

TEST SPECIFICATIONS						Date:		Select Routing:	
Rangeview Pipeline Well Connect Hydrostatic Test						16-Sep-2015			
Chesnut 28U-HZ Well Pads						Test Number: 1		of 1	
Project Name: Rangeview Pipeline Gathering System				Project I.D. / AFE Number 14CO009		Facility Name or Number Rangeview Pipeline			
Installation Location (M.P. or S.S.):		State:	County/Parish:	Class Location Designation	1	Selected Design Pressure	1480	Planned MAOP	1480
From: 0+00	To: 0+78	CO	Weld						
Project Description:									
Hydrostatic pressure test of the 4" well connect pipe.									
Testing at 1.25*MAOP = 1850 minimum test pressure. 2225 psig Target Test Pressure.									
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 checked="" type="checkbox"/> PRE-INSTALLATION TEST <input 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 type="checkbox"/> Input minimum and maximum pressure of test				Test Duration 8 Hours (min)			
Wall Thickness	0.188	<input type="checkbox"/> Input minimum and maximum %SMYS of test				Section Length 78 Ft.			
SMYS	52,000					Section Fill Volume 64 Gal			
Valve/Flange ANSI Class Rating 600# Valves/Fittings						Max. Elevation Change 2 Ft.			
						Station Equations:			
						Back 0+00 0+00 0+00			
						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	4623	2,600	59.8%	1,850	42.6%	749	2,225	51.2%
HIGH ELEVATION	0+17	4624	2,599	59.8%	1,850	42.6%	749	2,224	51.2%
LOW ELEVATION	0+78	4622	2,600	59.8%	1,851	42.6%	749	2,225	51.2%
END	0+78	4622	2,600	59.8%	1,851	42.6%	749	2,225	51.2%
Chart Location (Test Point)	0+78	4622	2,600	59.8%	1,851	42.6%	749	2,225	51.2%
REMARKS:									
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)						



April 2006

MOP Establishment and Pressure Testing of Pipelines

TG1601.190

PAGE 1 OF 9

LIQUID PIPELINE
PRESSURE TEST
REPORT

Pressure Test Number

1

MOP of tested facility is

PSIG

Company:

Saddle Butte

Operations Area:

Project:

Rangview Gathering System

AFE:

14CD009

Pipeline:

Leg C

Section:

Chestnut West 284-HZ

Station or Milepost

From:

0+00

To:

0+78



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.

East



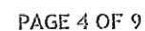
PRESSURE CALCULATIONS

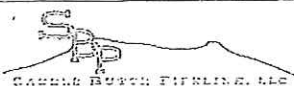
PAGE 3 OF 9

Location of Test Point		Elevation of Test Point		High Point		Low Point	
Chestnut		4622	Ft. (Elevation)	4624	Ft. (Elevation)	4622	Ft. (Elevation)
Well Pad		0+78	Ft. (Station)	0+17	Ft. (Station)	0+78	Ft. (Station)
West				Location Name		Location Name	
Target MOP:		Test Duration: hr		Start Point		End Point	
Target Test Pressure Range		High Point Low Point		4623		4622	
1st Min: Maximum:				0+00		0+78	
2nd Min:				Location Name		Location Name	

TEST LOG

DATE	TIME	PRESSURE	AMBIENT TEMP	BELOW GROUND TEMP	ABOVE GROUND TEMP	REMARKS
9-28-15	7:15A	0	50			Cloudy
	7:30	0	53			built to 500#
	7:30	501	53			
	7:45	501	56			built to 1000#
	7:45	1015	56			
	8:00	1011	56			built to 1500#
	8:00	1510	56			
	8:15	1506	56			built to 2000#
	8:15	2002	56			
	8:30	2000	56			Built to 2225#
*	8:30	2228	56	* Begin Test		Cloudy
	8:45	2228	57			
	9:00	2229	58			
	9:15	2230	60			Cloudy
	9:30	2233	62			
	9:45	2237	64			Mostly Cloudy
	10:00	2243	65			
	10:15	2251	66			Mostly Cloudy
	10:30	2257	68			
	10:45	2267	69			
	11:00	2277	71			Mostly Cloudy
	11:15	2282	72			
	11:30	2291	73			
	11:45	2299	73			
	12:00	2307	74			Mostly Cloudy
	12:15	2309	74			
	12:30	2315	75			
	12:45	2321	76			
	1:00	2326	76			
	1:15	2334	78			Mostly Cloudy
	1:30	2342	78			
	1:45	2345	78			
	2:00	2348	78			
	2:15	2355	79			
	2:30	2363	80			Mostly Cloudy
	2:45	2370	79			
	3:00	2373	79			
	3:15	2379	79			
	3:30	2377	78			





