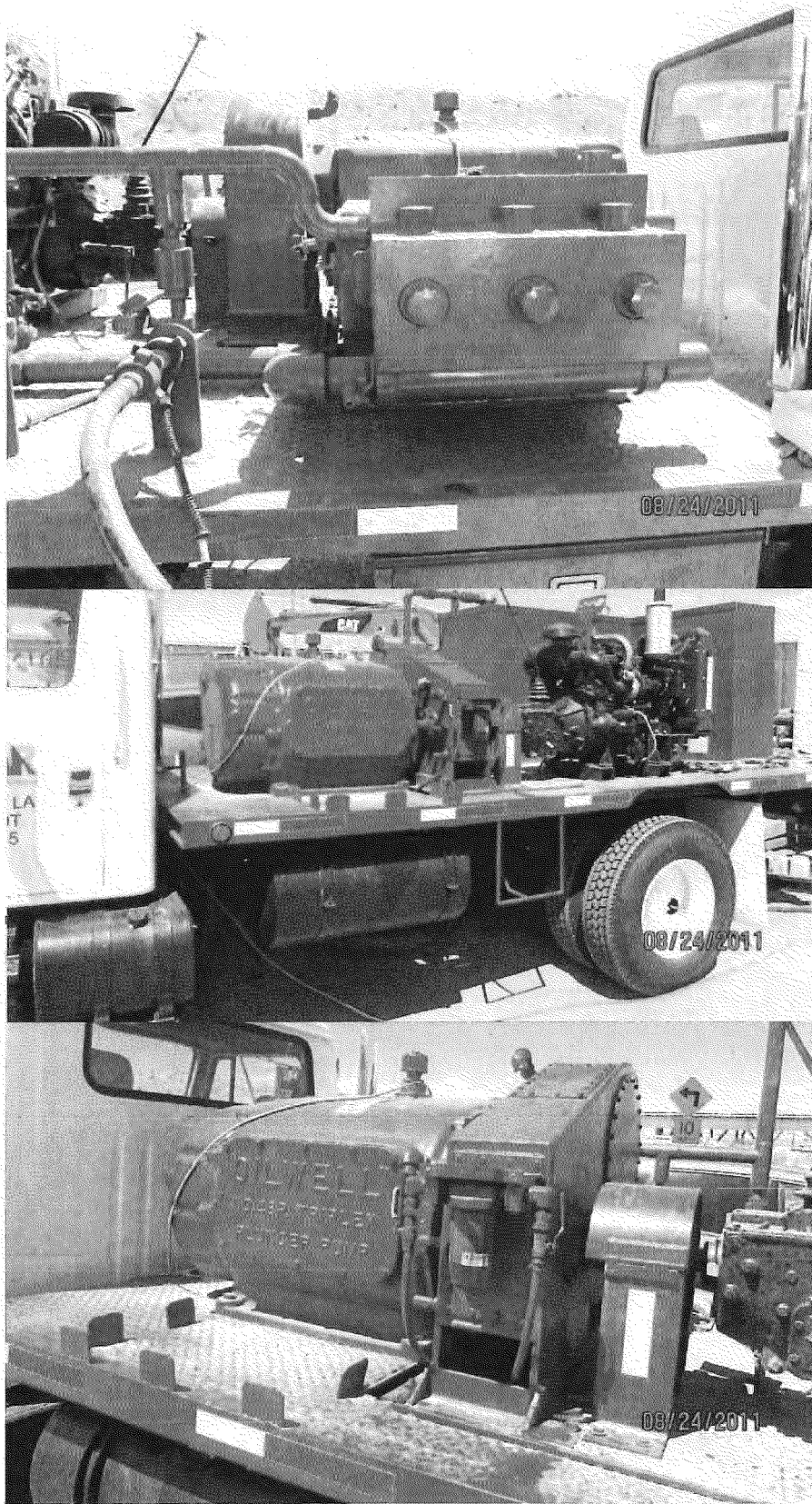
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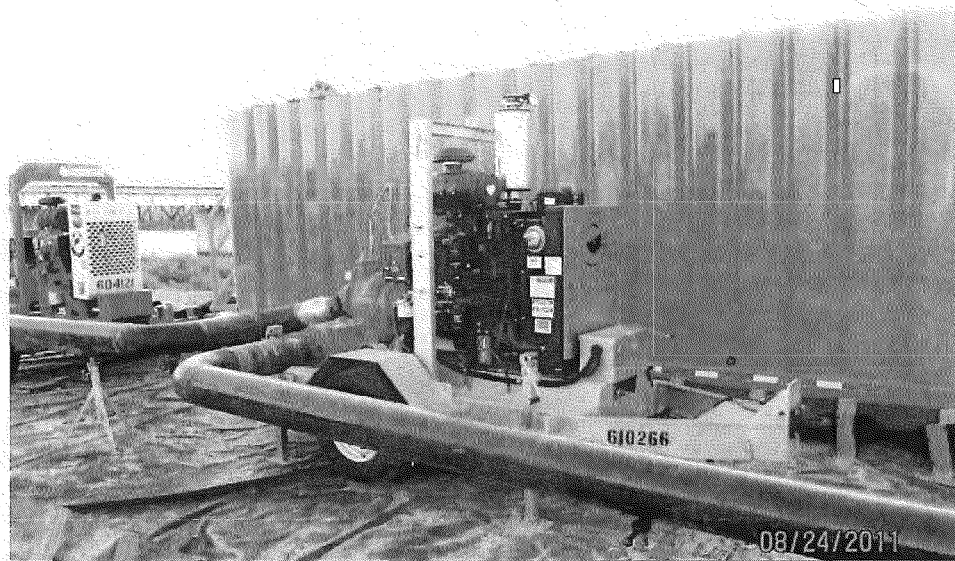
