

EXCEEDING EXPECTATIONS SINCE 1969



IDEAL WELDERS
LTD

MUD BOOK

SRO No.: 9550046105

Project Name: CS6A

Project Number: U2902

Station Name: 100 Mile House

Province: British Columbia

Contractor Name: Ideal Welders Ltd

10139

CN 06106

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6	Coating Package	<input type="checkbox"/>

Prepared by: _____

Reviewed by: _____



PRESSURE TEST FORM

ENB-CFCS-PROC-002F413



AFE No.	U2902	Province/State	BC
Project Name	TSRE	Station Name	CS6A 150 Mile House
Contractor/Vendor/PLM	Ideal Welders Ltd.	Location/Milepost	660 Caldew St.
Contract Ref. No.: e.g. (WO, PO, CWP)	10139	Date: YYYY/MM/DD	N/A

Note 1: Identify testing information that is not applicable as N/A.

Identify Metric or Imperial units: kPa or psi L or gal. °C or °F m or ft

PRESSURE TEST INFORMATION

Test Date: YYYY/MM/DD	2020/1/23	Test No.	10139-U2902-007
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Drawing No (s) and rev.

Spool	Control Number	Revision
CS-6A-9527-01 MK1	06105	0
CS-6A-9528-01 MK1	06106	0
CS-6A-9529-01 MK1	06107	0
CS-6A-9530-01 MK1	06108	0
CS-6A-9531-01 MK1	06109	0

Test Media

Test Media Type	Nitrogen <input type="checkbox"/>	Air <input type="checkbox"/>	Water <input checked="" type="checkbox"/>	Water with Additives <input type="checkbox"/>
Approximate Test Media Volume	2.88	CUBIC METERS	Type of Additive	N/A
Were permits for the use and disposal of water obtained?	Yes <input type="checkbox"/>		No Permits were required <input checked="" type="checkbox"/>	

PIPE SPECIFICATIONS

Manufacturer	Grade	NPS/OD	Wall Thickness	(USA only)	
				Length	Seam Type
TENARIS	A333 GR 6	12"	Sch.80	N/A	N/A

TEST EQUIPMENT DATA

Equipment Type	Make	Range	Serial No.
Precision Reference pressure tester	nVision	0-10000 PSI	700089
Continuous pressure recorder	nVison	0-10000 PSI	700089
Pressure Gauge	WGTC	0-5000 PSI	TE-82 S/N 02181415 TE-84 S/N 02181414
Liquid in Glass Thermometer	HBI	-35 TO 535C	TH-2 S/N 4F2571
Ambient Air Temp Recorder	LASARC	-35 TO 80C	CERT# C299061-00-01
Ground Temp Recorder	N/A	N/A	N/A
Test Medium Temp Recorder	nVison	-200 to 800c	700089

Chris
 Jan 23, 2020



PRESSURE TEST FORM

ENB-CFCS-PROC-002F413



TEST EQUIPMENT ACCURACY VERIFICATION					
Test Equipment	Pressure Verification Before Test			Pressure Verification After Test	
	% of Test Pressure	25%	50%	100%	50%
Precision Reference pressure tester	531 PSI	1055 PSI	2052 PSI	2049 PSI	1065 PSI
Continuous pressure recorder	531 PSI	1055 PSI	2052 PSI	2049 PSI	1065 PSI
Pressure Gauge	530 PSI	1050 PSI	2050 PSI	2050 PSI	1060 PSI

JAN 23 2020
Chris [Signature]



PRESSURE TEST FORM

ENB-CFCS-PROC-002F413



MAINLINE USE ONLY				
Pressure recorder and Precision Reference Tester Elevation		High Point Elevation		Critical Low Point Elevation
Location	N/A	N/A	N/A	N/A
Pressure	N/A	N/A	N/A	N/A
Location of Test Limits				
First 2 upstream and downstream welds	Upstream Weld ID	Coordinates (lat. and long.)	Downstream Weld ID	Coordinates (lat. and long.)
No. 1	N/A	N/A	N/A	N/A
No. 2	N/A	N/A	N/A	N/A

PRESSURE TESTING REQUIREMENTS

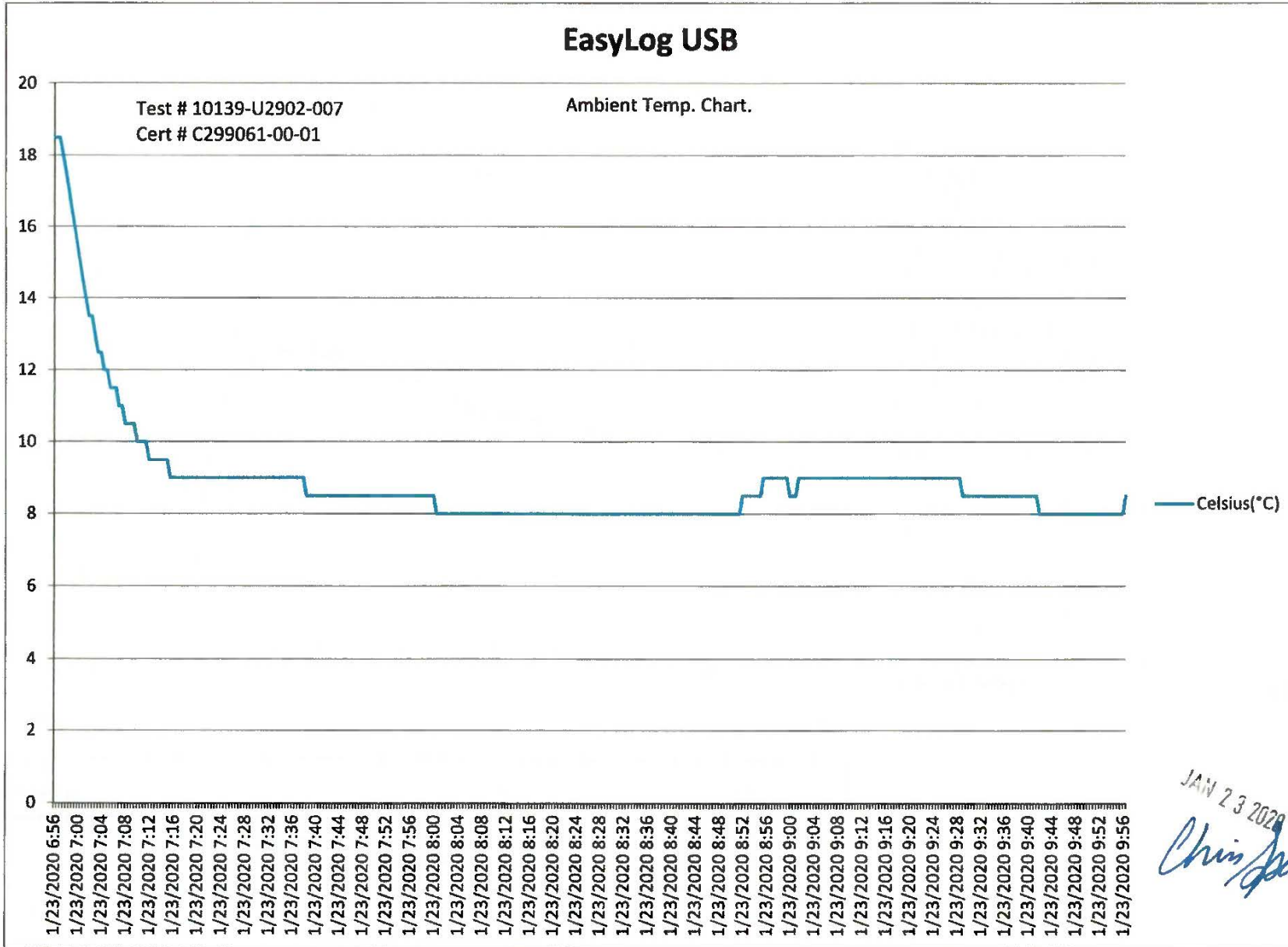
Note 1: Manually record temperatures to ensure equilibrium has been reached before pressurization according to FCS-014 or PCS-005
Note 2: Charts must be signed using ENB-CFCS-PROC-002F414 Pressure Test Chart ID Label

