



BOX 4207, SPRUCE GROVE, AB, T7X 3B4

HYDROSTATIC TEST REPORT

T/P: Px-003

168.3-FL-AP20-022-38C-ET	168.3-FL-AP20-106-38C-ET	219.1-FL-AP20-111-38C-ET
60.3-DR-AP20-114-25C-ET	88.9-DR-AP20-125-25C-ET	168.3-DR-AP20-126-38C-ET
	60.3-DR-AP20-128-25C-ET	60.3-DR-AP20-136-25C-ET

Customer: Pembina

Description of Product: FL, DR

Tests Conducted by: Josh van Nieuwkerk

Required Test Pressure: 2844kPa / 412 PSI
Stage-1-206 Psi Final Stage-412 Psi

Holding Time at Test Pressure: 1HR

Actual Test Pressure: Min (2844 kPa / 412 Psi) Max (3103 kPa / 450 Psi)

Test Time: 9:05 am to 12:01 pm

Test Date: October 30th, 2016

Test Temperature:

Results: No leaks at time of test

Chart N#1: CR-1000-17

Chart N#2: CR-1000-23

ABSA Insp. Witnessing Test: N/A

Comments:

(Signature of QCM / QCI)

(Signature of Owner's Inspector)

(Signature of ABSA Inspector, if applicable)

Pressure Test Data Report

Test Package No. : Px-003

Job No. : 162-113

Owner: Pembina Pipelines Corp.	Location: 01-24-80-15 W6M	Data By: Winston Watchorn
Test Code: ASME B31.3	Test Medium 50/50 Methynol/ Water	Test Date: Oct 30th, 2016
Design Data: 150# -68/ 38	Pressure: 345 Kpa	Temp. C° -3
Operation Data: 30/ ATM	Pressure: Min-2844kPa Max-3103KPa	Temp. C° -3

Test Equipment Data

DWG I.D.No. 501 / 530	Mfg. Crystal Eng.	Range: 0-5k	Date of Calib: 30-Sept-16/ 18-Oct-16
Recorder I.D.No. CR-1000-17	Mfg. Technical Ind	Range: 0-1k	Date of Calib: 19-Oct-16
Recorder I.D.No. CR-1000-23	Mfg. Technical Ind	Range: 0-1k	Date of Calib: 3-Oct-16

Line No.		
168.3-FL-AP20-022-38C-ET	168.3-FL-AP20-106-38C-ET	219.1-FL-AP20-111-38C-ET
60.3-DR-AP20-114-25C-ET	88.9-DR-AP20-125-25C-ET	168.3-DR-AP20-126-38C-ET
	60.3-DR-CP2-128-25C-ET	60.3-DR-CP2-136-25C-ET

Reading No.	Time (24 hr clock)	DWG Pressure (PSIg)	Ambient Temp C°	Pipe Temp C°	Comments
1	9:05 am	0	-1	See chart	Chart on
2	9:05 am	20	-1	See chart	leak on recorder hose
3	9:34 am	20	-1	See chart	start first stage pressure
4	9:41 am	182	-1	See chart	start first stage, body bleed open on 6"
5	9:52 am	181	0	See chart	end first stage
6		435	0	See chart	pressure
7		423	0	See chart	stabilize
8	10:00 am	442	0	See chart	bump up
9	10:13 am	435	0	See chart	DDW reading, stabilize
10	10:21 am	433	0	See chart	DDW reading, stabilize
11	10:31 am	431	-1	See chart	DDW reading, stabilize, no visible leaks
12	10:41 am	429	-2	See chart	DDW reading, stabilize, temp drop
13	10:51 am	428	-2	See chart	DDW reading, temp drop
14	11:01 am	426	-2	See chart	DDW reading, stabilize
15	11:11 am	425	-2	See chart	DDW, stabilizing, temp stabilizing
16	11:21 am	425	-2	See chart	DDW
17	11:31 am	424	-2	See chart	DDW, test complete
18	11:36 am	210	-2	See chart	bleed to first stage
19	11:46 am	214	-2	See chart	end of first stage
20	11:51 am	0	-2	See chart	depressure complete
21	12:01 pm	0	-2	See chart	Chart off

Signatures of Acceptance:

Pipeworx Rep. Winston Watchorn (Print)

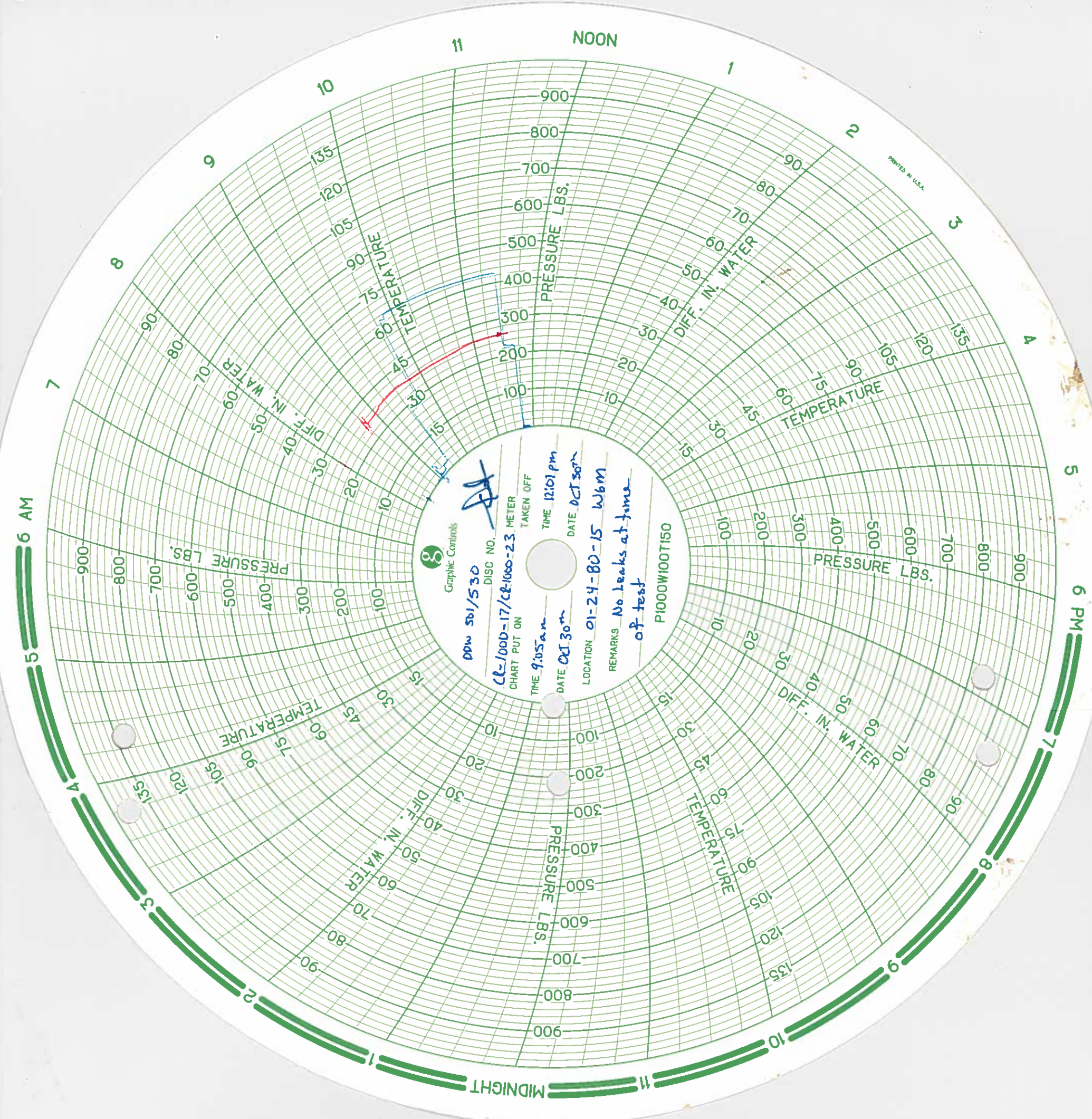
Pipeworx Rep. [Signature] (Signature)

Date: OCT 31 2016

Owner's Rep. Terry [Signature] (Print)

Owner's Rep. [Signature] (Signature)

Date: OCT 31 2016



Graphic Controls
DISC NO. 501/530
CHART PUT ON 01-1000-17/02-1000-23 METER
TIME 9:05 AM
DATE OCT 30
LOCATION 01-24-80-15 W6M
REMARKS No leaks at time of test
PI011001W0001150

168.3-FL-AP20-022-38C-ET
168.3-FL-AP20-106-38C-ET
219.1-FL-AP20-111-38C-ET
60.3-DR-AP20-114-25C-ET
88.9-DR-AP20-125-25C-ET
168-DR-AP20-126-28C-ET
60.3-DR-AP20-128-25C-ET
60.3-DR-AP20-136-25C-ET

PIPE AND TEST DATA

Company Pipework Location 61-24-80-15 Wagon
From 9:05 am To 12:01 pm
Approval [Signature] Line #
Job # 162-113 Date 08/30/2016
Medium 50/50 Duration 1 hr
Inspector Terry Quinlan
MOP 345 kPa
Test Pressure 493 psi max
Pipe Size 6" MM Spec Sour ✓ Sweet
Grade F316 Wt Sch 40
Min Test Pressure 412 psi Max Test Pressure 493 psi
Test Done By Terry Quinlan

Certificate of Calibration

Report number Arkane-Cal Report22620

ARKANE WORKS

Manufacturer	Model	Company / Unit	Gauge Number	Serial Number	Calibration Date	Expiration Date
Techni-Cal Industries	Barton 1,000	ARKANE WORKS	CR-1000-17 (ARK)	ARI 1555	19-Oct-16	19-Oct-17

All instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification.

