

Memo to File

Date: September 11, 2014

To: File 150 Destructive & Non-Destructive Inspections

From: Denis Houle

RE: Hydro test of Pipe at NTF

An four (8) hour strength test and leak test was performed as per CSA Z-662-11 on the 24" pipe between NTF valve 695 position and the end of ownership flange between MPL and Enbridge at NTF. Test was performed on 24" x 150 class blind flanges at each end. Valve 695 had been removed.

Test was performed on August 08, 2014 from 13h00 to 21h00. Water was used as the medium.

Test was successful and no failures or leaks were detected.

Test was performed by Denis Houle, Maintenance Supervisor Montreal Terminal.

Instrument used to perform test.

- Dead weight pressure tester used:
Make: Mansfield and Green, Model no. WG-50
Serial no. 5537
- Pressure Recorder used:
Make: Rosemount
Serial no. 1797340
- Temperature Recorder used:
Make: Weksler
Serial no. R96-1959

Signature: Denis Houle 07-11-2014

Attachments: Pressure and Temperature log
Hydro test record and certification
Pressure and temperature calibration reports
Copy of pressure and temperature chart.

HYDROSTATIC TEST RECORD AND CERTIFICATION

Test Section: Enbridge Supply

Date: 8-Aug-14

Company: Montreal Pipe Line Limited

System: North Tank Field

Description from: Test between valve Y695

To: Owner ship flange at Enbridge

New Construction: ☐

Requalification: ☒

Replacement or Relocation: ☒

Test Medium Water: ☐

Other: NA

Inhibitor: NA

Design Data Code: ☐ B31.4

☐ B31.3

☒ CSA Z662 - 11

Pipe Design Data

Specification and Grade	Weld Joint Factor	Design Factor	OD	Wall Thick.	Corr. Allow	Loc. Factor	SMYS	Design Press.	Comments
API 5L-X42	1	0.8	24	0.375	0.0625	1	42,000	275	
A234 WPB	1	0.8	24	0.375	0.0625	1	35,000	275	All Fittings
B16.5-A105-Class 150	1	0.8	24	0.375	0.0625	1	36,000	275	Weld Neck Flanges -ANSI 150

Pressure Test:

Test Pressure should be as follows:

Note: maximum test pressure is based on MOP Class 150 Flanges

Minimum at high point: 344 %SMYS 47%

Maximum at Low Point: 450 %SMYS 62%

Elevations: Low Point (Ft): Note 1

High Point (Ft): Note 1

DWT (Ft): Note 1

Qualification:

Date of Test: 27-Aug-14

Duration of Test (hours): 8 hour

Testing and recording witnessed by: Dennis Houle

Date: 20-Aug-14

Company: Montreal Pipe Line Limited

Company Representative: Dennis Houle

Title: Supervisor

Testing Pressure:

Maximum at low point: 397 PSIG Note:

for %SMYS 62%

Minimum at high point: 395 PSIG Note: Lowest recorded during test

for %SMYS 54%

Qualified to operate at: 275 PSIG Determined by ANSI Class 150 Flanges

for %SMYS 38%

Report checked by:

Date: 20-Aug-14

Approved by:

Title: *Dennis Houle*

Testing Company: Montreal Pipe Line Limited

Attached Documents:

Pressure record: ☒

Pressure and Temperature Log ☒

Temperature Record: ☒

Sketch and Diagram ☒

Profile: ☐ NA - less than 2 feet

Qualifications Calculations ☒

Failure Record: ☐ NA

Test Instrument Calibration Data: ☒

Comments:

Note 1: Elevation of pipe changes by 3.6 feet from valve Y-695 to isolation flange.

Test was performed on site at NTF in MTL East by Dennis Houle

Notes:

1. OD = outside diameter, SMYS=specified minimum yield strength, SMY = Specified minimum yield, DWT = deadweight tester
2. For test Sections containing more than one type of pipe, the maximum test pressure at low point and minimum test pressure at high point resulting specified minimum yield strength need to be calculated for each type of pipe.

QUALIFICATION CALCULATIONS

Test Section: Enbridge Supply
Date: 8-Aug-14
Company: Montreal Pipe Line Limited

System: North Tank Field

Description from: Test between valve Y695

To: Owner ship flange at Enbridge

New Construction: ☐
Requalification: ☒
Replacement or Relocation: ☒
Test Medium Water: ☐
Other: NA

Inhibitor: NA

Design Data Code: ☐ B31.4

☐

B31.3

☒ CSA Z662 - 11

PRESSURE TEST

Assume SMYS based on ANSI A234 WPB fittings

Calculating Minimum High Point SMYS

Pipe O.D	SMYS	Wall Thick	Corr Allow	WJF	DF	LF	Press	%SMYS
24	35000	0.375	0.0625	1	1	1	344	47%

Calculating Maximum Low Point SMYS

Pipe O.D	SMYS	Wall Thick	Corr Allow	WJF	DF	LF	Press	%SMYS
24	35000	0.375	0.0625	1	1	1	450	62%