PRESSURE TESTING DESIGN REQUIREMENTS AND DURATION					
Maximum Operating Pressure	942 PSI				
Can the entire piping system be visually inspected for leaks?	Yes <input checked="" type="checkbox"/>			No <input type="checkbox"/>	
Test Type	Design Min Pressure	Design Max Pressure	Time On	Time Off	Duration Required
Strength	2018 PSI	2160 PSI	N/A	N/A	60 Min.
Leak	2018 PSI	2160 PSI	N/A	N/A	Visual
ACTUAL TEST PRESSURES ACHIEVED AND DURATIONS					
Test Type	Actual Min Pressure	Actual Max Pressure	Time On	Time Off	Actual Total Duration
Strength	2049 PSI	2052 PSI	07:47 AM	08:50 AM	63 Min
Leak	2049 PSI	2049 PSI	08:50 AM	09:00 AM	10 Min

PRESSURE TESTING DATA					Test No.	10139-U2902-007
Time (approx. 15 min intervals)	Precision Reference Pressure	Ambient Air Temp.	Temperature Test Medium Temp.	Ground Temp.	Remarks (Weather, Volumes Added/Bled Off)	
AM	PSI	°C	°C	N/A		
07:16	0	9	7.18	N/A	0%	
07:21	531	9	7.14	N/A	25% START	
07:26	530	9	7.13	N/A	25% END	
07:29	1055	9	7.11	N/A	50% START	
07:34	1054	8.5	7.11	N/A	50% END	
07:37	1572	8.5	7.09	N/A	75% START	
07:44	1572	8.5	7.11	N/A	75% END	
07:47	2052	8.5	7.10	N/A	100% STRENGTH TEST START	
07:57	2051	8.5	7.13	N/A	10 Mins	
08:07	2050	7.5	7.15	N/A	20 Mins	
08:17	2050	7.5	7.17	N/A	30 Mins	

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HYDRO # 10139-U2902-007

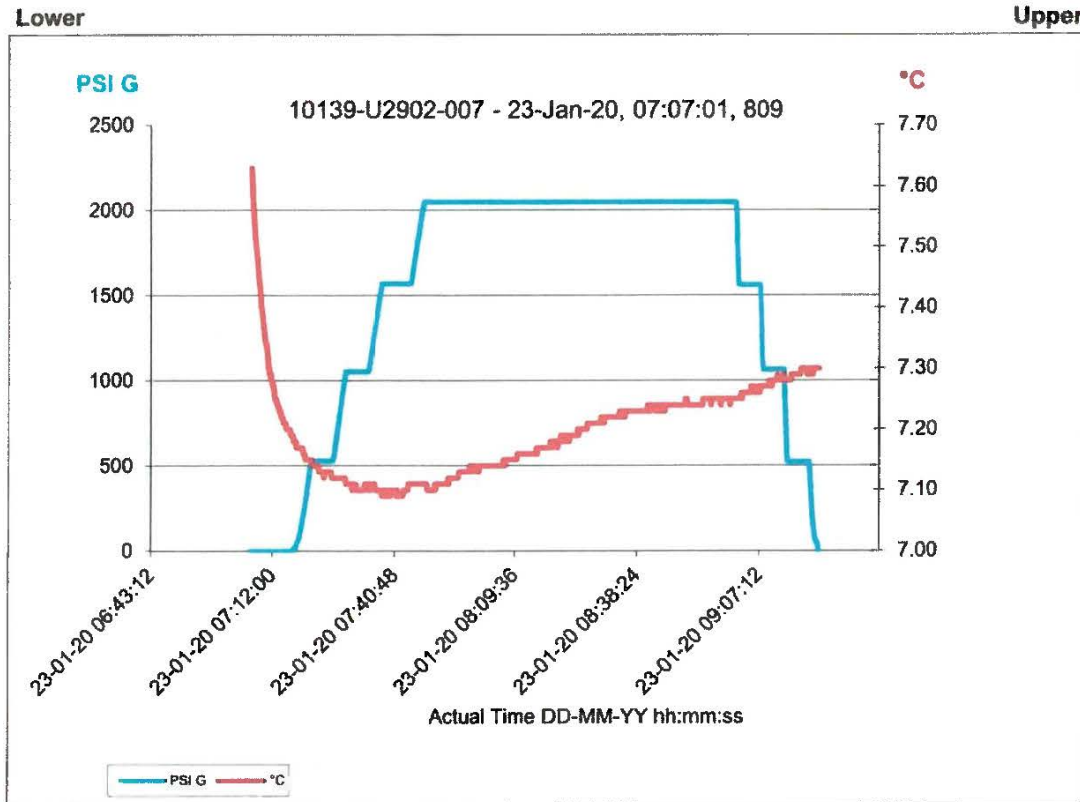


JAN 23 2020
Chris Jones

HYDRO # 10139-U2902-007

Data Collection Report

	Chassis	Left Scale	Right Scale
Serial Number	700089	707087	703951
Datatype		Lower	Upper
Units		PSI G	°C



Facility Construction



Pressure Test Chart Identification Label

AFE No.: U2902

Project: CS6A - 150 Mile House

Location: 1010 Derwent Way

Test Date yyyy/mm/dd: _____

Contractor/Job No.: 10139

Contractor Test No.: 10139-U2902-007

Pressure Element Range: 0 to 10000 PSI

Pressure Element Pen Color: BLUE

Temperature Element Range: -200 to +800 Celsius

Temperature Element Pen Color: RED

The attached pressure recorder chart meets all pressure testing criteria design requirements.

CONTRACTOR REPRESENTATIVE

Print: MIKE BAKER

Sign: [Signature]

Date yyyy/mm/dd: 2020/01/23

ENBRIDGE REPRESENTATIVE

Print: CHRIS SPENCE

Sign: [Signature]

Date yyyy/mm/dd: JAN 23 2020

HYDRO # 10139-U2902-007



TORONTO 16975 Leslie Street Newmarket, ON L3Y 9A1 Tel: (905) 952-3750 Fax: (905) 952-3751	MONTREAL 20800 Boul. Industriel Ste-Anne-de-Bellevue, QC H9X 0A1 Tel: (514) 457-7280 Fax: (514) 457-4329	CALGARY #209, 4615 112 Ave SE Calgary, AB T2C 5J3 Tel: (403) 272-9332 Fax: (403) 248-5194	VANCOUVER 1282 Cliveden Av Delta, BC V3M 6G4 Tel: (604) 254-9622 Fax: (604) 254-3123
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Calibration Certificate

Customer: *Ideal Welders Limited*

Certificate: C299061-00-01

Unit Identification

Manufacturer: Lascar
Model: EL-USB-1
Description: Temperature Data Logger

Serial: NA
Unit ID: NA

Calibration Date

Calibration Date: 30-Sep-2019
Due Date: 30-Sep-2020

Calibration Conditions

Temperature: 22.41°C
Humidity: 47.38 %
Barometric Pressure: N/A

General Information

Remark: N/A

Standards Used

<u>Unit ID</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal Date</u>	<u>Due Date</u>
INV145	Ametek	STS200A816	11-Dec-2018	11-Dec-2019
INV147	Ametek	DT1050	10-Dec-2018	10-Dec-2019

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HYDRO # 10139-U2902-007

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of k=2 corresponding to a confidence level of approximately 95%.