As Received Condition:

In tolerance

As Left Condition:

In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCSL Z540-1:1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation. Laboratory ambient conditions throughout this calibration were:

Temperature 20 to 24° C
Humidity 30 to 55% RH
Pressure 100 to 103 kPa

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology through the following report numbers:

Manufacturer	Model	Serial Number	Report Number	Due Date	Reference Uncertainty
Crystal Engineering	10KPSIXP2I	560793	41164	25-May-17	0-20% of FS; +/- 0.02% FS; 20%-100% of FS; +/- 0.1% reading

As Received Test Results

This certificate shall not be reproduced except in full, without written approval.

1000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		20
247	250	Pass	3	1.20%	20
496	500	Pass	4	0.80%	10
746	750	Pass	4	0.53%	10
1004	1000	Pass	-4	-0.40%	20
0	0	Pass	0		20

As Left Test Results

1000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		20
247	250	Pass	3	1.20%	20
496	500	Pass	4	0.80%	10
746	750	Pass	4	0.53%	10
1004	1000	Pass	-4	-0.40%	20
0	0	Pass	0		20

Cold Temperature Reference

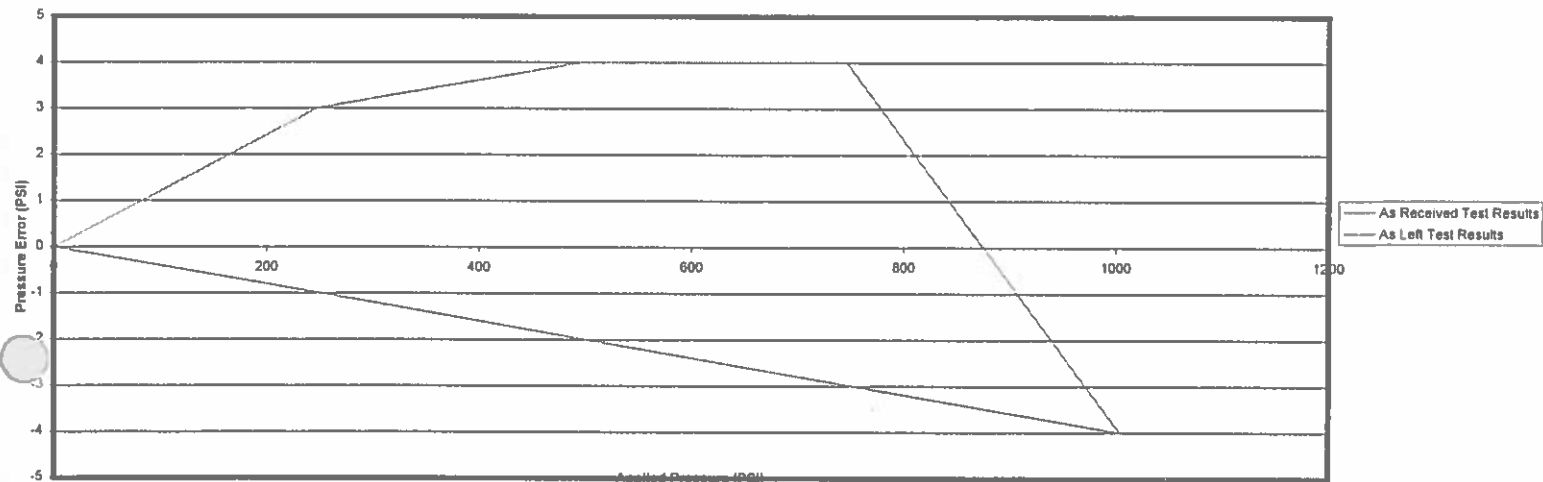
Cold Temperature Actual

Warm Temperature Reference

Warm Temperature Actual

Laboratory Representative
Shop Technician

Pressure Error Graph for Gauge # CR-1000-17 (ARK), S/N Barton 1,000, Report # Arkane-Cal Report22620



Certificate of Calibration

Report number Arkane-Cal Report25660

ARKANE WORKS

Manufacturer	Model	Company / Unit	Gauge Number	Serial Number	Calibration Date	Expiration Date
Techni-Cal Industries	Barton 1,000	ARKANE WORKS	CR-1000 23 (ARK)	ICI 2801	3-Oct-16	3-Oct-17

All instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification.

As Received Condition:

In tolerance

As Left Condition:

In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCCL Z540-1-1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation.

Laboratory ambient conditions throughout this calibration were:

Temperature 20 to 24° C
Humidity 30 to 55% RH
Pressure 100 to 103 kPa

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology through the following report numbers:

Manufacturer	Model	Serial Number	Report Number	Due Date	Reference Uncertainty
Crystal Engineering	15KPSIXP21	475533	40302	23 Dec-16	0-20% of FS: $\pm(0.02\%$ of FS) 20%-100% of FS: $\pm(0.1\%$ of Rdg)

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As Received Test Results

1000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		20
252	250	Pass	-2	-0.80%	10
502	500	Pass	-2	-0.40%	10
759	750	Pass	-9	-1.20%	20
1020	1000	Pass	-20	-2.00%	20
0	0	Pass	0		20

As Left Test Results

1000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		20
250	250	Pass	0	0.00%	10
498	500	Pass	2	0.40%	10
751	750	Pass	-1	-0.13%	20
1004	1000	Pass	-4	-0.40%	20
0	0	Pass	0		20

Cold Temperature Reference

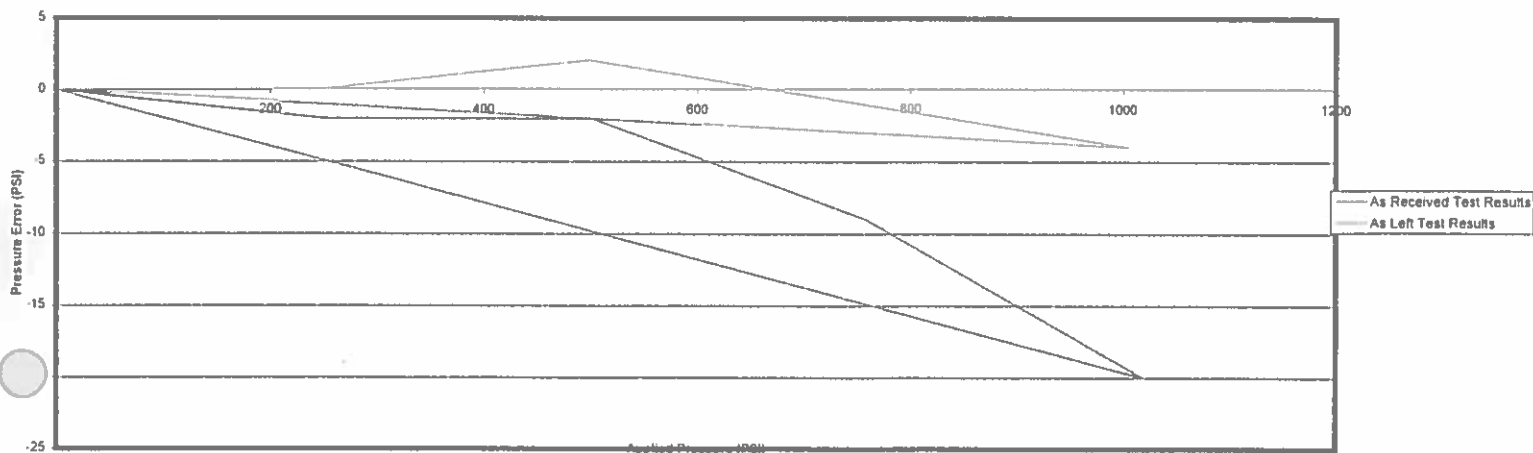
Cold Temperature Actual

Warm Temperature Reference

Warm Temperature Actual

Laboratory Representative
SHOP TECHNICIAN

Pressure Error Graph for Gauge # CR-1000-23 (ARK), S/N Barton 1,000, Report # Arkane-Cal Report25660



Certificate of Calibration

Report number Arkane-Cal Report25682

ARKANE WORKS

Manufacturer	Model	Company / Unit	Gauge Number	Serial Number	Calibration Date	Expiration Date
Techni Cal Industries	Barton 1,000		CR 1000 24 (ARK)	202E-11160763801	6-Oct-16	6-Oct-17

All Instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification.

As Received Condition:

In tolerance

As Left Condition:

In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCST 2540-1-1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation.

Laboratory ambient conditions throughout this calibration were:

Temperature 20 to 24° C
Humidity 30 to 55% RH
Pressure 100 to 103 kPa

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology through the following report numbers:

Manufacturer	Model	Serial Number	Report Number	Due Date	Reference Uncertainty
Crystal Engineering	15KPSIXP2I	475533	40302	23-Dec-16	0.20% of FS, ±(0.02% of FS) 20%-100% of FS ±(0.1% of Rdg)

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As Received Test Results

1000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		20
245	250	Pass	5	2.00%	20
495	500	Pass	5	1.00%	10
743	750	Pass	7	0.93%	10
996	1000	Pass	4	0.40%	20
0	0	Pass	0		20

As Left Test Results

1000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		20
250	250	Pass	0	0.00%	10
498	500	Pass	2	0.40%	10
747	750	Pass	3	0.40%	10
1000	1000	Pass	0	0.00%	20
0	0	Pass	0		20

