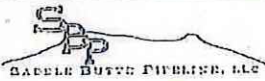


TEST SPECIFICATIONS						Date:		Select Routing:	
Rangeview Pipeline Gathering System Hydrostatic Pressure Test						23-Jan-2017			
Klein 19MN (North) Well Connect						Test Number: 1		of 1	
Project Name: Rangeview Pipeline Gathering System				Project I.D. / AFE Number 16W022A		Facility Name or Number Klein 19MN Well Pad			
Installation Location (M.P. or S.S.):		State:	County/Parish:	Class Location Designation	2	Selected Design Pressure	1480	Planned MAOP	1400
0+00 to 0+35		CO	Weld						
Project Description:									
Hydrostatic pressure test of the 4" well connect pipeline.									
Testing at 1.25*MAOP = 1850 minimum test pressure. 2225 psig Target Test Pressure at Chart Location									
Max Test Pressure for ANSI 600 Valves and Fittings is 2660 psig where they are located.									
Test shall be compliant with all test specifications in Exhibit D "Pipeline Construction Specifications" and all other Construction Documents.									
LEAK ONLY TEST <input type="checkbox"/> STRENGTH TEST <input checked="" type="checkbox"/> FABRICATION <input type="checkbox"/> NEW CONSTRUCTION <input checked="" type="checkbox"/> REPLACEMENT <input type="checkbox"/> RETEST <input type="checkbox"/> REFERENCE DRAWINGS ATTACHED <input type="checkbox"/>									
POST-INSTALLATION TEST <input type="checkbox"/> PRE-INSTALLATION TEST <input checked="" type="checkbox"/>									
Minimum Component Characteristics				Test Design Criteria			Test Section - Reference Data		
Pipe Information				Test Pressure Calculations			Test Medium Water		
O.D. 4.5				Input minimum and maximum pressure of test			Test Duration 4 Hours (min)		
Wall Thickness 0.188				Input minimum and maximum %SMYS of test			Section Length 35 Ft.		
SMYS 52,000							Section Fill Volume 24 Gal		
Valve/Flange ANSI Class Rating 600# Valves/Fittings				Pressure (psig) % PIPE SMYS			Max. Elevation Change 0 Ft.		
				Max. Test Pressure (Pipe) 2600 59.8%			Station Equations:		
				Max. Test Pressure (Valves and Fittings) 2660 61.2%			Back 0+00 0+00 0+00		
				Min. 1850 42.6%			Ahead 0+00 0+00 0+00		
Test Pressures									
Location	Station	Elevation (feet)	Max. psig.	% SMYS @ Max.	Min. psig.	% SMYS @ Min.	Variance psig.	Target psig.	% SMYS @Target
BEGIN -	0+00	4631	2,600	59.8%	1,850	42.6%	750	2,225	51.2%
HIGH ELEVATION	0+35	4631	2,600	59.8%	1,850	42.6%	750	2,225	51.2%
LOW ELEVATION	0+00	4631	2,600	59.8%	1,850	42.6%	750	2,225	51.2%
END	0+35	4631	2,600	59.8%	1,850	42.6%	750	2,225	51.2%
Chart Location (Test Point)	0+00	4631	2,600	59.8%	1,850	42.6%	750	2,225	51.2%
REMARKS:									
ASME B16.5 2.6 System Hydrostatic Testing 2003:									
Flanged joints and flanged fittings may be subjected to system hydrostatic tests at a pressure of 1.5 times the 38°C (100°F) rating rounded off to the next higher 1 bar (25 psi) increment. Testing at any higher pressure is the responsibility of the user, taking into account the requirements of the applicable code or regulation.									
Test shall be compliant with all test specifications in Exhibit D "Pipeline Construction Specifications" and all other Construction Documents.									
PRE-TEST SPECIFIED / REVIEWED BY:			TEST PERFORMED / ACCEPTED BY:			POST-TEST REVIEWED BY:			
Originator (Signature)	Date:	Test Performed by (Signature)	Date:	Compliance (signature)	Date:				
Designed Reviewed if applicable (Signature)	Date:	Company Name (for Contractor or for Employee):	Date:	Engineering or Operations (Signature)	Date:				
Compliance (Signature)	Date:	Witnessed & Accepted by Company Representative:	Date:	Actual MAOP					
		(Signature) Charles Walker	1-23-17						



