


Rev3																																																																									
 TEST SPECIFICATIONS Black Diamond Gathering, LLC - Pressure Test Herren Well Connect					Date: 1-Mar-2019		Select Routing: Test Number: 1 of 1																																																																		
Project Name: Herren Well Connect			Project I.D. / AFE Number 5000341			Facility Name or Number Herren - BDO-04-MVD-200-L1-1																																																																			
Contractor / Testing Company: Northwinds of Wyoming Construction			Technician Charlie Wallace			Company Representation Charlie Wallace																																																																			
Installation Location (M.P. or S.S.): 0+00 to 128+01.4			State: CO		County/Parish: Weld		Class Location Designation N/A		Selected Design Pressure 1480	Planned MAOP 1400																																																															
Lat: 40.177754 to Lat: 40.18246 Long: 104.85318 to Long: 104.88624																																																																									
Project Description: Hydrostatic pressure test of 12,864' of 4" Carbon Steel. Testing at 1.25*MAOP = 1850 psig minimum test pressure. 2034 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 Pipe Information <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> Valve/Flange ANSI Class Rating 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 colspan="2"></td> </tr> <tr> <td><input type="checkbox"/> Input minimum and maximum %SMYS of test</td> <td colspan="2"></td> </tr> <tr> <td></td> <td style="text-align: center;">Pressure (psig)</td> <td style="text-align: center;">% PIPE SMYS</td> </tr> <tr> <td>Max. Test Pressure (Pipe)</td> <td style="text-align: center;">2220</td> <td style="text-align: center;">51.1%</td> </tr> <tr> <td>Max. Test Pressure (Valves and Fittings)</td> <td style="text-align: center;">2545</td> <td style="text-align: center;">58.6%</td> </tr> <tr> <td>Min.</td> <td style="text-align: center;">1850</td> <td style="text-align: center;">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)	2545	58.6%	Min.	1850	42.6%	Test Section - Reference Data <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Test Medium</td> <td colspan="2">Water</td> </tr> <tr> <td>Test Duration</td> <td>8 hour</td> <td>Hours (min)</td> </tr> <tr> <td>Section Length</td> <td>12,864</td> <td>Ft.</td> </tr> <tr> <td>Section Fill Volume</td> <td>10,627</td> <td>Gal</td> </tr> <tr> <td>Max. Elevation Change</td> <td>82</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	12,864	Ft.	Section Fill Volume	10,627	Gal	Max. Elevation Change	82	Ft.	Station Equations:	1	2	Back	0+00	0+00	Ahead	0+00	0+00													
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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.																																																																									
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Pipeline Pressure Test Documentation

Pressure Test Report

Form :

Revision

3

Revision Date

Project Name : Herren Well Connect

AFE No. : 5000341

Contractor / Testing Company : Northwinds of Wyoming Construction

Technician : R. W. B. R. N.

Test Section No. : 0

From Station No.: 0+00

Test Description: Hydrostatic pressure test of 12,864' of 4" Carbon Steel.

To Station No.: 128+01.4

Test Type : Subpart E Test

Start of Test Period : Date :

3-10-2019

Time : 7:00 AM

Min. Test Duration : 8 hour

End of Test Period : Date :

3-10-2019

Time : 5:55 PM

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 #: 822296

Calibration Date : 3-1-19

Deadweight Tester Location : Station No. (ESN) :

0+00

Elevation (ft) :