Cold Temperature Reference

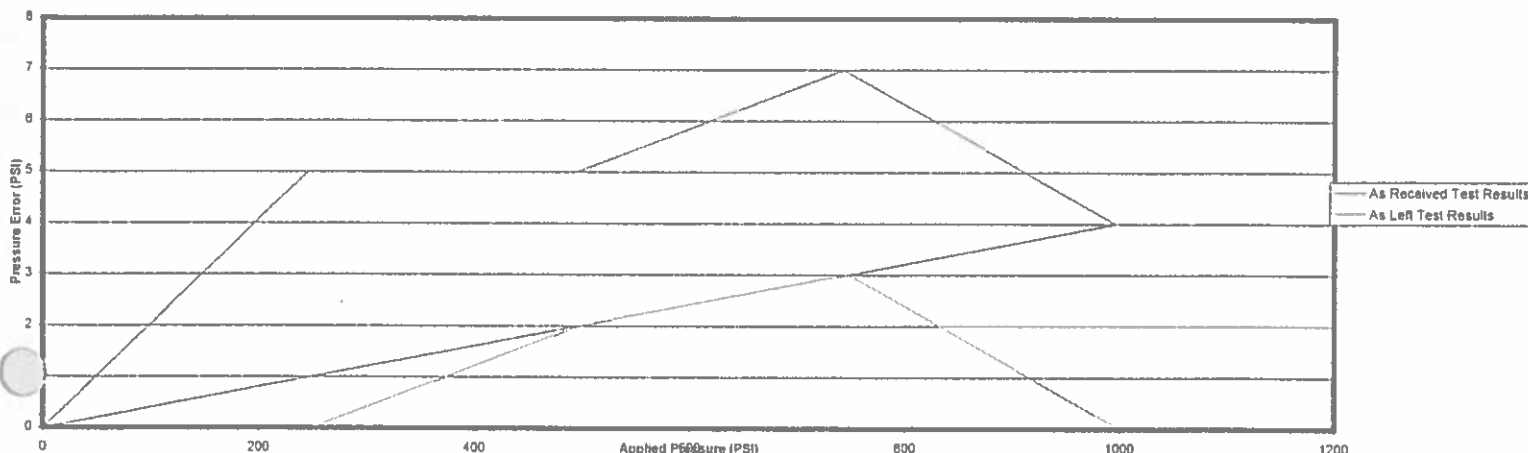
Cold Temperature Actual

Warm Temperature Reference

Warm Temperature Actual

Laboratory Representative
SHOP TECHNICIAN

Pressure Error Graph for Gauge # CR-1000-24 (ARK), S/N Barton 1,000, Report # Arkane-Cal Report25682



Certificate of Calibration

Form number Arkane-Cal Report25735

ARKANE WORKS

Manufacturer	Model	Company / Unit	Gauge Number	Serial Number	Calibration Date	Expiration Date
Crystal Engineering	XP21 5K	ARKANE WORKS	DDW-530 (ARK)	162211	18-Oct-16	18-Oct-17

All instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification.

As Received Condition: In tolerance As Left Condition: In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCSL Z540-1-1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation. Laboratory ambient conditions throughout this calibration were:

Temperature 20 to 24° C
Humidity 30 to 55% RH
Pressure 100 to 103 kPa

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology through the following report numbers:

Manufacturer	Model	Serial Number	Report Number	Due Date	Reference Uncertainty
Crystal Engineering	15KPSIXP21	475533	40302	23-Dec-16	0-20% of FS, $\pm 0.02\%$ of FS; 20%-100% of FS, $\pm 0.1\%$ of Rdg

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As Received Test Results

5000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		5
999	1000	Pass	1	0.10%	5
2000	2000	Pass	0	0.00%	5
2999	3000	Pass	1	0.03%	5
3998	4000	Pass	2	0.05%	5
5001	5000	Pass	-1	-0.02%	5
0	0	Pass	0		5

As Left Test Results

5000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		5
999	1000	Pass	1	0.10%	5
2000	2000	Pass	0	0.00%	5
2999	3000	Pass	1	0.03%	5
3998	4000	Pass	2	0.05%	5
5001	5000	Pass	-1	-0.02%	5
0	0	Pass	0		5

Cold Temperature Reference Cold Temperature Actual

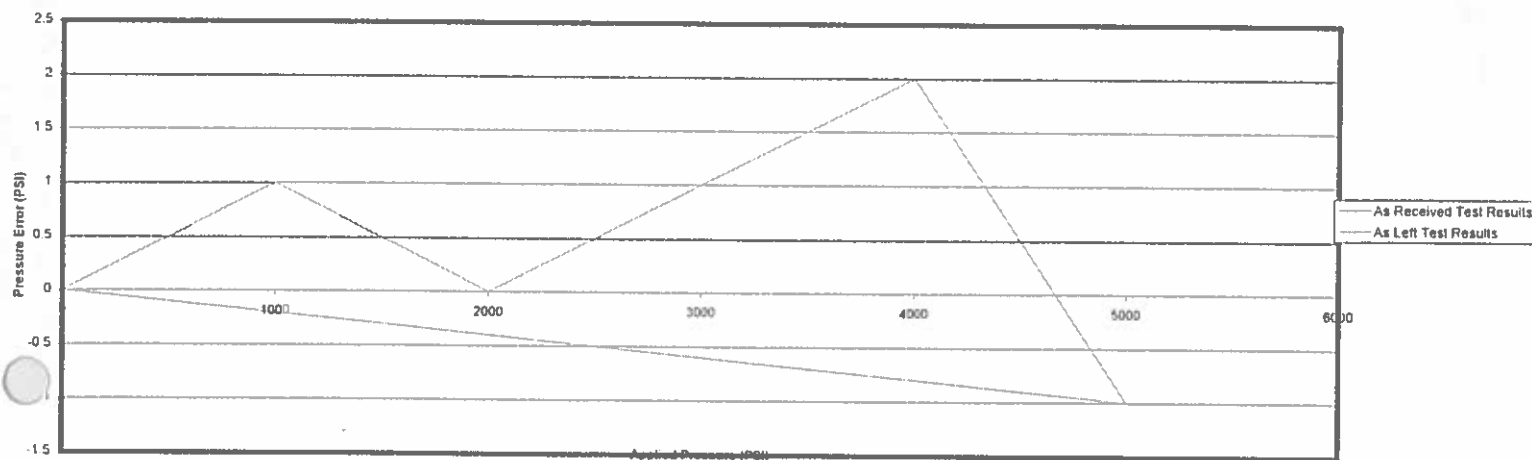
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Warm Temperature Reference Warm Temperature Actual

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Laboratory Representative
SHOP TECHNICIAN

Pressure Error Graph for Gauge # DDW-530 (ARK), S/N XP21 5K, Report # Arkane-Cal Report25735



Certificate of Calibration

Report number Arkane-Cal Report25636

ARKANE WORKS

Manufacturer	Model	Company / Unit	Gauge Number	Serial Number	Calibration Date	Expiration Date
Crystal Engineering	XP2I 5K	ARKANE WORKS	DDW-501 (ARK)	762030	30-Sep-16	30-Sep-17

All Instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification.

As Received Condition:

In tolerance

As Left Condition:

In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCST Z540-1-1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation. Laboratory ambient conditions throughout this calibration were:

Temperature 20 to 24° C
Humidity 30 to 55% RH
Pressure 100 to 103 kPa

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology through the following report numbers.

Manufacturer	Model	Serial Number	Report Number	Due Date	Reference Uncertainty
Crystal Engineering	15KPSIXP2I	475533	40302	23-Dec-16	0-20% of FS; $\pm 0.02\%$ of FS; 20%-100% of FS; $\pm 0.1\%$ of Rdg

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As Received Test Results

5000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		5
1001	1000	Pass	-1	-0.10%	5
2001	2000	Pass	-1	-0.05%	5
3000	3000	Pass	0	0.00%	5
3999	4000	Pass	1	0.03%	5
4998	5000	Pass	2	0.04%	5
0	0	Pass	0		5

As Left Test Results

5000 PSI

Reference Reading	Gauge Reading	Condition	Difference	Difference (% of Reading)	Allowable Tolerance
0	0	Pass	0		5
1001	1000	Pass	-1	-0.10%	5
2001	2000	Pass	-1	-0.05%	5
3000	3000	Pass	0	0.00%	5
3999	4000	Pass	1	0.03%	5
4998	5000	Pass	2	0.04%	5
0	0	Pass	0		5

Cold Temperature Reference Cold Temperature Actual

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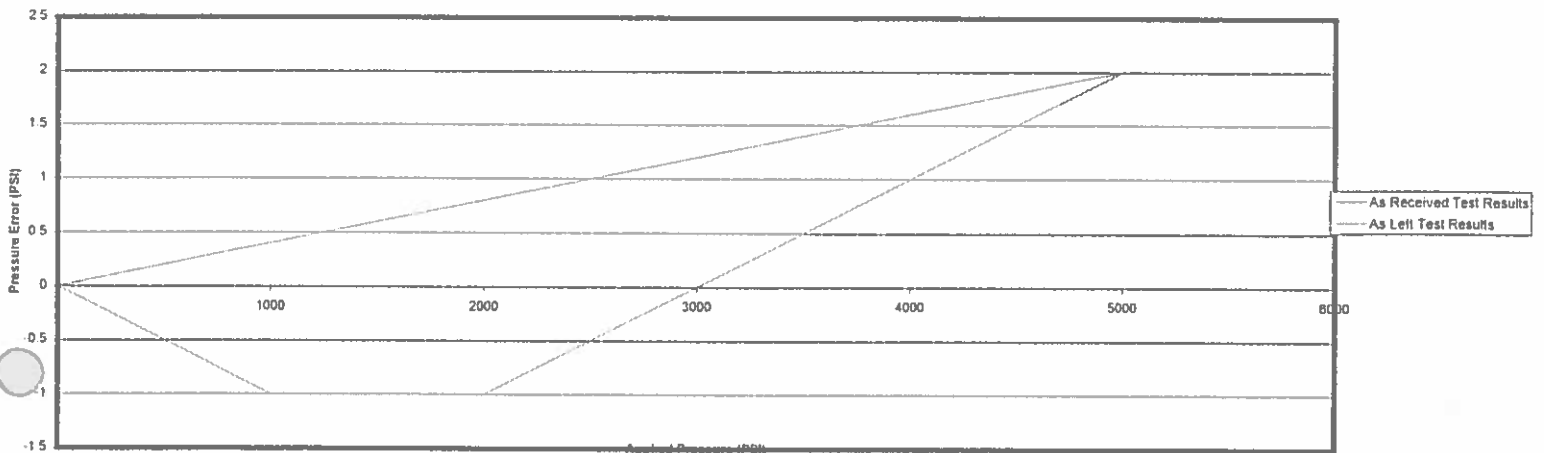
Warm Temperature Reference Warm Temperature Actual