April 2006

MOP Establishment and Pressure Testing of Pipelines
TG1601.190

PAGE 1 OF 9

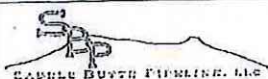
LIQUID PIPELINE PRESSURE TEST REPORT

Pressure Test Number _____

MOP of tested facility is PSIG

Company: Saddle Butte Operations Area: _____
Project: Rangview Gathering AFE: 16W022A
Pipeline: Klein 19 MN Well Connect
Section: all

Station or Milepost From: 0+00 To: 0+35

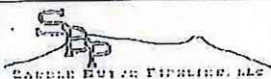


INSTRUCTIONS

PAGE 2 OF 9

In this worksheet, cells containing formulas are protected against input.
Cells with **BLUE** text labels allow or require input.

<i>General Information</i>	<ul style="list-style-type: none"> Complete this Report and attached necessary exhibits for all SBP installed pipelines or pipeline segments or those re-qualified for service. Fill in all applicable information. If information is not applicable, write NA in the corresponding space on the Report.
<i>Pipe Data</i>	<ul style="list-style-type: none"> Record the details for each pipe section tested, including lengths, line fill, pipe fittings, etc. Add together pipe section lengths and line fill for a total pipe section length and line fill.
<i>Test Water Data</i>	<ul style="list-style-type: none"> Enter water source information (i.e., from municipal supply, well, river, lake, pond) in the Test Log or notes section of the Report. Source water temperature compared to ground temperature can assist with understanding the time for the water to stabilize.
<i>Pressure Calculations</i>	<ul style="list-style-type: none"> Elevation of high and low points and the elevation of the test pressure measure sites is required for calculation of the target test pressures.
<i>Test Log</i>	<ul style="list-style-type: none"> Fill out the Test Log at the time of the test. This is the actual log of the test. From the start of filling the test section, record pressure readings from the calibrated test gauge or deadweight tester used in the test. Record the test pressure and temperatures at intervals of 30 minutes to an hour and as necessary to represent the test pressure during the test period. The below ground pipe temperature sensor should be placed away from exposed pipe and far enough from the water injection point so that water injected will not affect the readings. In the Remarks column, enter start of test, end of test, and any remarks concerning unusual events, such as liquid added or withdrawn, weather conditions, etc.
<i>Notes</i>	<ul style="list-style-type: none"> Enter all pertinent comments about the test, including such things as weather conditions, radical weather changes, equipment malfunctions, or any other noteworthy event that may affect testing.
<i>Profile</i>	<ul style="list-style-type: none"> An elevation profile is required for any test section where the elevation varies more than 100 feet. The following items should be noted on the profile: <ul style="list-style-type: none"> Location and elevation where test pressure measurements are taken High and low points Stationing or mileposts Horizontal and vertical scale of the drawing Elevation data is available in electronic format from the KPL mapping system. If electronic elevation data is not available, take profile elevations from survey information or from U.S. Geological Service 7 1/2 minute topographical maps.
<i>Failure Log</i>	<ul style="list-style-type: none"> Record each failure event that causes the line to be taken "off test". Enter the date, time, and pressure at the time of failure. List the apparent cause of the failure if the actual cause cannot be determined. Pipe seam failure or leaking flange, for example, could be entered as the cause of test failure. Describe the repair method (i.e., changed-out pipe or tightened flange).
<i>Supplementary Documentation</i>	<ul style="list-style-type: none"> Check each supplementary documentation attached as part of this test record (i.e., test charts and/or equipment certifications). Write the corresponding Exhibit Number on the attached supplementary documentation.
<i>Certification</i>	<ul style="list-style-type: none"> Signatures of the Company and Contractor representatives in charge of the test are MANDATORY.