TESTING PRESSURE

Assume SMYS based on ANSI A234 WPB fittings

Calculating Maximum at low point %SMYS

Pipe O.D	SMYS	Wall Thick	Corr Allow	WJF	DF	LF	Press	%SMYS
24	35000	0.375	0.0625	1	1	1	450	62%

Calculating Minimum at high Point %SMYS

Pipe O.D	SMYS	Wall Thick	Corr Allow	WJF	DF	LF	Press	%SMYS
24	35000	0.375	0.0625	1	1	1	450	54%

Qualified to operate at %SMYS

Pipe O.D	SMYS	Wall Thick	Corr Allow	WJF	DF	LF	Press	%SMYS
24	35000	0.375	0.0625	1	1	1	275	38%

High point pressure calculation D-6925

Min	Pressure	395	Pressure measured at the bottom of the pipe
Top	24" CL	136 feet	Center line of 24 inch pipe
Bottom	24" CL	132.4 feet	Centerline of pipe under road
Min Calc	Actual	396.6 Psi	Highest pressure in pipe under road

Flange Pressure Calculation (B16.5-2003 Section 2.6 "System pressure Testing")

B16.5 Version (1996 - 2013: mAXIMUM shell pressure test 1.5 times 100° class rating plus 25 psi

PSI	X Factor	= psi	Plus psi	Test Pressure (psi)
285	1.5	427.5	25	450

Montreal Pipe Line Ltd

Pressure and Temperature Log

Test section Description

24" pipe between blind flange at valve 695 position
to the property blind flange of Enbridge.

Start of Test Period

Time 13:00

Date 08-20-2014

End of Test Period

Time 21:00

Date 08-20-2014

Pressure test @ min 360

for 8 hours.

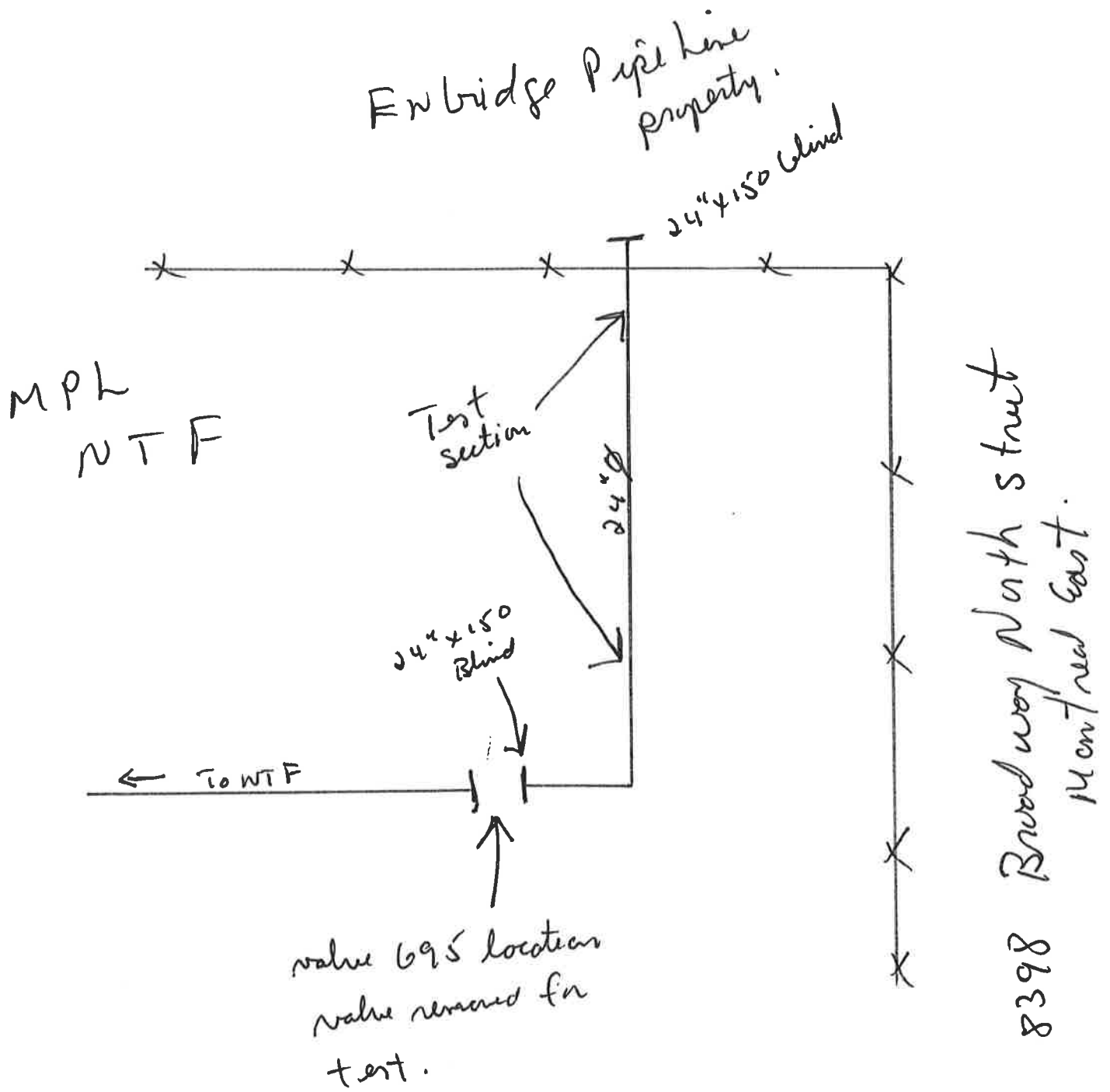
No.	Time	Dead Weight PSIG	Pressure Gauge	Pipe Temp.	Ambient Temp.	By	Remarks
1	13:00	395.5	395	59.8	86.4	DH	Sunny
2	14:00	396.0	395	60.1	90.4	DH	Sunny.
3	14:30	396	395	60.4	86.9	DH	Heavy cloudy.
4	15:00	396	395	60.8	90.3	DH	sunny / cloudy.
5	15:30	396	395	60.9	89.1	DH	" "
6	16:00	396	395	60.9	88.3	DH	cloudy.
7	16:30	396	395	61.1	88.4	DH	ambient temp dropping
8	17:00	396.5	396	61.2	84.7	DH	" "
9	17:30	396	395	61.3	81.8	DH	" "
10	18:00	396	395	61.3	80.2	DH	
11	18:30	396	395	61.4	80.2	DH	ambient temp stable.
12	19:00	396	395	61.5	78.2	DH	ambient air cooler sunset
13	19:30	396	395	61.5	75.0	DH	" " "
14	20:00	396	395	61.5	73.5	DH	" " "
15	20:30	396	395	61.5	73.1	DH	" " "
16	21:00	396	395	61.5	72.0	DH	" " "
17							End of 8 hour test.
18							no visual leaks from flanges.
19							remaining pipe was underground.
20							