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RAM

Laboratory Representative
SHOP TECHNICIAN

Pressure Error Graph for Gauge # DDW-501 (ARK), S/N XP2I 5K, Report # Arkane-Cal Report25636



LINE DESIGNATION				SERVICE INFORMATION										NORMAL										DESIGN										TEST										PIPE										STRESS										RADIOG										REFERENCE PID										REMARKS										REV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SIZE (mm)	SERVICE SPEC	LINE NO.	INS. (mm)	TR	ORIGIN	TERMINATION	OPERATING PRESS (MPa)	TEMP (°C)	UPSET (MIN/MAX) (MPa)	CONDITIONS PRESS (MPa)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)</



DESCRIPTION	WEIGHT
PIPE, BW, STD, ASME B36.19H, ASTM A-312 TP316 SMLS	60.2
WELDED, STD X SCH 80S, MSS SP-97, ASTM A-182 F316	0.8
ELBOW, 90°, LR, BW, STD, ASME B16.9, ASTM A-403-WP316	20.3
FLANGE, RF/MN, 150 CL, STD, ASME B16.5, ASTM A-182 F316	21.8
FLANGE, RF/MN, 150 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	2.8
GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W	2.0
316SS IR & OR	
GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W	2.0
316SS IR & OR	
(6) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	1.0
(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	2.0
OSG ITEM # BALL VALVE, F7, RF, 150 CL, ASTM A352-LCC OR ASTM A-350-LT2 CL1, VALVE TAG: B01R31	15.0
FLANGE, BLIND RF, 150 CL, ASME B16.5, ASTM A-182 F316 (C/W 3/4 NPT TAP)	1.9

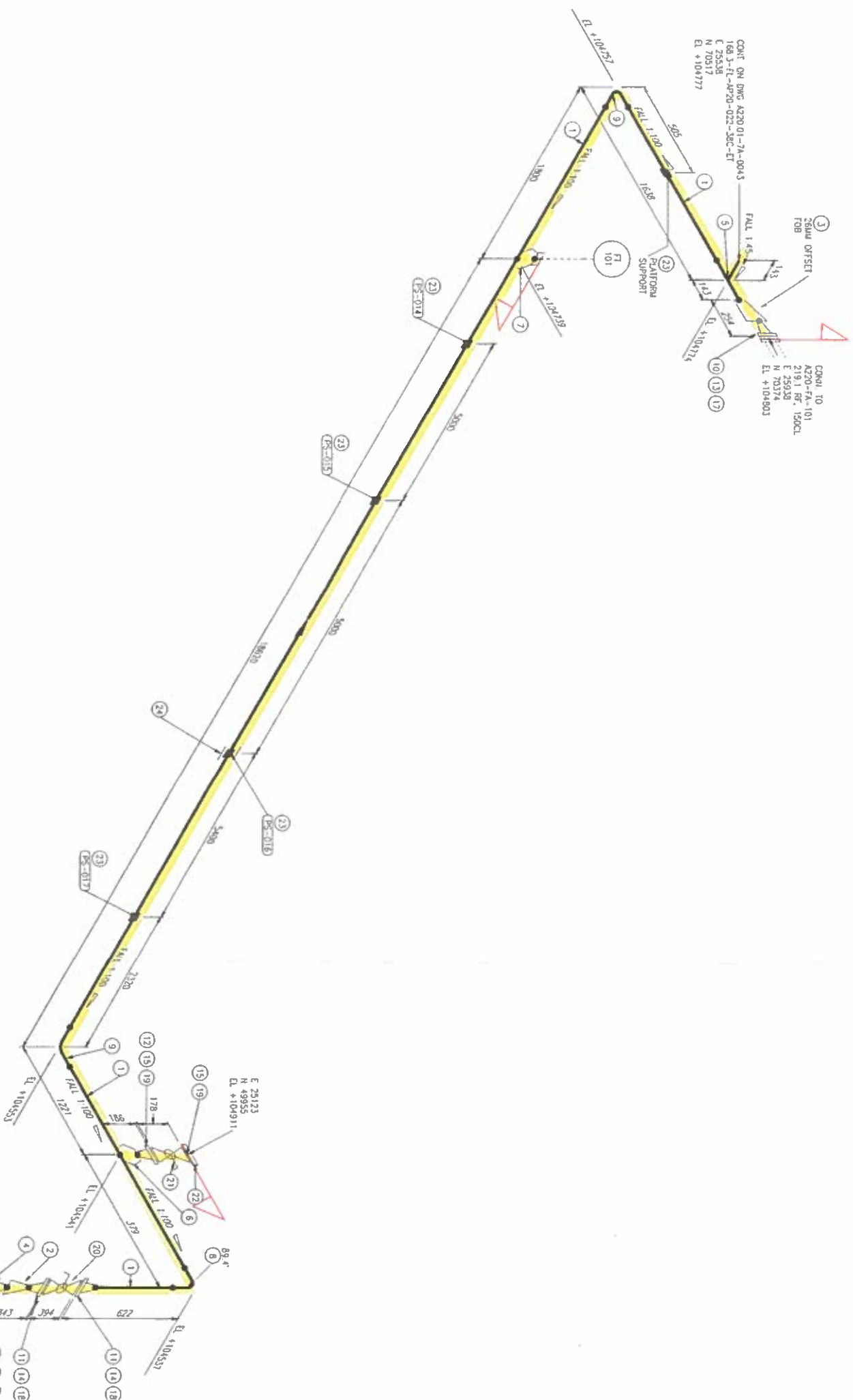
KGS

DESCRIPTION	CONSTRUCTION - A/E M15228	CML	<i>[Signature]</i>	<i>Hc</i>	<i>[Signature]</i>
		BY CHK. ENG. APP.			

-022-38C-EI

SWEETWATER PUMP STATION		REV.
PIPING ISOMETRIC		0
LSD 1-24-80-15 W6M		
CHECKED BY	PLANT AREA	
	FLARE	
DRAWING NO.	A220-01-7A-0043	





OPER. PRESS.	OPER. TEMP.	SERVICE:	SPEC:	REV:	INSPECTION CLASS:	HARDY TEST:
30 KPOG	-68C	FLARE	AP-20	15	N/A	518 KPOG
DESIGN PRESS:	DESIGN TEMP:	CLADDING THK AND MAT:INSUL. CLASS:				
345 KPOG	-75/38C	N/A	N/A	INSUL. THK AND MAT:	PNEUM TEST:	
FABRICATE PER ANSI CODE:		TRACER TYPE	TRACER (QTY, SIZE)	38mm C	N/A	10
ASME B31.3		ET	N/A	TRACER MATERIAL:	X-RAY WELDS	
					SHOP	FIELD
					10 %	10 %

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION
3. HYDROTEST WEIRTS AND DRAINS BY CONTRACTOR.

CONN. TO DWG A220.01
A220-Y-101
N2 - 219 1 RF. 150 CL
E 25500
N 49955
EL +103153

[illegible]**Pembina Pipeline Corporation**

BILL OF MATERIALS				WEIGHT
NO	QTY	SIZE	DESCRIPTION	
1	22681 MM	168	PIPE, BW, STD, ASME B36.19M, ASTM A-312 TP316 SMLS	639.7
2	1	219X168	REDUCER, CONC, BW, STD X STD, ASME B16.9, ASTM A-403-WP316	5.4
3	1	219X168	REDUCER, ECC, BW, STD X STD, ASME B16.9, ASTM A-403-WP316	5.4
4	1	219	SPECIALTY BLIND, RF, 150 CL, ASME B16.48, ASTM A-240 J316, 12.7mm THK	9.1
5	1	168X168	TEE, EQUAL, BW, STD, ASME B16.9, ASTM A-403-WP316	9.2
6	1	168X60	WELDOLET, STD X SCH 80S, MSS SP-97, ASTM A-182 F316	0.8
7	1	168X33	SOCKET, 3000 CL, MSS SP-97, ASTM A-182 F316	0.3
8	1	168	TRIMMED ELBOW, 90° LR, BW, STD, ASME B16.9, ASTM A-403-WP316 (89.43)	10.0
9	2	168	ELBOW, 90° LR, BW, STD, ASME B16.9, ASTM A-403-WP316	20.3
10	2	219	FLANGE, RFNM, 150 CL, STD, ASME B16.5, ASTM A-182 F316	35.4
11	2	168	FLANGE, RFNM, 150 CL, STD, ASME B16.5, ASTM A-182 F316	21.8
12	1	60	FLANGE, RFNM, 150 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	2.8
13	3	219	GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W 316SS IR & OR	3.0
14	2	168	GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W 316SS IR & OR	2.0
15	2	60	GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W 316SS IR & OR	2.0
16	1	19X130	(B) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	1.0
17	1	19X114	(B) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	1.0
18	2	19X108	(B) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	2.0
19	2	16X89	(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	2.0
20	1	168	OOS ITEM - BALL VALVE, RF, RF, 150 CL, ASTM A352-LCC OR ASTM A-350-LF2 CL1, GDRR OP- VALVE TAC: BDR31	79.9
21	1	60	OOS ITEM - BALL VALVE, RF, RF, 150 CL, ASTM A352-LCC OR ASTM A-350-LF2 CL1, VALVE TAC: BDR31	15.0
22	1	60	FLANGE, BLIND RF, 150 CL, ASME B16.5, ASTM A-182 F316	1.9
23	5	168	S-1 PIPE SHOE	-
24	1	009	G-3 GUIDE	-

TOTAL WEIGHT:

KGS

ENG. STAMP



PERMIT

0	2016.03.31	ISSUED FOR CONSTRUCTION - A/E M15228	CML	BR	HC	SE
REV.	Y M D	DESCRIPTION	BY	CHK.	ENG.	APP.