Calibrated by: **B. Cardin**

Approved by:

Certificate: C299061-00-01
Asset: ITM0029550

Calibration Certificate

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Test Results
 Procedure: Lascar EL-USB-1 /DTI050,STS200A916 Rev: 1
 Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
TEMPERATURE VERIFICATION						
0.328 °C		0.5 °C	-0.2 °C	0.8 °C	Pass	7.0e-002 °C
24.08 °C		23.6 °C	23.6 °C	24.6 °C	Pass	7.0e-002 °C
44.18 °C		44.0 °C	43.7 °C	44.7 °C	Pass	7.0e-002 °C

HYDRO # 10139-U2902-007

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Certificate: C299061-00-01
 Asset: ITM0029550

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ALBERTA MEASUREMENT SERVICES LTD.

5327 - 91 STREET - EDMONTON, ALBERTA, T6E 2E6 - CANADA
 Phone (780) 468- 6387 ~ Fax (780) 462-9387

CALIBRATION CERTIFICATE

CUSTOMER: Ideal Welders Ltd
MODEL: nVision
CHASSIS SERIAL NUMBER: 700089
10K PSI MODULE SERIAL NUMBER: 707087
CALIBRATION DATE: December 20, 2019

TEMPERATURE: 21.0°C
RELATIVE HUMIDITY: 23%
RTD MODULE SERIAL NUMBER: 703951
USERSPAN RTD/10K: 1.00000/1.00000
NEXT CAL DUE: December 20, 2020

MASTER INSTRUMENT READING	INSTRUMENT READING	ALLOWABLE TOLERANCE (°C)
-200.00°C	-199.99°C	0.05
0.00°C	0.02°C	0.09
200.00°C	200.03°C	0.13
400.00°C	400.05°C	0.17
600.00°C	599.97°C	0.21
800.00°C	799.95°C	0.25

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LS

MASTER DEADWEIGHT READING	INSTRUMENT READING	ALLOWABLE TOLERANCE (psi)
0 psi	0 psi	1.5
998.479 psi	998 psi	1.5
1998.978 psi	1999 psi	1.5
2999.461 psi	2999 psi	1.5
3999.925 psi	3999 psi	2.0
4998.407 psi	4997 psi	2.5
5998.835 psi	5998 psi	3.0
6999.222 psi	6998 psi	3.5
7999.614 psi	7997 psi	4.0
8999.950 psi	8997 psi	4.5
9998.304 psi	9998 psi	5.0

HYDRO # 10139-U2902-007

MASTER INSTRUMENT READING	RTD PROBE READING	ALLOWABLE TOLERANCE (°C)
0.02°C	-0.05°C	0.15

RTD SN: T703951

Userspan: RTD 1.00000, 10K 1.00000

REMARKS: The above instrument was found to be within the manufacturer's specifications: 10KPSI 0 TO 30% of Full Scale ±0.015% of Full Scale, 30% to 110% of Full Scale ±0.05% of Reading. RTD ±0.015% of reading +0.02Ω

THE ABOVE EQUIPMENT HAS BEEN COMPARED TO AN AMETEK AMC910 S/N 2594163 TRACEABLE IN ACCORDANCE ANSI/NCSL Z540-1:1994, TRACEABLE TO THE INTERNATIONAL SYSTEM OF UNITS (SI), THROUGH NATIONAL METROLOGY INSTITUTES, RATIO METRIC TECHNIQUES OR NATURAL PHYSICAL CONSTANTS.

THE ABOVE EQUIPMENT HAS BEEN COMPARED TO A DH-BUDENBERG CPB5800/CP55800/CPM5800 DEADWEIGHT TESTER S/N 32503/257N/B2704 TRACEABLE TO UKAS ON CERIFICATE 12814/15T32503/15WB2704.

Technician: 
 Tylor Flynn

P/T L-2



ITM Instruments Inc
www.itm.com
800-561-8187

1641 Venables Street
Vancouver, BC V5L 2H2
Phone: 604-254-9622 * Fax: 604-254-3123

Certificate of Calibration

Customer: Ideal Welders Ltd

Work Order: 308977-00

Gauge Description: Marsh 4½", 5000 PSI Pressure Gauge

Condition of gauge: USED

Gauge Serial No: 02181415

Date of Calibration: 2019-11-25

Due Date: 2020-11-25

Calibration Data

Applied Pressure	Gauge Reading	Deviation
PSI	PSI	
0	0	0
500	500	0
1500	1500	0
2500	2500	0
3500	3500	0
4500	4500	0

JAN 23 2020

Gauge Accuracy: ASME Grade 2A, ±0.5% of span

Test Standards:

Vacuum Gauges:

Digitron Digital Manometer model 2082P, accuracy ±0.2% of reading / ±0.08 inches of Mercury Vacuum

Pressures to 60 PSI:

Ashcroft Digital Pressure Gauge, model 302089SD02L60#, accuracy ±0.05% or ±0.03 PSI

Pressures to 200 PSI:

Ashcroft Digital Pressure Gauge, model 302089SD02L200#, accuracy ±0.05% or ±0.1 PSI

Pressures to 600 PSI:

Ashcroft Digital Pressure Gauge, model 302089SD02L600#, accuracy ±0.05% or ±0.3 PSI

Pressures to 10,000 PSI:

Ashcroft dead weight tester model 1305D, serial number DWT-12587, accurate to within ±0.1%.

Traceable to NIST Test Numbers: 821/276493-08, 14737, 14846, 14847

Certified by:

Tony Donnelly (Instrument Technician)

TE-82

HYDRO # 10139-U2902-007

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Vancouver, BC V5L 2H2
Phone: 604-254-9622 * Fax: 604-254-3123

Certificate of Calibration

Customer: Ideal Welders Ltd

Work Order: 308977-00

Gauge Description: Marsh 4½", 5000 PSI Pressure Gauge

Condition of gauge: USED

Gauge Serial No: 02181414

Date of Calibration: 2019-11-25

Due Date: 2020-11-25

Calibration Data

Applied Pressure	Gauge Reading	Deviation
PSI	PSI	
0	0	0
500	475	-25
1500	1500	0
2500	2500	0
3500	3500	0
4500	4500	0

JAN 23 2020
CS

Gauge Accuracy: ASME Grade 2A, ±0.5% of span

Test Standards:

Vacuum Gauges:

Digitron Digital Manometer model 2082P, accuracy ±0.2% of reading / ±0.08 inches of Mercury Vacuum

Pressures to 60 PSI:

Ashcroft Digital Pressure Gauge, model 302089SD02L60#, accuracy ±0.05% or ±0.03 PSI

Pressures to 200 PSI:

Ashcroft Digital Pressure Gauge, model 302089SD02L200#, accuracy ±0.05% or ±0.1 PSI

Pressures to 600 PSI:

Ashcroft Digital Pressure Gauge, model 302089SD02L600#, accuracy ±0.05% or ±0.3 PSI

Pressures to 10,000 PSI:

Ashcroft dead weight tester model 1305D, serial number DWT-12587, accurate to within ±0.1%.