TEST EQUIPMENT

PAGE 5 OF 9

PRESSURE RECORDER 1:

Mfg. ITT Barton
Model _____
Serial No. 242-122850
Range 0-3000 \pm

Notes: Cal on 9-10-15

PRESSURE RECORDER 2:

Mfg. _____
Model _____
Serial No. _____
Range _____

Notes: _____

DEADWEIGHT TESTER OR CALIBRATED TEST GAUGE:

Mfg. Crystal Engineering
Model 2xPi 5000
Serial No. 364359
Date of last Calibration 6-10-15
Calibrated by PSS
Range 0-5000 \pm
Notes: _____

TEMPERATURE RECORDER:

Mfg. _____
Model _____
Serial No. _____
Range _____

Notes: _____

CALIBRATION OF TEMPERATURE RECORDER

Temperature recorder reading

Test mercury thermometer reading

Remarks

CALIBRATION OF PRESSURE RECORDER 1

Pressure recorder reading

Deadweight tester reading

Remarks

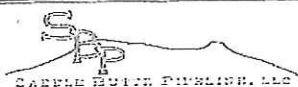
CALIBRATION OF PRESSURE RECORDER 2

Pressure recorder reading

Deadweight tester reading

Remarks

NOTES



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 9-28-15 Time 7:15 Am
Test Point Location Chestnut West Pad
Test Medium Water Test Duration 8 hr
Specific Gravity of Test Medium _____
Min. Test Press. at test site 125% of min. MOP + elv. 110%
Maximum allowable % of SMYS = 100%

2. Pipe Specifications:

Manufacture Type _____

Pipe (#1) O.D. 4.5" MOP _____
Grade X-52 SMYS _____ Seam Joint Factor _____
Wall thickness .188 Design Factor (F) _____
Length (ft.): 78 Volume _____
Max allowable test pressure, psig _____

3. Pipe Specifications:

Manufacture Type _____

Pipe (#2) O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____
Length (ft.): _____ Volume _____
Max allowable test pressure, psig _____

4. Pipe Specifications:

Manufacture Type _____

Pipe (#3) O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____
Length (ft.): _____ Volume _____
Max allowable test pressure, psig _____

5. Pipe Specifications:

Manufacture Type _____

Pipe (#4) O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____
Length (ft.): _____ Volume _____
Max allowable test pressure, psig _____

6. Pipe Specifications:

Manufacture Type _____

Pipe (#5) O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____
Length (ft.): _____ Volume _____
Max allowable test pressure, psig _____

7. Pipe Specifications:

Manufacture Type _____

Pipe (#6) O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____
Length (ft.): _____ Volume _____
Max allowable test pressure, psig _____

8. Pipe Fittings Specifications:

Manufacture Type _____

Fitting Description _____

Pipe Fitting O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____

Max allowable test pressure, psig _____

9. Pipe Fittings Specifications:

Manufacture Type _____

Fitting Description _____

Pipe Fitting O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____

Max allowable test pressure, psig _____

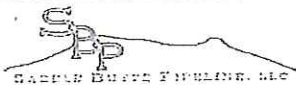
10. Pipe Fittings Specifications:

Manufacture Type _____

Fitting Description _____

Pipe Fitting O.D. _____ MOP _____
Grade _____ SMYS _____ Seam Joint Factor _____
Wall thickness _____ Design Factor (F) _____

Max allowable test pressure, psig _____



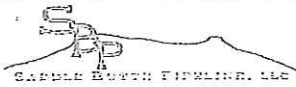
EQUIPMENT CALCULATED MOP SUMMARY WORKSHEET
(continued)

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: _____

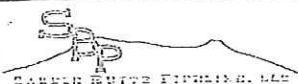
FAILURE:

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

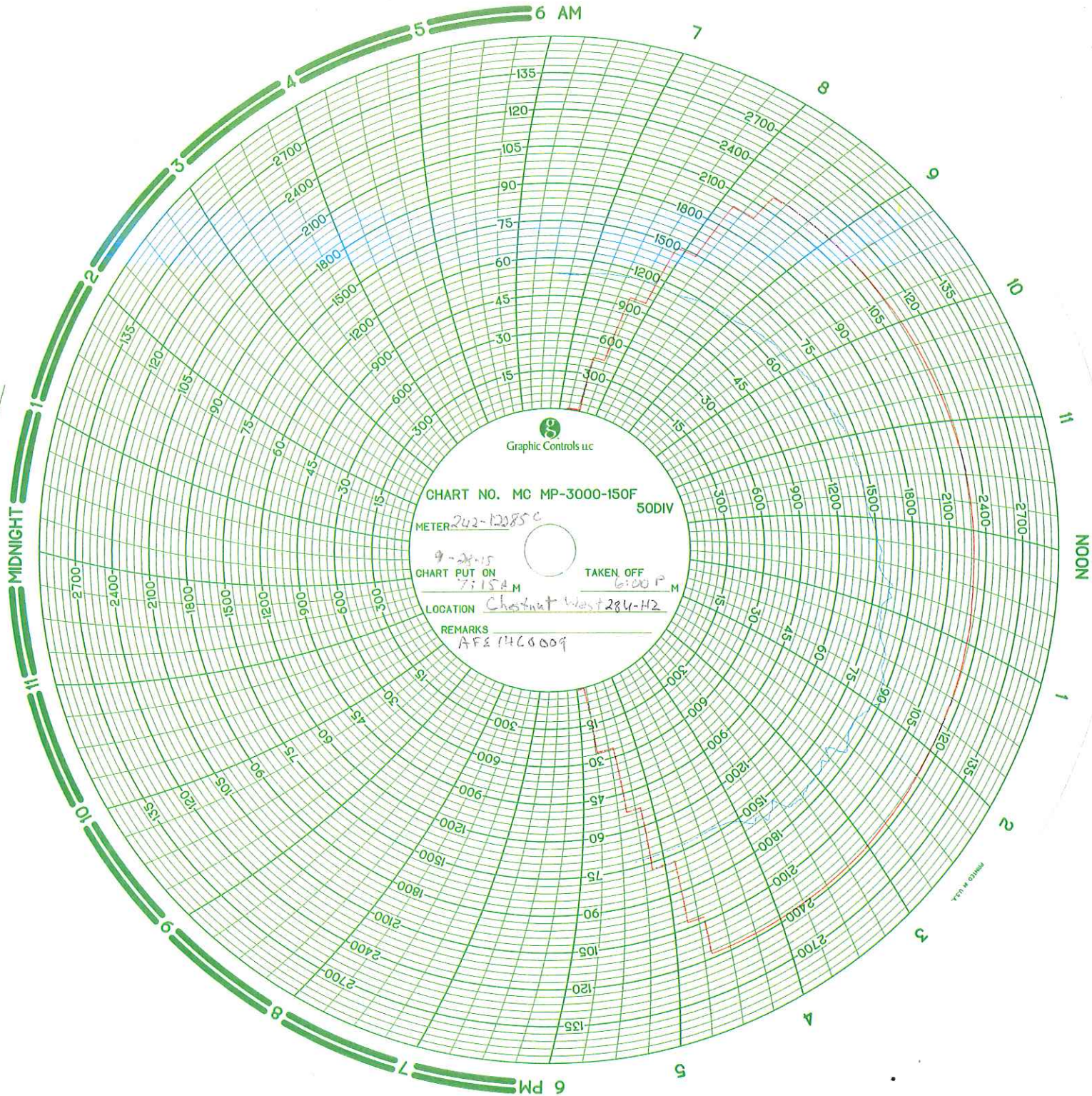
By: _____ Date: _____
(Please print) (Signature)

Inspector

By: Charles Wallace Charles Wallace Date: 9-28-15
(Please print) (Signature)

Name of Testing Contractor

By: North Winds of Wyoming [Signature] Date: 9-28-15
(Please print) (Signature)



Dir Gauge

PSS-COMPANIES



2070 South 4250 West - Salt Lake City, Utah 84104 - Phone (801) 363-1933 - Fax (801) 531-9548

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER: UT 61015-2

Details+/-: 0.05% ACCURACY

DATE CALIBRATED: 06-10-2015

DUE DATE: 06-10-2016

INDICATED PRESSURE RANGE: # 0 – 5,000 PSI

SERIAL NO: 364359

MANUFACTURER: CRYSTAL / XP2 i

PRESSURE INSTRUMENT: # 0 – 5,000 PSI / DIGITAL GAUGE

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

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

BASED ON CLAIBRATED PISTON AREA: (0.3969154 cm./sq.) (0.061522 cm./sq.)