168.3-FL-AP20-106-38C-ET

SWEETWATER PUMP STATION

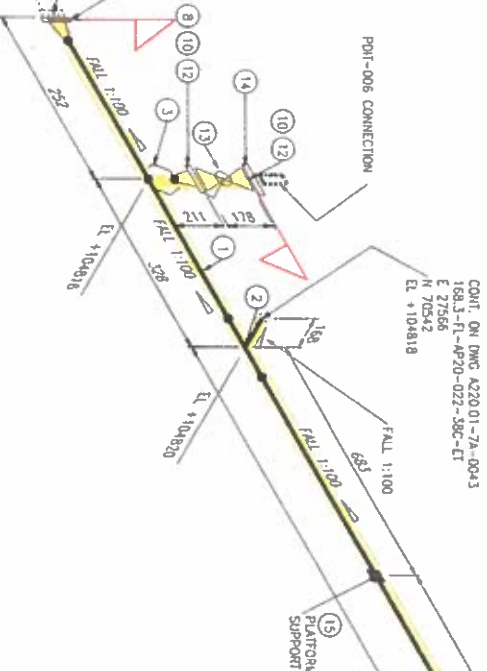
PIPING ISOMETRIC

LSD 1-24-80-15 W6M

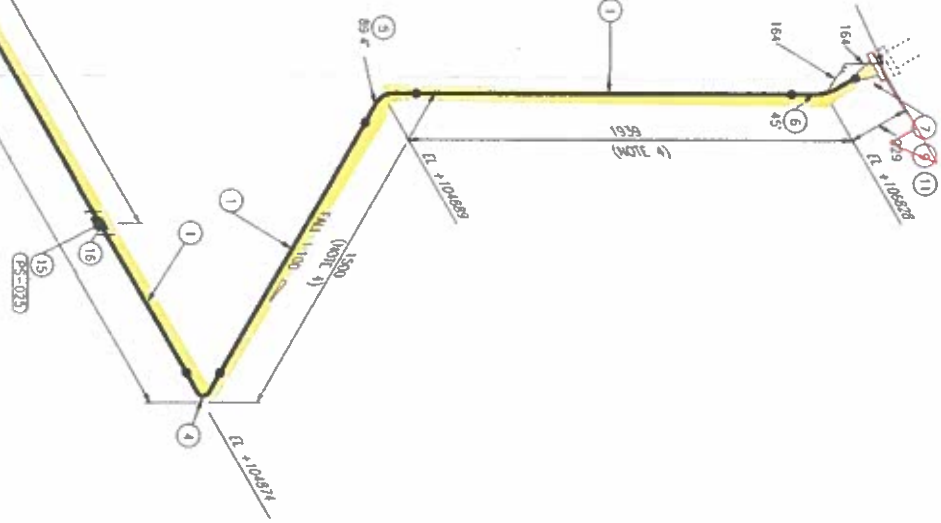
DRAWN BY	CHECKED BY	PLANT AREA
CML		FLARE K.O. DRUM
APPROVED	DRAWING NO.	REV
	A220.01-7A-0041	0



CONN. TO
A220-F3-101
219.1 RT. 130CL
E 26893
H 72038
EL +104814



CONN. TO
A220-F3-101
219.1 RT. 130CL
E 26893
H 72038
EL +104814



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
3. DIMENSIONS ARE APPROXIMATE. FIELD TO CONFIRM/VERIFY.
4. DIMENSIONS ARE APPROXIMATE. FIELD TO CONFIRM/VERIFY.

OPER. PRESS:	OPER. TEMP:	SPEC:	REV:	INSPECTION CLASS:	HYDRO TEST:
30 kPaG	-68°C	AP20	15	N/A	518 kPaG
DESIGN PRESS:	DESIGN TEMP:	CLADDING THK AND MAT:	INSUL. THK AND MAT:	PNEUM TEST:	TIME(MIN)
345 kPaG	-75/38°C	N/A	38mm C	N/A	10
FABRICATE PER ANSI CODE:	TRACER TYPE	TRACER (QTY, SIZE)	TRACER MATERIAL:	X-RAY WELDS	SHOP
ASME B31.3	ET	N/A	N/A	10 %	10 %

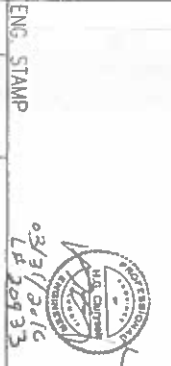
Pembina Pipeline Corporation



BILL OF MATERIALS

NO	QTY	SIZE	DESCRIPTION	WEIGHT
1	7655 MM	219	PIPE, BW, STD, ASME B36.19M, ASTM A-312 TP316	325.1
2	1	219X168	SMELT	-
3	1	219X60	TEE, RED, BW, STD X STD, ASME B16.9, ASTM A-403-WP316	0.8
4	1	219	WELDOLET, STD X SCH 80S, MSS SP-97, ASTM A-182 F316	20.4
5	1	219	ELBOW, 90°, LR, BW, STD, ASME B16.9, ASTM A-403-WP316	20.1
6	1	219	TRIMMED ELBOW, 90°, LR, BW, STD, ASME B16.9, ASTM A-403-WP316 (89.43)	288.0
7	2	219	ELBOW, 45°, LR, BW, STD, ASME B16.9, ASTM A-403-WP316	35.4
8	1	60	FLANGE, RTNVL, 150 CL, STD, ASME B16.5, ASTM A-182 F316	2.8
9	2	219	FLANGE, RTNVL, 150 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	2.0
10	2	60	GASKET, RT, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W	2.0
11	2	19X114	GASKET, RT, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W	2.0
12	2	16X89	(8) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8U CL2 C/W A194 GR. B8A NUTS	2.0
13	1	60	(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8U CL2 C/W A194 GR. B8A NUTS	15.0
14	1	60	005 ITEM - BALL VALVE, RP, RT, 150 CL, ASTM A352-LCC OR ASTM A-350-LF2 CL1, VALVE TAG B01R31	1.9
15	2	219	FLANGE, BLND RT, 150 CL, ASME B16.5, ASTM A-182 F316 (C/W 3/4 NPT TAP)	-
16	1	219	S-1 PIPE SHOE	-
			A-4 DIRECTIONAL ANCHOR	-

TOTAL WEIGHT: KGS



ENG. STAMP	PERMIT
0	2016.03.31
REV.	Y M D
DATE	DESCRIPTION
BY	CHK
ENG.	APP.
LINE NO.	219.1-FL-AP20-111-38C-ET
TITLE	SWEETWATER PUMP STATION
	PIPING ISOMETRIC
	LSD 1-24-80-15 W6M

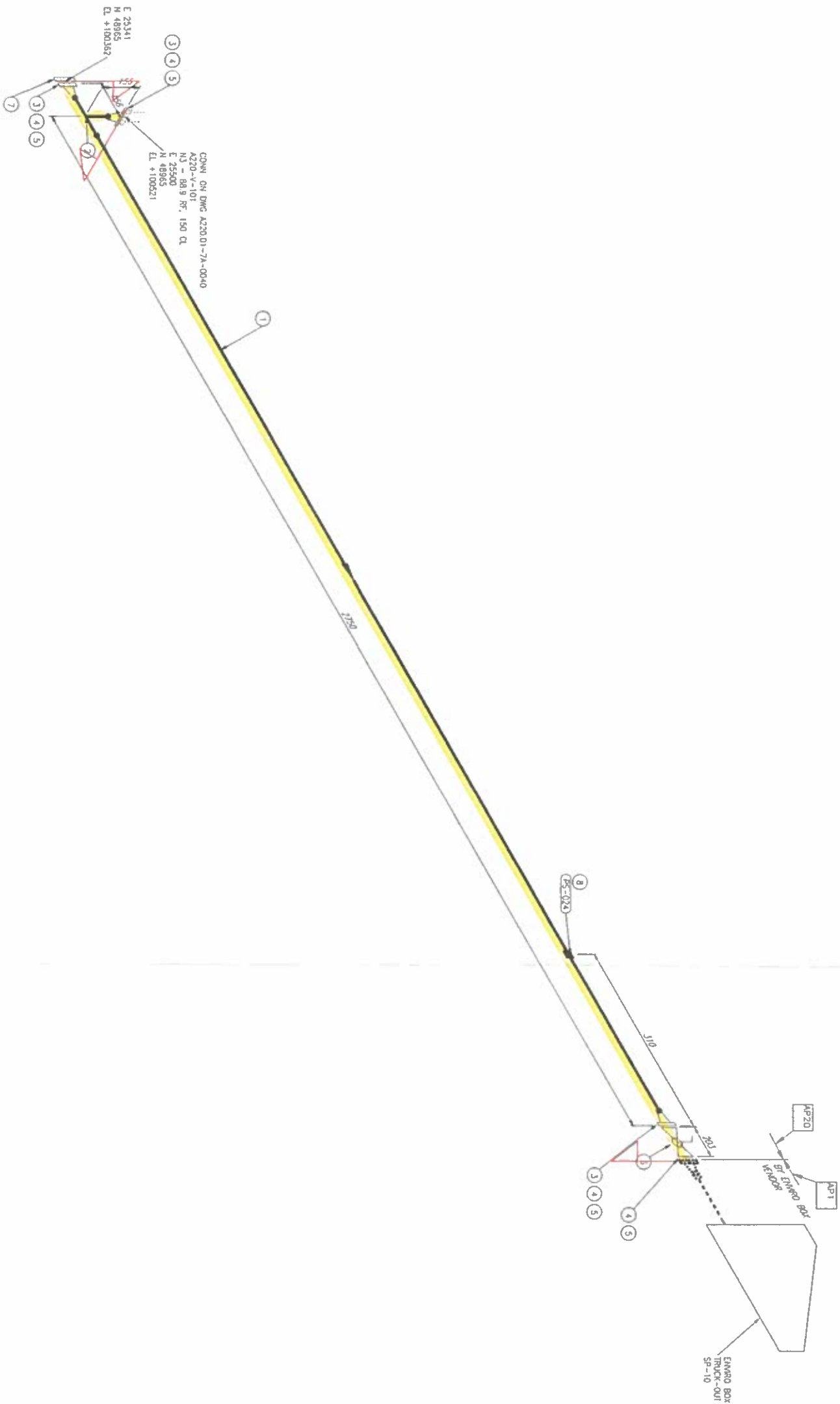
DRAWN BY	CHECKED BY	PLANT AREA
CML	FLARE	
APPROVED	DRAWING NO.	REV.
	A220.01-7A-0042	0