Test Performed By:

Denis Houle
Print Name

Denis Houle
Signature

08-20-2014
Date



42.

PRESSURE TESTING OF LIQUID PETROLEUM PIPELINES

PRESSURE RECORD

Company Montreal Pipe Line
 System 24" pipe between rdw 695 +
Enbridge flange.

Description of Instrument (make/model) <u>Rosemount</u>			
Serial Number of Instrument <u>1797340</u>			
Test Section No. <u>24" pipe between rdw 695 + Enbridge.</u>	<u>approx 60 feet</u>	miles	
MP <u>NA</u> to MP <u>NA</u>	Station No. <u>NTF</u>	to Station No. <u>Enbridge.</u>	
Location of Chart Recorder MP <u>at rdw 695 position on 1" vent.</u>		Station No. <u>NA</u>	
Start: Time <u>13:00</u>	Date <u>08-20-2014</u>		
End: Time <u>21:00</u>	Date <u>08-20-2014</u>		
Contractor Rep. <u>NA</u>	Title <u>NA</u>	Date <u>NA</u>	
Pipeline Company Rep. <u>Denis Houle</u>	Title <u>SUPERVISOR</u>	Date <u>08-20-14</u>	
Project Engineer		Date	

Notes:

1. MP = mile post.
2. This pressure information should be included on the permanent record of pressure versus time. Placing this information on a stick-on label and sticking the label to the permanent record might be considered.

TEMPERATURE RECORD

Company Montreal Pipe Line
 System 24" pipe between rdw 695 +
Enbridge.

Description of Instrument (make/model) <u>Weksler</u>			
Serial Number of Instrument <u>R-96-1959</u>			
Test Section No. <u>24" pipe between rdw 695 + Enbridge.</u>	<u>approx 60 feet</u>	miles	
MP <u>NA</u> to MP <u>NA</u>	Station No. <u>NTF</u>	to Station No. <u>Enbridge.</u>	
Location of Chart Recorder MP <u>at rdw 695 position on 1" vent.</u>		Station No. <u>NA</u>	
Start: Time <u>13:00</u>	Date <u>08-20-2014</u>		
End: Time <u>21:00</u>	Date <u>08-20-2014</u>		
Contractor Rep. <u>NA</u>	Title <u>NA</u>	Date <u>NA</u>	
Pipeline Company Rep. <u>Denis Houle</u>	Title <u>Supervisor.</u>	Date <u>08-20-14</u>	
Project Engineer		Date	

Notes:

1. MP = mile post.
2. This temperature information should be included on the permanent record of temperature versus time. Placing this information on a stick-on label and sticking the label to the permanent record might be considered.