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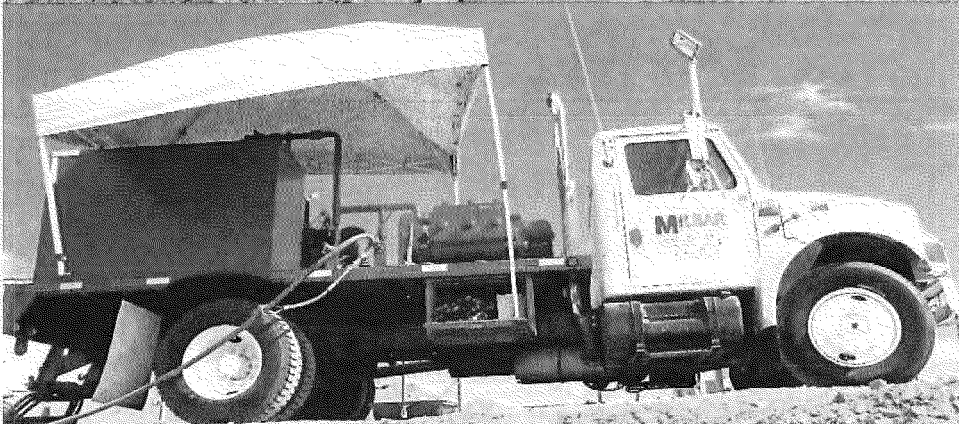
Pressure Pump