TYPE OF STANDARD USED TO CALIBRATE: AMERI-WEIGHT DEADWEIGHT TEST UNIT SPT. (50-05-B) SERIAL No. 1031; CALIBRATION DATE: JULY 14, 2014

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, A_o, AND STATED GRAVITY.

ROOM TEMPERATURE/HUMIDITY (AT TIME OF TEST): 77°F (25°C)/ 40%

CALIBRATED BY: TYLER HALL

SIGNATURE

PSS-COMPANIES



2070 South 4250 West - Salt Lake City, Utah 84104 - Phone (801) 363-1933 - Fax (801) 531-9548

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER: UT 22315-6

Details +/-: 0.05% ACCURACY

DATE CALIBRATED: 02-23-2015
DUE DATE: 02-23-2016
INDICATED TEMPERATURE RANGE: # 0 - 150°F
INDICATED PRESSURE RANGE: # 0 - 3,000 PSI
SERIAL NO: 242 - 122850
MANUFACTURER: BARTON / 12" CHART 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.).

BASED ON CALIBRATED PISTON AREA: (0.3969154 cm./sq.) (0.061522 cm./sq.).

TYPE OF STANDARD USED TO CALIBRATE: CHANDLER DEADWEIGHT TEST UNIT SPT. (55-100-B) SERIAL No. 25985; KESSLER TEST THERMOMETERS; SERIAL NO. 87B2276 & 403751. CALIBRATION DATE: MAY 07, 2014