API RECOMMENDED PRACTICE 1110

HYDROSTATIC TEST
RECORD AND CERTIFICATIONTest Section 24" pipe between rdh 695 + Enbridge flange
Date 08-20-2014

Company Montreal Pipe Line System 24" pipe between rdh 695 + Enbridge
 Description from Blind flange Y695 position to Blind flange at Enbridge property
 New Construction ☐ Requalification ☒ Replacement or Relocation ☐ Pipeline ☐ Station ☐
 Test Medium: Water ☒ Other ☐ Inhibitor ☐
 Design Data Code: ☐ B31.4 ☐ B31.8 ☐ Other ☐

Pipe Design Data

Specification and Grade	Weld Joint Factor	Design Factor	OD	Wall Thickness	SMYS	Design Pressure	Comments
			24"				

Pressure Test:

Test pressure should be as follows:

360 Minimum at high point NA %SMY Maximum at low point NA %SMYElevations: Low point NA High point NA DWT NA

Qualification:

Date of test 08-20-2014 Duration of test 8 hoursTesting and recording witnessed by Denis Houle Date 08-20-2014Company Montreal Pipe Line Title SupervisorCompany representative Denis Houle Title Supervisor

Testing Pressure:

Maximum at low point NA for %SMYSMinimum at high point NA for %SMYSQualified to operate at NA for %SMYSReport checked by NA Date NAApproved by NA Title NATesting Company NA

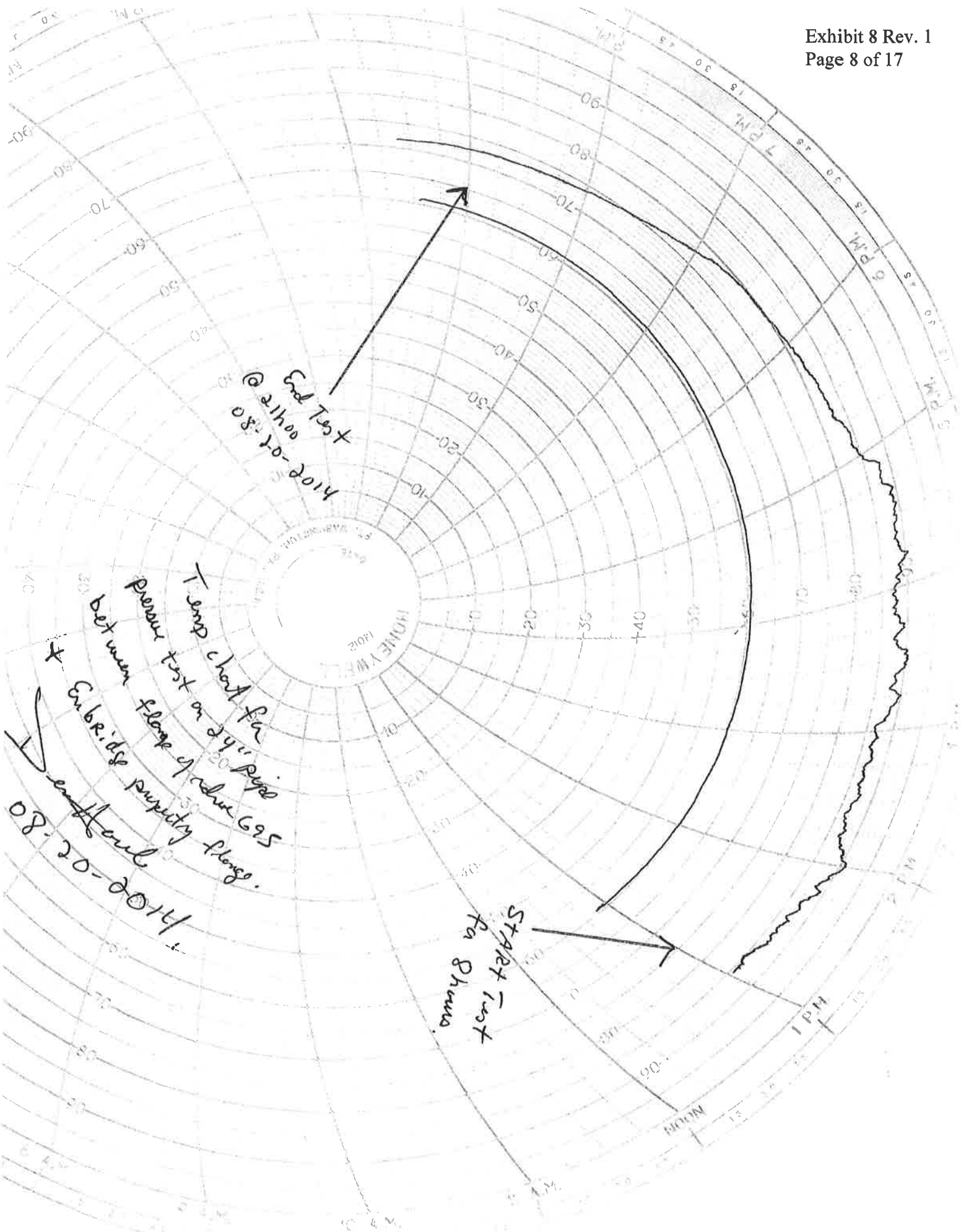
Attached Documents:

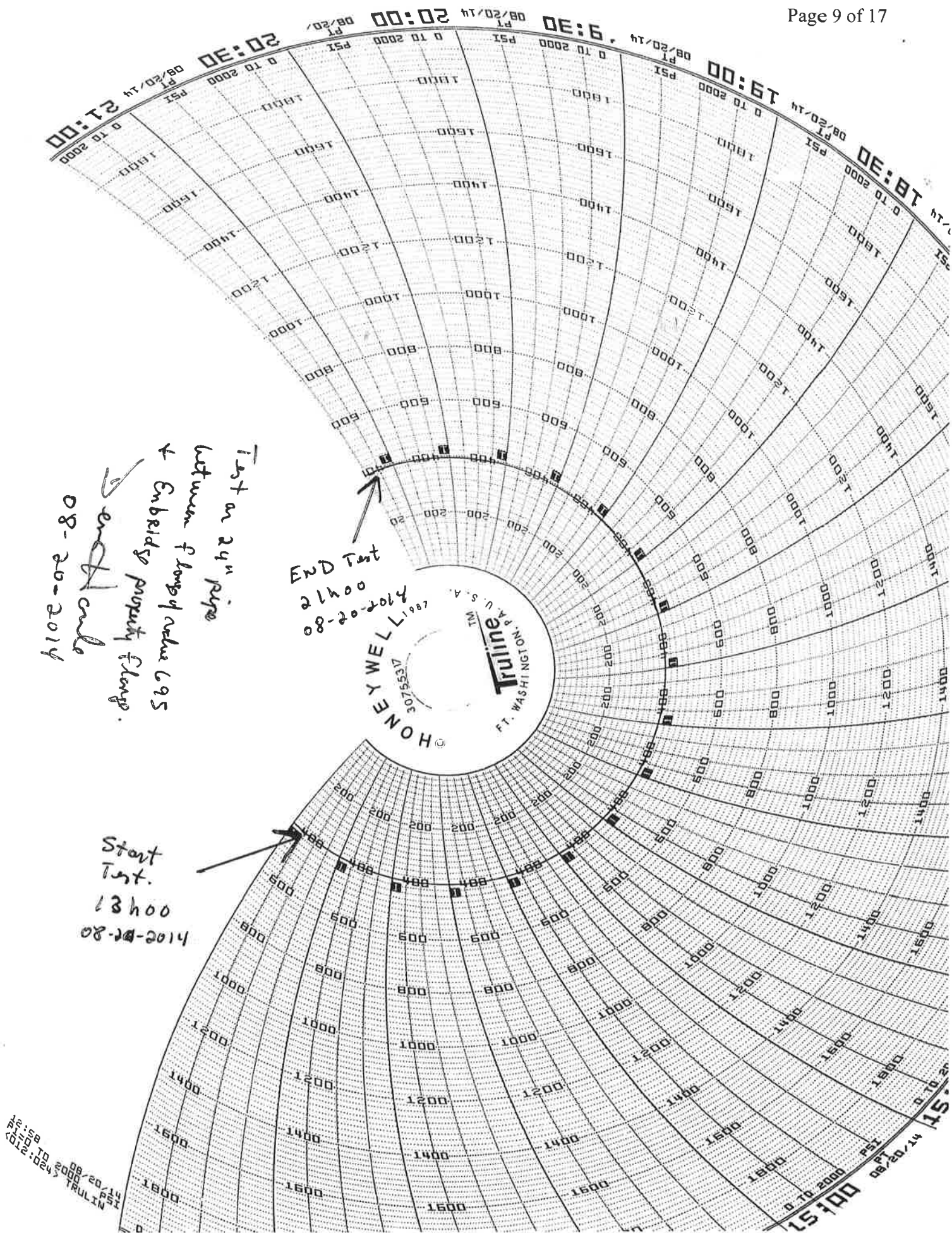
Pressure Record ☒ Pressure and Temperature Log ☒ Temperature Record ☒Test Instrument Calibration Data ☒ Sketch or Diagram ☒ Qualification Calculations ☐Profile ☐ Failure Records ☐

Comments:

Notes:

1. OD = outside diameter, SMYS = specified minimum yield strength, SMY = specified minimum yield, DWT = deadweight tester.
 For test sections containing more than one type of pipe, the maximum test pressure at low point and minimum test pressure at high point resulting specified minimum yield strength need to be calculated for each type of pipe.