Traceable to NIST Test Numbers: 821/276493-08, 14737, 14846, 14847

Certified by:

Tony Donnelly
Tony Donnelly, Instrument Technician

TE-84

HYDRO # 10139-U2902-007



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Test Results

Procedure: Glass Thermometer: RTC-158B Rev: 1.0

Data Type: As Found Results: Pass

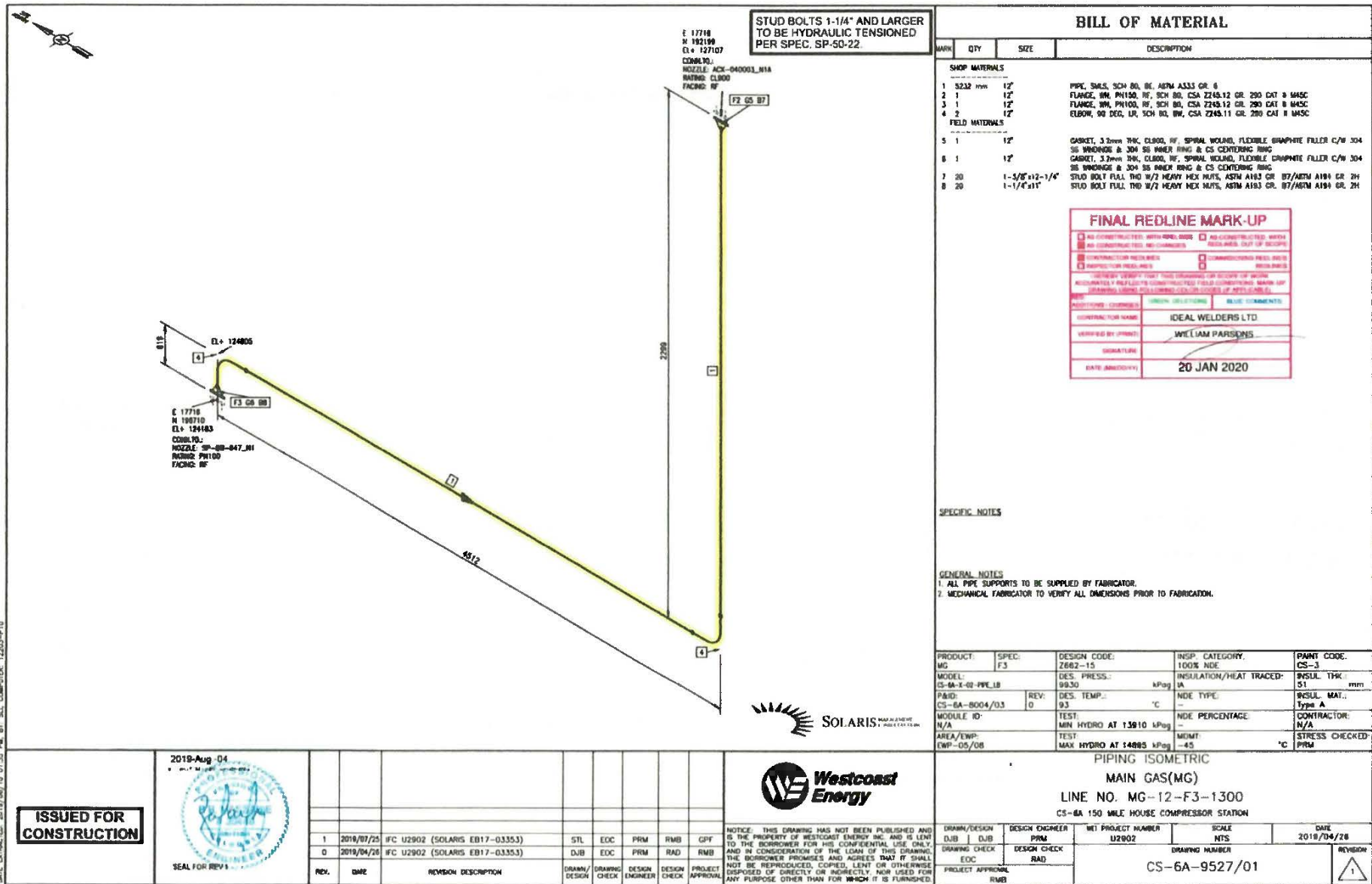
<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
DEGREES CELCIUS						
-20.00 °C		-20.0 °C	-21.0 °C	-19.0 °C	Pass	1.9e-001 °C
0.00 °C		0.0 °C	-1.0 °C	1.0 °C	Pass	1.9e-001 °C
20.00 °C		20.0 °C	19.0 °C	21.0 °C	Pass	1.9e-001 °C
40.00 °C		40.0 °C	39.0 °C	41.0 °C	Pass	1.9e-001 °C

Certificate: C312741-00-01
 Asset: ITM10032185

Calibration Certificate

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STUD BOLTS 1-1/4" AND LARGER TO BE HYDRAULIC TENSIONED PER SPEC. SP-50-22.

BILL OF MATERIAL

MARK	QTY	SIZE	DESCRIPTION
SHOP MATERIALS			
1	3232 mm	12"	PIPE, SMLS, SCH 80, BK, ASTM A333 GR. 6
2	1	12"	FLANGE, WN, PN150, RF, SCH 80, CSA Z245.12 GR. 250 C&I B MISC
3	1	12"	FLANGE, WN, PN150, RF, SCH 80, CSA Z245.12 GR. 250 C&I B MISC
4	2	12"	ELBOW, 90 DEG, LP, SCH 80, BK, CSA Z245.11 GR. 250 C&I B MISC
FIELD MATERIALS			
5	1	12"	GASKET, 3.2mm THK, CL800, RF, SPIRAL WOUND, FLEXIBLE GRAPHITE FILLER C/W 304 SS WINDING & 304 SS RIBER RING & CS CENTERING RING
6	1	12"	GASKET, 3.2mm THK, CL800, RF, SPIRAL WOUND, FLEXIBLE GRAPHITE FILLER C/W 304 SS WINDING & 304 SS RIBER RING & CS CENTERING RING
7	20	1-5/8"x12-1/4"	STUD BOLT FULL THD W/2 HEAVY HEX NUTS, ASTM A193 GR. B7/ASTM A194 GR. 2H
8	20	1-1/4"x11"	STUD BOLT FULL THD W/2 HEAVY HEX NUTS, ASTM A193 GR. B7/ASTM A194 GR. 2H

FINAL REDLINE MARK-UP

<input type="checkbox"/> AS CONSTRUCTED WITH REVISION	<input type="checkbox"/> AS CONSTRUCTED WITH REVISION
<input type="checkbox"/> AS CONSTRUCTED WITH REVISION	<input type="checkbox"/> AS CONSTRUCTED WITH REVISION
<input type="checkbox"/> AS CONSTRUCTED WITH REVISION	<input type="checkbox"/> AS CONSTRUCTED WITH REVISION
<input type="checkbox"/> AS CONSTRUCTED WITH REVISION	<input type="checkbox"/> AS CONSTRUCTED WITH REVISION

CONTRACTOR NAME: IDEAL WELDERS LTD
 VERIFIED BY: WILLIAM PARSONS
 DATE: 20 JAN 2020

SPECIFIC NOTES

GENERAL NOTES

1. ALL PIPE SUPPORTS TO BE SUPPLIED BY FABRICATOR.
 2. MECHANICAL FABRICATOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

PRODUCT: MG	SPEC: F3	DESIGN CODE: Z662-15	INSP. CATEGORY: 100% NDE	PAINT CODE: CS-3
MODEL: CS-6A-X-01-PWL-LB	DES. PRESS.: 9930	INSULATION/HEAT TRACED: kPag	INSUL. THK.: 51 mm	
REV: 0	DES. TEMP.: 93 °C	NDE TYPE: --	INSUL. MAT.: Type A	
MODULE ID: N/A	TEST: MIN HYDRO AT 13910 kPag	NDE PERCENTAGE: --	CONTRACTOR: N/A	
AREA/EWP: EWP-05/08	TEST: MAX HYDRO AT 14885 kPag	MMT: -45 °C	STRESS CHECKED: PRM	