ENG. STAMP 68 20533 PERMIT

SWEETWATER PUMP STATION
PIPING ISOMETRIC
LSD 1-24-80-15 W6M





OPER. PRESS:	OPER. TEMP:	SERVICE:	SPEC:	REV:	INSPECTION CLASS:	HYDRO TEST:
30 kPaG	-68 C	DRAIN	AP20	15	N/A	518 kPaG
DESIGN PRESS:	DESIGN TEMP:	CLADDING THK AND MAT'NSUL. CLASS:				
345 kPaG	-75/38 C	N/A	N/A	25mm C	N/A	10
FABRICATE PER ANSI CODE:	TRACER TYPE	TRACER (QTY, SIZE)	TRACER MATERIAL:	X-RAY WELDS	SHOP	10 % FIELD 10 %
ASME B31.3	ET	N/A	N/A			

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
3. HYDROTEST VENTS AND DRAINS BY CONTRACTOR

Pembina Pipeline Corporation



BILL OF MATERIALS

NO	QTY	SIZE	DESCRIPTION	WEIGHT
1	2594 MM	89	PIPE, BW, STD, ASME B36.19M, ASTM A-312 TP316 SMLS	29.3
2	1	89X89	TEE, EQUAL, BW, STD, ASME B16.9, ASTM A-403-WP316	2.3
3	3	89	FLANGE, RFWN, 150 CL, STD, ASME B16.5, ASTM A-182 F316	15.3
4	4	89	GASKET, RT, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W 316SS IR & OR	3.0
5	4	16X95	(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 OR BMA NUTS	4.0
6	1	89	005 ITEM - BALL VALVE, FP, RF, 150 CL, ASTM A535-ICC OR ASTM A-350-LF2 CL1, VALVE TAG: B01R3J	29.1
7	1	89	FLANGE, BLIND RF, 150 CL, ASME B16.5, ASTM A-182 F316	4.1
8	1	89	S-1 PIPE SHOE	-

TOTAL WEIGHT: KGS

ENG. STAMP

03/21/2016
1420533

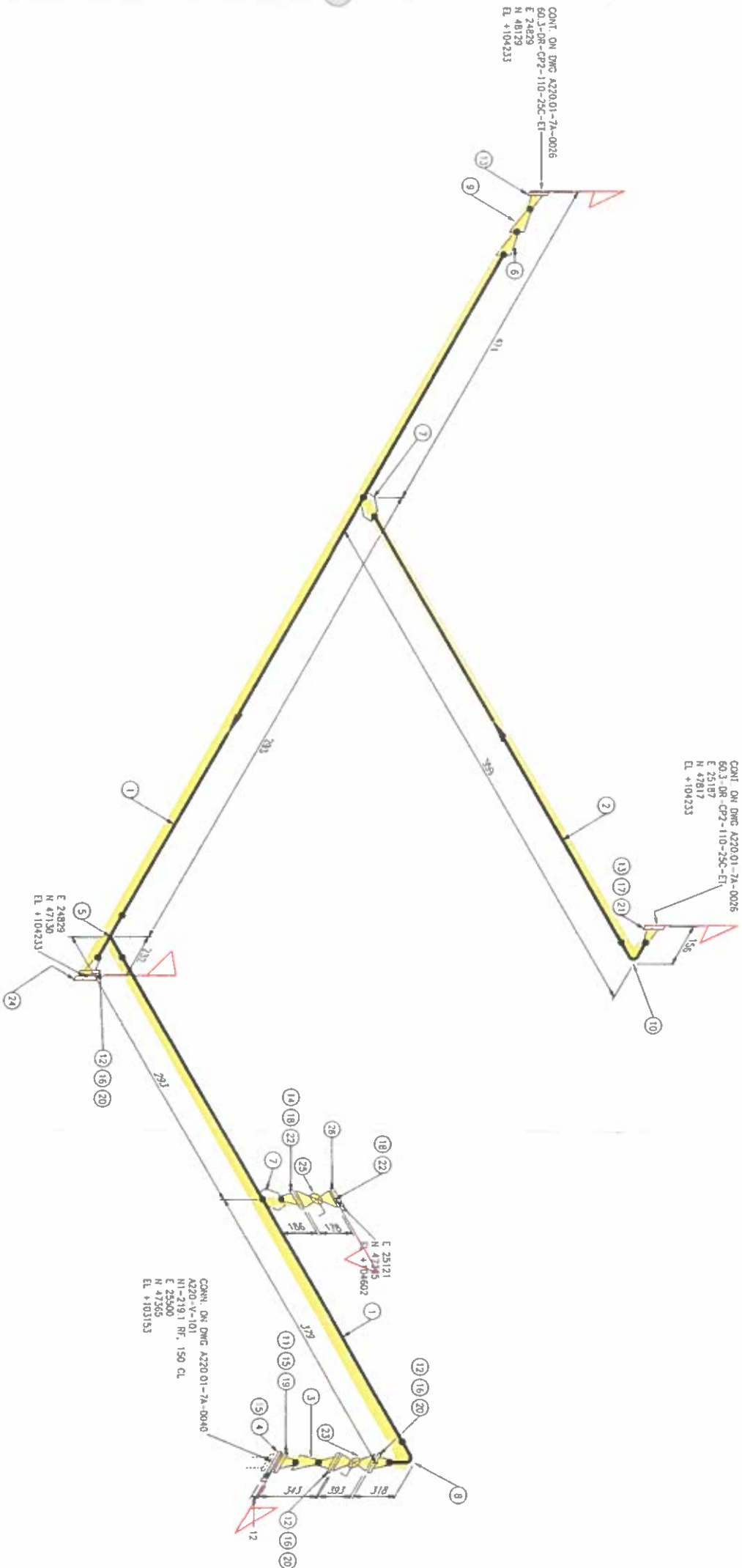
PERMIT

REV	Y M D	DATE	DESCRIPTION	BY	CHK	ENG	APP
0	2016.03.31		ISSUED FOR CONSTRUCTION - AFE M15228	CML			

LINE NO. 88.9-DR-AP20-125-25C-ET

SWEETWATER PUMP STATION
PIPING ISOMETRIC
LSD 1-24-80-15 W6M

DRAWN BY	CHECKED BY	PLANT AREA	REV.
CML		FLARE K.O. DRUM	0
APPROVED	DRAWING NO.	A220.01-7A-0037	



BILL OF MATERIALS

NO	QTY	SIZE	DESCRIPTION	WEIGHT
1	600 MM	168	PPE, BW, STD, ASME B36.19M, ASTM A-312 TP316	17.0
2	160 MM	60	PPE, BW, SCH 80S, ASME B36.19M, ASTM A-312 TP316 SMS	1.2
3	1	219X168	REDUCER, CONC., BW, STD X STD, ASME B16.9, ASTM A-403-WP316	-
4	1	219	SPECIACLE BLIND, RF, 150 CL, ASME B16.4B, ASTM A-240 T316, 12.7mm THK	9.1
5	1	168X168	TEE, EQUAL, BW, STD, ASME B16.9, ASTM A-403-WP316	9.2
6	1	168X114	REDUCER, CONC., BW, STD X STD, ASME B16.9, ASTM A-403-WP316	-
7	2	168X60	WELDOLET, STD X SCH 80S, MSS SP-97, ASTM A-182 F316	1.6
8	1	168	ELBOW, 90° LR, BW, STD, ASME B16.9, ASTM A-403-WP316	-
9	1	114X60	REDUCER, CONC., BW, STD X SCH 80S, ASME B16.9, ASTM A-403-WP316	-
10	1	60	ELBOW, 90° LR, BW, SCH 80S, ASME B16.9, ASTM A-403-WP316	0.9
11	1	219	FLANGE, RPNM, 150 CL, STD, ASME B16.5, ASTM A-182 F316	17.7
12	3	168	FLANGE, RPNM, 150 CL, STD, ASME B16.5, ASTM A-182 F316	32.7
13	2	60	DOO ITEM - FLANGE, RPNM, 600 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	10.9
14	1	60	FLANGE, RPNM, 150 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	2.8
15	2	219	GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W	2.0
16	3	168	GASKET, RF, 150 CL, ASME B16.20, 316SS IR & OR	3.0
17	1	60	DOO ITEM - GASKET, RF, 600 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W	1.0
18	2	60	GASKET, RF, 150 CL, ASME B16.20, 316SS IR & OR	2.0
19	1	19X130	(8) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	1.0
20	3	19X108	(8) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	3.0
21	1	16X114	(8) DOO ITEM - STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	1.0
22	2	16X89	(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR. B8M CL2 C/W A194 GR. B8A NUTS	2.0
23	1	168	DOO ITEM - BALL VALVE, FP, RF, 150 CL, ASTM A352-LCC OR ASTM A-350-LF2 CL1, GEAR DR, VALVE TAG: B01R31	79.9
24	1	168	FLANGE, BLIND RF, 150 CL, ASME B16.5, ASTM A-182 F316	11.8
25	1	60	DOO ITEM - BALL VALVE, FP, RF, 150 CL, ASTM A352-LCC OR ASTM A-350-LF2 CL1, VALVE TAG: B01R31	15.0
26	1	60	FLANGE, BLIND RF, 150 CL, ASME B16.5, ASTM A-182 F316	1.9

TOTAL WEIGHT: KGS

ENG. STAMP	PERMIT

REV.	Y	M	D	DATE	DESCRIPTION	BY	CHK	ENG.	APP.
0	2016	03	31		ISSUED FOR CONSTRUCTION - AFE M15228	CML	ER	MC	ER
LINE NO.									
TITLE									