Montreal Pipe Line Limited

Instrument Check

Honeywell Two Channel Portable Temperature Recorder

Model No. DR45A2-1100

Serial No: 0748Y776363200001

Date: September 5, 2014

Span: 0-100° F

Applied Temp. ° F	Recorder - ° F			
	Channel 1 - Process - Purple Pen			
	Chart	Difference	Display	Difference
40.2	40.0	-0.2	40.3	0.1
60.2	60.1	-0.1	60.2	0.0
90.0	90.0	0.0	90.4	0.4

Span: 0-100° F

Applied Temp. ° F	Recorder - ° F			
	Channel 2 - Ambient - Red Pen			
	Chart	Difference	Display	Difference
40.2	39.9	-0.3	40.3	0.1
60.2	60.0	-0.2	60.3	0.1
90.0	90.0	0.0	90.2	0.2

Test Instruments Used:

Hart Scientific Dry-well calibrator
Model 9105

Thermometer with probe

Model: Hart Scientific (Fluke) 1521/RTD

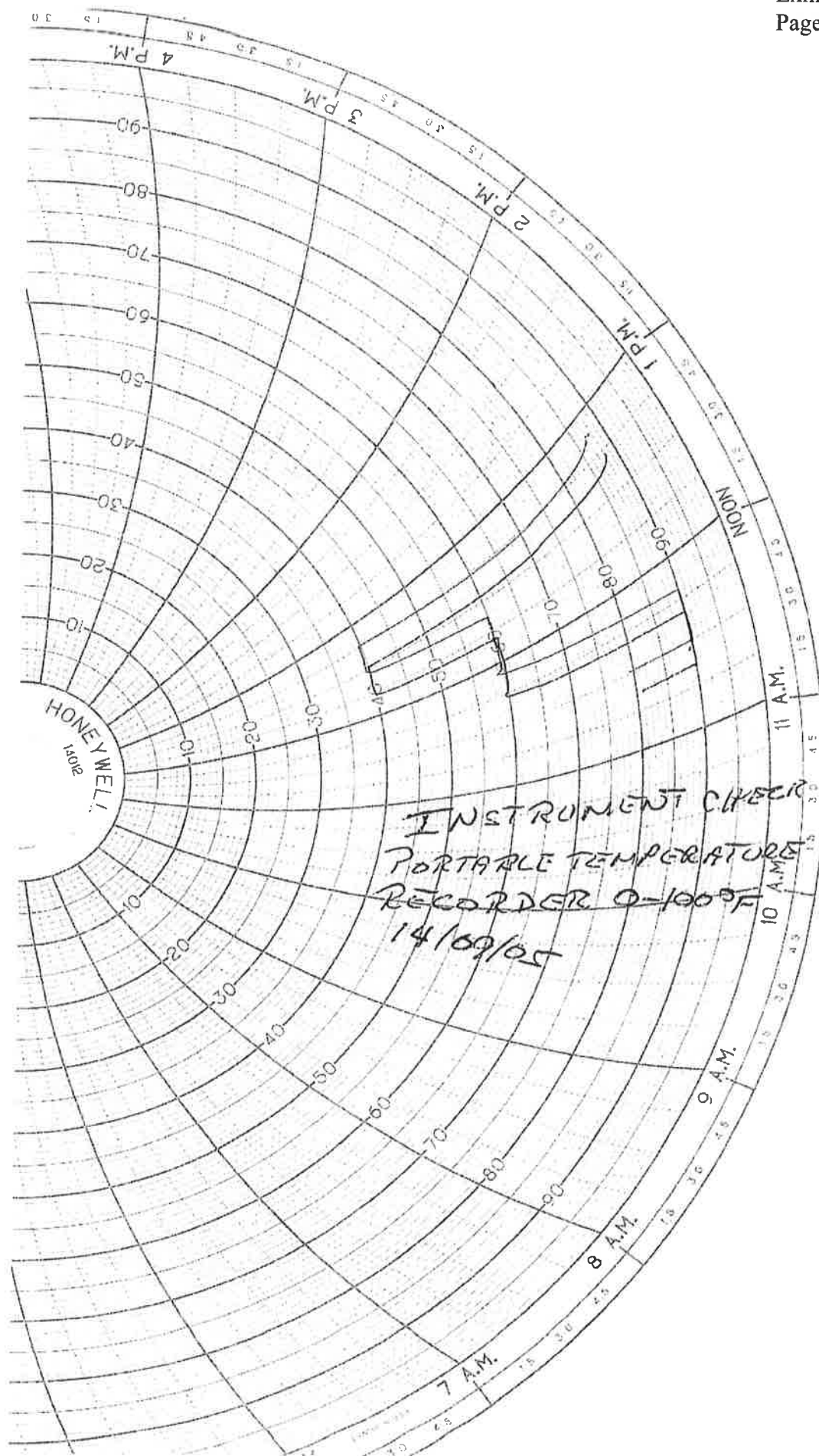
Serial No: A73284/800167

Recall Date: 2015-01-29

Performed By: P.M.