4,832

Pressure Recorder : Mfg Barton

Serial #: 202A-161894

Calibration Date : 12-4-18

Pipe Temp. Recorder : Mfg Barton

Serial #: 202A-161894

Calibration Date : 12-4-18

Target Test Pressure Range

Pre-approved Target Test Pressure : 2,034.0 psig

Maximum Test Pressure : 2,220.0 psig

Max Elevation Change: 82

Minimum Test Pressure : 1,850.0 psig

Time	Pressure (psig)	Pipe Temp	Amb. Temp.	Weather	Visual Inspection	Comments
7:00 AM	0	36	24	cloudy		
7:15	0	36	24			Build to 50% - 1016
7:40	1012	36	26	mostly cloudy	OK	Hold 15 min
7:55	1012	36	27			Build to 40% - 1627
8:02	1626	36	27		OK	Hold 15 min
8:17	1626	36	29			Build to 100% - 2034
8:22	2037	36	29			Hold
* 8:30	2037	36	29	Partly Cloudy	OK	BEGIN TEST *
8:45	2037	36	30	Wind West	NO LEAKS	
9:00	2037	36	30	@ 5 MPH		
9:15	2037	36	31			
9:30	2037	36	31	Mostly Sunny		
10:00	2037	36	32			
10:30	2038	36	33	Sunny		
11:00	2038	36	34			
11:30	2038	36	37			
12:00P	2039	36	40			
12:30	2039	36	42	Sunny	NO LEAKS	
1:00	2039	36	43			

[illegible]

Cross Country Pipeline Supply CO. Inc

Sales and Service

2251 Rifle Street - Aurora, Colorado 80011

Phone 303.361.6797 Fax 303.361.6836

C-4

NIST CALIBRATION DATA

Model Number	Serial Number	Customer	Range	Accuracy
J-W Measure	202A-161894	NorthWinds of Wy.	3000# - 150F	1/2%
Work Performed:		Calibration: Output/Reading	Results: Pressure	
Calibrate to Mfg. Spec.		0 PSI	0 PSI	
		600 PSI	600 PSI	
		1200 PSI	1200 PSI	
		1800 PSI	1800 PSI	
		2400 PSI	2400 PSI	
		3000 PSI	3000 PSI	
		33 Deg	33 DEG	
		57 DEG	57 DEG	
		100 DEG	100 DEG	
150 DEG	150 DEG			
PO Number		Sales Order Number	Date of Test	
Recalibrated		Recerted	12/4/2018 12:25:33 PM	

Remarks: ALL CALIBRATIONS ARE GOOD FOR ONE YEAR FROM DATE OF TEST

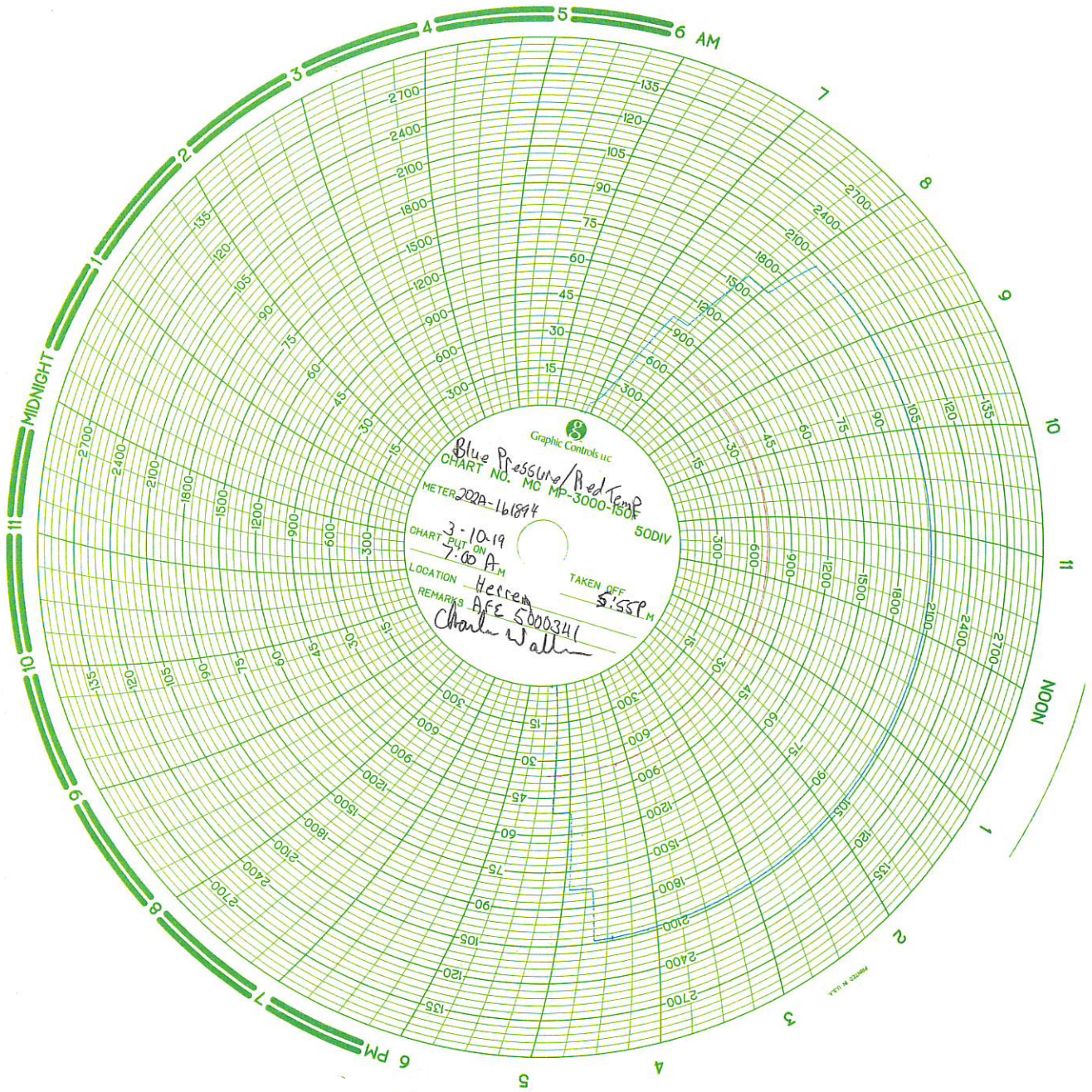
Standard Used:

Manufacturer	Model	Instrument	Calibration Date	Certification #
Perma-Cal	101FTM15B21	Pressure Gauge	08/08/2018	17-043
Tech Instrumentation	TM99A	Thermometer	08/18/2018	59448

Don F.

Signature

Don Erick 12-4-18



Certificate of Calibration

Calibrations comply with
ISO/IEC 17025:2005 and
ANSI NCSL Z540-1-1994



CR-4

Device Information

Model	5KPSIXP2I
Serial Number	822296
Water Column (@ 1 Atm)	4° C
Calibration Date	18 October 2018
Verification Date	18 October 2018
As Received Condition	New
As Left Condition	In Tolerance

Laboratory Conditions

Laboratory ambient conditions throughout this calibration	
Temperature	19 to 23° C
Humidity	20 to 60% RH

Definitions

Temperature Measured temperature of Device Under Test (DUT) during data collection.
Reference Reading True value according to our reference standards.
Indicated Reading Displayed reading from test unit.
Condition Pass or Fail.
Difference Indicated reading minus reference reading.
Relative Difference (Difference / reference reading) x 100.
Allowable Tolerance ± according to manufacturer's specifications.
Pressure Medium Nitrogen.

Traceability Statement

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology of the United States (NIST) or other NMI.

System Expanded Uncertainty

System expanded uncertainty evaluation includes the calibration reference used and device under test and is calculated in accordance with ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainties reported represent expanded uncertainties using a coverage factor (k) to approximate a percentage (%) confidence level. In Tolerance or Pass conditions are based on test results falling within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. Test methods defined by COI-054.