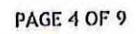
PRESSURE CALCULATIONS

PAGE 3 OF 9

Location of Test Point <u>Klein North</u> <u>above ground</u>	Elevation of Test Point <u>4631</u> Ft. (Elevation) <u>0+00</u> Ft. (Station)	High Point <u>4631</u> Ft. (Elevation) <u>0+35</u> Ft. (Station) Location Name	Low Point <u>4631</u> Ft. (Elevation) <u>0+00</u> Ft. (Station) Location Name
Target MOP: Target Test Pressure Range 1st Min: <u>2225</u> Maximum: <u>2600</u> 2nd Min:	Test Duration: <u>4</u> hr High Point <u>2360</u> Low Point <u>2240</u>	Start Point <u>4631</u> Ft. (Elevation) <u>0+00</u> Ft. (Station) Location Name	End Point <u>4631</u> Ft. (Elevation) <u>0+35</u> Ft. (Station) Location Name

TEST LOG

DATE	TIME	PRESSURE	AMBIENT TEMP	BELOW GROUND TEMP	ABOVE GROUND TEMP	REMARKS
	9:45	0	38		40	
	10:00	0	38		46	Build to 500
	10:00	499	38		46	
	10:15	498	39		47	Build to 1000
	10:15	1000	39		47	
	10:30	1001	39		47	Build to 1500
	10:30	1500	39		47	
	10:45	1500	40		49	Build to 2000
	10:45	2002	40		48	
	11:00	2004	40		49	Build to 2225 +
	11:00	2266	40		49	Bleed to 2240
*	11:02	2240	40		49	* Begin TEST
	11:15	2243	41		50	Sunny nice
	11:30	2246	43		52	most of pipe is shaded by Tanks
	11:45	2248	43		55	but it is starting to get some
	12:00	2254	44		57	Sun
	12:15	2261	45		59	
	12:30	2268	46		60	Sunny
	12:45	2276	46		62	
	1:00	2288	46		62	
	1:15	2298	47		64	
	1:30	2310	47		65	Partly Cloudy
	1:45	2322	48		66	
	2:00	2334	48		65	Mostly cloudy wind picked up
	2:15	2338	48		63	cloudy covered pipe, turned
	2:30	2334	47		60	heater on
	2:45	2340	47		59	
	3:00	2350	47		58	
*	3:15	2360	46		56	* END TEST Bleed to 2000
	3:16	2003	46		56	
	3:30	2003	45		55	Bleed to 1500
	3:30	1502	45		55	
	3:45	1500	44		54	Bleed to 1000
	2:45	1001	44		54	
	4:00	1000	43		53	Bleed to 500
	4:00	501	43		53	
	4:15	500	42		52	Bleed to 0
	4:15	0	42		53	
	4:30	0	42		53	





EQUIPMENT CALCULATED MOP SUMMARY WORKSHEET

PAGE 6 OF 9

1. Test Information:

Target MOP
Enter the desired MOP,
if less than pipe
internal design
pressure.

Date 1-23-17Time 9:00 AMTest Point Location 0+00Test Medium WaterTest Duration 4 hr

Specific Gravity of Test Medium

Min. Test Press. at test site 125% of min. MOP + elev.

110%

Maximum allowable % of SMYS = 100%

2. Pipe Specifications:

Manufacture Type

Grade

Pipe (#1) O.D.

SMYS

MOP

Seam Joint Factor

Wall thickness

Design Factor (F)

Length (ft.):

Volume

Max allowable test pressure, psig

3. Pipe Specifications:

Manufacture Type

Grade

Pipe (#2) O.D.

SMYS

MOP

Seam Joint Factor

Wall thickness

Design Factor (F)

Length (ft.):

Volume

Max allowable test pressure, psig

4. Pipe Specifications:

Manufacture Type

Grade

Pipe (#3) O.D.

SMYS

MOP

Seam Joint Factor

Wall thickness

Design Factor (F)

Length (ft.):

Volume

Max allowable test pressure, psig

5. Pipe Specifications:

Manufacture Type

Grade

Pipe (#4) O.D.

SMYS

MOP

Seam Joint Factor

Wall thickness

Design Factor (F)

Length (ft.):

Volume

Max allowable test pressure, psig

6. Pipe Specifications:

Manufacture Type

Grade

Pipe (#5) O.D.

SMYS

MOP

Seam Joint Factor

Wall thickness

Design Factor (F)

Length (ft.):

Volume

Max allowable test pressure, psig

7. Pipe Specifications:

Manufacture Type

Grade

Pipe (#6) O.D.