ISSUED FOR CONSTRUCTION



REV.	DATE	REVISION DESCRIPTION	DRAWN/DESIGN	CHECK	DESIGN ENGINEER	DESIGN CHECK	PROJECT APPROVAL
1	2018/07/25	FC U2902 (SOLARIS EB17-03353)	STL	EDC	PRM	RMB	GPF
0	2018/04/26	FC U2902 (SOLARIS EB17-03353)	DJB	EDC	PRM	RAD	RMB

Westcoast Energy

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PIPING ISOMETRIC				DATE: 2018/04/28	
MAIN GAS(MG)				SCALE: NTS	
LINE NO. MG-12-F3-1300				DRAWING NUMBER	
CS-6A 150 MULE HOUSE COMPRESSOR STATION				CS-6A-9527/01	
DRAWN/DESIGN: DJB DJB	DESIGN ENGINEER: PRM	WT PROJECT NUMBER: U2902	SCALE: NTS	DATE: 2018/04/28	
DRAWING CHECK: EDC	DESIGN CHECK: RAD	PROJECT APPROVAL: RMB		REVISION: 1	

HYDRO # 10139-U2902-007

~~08090174~~
 FEB 03 2020
 JAN 23 2020
 LS




Mapping for Spool CS-6A-9527-01 MK1



Client Enbridge **Reference Drawing** CS-6A-9527/01 **Rev.** 1 **Module Number** **Load No.**
Project CS6A - U2902 - 150 MILE HOUSE COMPRESSOR STATION **Line Class** F3 **System Number** MAIN GAS
PO No. 9550048105 **Control** 08105 **Rev.** 0 **Line Designation** MG-1300

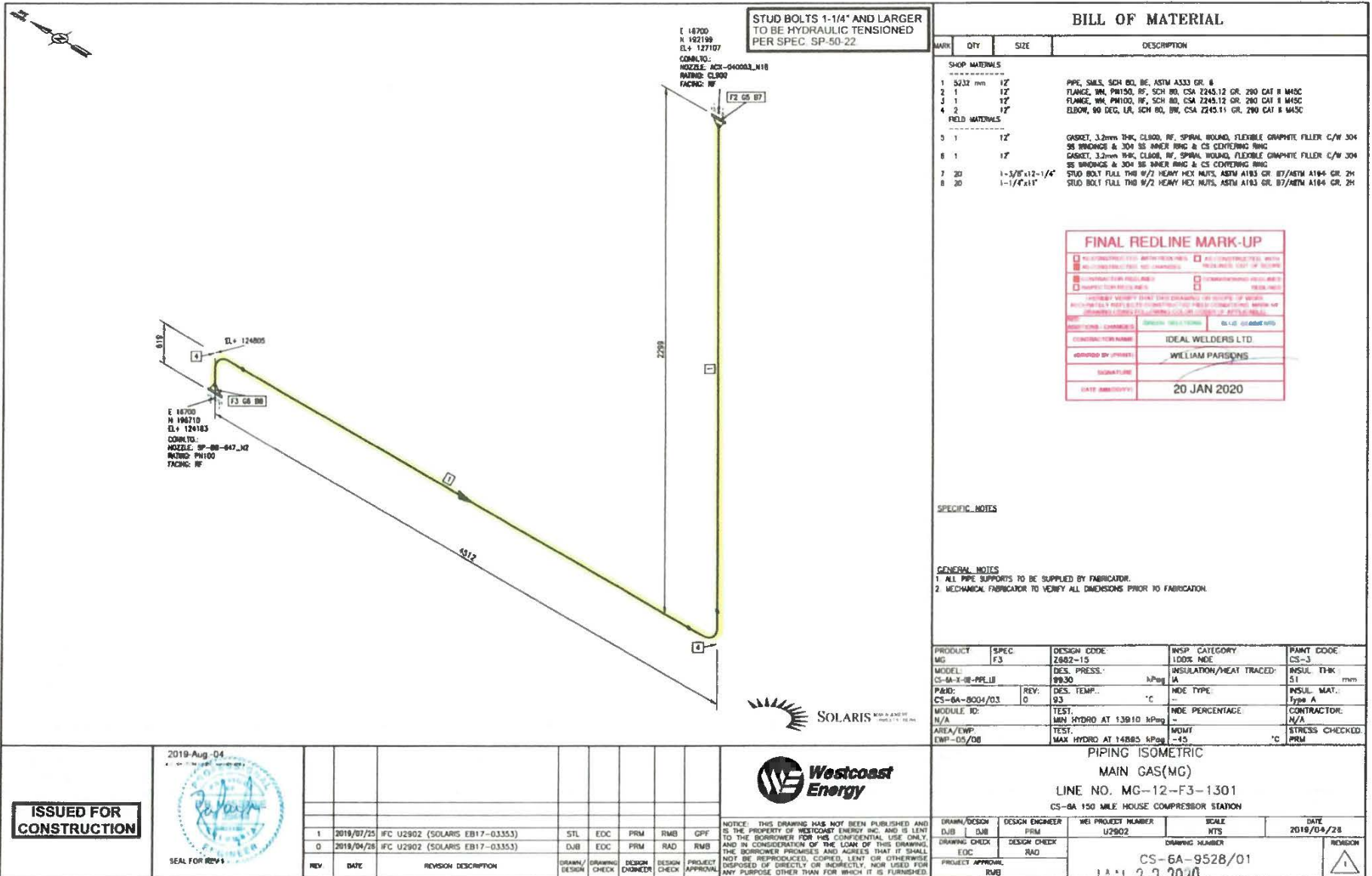
Hydro Yes **PWHT** No **Visual** Direct Procedure # IWL-VT-001 Rev.3 **Dimensional** Yes 01/21/2020
BHN No **Ferrite** No **PMI** No **All NDE Accepted as per** Z662,B31.3

Weld Size	Type	Welder	WPS	RT	MT/LT	BHN	Ferrite	PMI No.	Visual	Failed	Repaired	Item No.	RN	Heat No.	PMI No.	BL/UT
A	12"	B/W Wire	JJ	33N	S-197				12/16/2019	<input type="checkbox"/>		1	P346	98512		
B	12"	B/W Wire	JJ	33N	S-413				01/04/2020	<input type="checkbox"/>		2	P324	98512		
C	12"	B/W Wire	JJ	33N	S-413				01/04/2020	<input type="checkbox"/>		3	F2118	TL10030295		
D	12"	B/W Wire	JE	39N	U2902-AM-69				01/17/2020	<input type="checkbox"/>		4	F2117	TL10029970		
E	12"	B/W Wire	JO	33N	S-413				01/04/2020	<input type="checkbox"/>		5	F1882	983452		
										<input type="checkbox"/>		6	F1882	983452		

All WELDS VISUALLY INSPECTED TO B31.3 AND ACCEPTED BY:  Mike Baker CWB Level III, Reg # 7196	DOCUMENTATION REVIEWED BY:  William Parsons CWB Level III, Reg # 8125 21 Jan 2020	DOCUMENTATION ACCEPTED BY:  Chris Spence Enbridge QA JAN 21 2020
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ITEM	QTY	Description	Material	Length
1	1	12" Sch 80(17.4B) BE x BE	A333-Gr.6 SMLS Pipe	3598
2	1	12" Sch 80(17.4B) BE x BE		1635
				Total length 5233
3	1	12" PN-100 RF Weld Neck	Gr.290, CAT.II (C, 45°C) Flanges	Sch 80
4	1	12" PN 150 RF Weld Neck	Gr.290, CAT.II (C, 45°C) Flanges	Sch 80
5	1	12" 90 LR Elbow	Gr.290, CAT.II (C, 45°C) Fittings	Sch 80
6	1	12" 90 LR Elbow		Sch 80
LABOR				
5	1	12" Sch 80 Butt-Weld Low Temp Grp 5		
1	1	12" Flange Prot. PN 100		
1	1	12" Flange Prot. PN 150		
2558		Handling-Wt		