SWEETWATER PUMP STATION
PIPING ISOMETRIC
LSD 1-24-80-15 W6M

OPER. PRESS:	OPER. TEMP:	SERVICE:	SPEC:	REV:	INSPECTION CLASS:	HYDRO TEST:
30 kPaQ	-68°C	FLARE	AP20	15	N/A	518 kPaQ
DESIGN PRESS:	DESIGN TEMP:	CLADDING THK AND MAT'NSUL. CLASS:		INSUL. THK AND MAT:		
345 kPaQ	-75/38°C	N/A	N/A	25mm C		TIME(MIN):
FABRICATE PER ANSI CODE:		TRACER TYPE	TRACER (QTY, SIZE)	TRACER MATERIAL:		
ASME B31.3		ET	N/A	N/A		

Pembina Pipeline Corporation		Stantec	
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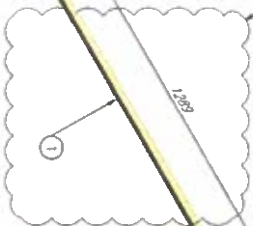
- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
 2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION
 3. HYDROTEST VENTS AND DRAINS BY CONTRACTOR

DRAWN BY	CHECKED BY	PLANT AREA	REV.
CML		FLARE K.O. DRUM	0
APPROVED	DRAWING NO.	A220.01-7A-0027	



DOWN ON DWG A220.01-7A-0040
A220-V-101
N9 = 60.3 RE, 150 CL
E 25640
N 47365
EL +100+57

HOLD FOR VENDOR INFO:
PLATFORM AND LEVEL GAUGE



LEVEL GAUGE LG-004

BILL OF MATERIALS

NO	QTY	SIZE	DESCRIPTION	WEIGHT
1	1161 MM	60	PPE, BW, SCH 80S, ASME B36.19M, ASTM A-312 TP316 SMLS	8.7
2	1	33	NIPPLE, SCH 160S, TBE, ASME B36.19M, ASTM A-312 TP316 SMLS (100 MM LG)	1.3
3	1	33	PLUG, HEAVY HEX HEAD, NPT, ASME B16.11, ASTM A-182 F316	0.4
4	2	60	FLANGE, RTMN, 150 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	5.5
5	3	60	GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W 316SS IR & OR	3.0
6	3	16X89	(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193 GR B8U CL2 C/W A194 GR B8A NUTS	3.0
7	1	60	OOS ITEM - BALL VALVE, FP, RF, 150 CL, ASTM A352-LCC OR ASTM A-350-LF2 CL1, VALVE TAG: B01R31	15.0
8	1	33	OOS ITEM - BALL VALVE, NPT, 3000 CMP, ASTM A-350-LF2 CL1, VALVE TAG: B30T3C	0.7

TOTAL WEIGHT: KGS

ENG. STAMP	PERMIT
12/31/2016	

REV.	Y M D	DESCRIPTION	CML	BY	CHK.	ENG.	APP.
0	2016.03.31	ISSUED FOR CONSTRUCTION - AFE M15228	CML	AR	AC		
LINE NO.							
60.3-DR-AP20-128-25C-EI							
TITLE							

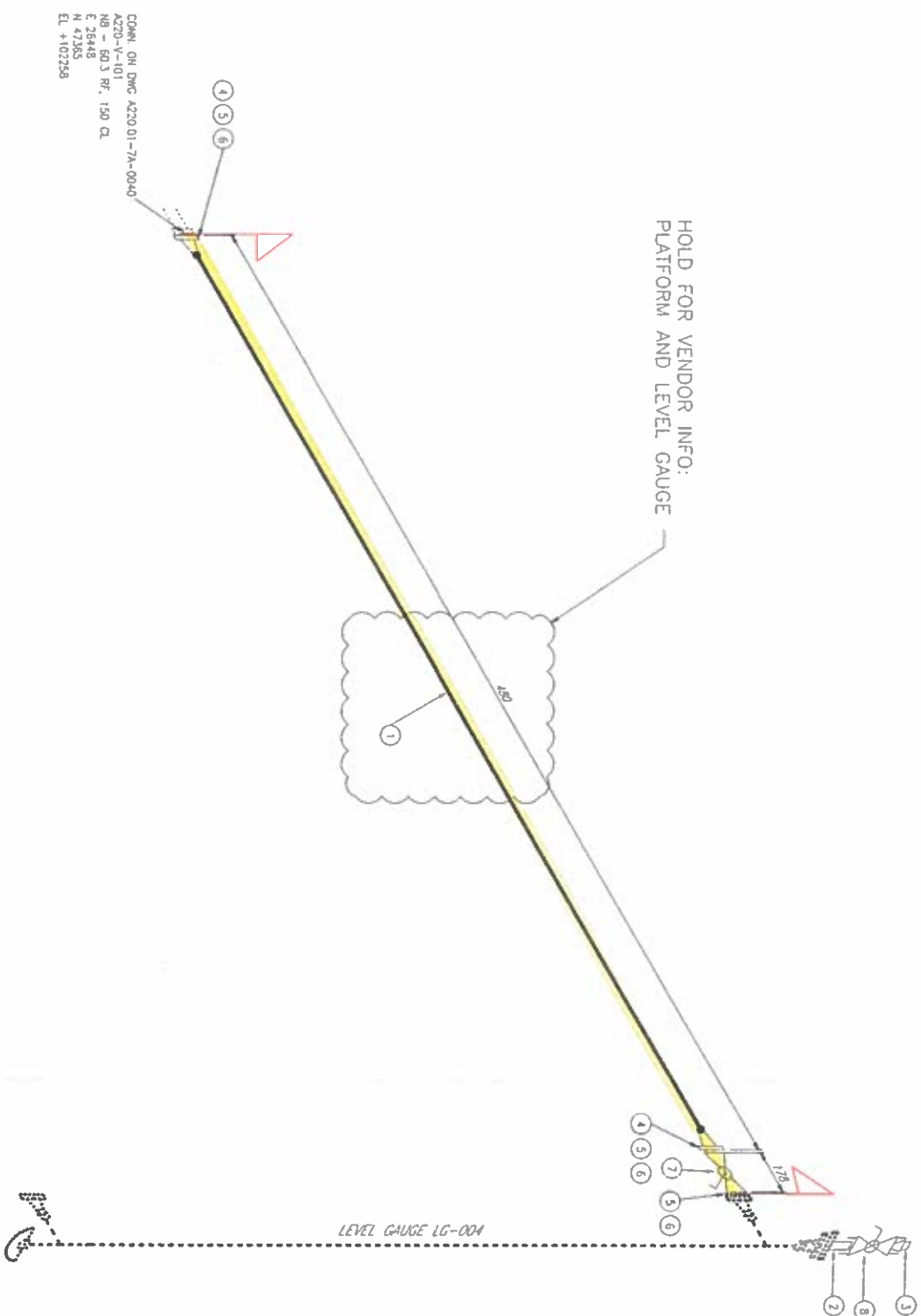
SWEETWATER PUMP STATION			
PIPING ISOMETRIC			
LSD 1-24-80-15 W6M			
DRAWN BY	CHECKED BY	PLANT AREA	REV.
CML		FLARE K.O. DRUM	0
APPROVED	DRAWING NO.		
	A220.01-7A-0038		

OPER. PRESS:	OPER. TEMP:	SERVICE:	SPEC:	REV:	INSPECTION CLASS:	HYDRO TEST:
30 kPaq	-68°C	FLARE	AP20	15	N/A	518 kPaq
DESIGN PRESS:	DESIGN TEMP:	CLADDING THK AND MAT'NSUL. CLASS:		INSUL. THK AND MAT:	PNEUM TEST:	TIME(MIN)
345 kPaq	-75/38°C	N/A	N/A	25mm C	N/A	10
FABRICATE PER ANSI CODE:		TRACER TYPE	TRACER (QTY, SIZE)	TRACER MATERIAL:	X-RAY WELDS	
ASME B31.3		EI	N/A	N/A	SHOP	10 %

Pembina Pipeline Corporation

Stantec

NOTES:
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2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
3. HYDROTEST VENIS AND DRAINS BY CONTRACTOR.



BILL OF MATERIALS				
NO	QTY	SIZE	DESCRIPTION	WEIGHT
1	353 MM	60	PIPE, BW, SCH 80S, ASME B36.19M, ASTM A-312 TP316 SMLS	2.7
2	1	33	NIPPLE, SCH 160S, 1BE, ASME B36.19M, ASTM A-312 TP316 SMLS (100 MM LG)	1.3
3	1	33	PLUG, HEAVY HEX HEAD, NPT, ASME B16.11, ASTM A-182 F316	0.4
4	2	60	FLANGE, RFNPN, 150 CL, SCH 80S, ASME B16.5, ASTM A-182 F316	5.5
5	3	60	GASKET, RF, 150 CL, ASME B16.20, 316SS/FLEXIBLE GRAPHITE, SPIRAL WOUND C/W 316SS IR & OR	3.0
6	3	16X89	(4) STUDS & NUTS, ASME B18.2.1, ASME B18.2.2, ASTM A193, GR. B8U, C12 C/W A194, CR. BAA NUTS 00S ITEM - BALL VALVE, RF, 150 CL, ASTM A532-LCC OR ASTM A-350-LF2 CL1, VALVE TAG: B01R01	3.0
7	1	60	00S ITEM - BALL VALVE, NPT, 3000 CMP, ASTM A-350-LF2 CL1, VALVE TAG: B3013C	15.0
8	1	33		0.7

TOTAL WEIGHT:	KGS
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[illegible]

OPER. PRESS:	OPER. TEMP:	SERVICE:	SPEC:	REV:	INSPECTION CLASS:	HYDRO TEST
30 KPOG	-68°C	FLARE	AP20	15	N/A	518 KPOG
CLAS. PRESS:	DESIGN TEMP:	CLADDING THK AND MAT:	INSUL. THK AND MAT:	PREEN TEST:		
345 KPOG	-75/38°C	N/A	25mm C	N/A		
FABRICATE PER ANSI CODE:	TRACER TYPE	TRACER (QTY, SIZE)	TRACER MATERIAL:	X-RAY WELDS		
ASME B31.3	ET	N/A	N/A	SHOP	10 %	FIELD 10 %

Pembina Pipeline Corporation

NOTES:

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3. HYDROTEST VENTS AND DRAINS BY CONTRACTOR.



