


Rev3																																																																					
 <b>TEST SPECIFICATIONS</b> <b>Black Diamond Gathering, LLC - Pressure Test</b> Echeverria Well Connect					Date: 15-Apr-2019		Select Routing: Test Number: 1 of 1																																																														
Project Name: Echeverria Well Connect			Project I.D. / AFE Number 5000415			Facility Name or Number Echeverria Well Connect - BDO-04-MVD-200-L1-2																																																															
Contractor / Testing Company: Northwinds			Technician																																																																		
Installation Location (M.P. or S.S.):			State: CO	County/Parish: Weld	Class Location Designation N/A	Selected Design Pressure 1480	Planned MAOP 1480																																																														
0+00 to 38+95 Lat: 40°10'34.90"N to 40°10'15.98"N Long: 104°51'28.89"W to 104°51'55.08"W																																																																					
Project Description: Hydrostatic pressure test of 3,895' of 4" Carbon Steel.																																																																					
Testing at 1.25*MAOP = 1850 psig minimum test pressure. 2038 psig Target Test Pressure at Chart Location Max Test Pressure for ANSI 600 Valves and Fittings is 2660 psig where they are located.																																																																					
LEAK ONLY TEST <input type="checkbox"/> STRENGTH TEST <input type="checkbox"/> FABRICATION <input type="checkbox"/> NEW CONSTRUCTION <input 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 type="checkbox"/>																																																																					
Minimum Component Characteristics <b>Pipe Information</b> <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>O.D.</td><td>4.5</td></tr> <tr><td>Wall Thickness</td><td>0.188</td></tr> <tr><td>SMYS</td><td>52,000</td></tr> <tr><td>Grade</td><td>X52</td></tr> </table> <b>Valve/Flange ANSI Class Rating</b> 600# Valves/Fittings			O.D.	4.5	Wall Thickness	0.188	SMYS	52,000	Grade	X52	Test Design Criteria Test Pressure Calculations <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> Input minimum and maximum pressure of test</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Input minimum and maximum %SMYS of test</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Pressure (psig)    % PIPE SMYS</td> </tr> <tr> <td>Max. Test Pressure (Pipe)</td> <td style="text-align: center;">2220    51.1%</td> </tr> <tr> <td>Max. Test Pressure (Valves and Fittings)</td> <td style="text-align: center;">2220    51.1%</td> </tr> <tr> <td>Min.</td> <td style="text-align: center;">1850    42.6%</td> </tr> </table>			<input type="checkbox"/> Input minimum and maximum pressure of test		<input type="checkbox"/> Input minimum and maximum %SMYS of test			Pressure (psig)    % PIPE SMYS	Max. Test Pressure (Pipe)	2220    51.1%	Max. Test Pressure (Valves and Fittings)	2220    51.1%	Min.	1850    42.6%	Test Section - Reference Data <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Test Medium</td> <td>Water</td> <td></td> </tr> <tr> <td>Test Duration</td> <td>8 hour</td> <td>Hours (min)</td> </tr> <tr> <td>Section Length</td> <td>3,895</td> <td>Ft.</td> </tr> <tr> <td>Section Fill Volume</td> <td>3,218</td> <td>Gal</td> </tr> <tr> <td>Max. Elevation Change</td> <td>52</td> <td>Ft.</td> </tr> <tr> <td>Station Equations:</td> <td>1</td> <td>2</td> </tr> <tr> <td>Back</td> <td>0+00</td> <td>0+00</td> </tr> <tr> <td>Ahead</td> <td>0+00</td> <td>0+00</td> </tr> </table>				Test Medium	Water		Test Duration	8 hour	Hours (min)	Section Length	3,895	Ft.	Section Fill Volume	3,218	Gal	Max. Elevation Change	52	Ft.	Station Equations:	1	2	Back	0+00	0+00	Ahead	0+00	0+00																
O.D.	4.5																																																																				
Wall Thickness	0.188																																																																				
SMYS	52,000																																																																				
Grade	X52																																																																				
<input type="checkbox"/> Input minimum and maximum pressure of test																																																																					
<input type="checkbox"/> Input minimum and maximum %SMYS of test																																																																					
	Pressure (psig)    % PIPE SMYS																																																																				
Max. Test Pressure (Pipe)	2220    51.1%																																																																				
Max. Test Pressure (Valves and Fittings)	2220    51.1%																																																																				
Min.	1850    42.6%																																																																				
Test Medium	Water																																																																				
Test Duration	8 hour	Hours (min)																																																																			
Section Length	3,895	Ft.																																																																			
Section Fill Volume	3,218	Gal																																																																			