P. McDougall

Comments: Instrument check



Montreal Pipe Line Limited

Instrument Loop Check

Honeywell Portable Pressure Recorder

Model No. DR45AT-1100
Serial No: 0722Y7744440500001

and Rosemount Pressure Transmitter

Date: September 5, 2014

Model No: 3051165A1AB
Serial No: 1797340

Span: 0-2000 PSI

Applied Pressure PSI	Recorder - PSI			
	Chart	Difference	Display	Difference
0	0	0	0	0
500	500	0	500	0
1000	1000	0	1000	0
1500	1501	1	1500	0
1980	1982	2	1980	0

Test Instrument Used:

Ametek Jofra Advanced Pressure Calibrator (APC)

Model: APC03KGINDG

Serial No: 9632072

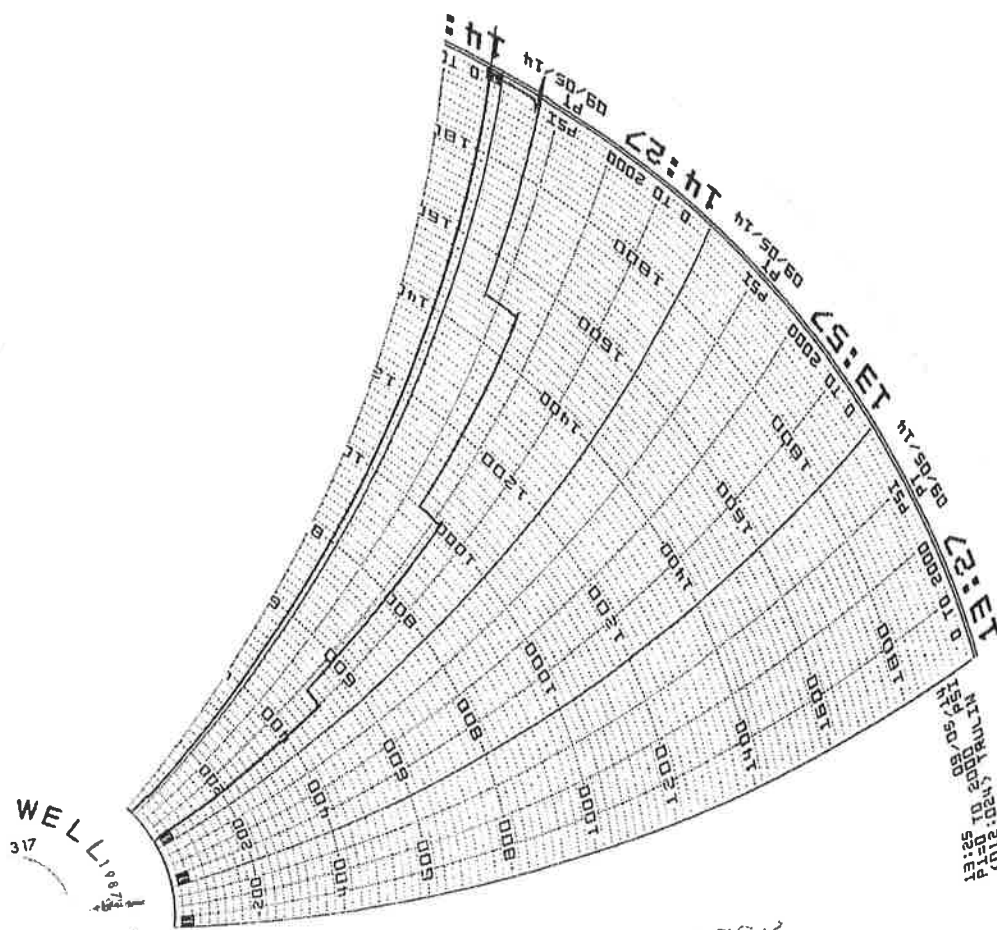
Recall Date: 2015-04-09

Performed By:



P. M'Dougall

Comments: Instrument Check



INSTRUMENT CHECK
PORTABLE PRESSURE
RECORDER 0-2,000 PSI
14/09/05

Montreal Pipe Line Limited

Instrument Loop Check

Honeywell Portable Pressure Recorder

Model No. DR45AT-1100
Serial No: 0722Y7744440500001

and Rosemount Pressure Transmitter

Date: April 14, 2014

Model No: 3051165A1AB
Serial No: 1797340

Span: 0-2000 PSI

Applied Pressure PSI	Recorder - PSI			
	Chart	Difference	Display	Difference
0	0	0	2	2
500	500	0	502	2
1000	1000	0	1002	2
1500	1500	0	1502	2
1980	1980	0	1983	3

Test Instrument Used:

Ametek Jofra Advanced Pressure Calibrator (APC)