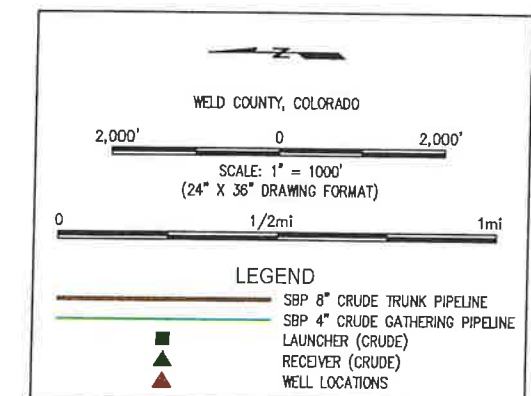
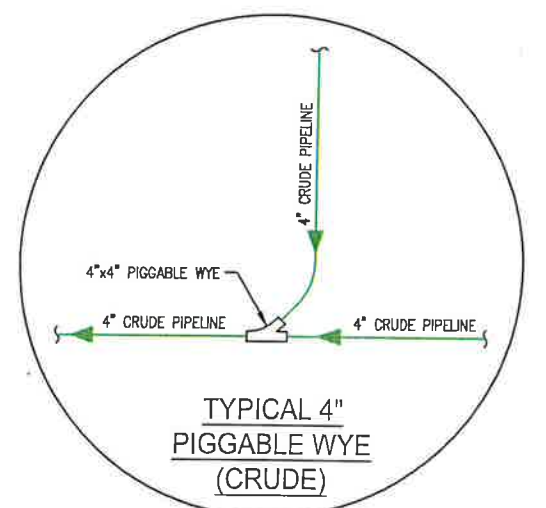
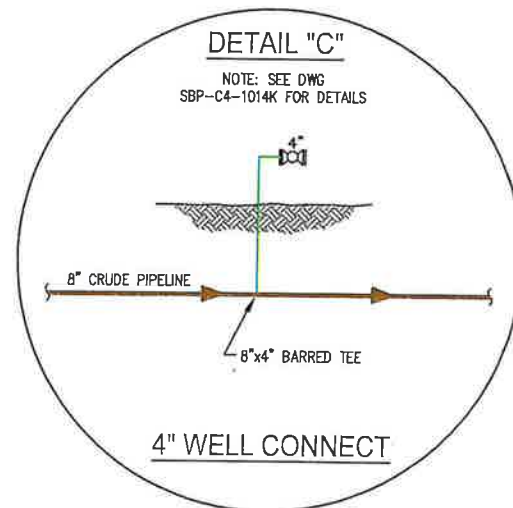
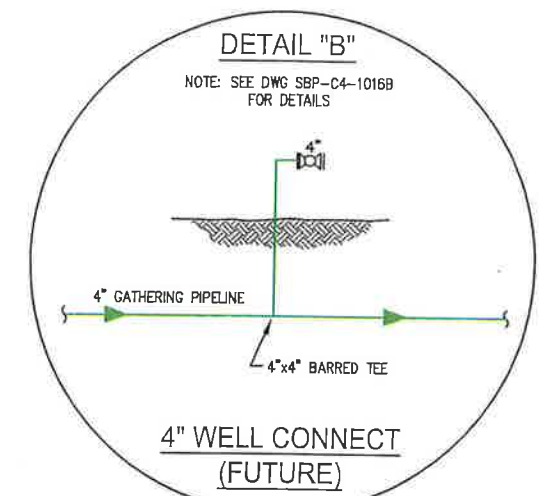
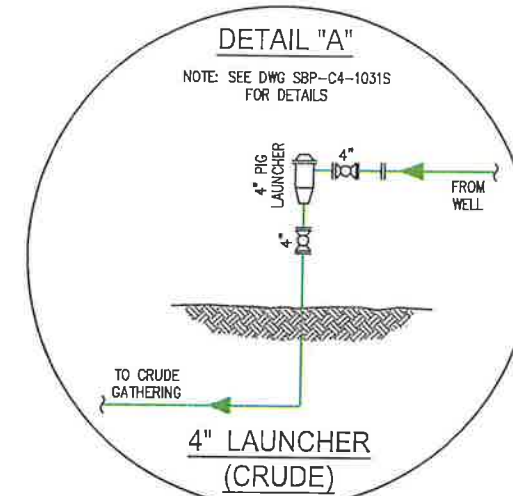
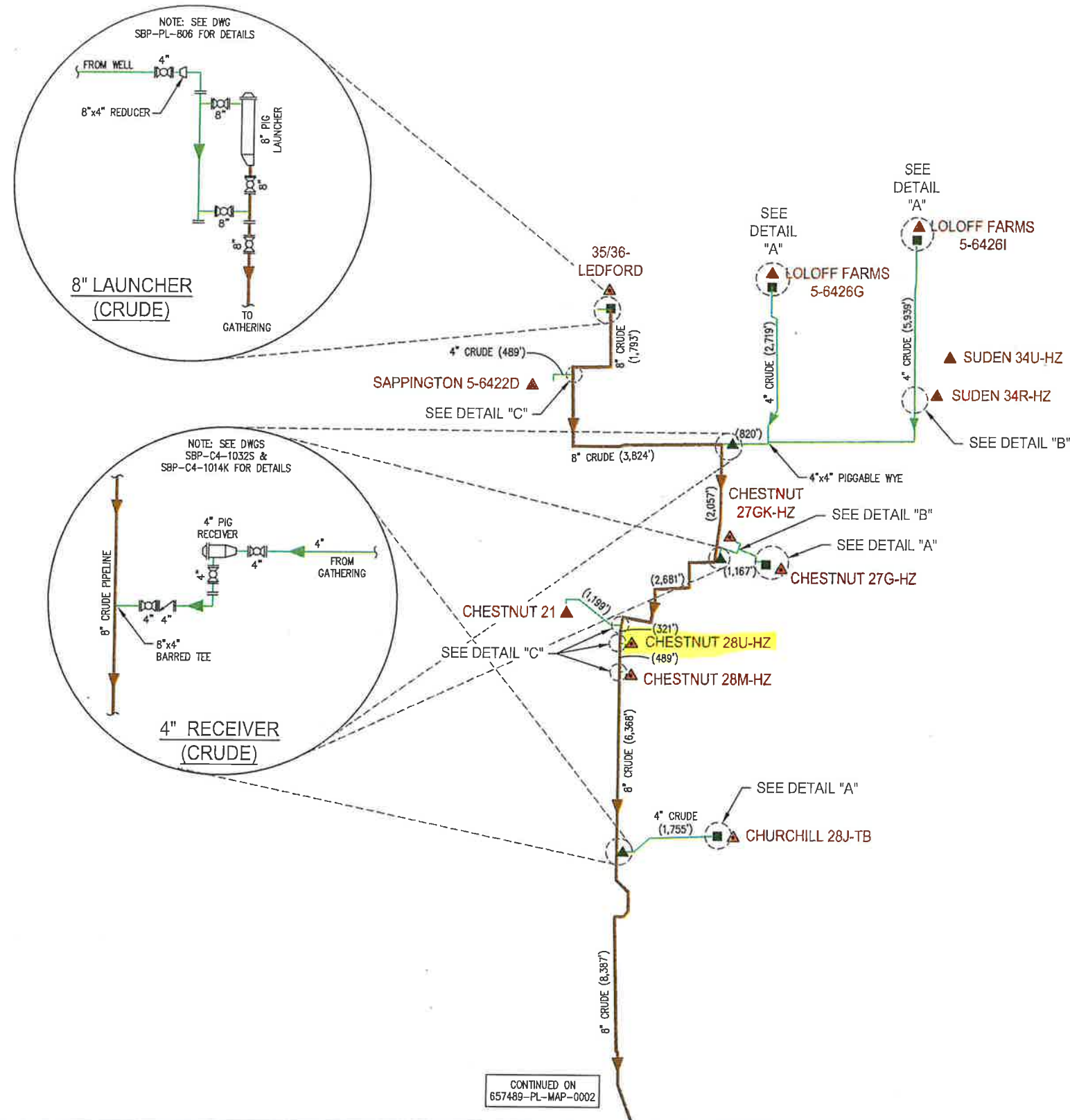
ALL STANDARD DIRECTLY TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGIES TEST NO: (N.I.S.T.) 2.6/172490 & 6.6/139577.