Max. Elevation Change	52	Ft.																																																																			
Station Equations:	1	2																																																																			
Back	0+00	0+00																																																																			
Ahead	0+00	0+00																																																																			
<b>Test Pressures</b> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Station</th> <th>Elevation (feet)</th> <th>Max. psig.</th> <th>% SMYS @ Max.</th> <th>Min. psig.</th> <th>% SMYS @ Min.</th> <th>Variance psig.</th> <th>Target psig.</th> <th>% SMYS @ Target</th> </tr> </thead> <tbody> <tr> <td>BEGIN</td> <td>0+00</td> <td>4847</td> <td>2,213</td> <td>50.9%</td> <td>1,865</td> <td>42.9%</td> <td>347</td> <td>2,038</td> <td>46.9%</td> </tr> <tr> <td>HIGH ELEVATION</td> <td>38+95</td> <td>4882</td> <td>2,197</td> <td>50.6%</td> <td>1,850</td> <td>42.6%</td> <td>347</td> <td>2,023</td> <td>46.6%</td> </tr> <tr> <td>LOW ELEVATION</td> <td>10+60</td> <td>4830</td> <td>2,220</td> <td>51.1%</td> <td>1,873</td> <td>43.1%</td> <td>347</td> <td>2,046</td> <td>47.1%</td> </tr> <tr> <td>END</td> <td>38+95</td> <td>4882</td> <td>2,197</td> <td>50.6%</td> <td>1,850</td> <td>42.6%</td> <td>347</td> <td>2,023</td> <td>46.6%</td> </tr> <tr> <td>Chart Location (Test Point)</td> <td>0+00</td> <td>4847</td> <td>2,213</td> <td>50.9%</td> <td>1,865</td> <td>42.9%</td> <td>347</td> <td>2,038</td> <td>46.9%</td> </tr> </tbody> </table>										Location	Station	Elevation (feet)	Max. psig.	% SMYS @ Max.	Min. psig.	% SMYS @ Min.	Variance psig.	Target psig.	% SMYS @ Target	BEGIN	0+00	4847	2,213	50.9%	1,865	42.9%	347	2,038	46.9%	HIGH ELEVATION	38+95	4882	2,197	50.6%	1,850	42.6%	347	2,023	46.6%	LOW ELEVATION	10+60	4830	2,220	51.1%	1,873	43.1%	347	2,046	47.1%	END	38+95	4882	2,197	50.6%	1,850	42.6%	347	2,023	46.6%	Chart Location (Test Point)	0+00	4847	2,213	50.9%	1,865	42.9%	347	2,038	46.9%
Location	Station	Elevation (feet)	Max. psig.	% SMYS @ Max.	Min. psig.	% SMYS @ Min.	Variance psig.	Target psig.	% SMYS @ Target																																																												
BEGIN	0+00	4847	2,213	50.9%	1,865	42.9%	347	2,038	46.9%																																																												
HIGH ELEVATION	38+95	4882	2,197	50.6%	1,850	42.6%	347	2,023	46.6%																																																												
LOW ELEVATION	10+60	4830	2,220	51.1%	1,873	43.1%	347	2,046	47.1%																																																												
END	38+95	4882	2,197	50.6%	1,850	42.6%	347	2,023	46.6%																																																												
Chart Location (Test Point)	0+00	4847	2,213	50.9%	1,865	42.9%	347	2,038	46.9%																																																												
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.																																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="3">PRE-TEST APPROVAL / REVIEWED BY:</td> <td colspan="3">TEST PERFORMED / ACCEPTED BY:</td> <td colspan="3">POST-TEST REVIEWED BY:</td> </tr> <tr> <td>Originator/Project Manager (Signature) Craig Melton</td> <td>Date: 04/15/2019</td> <td></td> <td>Test Performed by (Signature): [Signature]</td> <td>Date: 4-17-19</td> <td></td> <td>Construction Manager (signature) [Signature]</td> <td>Date: 4-18-19</td> <td></td> </tr> <tr> <td>Designed Reviewed if applicable (Signature)</td> <td>Date:</td> <td></td> <td>Company Name (for Contractor or for Employee): Northwinds of Wyoming</td> <td>Date: 4-17-19</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Compliance (Signature)</td> <td>Date:</td> <td></td> <td>Witnessed &amp; Accepted by Company Representative: [Signature]</td> <td>Date: 4-17-19</td> <td></td> <td>Actual MAOP</td> <td></td> <td></td> </tr> </table>										PRE-TEST APPROVAL / REVIEWED BY:			TEST PERFORMED / ACCEPTED BY:			POST-TEST REVIEWED BY:			Originator/Project Manager (Signature) Craig Melton	Date: 04/15/2019		Test Performed by (Signature): [Signature]	Date: 4-17-19		Construction Manager (signature) [Signature]	Date: 4-18-19		Designed Reviewed if applicable (Signature)	Date:		Company Name (for Contractor or for Employee): Northwinds of Wyoming	Date: 4-17-19					Compliance (Signature)	Date:		Witnessed & Accepted by Company Representative: [Signature]	Date: 4-17-19		Actual MAOP																										
PRE-TEST APPROVAL / REVIEWED BY:			TEST PERFORMED / ACCEPTED BY:			POST-TEST REVIEWED BY:																																																															
Originator/Project Manager (Signature) Craig Melton	Date: 04/15/2019		Test Performed by (Signature): [Signature]	Date: 4-17-19		Construction Manager (signature) [Signature]	Date: 4-18-19																																																														
Designed Reviewed if applicable (Signature)	Date:		Company Name (for Contractor or for Employee): Northwinds of Wyoming	Date: 4-17-19																																																																	
Compliance (Signature)	Date:		Witnessed & Accepted by Company Representative: [Signature]	Date: 4-17-19		Actual MAOP																																																															