SMYS

MOP

Seam Joint Factor

Wall thickness

Design Factor (F)

Length (ft.):

Volume

Max allowable test pressure, psig

8. Pipe Fittings Specifications:

Manufacture Type

Grade

Pipe Fitting O.D.

SMYS

MOP

Seam Joint Factor

Fitting Description

Wall thickness

Design Factor (F)

Max allowable test pressure, psig

9. Pipe Fittings Specifications:

Manufacture Type

Grade

Pipe Fitting O.D.

SMYS

MOP

Seam Joint Factor

Fitting Description

Wall thickness

Design Factor (F)

Max allowable test pressure, psig

10. Pipe Fittings Specifications:

Manufacture Type

Grade

Pipe Fitting O.D.

SMYS

MOP

Seam Joint Factor

Fitting Description

Wall thickness

Design Factor (F)

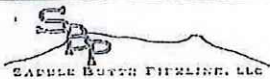
Max allowable test pressure, psig



EQUIPMENT CALCULATED MOP SUMMARY WORKSHEET
(continued)

PAGE 7 OF 9

11. Manufactured:		Weldolet, etc. O.D.	Working Pressure
Manufacture Type	Grade		
Fitting Description			
		Max allowable test pressure, psig	
12. Manufactured:		Pipe Flanges O.D.	Working Pressure
Manufacture Type	Class		
	Temperature Derating Factor (T)		
		Max allowable test pressure, psig	
13. Manufactured:		Pipe Flanges O.D.	Working Pressure
Manufacture Type	Class		
	Temperature Derating Factor (T)		
		Max allowable test pressure, psig	
14. Manufactured:		Block Valve Size	Working Pressure
Manufacture Type	Class		
	Temperature Derating Factor (T)		
		Max allowable test pressure, psig	
15. Calculated MOPs (psi):			
Test Pressure Range @Test Site, psig	125% to psig	110% to psig	
Note: Add 0 psi to min. test range			
Maximum test pressure at test site, psig			
CALCULATED TARGET MOP OF PIPELINE SECTION			PSIG



FAILURE LOG

PAGE 8 OF 9

FAILURE:

Date: _____ Time: _____ am / pm Failure Pressure: _____

Apparent Cause: _____

REPAIR:

Describe Repair Method: _____

FAILURE:

Date: _____ Time: _____ am / pm Failure Pressure: _____

Apparent Cause: _____

REPAIR:

Describe Repair Method: _____

FAILURE:

Date: _____ Time: _____ am / pm Failure Pressure: _____

Apparent Cause: _____

REPAIR:

Describe Repair Method: _____

FAILURE:

Date: _____ Time: _____ am / pm Failure Pressure: _____

Apparent Cause: _____

REPAIR:

Describe Repair Method: _____

FAILURE:

Date: _____ Time: _____ am / pm Failure Pressure: _____

Apparent Cause: _____

REPAIR:

Describe Repair Method: _____



SUPPLEMENTARY DOCUMENTATION

PAGE 9 OF 9

The following marked exhibits are attached as a part of this Test Report:

- EXHIBIT NO. 1 ☐ Sketch of Tested Piping (including how section is isolated), with material list
- EXHIBIT NO. 2 ☐ Profile of pipeline section and/or segment
- EXHIBIT NO. 3 ☐ Pressure Chart, with pressure test number, date, test section name, Inspector name and signature
- EXHIBIT NO. 4 ☐ Temperature Chart, with pressure test number, date, test section name, Inspector name and signature
- EXHIBIT NO. 5 ☐ Pressure Recorder Certification Papers
- EXHIBIT NO. 6 ☐ Temperature Recorder Certification Papers
- EXHIBIT NO. 7 ☐ Deadweight or Calibrated Test Gauge Certification Papers
- EXHIBIT NO. 8 ☐ Field test data log, if hand written
- EXHIBIT NO. 9 ☐ Pressure Test Procedure, if applicable, with MOP Area Representative and Engineer signature approval

CERTIFICATION

I certify this pipeline or pipeline section has been tested and successfully met the terms of SBP MOP Establishment and Pressure Testing of Pipelines Technical Guideline and, where applicable, the contract document between SBP and its prime contractor.