CALCULATED USING MASS VALUES, AREA, AO, AND STATED GRAVITY.
ROOM TEMPERATURE/HUMIDITY (AT TIME OF TEST): 77°F (25°C)/ 40%.

CALIBRATED BY: TYLER HALL



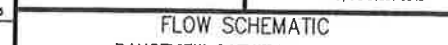

SIGNATURE

Uced



NOTES:

- 1) FLOW SCHEMATIC IS FOR GRAPHICAL REPRESENTATION ONLY.
- 2) ALL GAS, WATER, AND UTILITY LINES SHOULD BE LOCATED PRIOR TO ANY EXCAVATING, DIGGING, OR TRENCHING ANYWHERE ON OR NEAR THIS SITE.
- 3) CH2M HILL ASSUMES NO RESPONSIBILITY FOR THE SPECIFIC LOCATION OF WATER, OR UTILITY LINES THAT MAY BE PRESENT ON OR NEAR THIS SITE, NOR IS ANY LIABILITY ASSUMED FOR ANY LEGAL ACTION WHICH RESULTS FROM A DISCOVERY OF A GAS, WATER, OR UTILITY LINE IN ADDITION TO OR IN A DIFFERENT LOCATION THAN SHOWN ON THIS PLAN.
- 4) COORDINATE SYSTEM BASED ON NAD 83 COLORADO STATE PLANE, NORTH ZONE.
- 5) PROPOSED PIPELINE ROUTES FROM IMPORTED SHAPE FILES PROVIDED BY SADDLE BUTTE PIPELINE, LLC.

REFERENCE DRAWINGS			REVISIONS							DRAWN BY: TMM 01/28/15		PREPARED FOR:  SADDLE BUTTE PIPELINE  CH2MHILL 150 TECH CENTER DRIVE, SUITE E DURANGO, CO 81301-6840	 FLOW SCHEMATIC RANGEVIEW GATHERING SYSTEM WELD COUNTY, COLORADO			
DWG. NO.	TITLE	NO.	DESCRIPTION	DATE	BY	CHK	APPR.	CHECKED BY: JK 02/04/15	REVIEWED BY: JK 02/04/15	APPROVED BY:	SCALE: SCALE: 1" = 1000'			PROJECT NUMBER 6574RQ	DRAWING NUMBER 6574RQ-D1-MAP-0001	REV F