# Pipeline Pressure Test Documentation

## Pressure Test Report

Form :

Revision  
3

Revision Date

Project Name : Echeverria Well Connect

AFE No. : 5000415

Contractor / Testing Company : Northwinds

Technician : Reuben

Test Section No. : 0

From Station No. : 0+00

Test Description : Hydrostatic pressure test of 3,895' of 4" Carbon Steel.

To Station No. : 38+95

Test Type : Subpart E Test

Start of Test Period : Date : 5-17-19

Time : 5:45 AM

Min. Test Duration : 8 hour

End of Test Period : Date : 5-17-19

Time :

Class Location : Not Applicable (Liquids)

Low Strength Pipe : O.D. : 4.500 W.T. : 0.188 SMYS : 52,000 Grade : X52 Station Piping : Yes

Test Medium : Water Source of Medium : N/A

Corrosion Inhibitor : No Inhibitor Type : N/A Rate : N/A

Leak Detection : No Material Type : N/A Rate : N/A

Deadweight Tester : Mfg : Crystal Eng.

Serial # :

Calibration Date :

Deadweight Tester Location : Station No. (ESN) : 0+00

Elevation (ft) : 4,847

Pressure Recorder : Mfg : Tech Cal

Serial # : 09353

Calibration Date :

Pipe Temp. Recorder : Mfg : Tech Cal

Serial # : 09353

Calibration Date :