Fill Pump

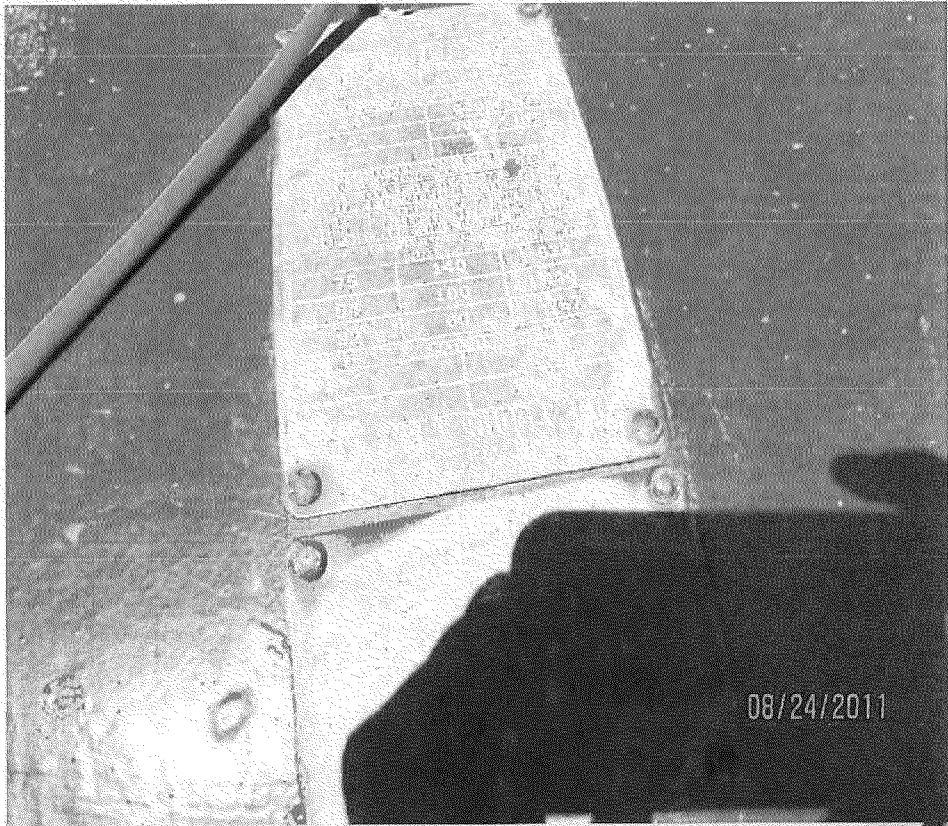


Test Trailer

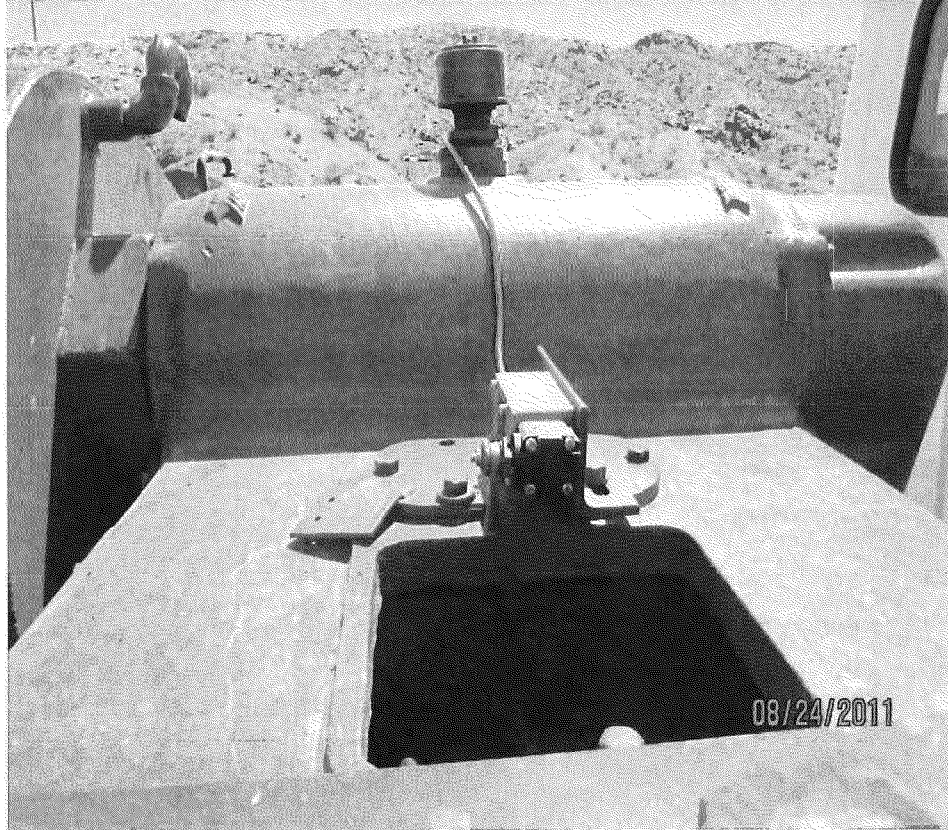


Pressure Pump Truck

Redacted



**Pressure Pump
Nameplate**



**Pressure Pump
Stroke Counter**

RCP



Dead Weight Pressure Guage, Pressure Recorder Chart & Ambient Temperature Chart

RCP



Unrestrained
Pipe
Temperature
Recording
Charts