WELDS	TYPE	WELDER ID	MPS	RT	MPI	VIS
A	12" BW					
B	12" BW					
C	12" BW					
D	12" BW					
E	12" BW					

AS-BUILT

IDEAL WELDERS LTD

I HEREBY VERIFY THAT THIS DRAWING OR SCOPE OF WORK ACCURATELY REFLECTS CONSTRUCTED CONDITIONS

VERIFIED BY (PRINT)	BILL PARSONS
SIGNATURE	
DATE (MM/DD/YY)	20 JAN 2020

SUB ASSEMBLY	FINAL ASSEMBLY
HEAT #	
DIMENSIONS	
ORIENTATION	
ALIGNMENT	
FINAL GA	

INSPECTION CHECKLIST

RT MPI PMI BN HYDRO

UT VIS AS FLHT

10139

RTAIT BW 100	2 SW 0	2 BBN 0	2 HYDRO 14403 kPaq	FAB CODE 2662B313	FDI	LINE SIZE 12
LPI BW 0	2 SW 0	2 VISUAL 100	2 AIR TEST NONE	LINE CLASS F3	SERVICE	
MPI BW 100	2 SW 100	2 FERRITE 0	2 PAINT CS-3	SURF AREA 86.4 sq ft	MODULE NO.	
PMI 0	2 BLUT 0	2 PWHT NONE	INS. CLASS	REF DRG. CS-6A-9528/01	MOD. C/CODE	
WELD PROCEDURES			1 YOGON	2 36N	3 33N	4
REVISIONS			BY	CHK	DATE	APPR

IDEAL WELDERS LTD
 990 Calder Street, Annapolis Island, Delta, BC V2M 6E2
 (250) 251-1010 (1-800-945-1011) Website: www.idealwelders.com

CLIENT ENBRIDGE	PROJECT U2902 COMPRESSOR STN CS6A 150 M F HOUSE	ITEM No. 1056	WEIGHT 2558 lb
DATE 2019-10-16	CONTROL No. 06106	DATE 2020-01-20	
REF. DRG. CS-6A-9528-01 MK1			

JAN 23 2020

HYDRO # 10139-U2902-007




Mapping for Spool CS-6A-9528-01 MK1



Client Enbridge **Reference Drawing** CS-6A-9528/01 **Rev.** 1 **Module Number** **Load No.**
Project CS6A - U2902 - 150 MILE HOUSE COMPRESSOR STATION **Line Class** F3 **System Number** MAIN GAS
PO No. 9550048105 **Control** 06108 **Rev.** 0 **Line Designation** MG-1301

Hydro Yes **PWHT** No **Visual** Direct Procedure # IWL-VT-001 Rev 3 **Dimensional** Yes 01/21/2020
BHN No **Ferrite** No **PMI** No **All NDE Accepted as per** Z862,B31.3

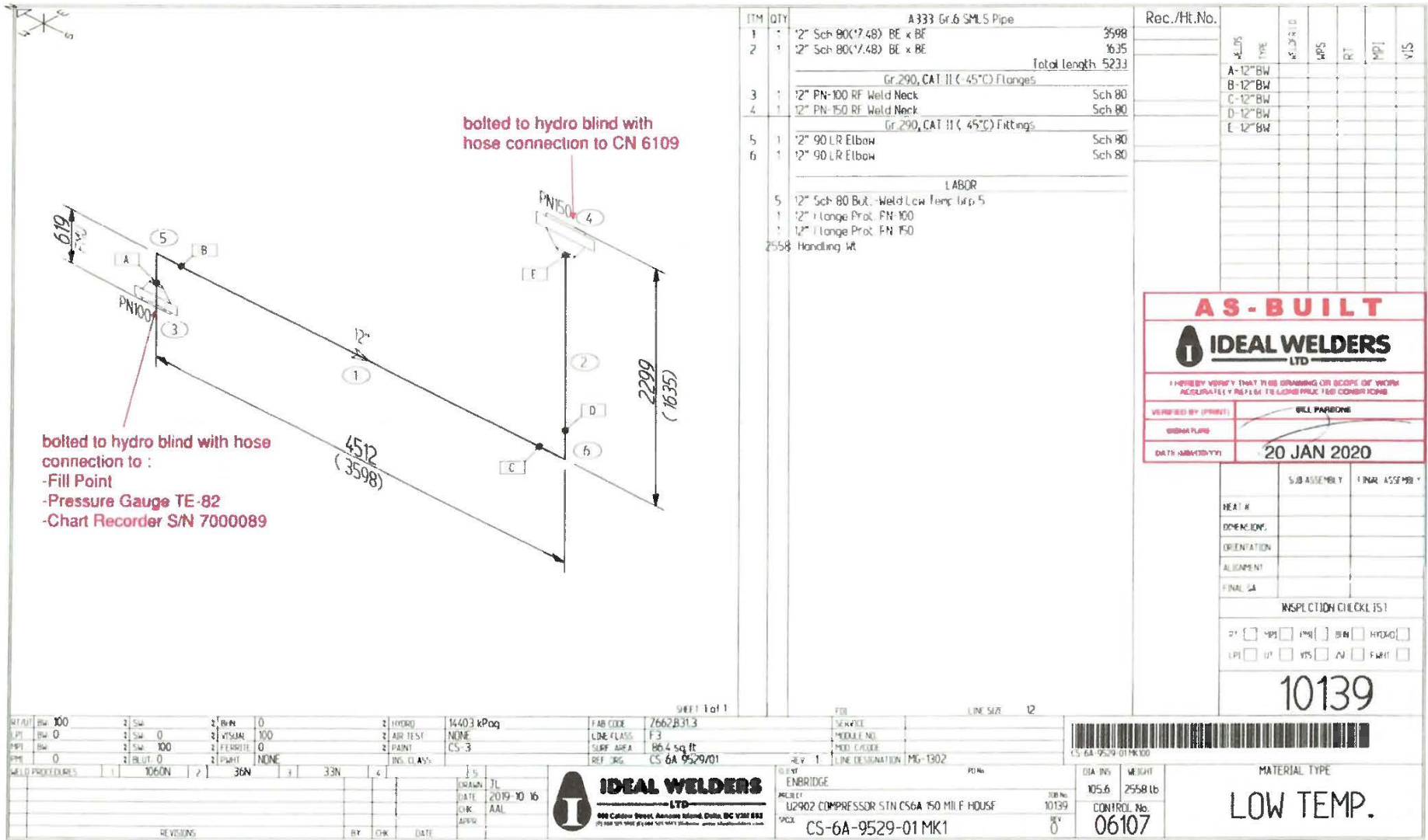
Weld Size	Type	Welder	WPS	RT	MT/LT	BHN	Ferrite	PMI No.	Visual	Failed	Repaired	Item No.	RN	Heat No.	PMI No.	BL/UT
A	12"	B/W Wire	JJ	33N	S-198				12/16/2019	<input checked="" type="checkbox"/>	12/18/2019	1	P348	92256		
AR1	12"	B/W Wire	JJ	33N	S-241				12/18/2019	<input type="checkbox"/>		2	P324	96512		
B	12"	B/W Wire	JO	33N	S-539				01/08/2020	<input type="checkbox"/>		3	F2118	TL10030295		
C	12"	B/W Wire	JO	33N	S-539				01/08/2020	<input type="checkbox"/>		4	F2117	TL10029970		
D	12"	B/W Wire	JE	39N	U2902-AM-70				01/17/2020	<input type="checkbox"/>		5	F1882	983452		
E	12"	B/W Wire	JO	33N	S-414				01/04/2020	<input type="checkbox"/>		6	F1882	983452		