### Target Test Pressure Range

Pre-approved Target Test Pressure : 2,038.0 psig

Maximum Test Pressure : 2,220.0 psig

Max Elevation Change : 52

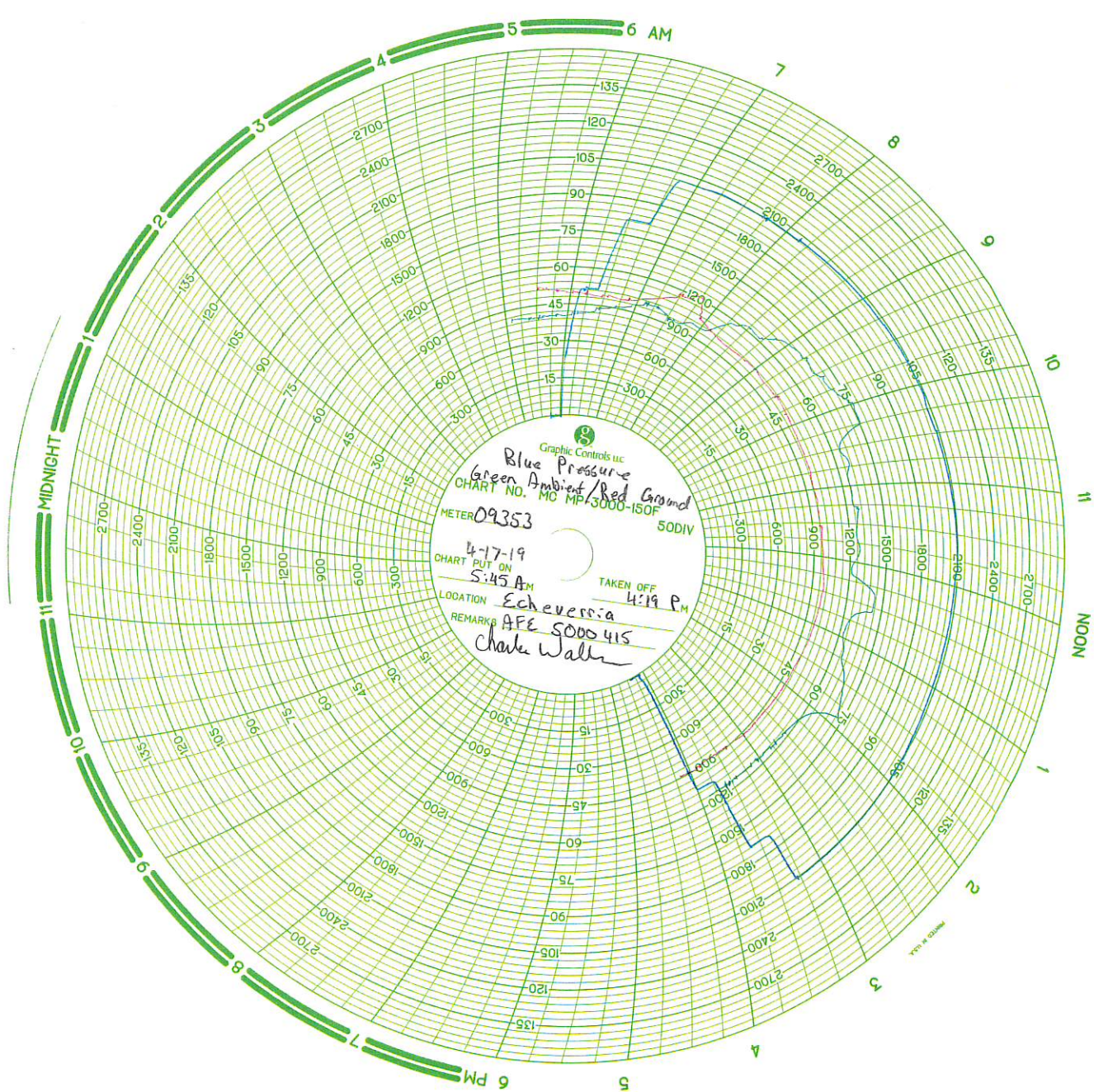
Minimum Test Pressure : 1,850.0 psig

Time	Pressure (psig)	Pipe Temp.	Amb. Temp.	Weather	Visual Inspection	Comments
5:45 AM	0	51	41	mostly cloudy		
6:00	0	51	41			Build to 1019
6:09	1020	51	41			hold 15 minutes
6:24	1022	51	41			Build to 1630
6:29	1632	50	41			hold 15 minutes
6:44	1632	50	41			Build to 2038
6:48	2038	50	42			
7:00	2038	50	43	cloudy	NO LEAKS	*BEGIN TEST*
7:15	2038	50	44	N wind @ 11		
7:30	2038	50	46			
7:45	2038	50	47			
8:00	2038	50	48			Redig the hole for the below ground pipe Temp probe
8:30	2040	50	48			
9:00	2046	50	49	Mostly Sunny		
9:30	2052	50	50	N wind @ 15		
10:00	2059	49	52			
10:05	2060	49	53			Bleed down to 2040
10:05	2040	49	54			
10:30	2046	49	56			
11:00	2051	49	56		NO LEAKS	
11:30	2057	49	57			
11:50	2060	49	57			Bleed down to 2040
11:51	2040	49	57			
12:00 PM	2041	49	57	cloudy		

wind @ 2

[illegible]







9829 E. Easter Ave. • Centennial, CO 80112  
303.794.8833 • Fax 303.730.1220  
Toll Free 1.800.327.7257  
www.jmcinstruments.com



CR-4

### CERTIFIED CALIBRATION

CUSTOMER Cross Country ORDER NO. \_\_\_\_\_

ITEM Digital Gauge RANGE 0-5000PSIG ITEM NO. 4901-2

TRUE VALUE	INDICATED VALUE	
	INCREASING READINGS	DECREASING READINGS
PSIG		
0.00	0	0
500.00	500.0	500.0
1000.00	1000.0	1000.0
1500.00	1499.9	1500.0
2000.00	1999.8	1999.9
2500.00	2499.5	2499.7
3000.00	2999.6	2999.7
3500.00	3499.6	3499.8
4000.00	3999.7	3999.8
4500.00	4499.8	4499.9
5000.00	4999.7	4999.7

Tested On: Deadweight Tester S/N# 1GA4474

Traceable to National Institute of Standards and Technology certificate  
# 17-043

Tested By: Brian McLain Date 1 March 2019

Remarks:

Crystal	XP2i	SN	822296
Accuracy is +/-	0.025	% of Full Scale or Better	
Test Conditions	67 °F;	610	mmHg Atm. Pressure



C-7

# PSS-COMPANIES



9700 E. 104<sup>TH</sup> 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: 03/27/2019

DUE DATE: 03/27/2020

INDICATED TEMPERATURE RANGE: # 0 – 150°F

INDICATED PRESSURE RANGE: #0 – 3000 PSI

SERIAL NO: 09353

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

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): 73°F / 31%.

CALIBRATED BY: NICK BEDFORD

SIGNATURE

[illegible]