Coverage Factor (k)	2
Confidence Level (%)	~ 95

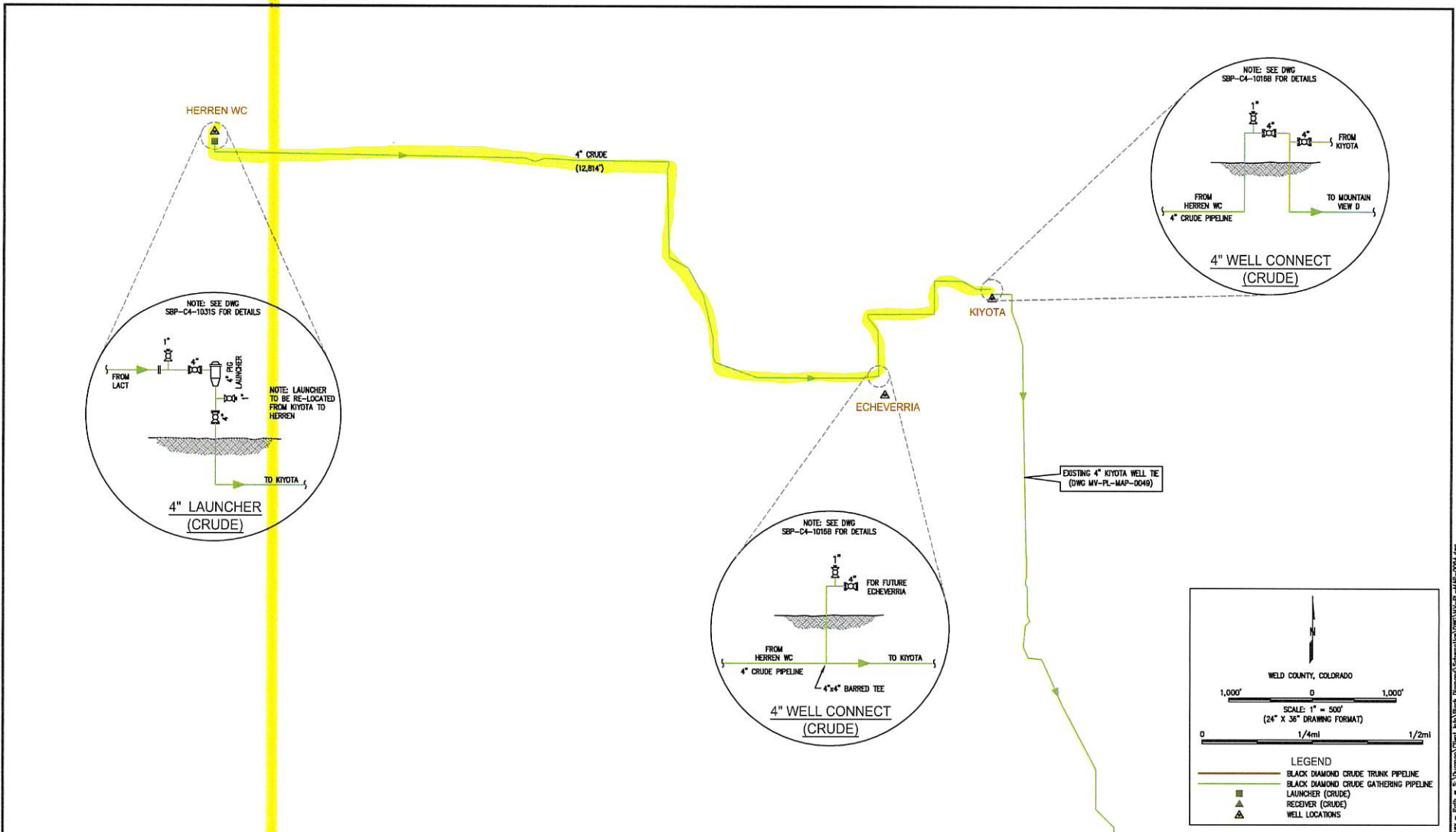
Traceable Reference Standards

Manufacturer	Calibration Reference Used	Serial Number	Report No.	Reference Cal. Due
DHI	PPCH-G 618 10KPSI Pressure Controller	618	18002	09 January 2019

Laboratory Representative
Tony Ly

Quality Representative
Tanner Jennings

* test includes receiver to launcher + lct
+ 1 future



NOTES:
1) FLOW SCHEMATIC IS FOR GRAPHICAL REPRESENTATION ONLY.
2) ALL GAS, WATER AND UTILITY LINES SHOULD BE LOCATED PRIOR TO ANY EXCAVATING, DRILLING, OR TRENCHING ANYWHERE ON OR NEAR THIS SITE.
3) CAM ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE SPECIFIC LOCATION OF ANY BURIED GAS, 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 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 BLACK DIAMOND GATHERING.

REFERENCE DRAWINGS				REVISIONS										DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT		DRAWING		DATE		BY		CHK		APPV		SCALE		SHEET		PROJECT	
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