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HYDRO # 10139-U2902-007



ITEM	QTY	DESCRIPTION	UNIT	PRICE
1	1	2" Sch 80(17.48) BE x BE		3598
2	1	2" Sch 80(17.48) BE x BE		1635
				Total length 5233
Gr.290, CAT II (45°C) Flanges				
3	1	12" PN-100 RF Weld Neck	Sch 80	
4	1	12" PN-150 RF Weld Neck	Sch 80	
Gr.290, CAT II (45°C) Fittings				
5	1	2" 90 LR Elbow	Sch 80	
6	1	2" 90 LR Elbow	Sch 80	
LABOR				
5	1	2" Sch 80 But. -Weld Low Temp (tp. 5		
1	1	2" Flange Prot. PN 100		
1	1	2" Flange Prot. PN 150		
2558		Handling wt		

Rec./Ht.No.	WELD TYPE	WELD ID	WPS	RT	IMP	VIS
	A-12"BW					
	B-12"BW					
	C-12"BW					
	D-12"BW					
	E-12"BW					

HYDRO # 10139-U2902-007

JAN 23 2020




Mapping for Spool CS-6A-9529-01 MK1



Client Enbridge **Reference Drawing** CS-6A-9529/01 **Rev.** 1 **Module Number** **Load No.**
Project CS6A - U2902 - 150 MILE HOUSE COMPRESSOR STATION **Line Class** F3 **System Number** MAIN GAS
PO No. 9550046105 **Control** 06107 **Rev.** 0 **Line Designation** MG-1302

Hydro Yes **PWHT** No **Visual** Direct Procedure # IWL-VT-001 Rev.3 **Dimensional** Yes 01/21/2020
BHN No **Ferrite** No **PMI** No **All NDE Accepted as per** Z662,B31.3

Weld Size	Type	Welder	WPS	RT	MT/LT	BHN	Ferrite	PMI No.	Visual	Failed	Repaired	Item No.	RN	Heat No.	PMI No.	BL/UT
A	12"	B/W Wire	JJ	33N	S-199				12/16/2019	<input type="checkbox"/>		1	P344	92256		
B	12"	B/W Wire	JO	33N	U2902-AM-71				01/17/2020	<input type="checkbox"/>		2	P324	96512		
C	12"	B/W Wire	JO	33N	U2902-AM-71				01/17/2020	<input type="checkbox"/>		3	F2118	TL10030295		
D	12"	B/W Wire	DG	39N	U2902-AM-71				01/17/2020	<input type="checkbox"/>		4	F2117	TL10029970		
E	12"	B/W Wire	JO	33N	S-415				01/04/2020	<input checked="" type="checkbox"/>	01/06/2020	5	F1882	963452		
ER1	12"	B/W Wire	JO	33N	S-471				01/06/2020	<input type="checkbox"/>		6	F1882	963452		

ALL WELDS VISUALLY INSPECTED TO B31.3 AND ACCEPTED BY:  Mike Baker CWB Level III, Reg # 7196	DOCUMENTATION REVIEWED BY:  William Parsons CWB Level III, Reg # 8125 21 Jan 2020	DOCUMENTATION ACCEPTED BY:  Chris Spence Enbridge QA JAN 21 2020
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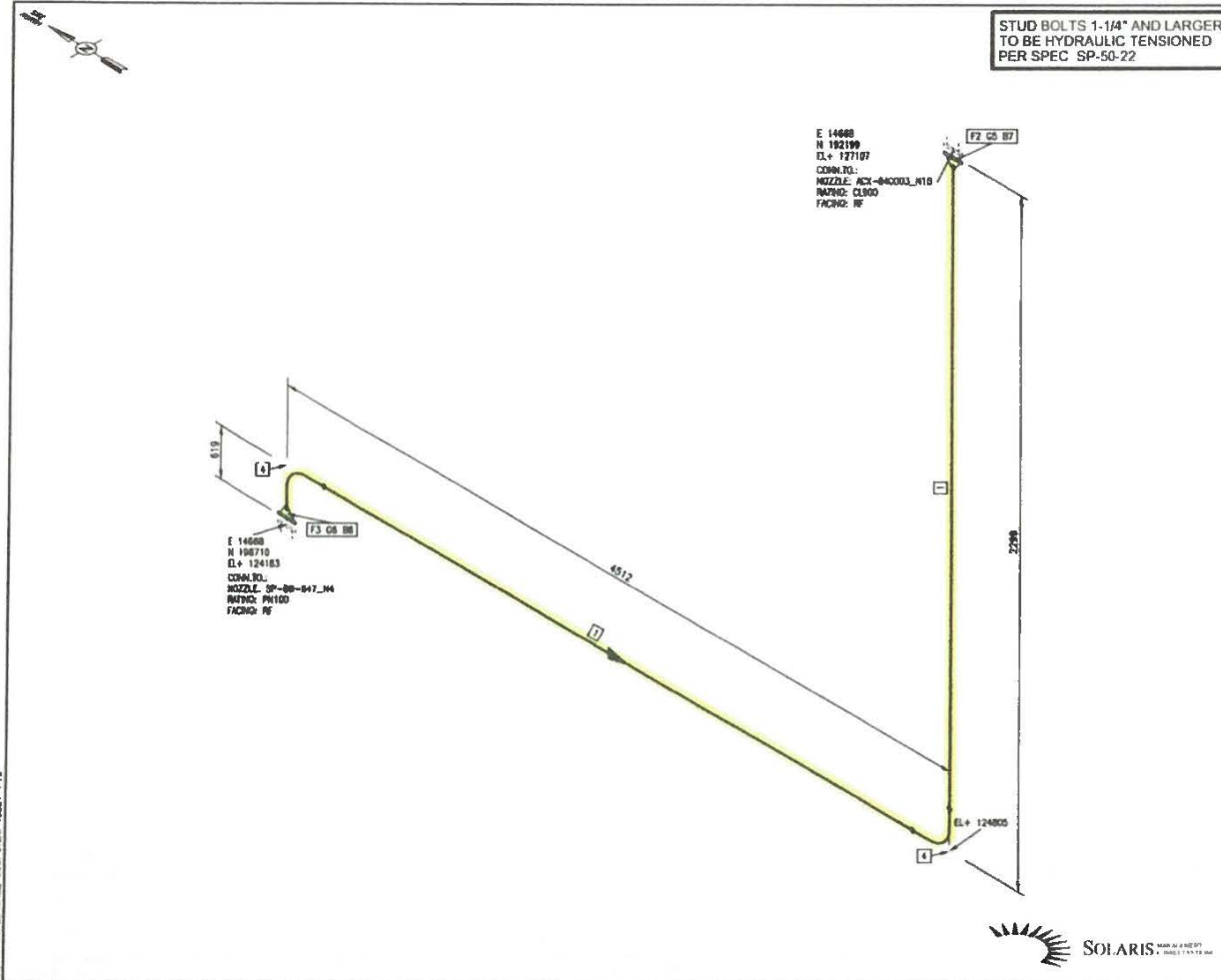
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STUD BOLTS 1-1/4" AND LARGER
 TO BE HYDRAULIC TENSIONED
 PER SPEC SP-50-22