MOP Area Representative

By: _____ Date: _____
(Please print) (Signature)

Engineer

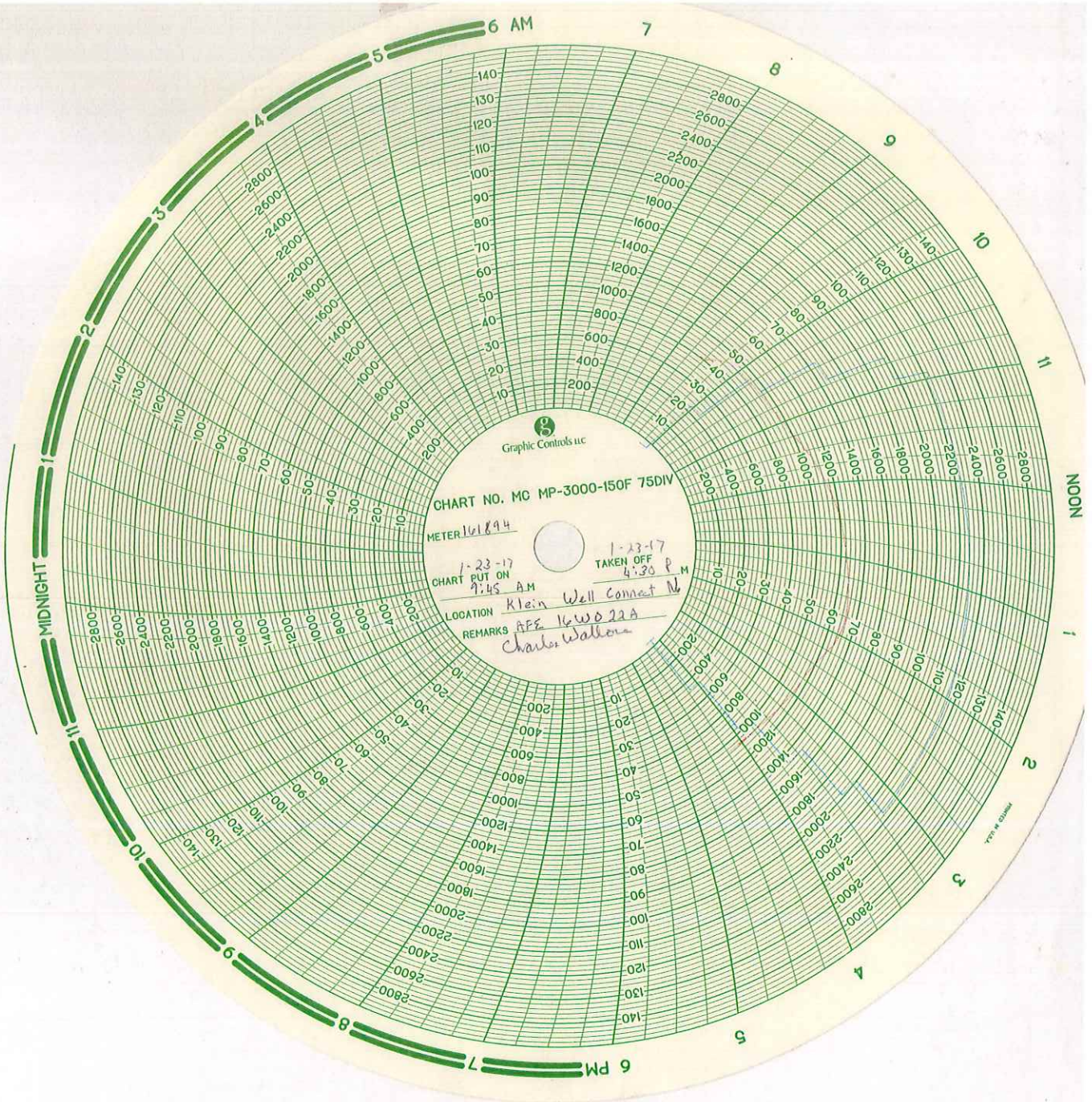
By: _____ Date: _____
(Please print) (Signature)

Inspector

By: Charles Wallace Charles Wallace Date: 1-23-17
(Please print) (Signature)