Model: APC03KGINDG

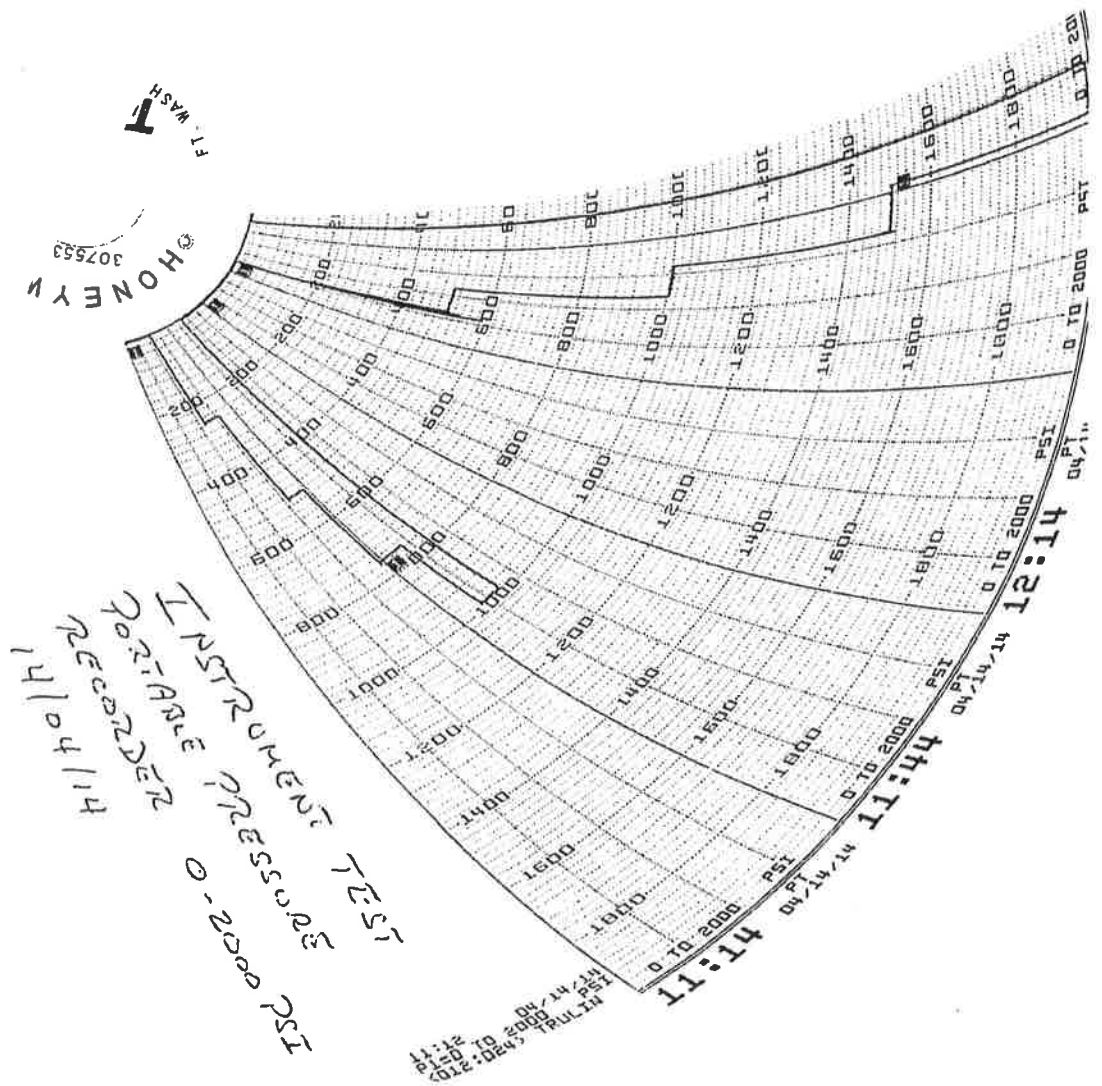
Serial No: 9632072

Recall Date: 2015-04-09

Performed By: 

P. McDougall

Comments: Instrument Check



Montreal Pipe Line Limited

Instrument Check

Honeywell Two Channel Portable Temperature Recorder

Model No. DR45A2-1100
Serial No: 0748Y776363200001

Date: April 14, 2014

Span: 0-100° F

Applied Temp. ° F	Recorder - ° F			
	Channel 1 - Process - Purple Pen			
	Chart	Difference	Display	Difference
33.1	33.0	-0.1	33.2	0.1
62.0	62.0	0.0	62.2	0.2
90.8	91.0	0.2	91.1	0.3

Span: 0-100° F

Applied Temp. ° F	Recorder - ° F			
	Channel 2 - Ambient - Red Pen			
	Chart	Difference	Display	Difference
33.1	33.0	-0.1	33.2	0.1
62.0	62.0	0.0	62.0	0.0
90.8	91.0	0.2	90.8	0.0

Test Instruments Used:

Hart Scientific Dry-well calibrator
Model 9105

Thermometer with probe

Model: Hart Scientific (Fluke) 1521/RTD
Serial No: A73284/789477
Recall Date: 2015-01-29

Performed By: P.M.

P. McDougall

Comments: Instrument check