BILL OF MATERIAL

MARK	QTY	SIZE	DESCRIPTION
SHEP MATERIALS			
1	5232 mm	12"	PIPE, SMLS, SCH 80, BW, ASTM A333 GR. 6
2	1	12"	FLANGE, WN, PN150, RF, SCH 80, CSA Z245.12 GR. 280 CAT B MISC
3	1	12"	FLANGE, WN, PN150, RF, SCH 80, CSA Z245.12 GR. 280 CAT B MISC
4	2	12"	ELBOW, 90 DEG, LR, SCH 80, BW, CSA Z245.11 GR. 280 CAT B MISC
FIELD MATERIALS			
5	1	12"	GASKET, 3.2mm THK, CL800, RF, SPIRAL WOUND, FLEXIBLE GRAPHITE FILLER C/W 304 SS WINDINGS & 304 SS INNER RING & CS CENTERING RING
6	1	12"	GASKET, 3.2mm THK, CL800, RF, SPIRAL WOUND, FLEXIBLE GRAPHITE FILLER C/W 304 SS WINDINGS & 304 SS INNER RING & CS CENTERING RING
7	20	1-3/8"x12-1/4"	STUD BOLT FULL THD W/2 HEAVY HEX NUTS, ASTM A193 GR. B7/ASTM A194 GR. 2H
8	20	1-1/4"x11"	STUD BOLT FULL THD W/2 HEAVY HEX NUTS, ASTM A193 GR. B7/ASTM A194 GR. 2H



FINAL REDLINE MARK UP

<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET	<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET
<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET	<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET
<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET	<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET
<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET	<input type="checkbox"/> NO CONSTRUCTION WITH THIS SET

THESE ARE THE FINAL REDLINE MARKUPS FOR THIS SET. ANY CHANGES TO THE SET MUST BE MADE BY THE DESIGNER AND APPROVED BY THE CLIENT. ANY CHANGES TO THE SET MUST BE MADE BY THE DESIGNER AND APPROVED BY THE CLIENT.

DESIGNED BY	WILLIAM PARSONS
DESIGNED BY	WILLIAM PARSONS
DATE	20 JAN 2020

SPECIFIC NOTES

GENERAL NOTES

- ALL PIPE SUPPORTS TO BE SUPPLIED BY FABRICATOR.
- MECHANICAL FABRICATOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

PRODUCT: MD	SPEC: FS	DESIGN CODE: Z682-15	INSP CATEGORY: 150R MDE	PART CODE: CS-3
MODEL: CS-6A-X-02-PIPE-1B	DES. PRESS.: 8930 kPa(g)	INSULATION/HEAT TRACED: IA	INSUL. THK.: S1 mm	
P&ID: CS-6A-8004/03	REV: 0	DES. TEMP.: 93 °C	NDE TYPE: -	INSUL. MAT.: Type A
MODULE ID: N/A	TEST: MAX HYDRO AT 13010 kPa(g)	NDE PERCENTAGE: -	CONTRACTOR: N/A	
AREA/EWP: EWP-05/08	TEST: MAX HYDRO AT 14895 kPa(g)	NDEMT: -45 °C	STRESS CHECKED: PRM	

2019-Aug-04

ISSUED FOR CONSTRUCTION

SEAL FOR REVIEW

REV.	DATE	REVISION DESCRIPTION	DRAM/DESIGN	DRAWING CHECK	DESIGN ENGINEER	DESIGN CHECK	PROJECT APPROVAL
1	2019/07/25	IFC U2902 (SOLARIS EB17-03353)	STL	EOC	PRM	RMB	GFJ
0	2019/04/26	IFC U2902 (SOLARIS EB17-03353)	DJB	EOC	PRM	RAD	RMB

Westcoast Energy

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PIPING ISOMETRIC
 MAIN GAS(MG)
 LINE NO. MG-12-F3-1303
 CS-6A 150 MILE HOUSE COMPRESSOR STATION

DRAM/DESIGN: DJB	DESIGN ENGINEER: PRM	PROJECT NUMBER: U2902	SCALE: NTS	DATE: 2019/04/26
DRAWING CHECK: EOC	DESIGN CHECK: RAD	DRAWING NUMBER: CS-6A-9530/01		REVISION: 1

JAN 23 2020

CS

HYDRO # 10139-U2902-007




Mapping for Spool CS-6A-9530-01 MK1



Client Enbridge **Reference Drawing** CS-6A-9530/01 **Rev.** 1 **Module Number** **Load No.**
Project CS6A - U2902 - 150 MILE HOUSE COMPRESSOR STATION **Line Class** F3 **System Number** MAIN GAS
PO No. 9550048105 **Control** 06108 **Rev.** 0 **Line Designation** MG-1303

Hydro Yes **PWHT** No **Visual** Direct Procedure # IWL-VT-001 Rev 3 **Dimensional** Yes 01/21/2020
BHN No **Ferrite** No **PMI** No **All NDE Accepted as per** Z662.B31.3

Weld Size	Type	Welder	WPS	RT	MT/LT	BHN	Ferrite	PMI No.	Visual	Failed	Repaired	Item No.	RN	Heat No.	PMI No.	BL/UT
A	12"	B/W Wire	JJ	33N	S-200				12/16/2019	<input type="checkbox"/>		1	P344	92256		
B	12"	B/W Wire	JJ	33N	S-416				01/04/2020	<input type="checkbox"/>		2	P324	98512		
C	12"	B/W Wire	JJ	33N	S-416				01/04/2020	<input type="checkbox"/>		3	F2118	TL10030295		
D	12"	B/W Wire	DG	39N	U2902-AM 72				01/17/2020	<input type="checkbox"/>		4	F2117	TL10029970		
E	12"	B/W Wire	JE	33N	S-416				01/04/2020	<input type="checkbox"/>		5	F1882	983452		
												6	F1882	983452		

ALL WELDS VISUALLY INSPECTED TO B31.3 AND ACCEPTED BY:  Mike Baker CWB Level III, Reg # 7196	DOCUMENTATION REVIEWED BY:  William Parsons CWB Level III, Reg # 8125 21 Jan 2020	DOCUMENTATION ACCEPTED BY:  Chris Spence Enbridge QA JAN 21 2020
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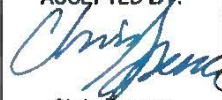
Mapping for Spool CS-6A-9531-01 MK1



Client Enbridge **Reference Drawing** CS-6A-9531/01 **Rev.** 1 **Module Number** **Load No.**
Project CS6A - U2902 - 150 MILE HOUSE COMPRESSOR STATION **Line Class** F3 **System Number** MAIN GAS
PO No. 9550048105 **Control** 06109 **Rev.** 0 **Line Designation** MG-1304

Hydro Yes **PWHT** No **Visual** Direct Procedure # IWL-VT-001 Rev.3 **Dimensional** Yes 01/21/2020
BHN No **Ferrite** No **PMI** No **All NDE Accepted as per** Z662.B31.3

Weld Size	Type	Welder	WPS	RT	MT/LT	BHN	Ferrite	PMI No.	Visual	Failed	Repaired	Item No.	RN	Heat No.	PMI No.	BL/UT
A	12"	B/W Wire	JJ	33N	S-201				12/16/2019	<input type="checkbox"/>	<input type="checkbox"/>	1	P346	96512		
B	12"	B/W Wire	JJ	33N	S-417				01/04/2020	<input type="checkbox"/>	<input type="checkbox"/>	2	P324	96512		
C	12"	B/W Wire	JJ	33N	S-417				01/04/2020	<input type="checkbox"/>	<input type="checkbox"/>	3	F2118	TL10030295		
D	12"	B/W Wire	DG	39N	U2902-AM-73				01/17/2020	<input type="checkbox"/>	<input type="checkbox"/>	4	F2117	TL10029970		
E	12"	B/W Wire	JE	33N	S-417				01/04/2020	<input type="checkbox"/>	<input type="checkbox"/>	5	F1882	983452		
												6	F1882	983452		

All WELDS VISUALLY INSPECTED TO B31.3 AND ACCEPTED BY:  Mike Baker CWB Level III, Reg # 7196	DOCUMENTATION REVIEWED BY:  William Parsons CWB Level III, Reg # 8125 21 Jan 2020	DOCUMENTATION ACCEPTED BY:  Chris Spence Enbridge QA JAN 21 2020
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