Name of Testing Contractor

North Wind 3 of Wyoming
By: Dwayne Keys Dwayne Keys Date: 1-23-17
(Please print) (Signature)





Certificate of Calibration

PROCESS MEASUREMENT COMPANY

2475 W. 2ND AVE 34A DENVER, CO , 80223

303-937-7226 Fax: 303-936-2731

www.pmc-calibration.com

CR-2

Prepared For:

PIPELINE SUPPLY AND SERVICE

9700 E 104TH AVE

Certificate Number

883189

Equipment Information

I.D.: CR-2
Manufacturer: CRYSTAL
Model Number: XP2I
Serial Number: 364359
Description: PRESSURE GAGE
Received Cond: OPERABLE

As Found: Fail
Calibration Result: ADJ.
Cal Date: 11/2/2016
Cal. Due Date: 11/2/2017
Cal. Interval: 12 MONTHS
Temp./RH: 71.9F / 21.8 %

Calibration Notes

Test Points

Description	Nominal	Tolerance -	Tolerance +	As Found	As Left	Unit	Notes
Pressure	1000.0	999.0	1001.0	1002.4	1000.4	PSI	
	2000.0	1998.0	2002.0	2001.3	2001.8	PSI	
	3000.0	2997.0	3003.0	3000.8	3000.7	PSI	
	4000.0	3996.0	4004.0	3999.0	4000.5	PSI	
	5000.0	4995.0	5005.0	4999.8	5002.3	PSI	

Standards Used To Calibrate Equipment

Manufacturer	Model	Serial Number	ID Number	Cal. Due Date
AMPROBE	TR300	14040186	PMCD-064	5/16/2017
CHANDLER ENGINEERING CO	23-1	15586	PMCO-134	5/3/2017

Procedure

SCP05-022

Rev

0

Date

2/9/2015

Certified By: *Matthew Knowles*
MATTHEW KNOWLES
CALIBRATION TECHNICIAN

This instrument was calibrated to standards traceable to NIST, or an equivalent National Metrology Institute per the guidelines specified in Z540.1. Unless otherwise stated, the TUR for a given measurement result is 4:1 or greater. Test equipment used to calibrate this instrument are traceable to International System of Units through the National Institute of Standards and Technology (NIST) or equivalent National Metrology Institute. The data provided in this report only apply to the specific item(s) listed on this certificate. This document shall not be reproduced, except in full, without written approval from Process Measurement Company.

PSS-COMPANIES



9700 E. 104TH AVE, UNIT F- HENDERSON, CO 80640 - Phone (303)857-7986 - Fax (303)389-4945

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER: CO

Details +/-: 1.0% ACCURACY

DATE CALIBRATED: 11/12/2016

DUE DATE: 11/12/2017

INDICATED TEMPERATURE RANGE: # 0 – 150°F

INDICATED PRESSURE RANGE: #0 – 3000 PSI

SERIAL NO: 202A-161894

MANUFACTURER: BARTON/ 12" RECORDER

TYPE OF INSTRUMENT CALIBRATED: TEMPERATURE / PRESSURE RECORDER

INSTRUMENT FINDINGS/STATUS: UNIT IS IN TOLERANCE/ INSTRUMENT MEETS OR EXCEEDS SPECIFICATIONS.

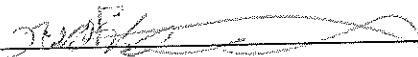
BASED ON INTERNATIONAL STANDARDS OF GRAVITY: (980.665 cm./sq.).

TYPE OF STANDARD USED TO CALIBRATE: REFINERY DEADWEIGHT TEST UNIT SPT. (35225-3) SERIAL No. 5268: KESSLER TEST THERMOMETERS; SERIAL NO. CALIBRATION DATE: SEPTEMBER 14, 2015

ALL STANDARD DIRECTLY TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGIES TEST NO: (N.I.S.T.) 2.6/172490 & 6.6/139577.

CALCULATED USING MASS VALUES, AREA, AO, AND STATED GRAVITY.
ROOM TEMPERATURE/HUMIDITY (AT TIME OF TEST): 66°F / 25%.

CALIBRATED BY: NICK BEDFORD



Klein North (Klein 19MN)
16W022A

1-21-17

J.G.

COPY