BOX 4207, SPRUCE GROVE, AB, T7X 3B4

HYDROSTATIC TEST REPORT

Date: Dec 12 2016

Customer: Pembina Pipeline Corp

Description of Product: Stainless Steel Flare Piping Repair

Tests Conducted by: Jason Hofer

Test Pressure: Min 2945Kpa- Max 3018Kpa

Holding Time at Test Pressure: Minimum 01 hours.

Results: Hydrotest O.K.

ABSA Insp. Witnessing Test: N/A

Comments: Test Conducted with H2O

Trevor Vreeland

(Signature of QCM / QCI)

A handwritten signature in blue ink, appearing to read "Trevor Vreeland".

Garth Henry

(Signature of Owner's Inspector)

(Signature of ABSA Inspector, if applicable)



HYDROSTATIC TEST REPORT

PipeWorx Job # 162-113

Date: DEC.11/2016

Customer: PEMBINA PIPELINE CORPERATION

Description of What Was Tested: 6" 150 ANSI STAINLESS STEEL FLARE PIPING

Test # 1

Location # (LSD's) 01-24-80-15 W6M

Test Conducted by: TREVOR VREELAND

Test Pressure Minimum PSI: 427

Test Pressure Maximum PSI: 437

Target Test Pressure PSI: 432

Test Fluid (Medium): TOWN WATER

Test Time On: 12:20 PM

Test Time Off: 2:42 PM

Test Duration: 2:22 HOURS

Recorder # R-53

Deadweight # DWG-50

Deaweight Reading Sheet Attached: YES

TREVOR VREELAND

(Signature of PipeWorx Rep.)

GARTH HENRY

(Signature of Owner's Inspector)



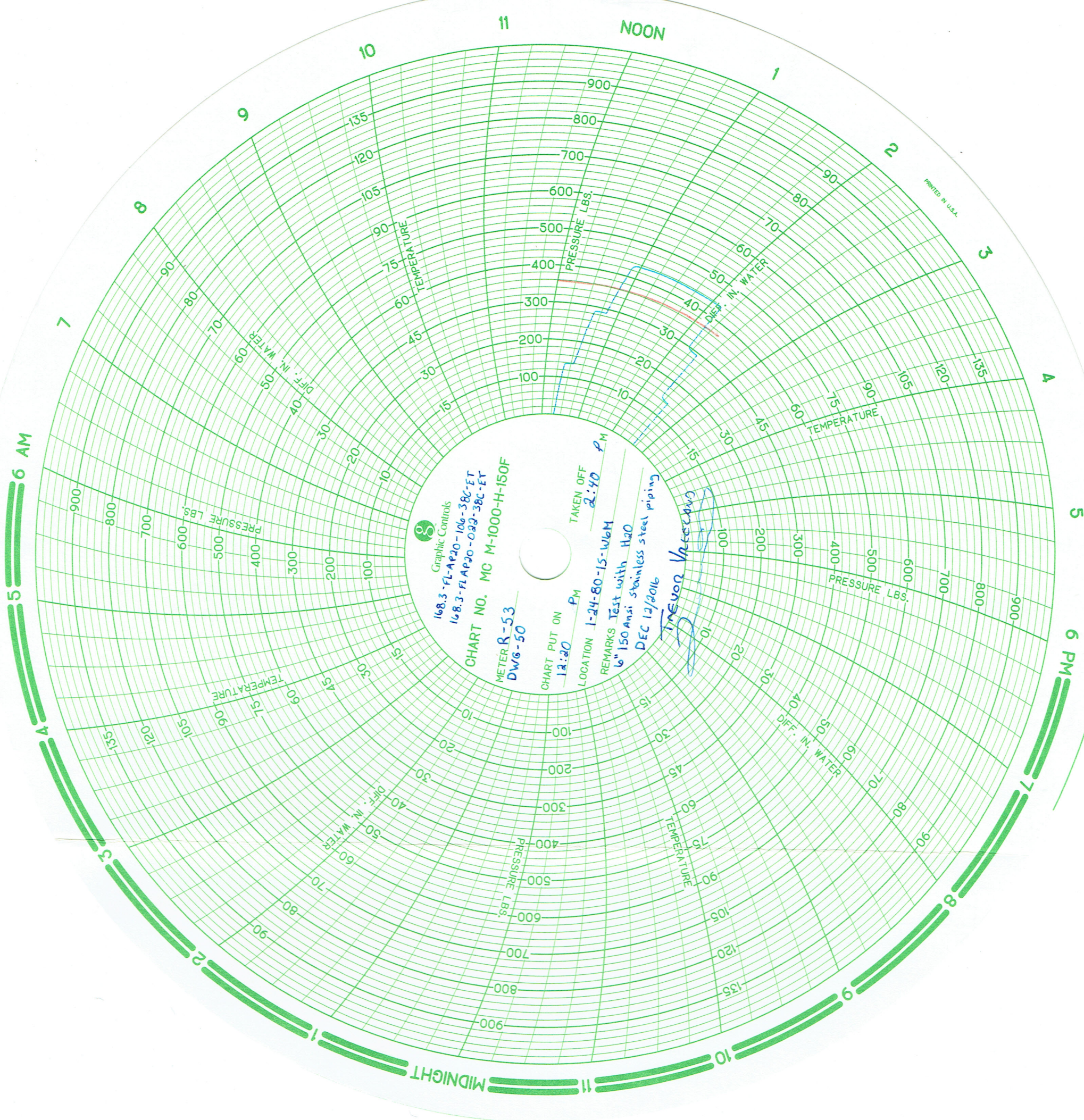
HYDRO TEST RECORD (every 15min)

Date	DEC 12 2016		Location (LSD)	1-24-80-15-W6M		Page 111
Line #	168.3 FL-AP20-032-38C-ET		Chart #	MC-11-1000-H-150F		
Recorder#	RS3	Dead Weight#	DWG-50	Line Number		(continue on other pages if req'd)
Time	Pressure (PSI)		Guage	Temperature		Remarks
	Recorder	Dead Weights		Ambient	Test	
12:20	0	0		14°	51°F	Start Hydrotest
12:25	140	140.3 Psi		14°	52°F	1st Stage Bumpup
12:35	140	140.7 Psi		14°	54°F	15 min Hold
12:42	290	290.6 Psi		14°	54°F	2nd Stage Bumpup
12:52	290	290.4 Psi		14°	54°F	15 min Hold
12:57	430	432.9 Psi		15°	54°F	Hydrotest up to pressure
1:10	430	432.9 Psi		15°	54°F	Monitoring Test
1:25	431	433.2 Psi		15°	55°F	Monitoring Test
1:40	431	433.2 Psi		15°	55°F	Monitoring Test
1:55	431	433.4 Psi		15°	55°F	Monitoring Test
2:10	432	434.0 Psi		15°	55°F	1 Hr complete
2:14	290	290.1 Psi		15°	56°F	1st Stage bleeddown
2:23	290	290.7 Psi		15°	56°F	15 min hold
2:27	140	140.4 Psi		15°	56°F	2nd Stage bleeddown
2:38	140	140.8 Psi		15°	56°F	15 Min hold
2:42	0	0 Psi		15°	56°F	Test Complete

Contractor's Signature:

Inspector's Signature:

TRAVOR KREELAND



Graphic Controls
168.3-FL-AP20-106-38C-ET
168.3-FL-AP20-022-38C-ET
CHART NO. MC M-1000-H-150F
METER R-53
DWG-50
CHART PUT ON 12:20 PM
TAKEN OFF 2:40 PM
LOCATION 1-24-80-15-46M
REMARKS Test with H2O
6" 150 ANSI stainless steel piping
DEC 12/2016
Trevor V. [unclear]

PRINTED IN U.S.A.



BOX 4207, SPRUCE GROVE, AB, T7X 3B4

RECORD OF CALIBRATIONS

Date: December, 12,2016
Equipment Number: DWG-50
Date of Purchase or Rental: December, 11,2016
Description of Equipment: (1)-0 to 5000 p.s.i. Deadwight Gauge

DATE CALIBRATED

December, 9,2016

BY WHOM

Bull Oilfield

OCM / SUPT

Trevor Vreeland

A handwritten signature in blue ink, appearing to read "Trevor Vreeland", is written over the printed name.

BULL OILFIELD Instrument Rentals

742698 Alberta Ltd
11450-89 Ave Grande Prairie A 8V 7M9

Meter Inspection**3D Gauge DIGITAL STATIC PRESSURE INDICATOR**

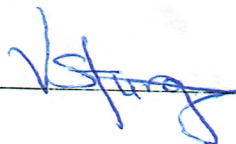
UNIT #	Pressure Range	Serial #	rated accuracy
DWG-50	0-5000 psig	3866	0.04%

DEADWEIGHT PRESSURE	Gauge READING			
500	500			
1000	1000			
1500	1500			
2000	2000			
2500	2500			
3000	3000			
3500	3500			
4000	4000			
4500	4500			
5000	5000			
0	0			

bushing condition	Deadweight Ser.#58663
NIST Compliance # P-8600/8599 A	
The calibration of this instrument has been accurately compared with reference pistons whose areas have been determined by the National Institute of Standards And Technology	

DATE CALIBRATED Friday, December 09, 2016
Cert.#12/9/16 DWG-50

Tech. Signature





BOX 4207, SPRUCE GROVE, AB, T7X 3B4

RECORD OF CALIBRATIONS

Date: December, 12,2016
Equipment Number: R-53
Date of Purchase or Rental: December, 11,2016
Description of Equipment: (1)-0 to 1000psi Recorder

DATE CALIBRATED

December, 6,2016

BY WHOM

Bull Oilfield

QCM / SUPT

Trevor Vreeland

A handwritten signature in blue ink, appearing to read "Trevor Vreeland", is written over the printed name.