

**WELDING PROCEDURE
DATA SHEET**

 No. **SMAW-06-CVN**

 Date **May 5, 2008**

Company Name: Mosher Engineering				Wldg. Specification No: RTR-1			
Address: 1358 Queen Street				Reference WPQR:			
Halifax		Nova Scotia		B3J 2H5		Ref. Standards: CSA W47.1, W59 & W48	

Material Information:							
Position: Horizontal		Welding Process: SMAW		Consumable: E4918/E48018/E7018			
Base Matl: CAN G40 21 350WT Cat. 5 (27J @ -40°C)		Mode of Transfer: N/A		Shielding Gas: N/A			
		Process Mode: Manual		Gas Flow: ft ³ /h			
		Tungsten Type:		Tungsten Dia: in			
Cleaning: Wire brush and remove slag in between passes				PHT Temp: 15°C or 59°F		PWHT Temp: NA °F	

Typical Joint Details:

$G = T/2$ to a max. of 5mm (3/16")
 $T_{max} = 12mm (1/2")$

Typical Pass & Layer Sequence

Joint Configuration:				Joint Details:				Technique & Process Information:			
Joint Type: Butt, Tee, Corner				G = T/2 R (°) = 0				Electrical Stickout: 3/4 ± 1/8 in			
Weld Type: Complete Joint Penetration				R _u = 0				Nozzle Diameter: 1/2 in			
Backgouging: Backgouged to Sound Metal								Average Deposition Rate: 2.6 lbs/h			

Welding Parameters:																				
Weld Size	Depth of Prep'n	Side No.	Layer No.		Pass No.		Electrode Size		Current (Amps) DCRP		Wire Feed Speed (in/min)		Arc Volts (Volts)		Travel Speed (in/min)		Average Heat Input (kJ/in)			
			Min	Max	Min	Max	in.	mm	Min	Max	Min	Max	Min	Max	Min	Max				
1/4	6.4	1/4	1		1		1	3/32	2.4	75	-	95			20	-	22	5.7	7.7	16.0
			2		2		2	3/32	2.4	75	-	95			20	-	22	5.7	7.7	16.0
5/16	7.9	5/16	1	1	2	1	2	3/32	2.4	75	-	95			20	-	22	4.6	6.2	16.0
			2		3	3	3	3/32	2.4	75	-	95			20	-	22	5.7	7.7	16.0
3/8	9.5	3/8	1	1	2	1	2	3/32	2.4	75	-	95			20	-	22	3.6	5.1	16.0
			2		3	3	3	3/32	2.4	75	-	95			20	-	22	5.7	7.7	16.0

Revision Status:		CWB Approval:		Company's Approval:	
Date:	Explanation:	CWB Accepted Jul 25, 2008 Valid only if welding consumables are certified by the CWB			
22/07/2008	Per PQR P65JR78				
NOTES: 1. Use stringer beads only. Restrict weld bead to ≤ 16 mm. 2. Weld Sizes represent effective weld throat thickness for qualified T range. 3. Target heat inputs at calculated average. 4. Tack weld parameters to be per main weld parameters. 5. Backgouge as necessary to repair side 2.		Prepared by: FORGERON ENGINEERING LIMITED Tel: (902) 835-7225			

RTR FORM S-101, 1992
to CSA W47.1

**RTR ENGINEERING
WELDING PROCEDURE
DATA SHEET**

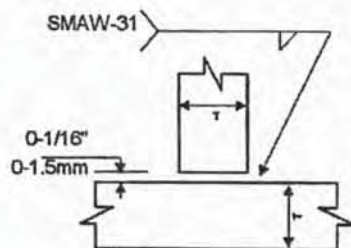
No.

SMAW-31

Date

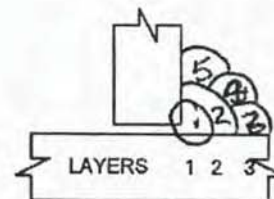
MARCH 28, 2002

Company Name and Complete Address	MOSHER ENGINEERING LIMITED		WPS No.	RTR-1(A)
	2089 Upper Water Street		Applicable Standard(s)	CSA W47.1, W59 & W48.1
	Halifax, Nova Scotia, B3J 2R7		Electrode Classification	E41011
Welding Process & Mode	☒ SMAW ☐ SAW ☐ GTAW (Tungsten) Type: _____ ☐ FCAW ☐ GMAW ☐ ESW ☐ SW Size: _____		☒ Preheat Minimum as per CSA W59 ☐ Other	
	☒ Manual ☐ Semi-Automatic ☐ Machine ☐ Automatic			
Material Designation	Steel group 2 from Table 5-3 of W59 Excluding 260WT, 300W, 300WT, A570 Gr. 50, A572 Gr. 50 & A607 Gr. 50		Welding Position	HORIZONTAL
			Interpass Temperature	Minimum As above Maximum 450 deg. F



Sketch Of Typical Joint Preparation

$$3/16" \leq T \leq 1 \frac{1}{4}"$$



Typical Pass and Layer Sequence

Groove Weld Complete Joint Penetration ☐ Back-gouged to sound metal ☐ Welded onto steel backing ☐ Other		Groove Weld Partial Joint Penetration ☐ Minimum as per CSA W59 ☐ Others		Joint Type as per CSA W59 ☐ Butt ☒ Tee ☐ Edge ☒ Lap ☒ Corner		Automatic or Semi-Automatic Electrical Stickout Shielding Gas cu.ft /hr. Flux				
☒ Fillet Weld Minimum as per CSA W59										
Material Thickness	ETT, or Fillet Size	Side No.	Layer Number	Pass Number	Electrode (in) Size (mm)	Current Polarity	Amperes	Wire Feed Speed (in/min)	Volts	Arc Travel Speed (in/min)
	3/16" 5mm		1	1	3/32 2.5	DCRP	55-75			
	1/4" 6mm		1	1	1/8 3.2	DCRP	95-115			
	OR		1	1	5/32 4.0	DCRP	130-160			
	5/16" 8mm		1-2	1-3*	5/32 4.0	DCRP	130-160			
	3/8" 10mm		1-3	1-5*	5/32 4.0	DCRP	130-160			
	OR		1-2	1-3*	3/16 5.0	DCRP	170-190			
	1/2" 12mm		1-3	1-5*	3/16 5.0	DCRP	170-190			

Revision Date	Explanation	CWB Approval	Engineer's Stamp
		Welding Procedure Data Sheet CWB Approved to CSA W47.1 APR 04 2002 Approval valid only when Welding Consumables certified by C.W.B. (C18.2.2.1, CSA W47.1)	
NOTES: *NUMBER OF PASSES MAY VARY BY +/-1 PASS			



CANADIAN WELDING BUREAU
DIVISION OF CWB GROUP - INDUSTRY SERVICES

WELDING PROCEDURE QUALIFICATION REPORT

P 036339

0	6	2	4	2	0	0	8
MONTH		DAY		YEAR			
DATE OF TEST							

APPLICABLE STANDARD	
☐ CSA W47.1	☒ CSA W47.2
☐ CSA W186	☐ AWS D1.3
☐ OTHER _____	

Company Code					
D	F	B	A	R	2

REPORT OF

WPDS No. A3332-1H

WPS No. A 3300

RETEST ☒ YES ☐ NO LAB WORK REQUIRED ☐ YES ☒ NO

QUALIFICATION REQUESTED BY:					☒ COMPANY	☐ CWB							
Company Name <u>D. F. Barnes Ltd</u>													
Location of Test <u>Goulds</u>													
CWB Witness <u>Lew Feltham</u>					Test Plate Number <u>202</u>								
Signature of Comp. Rep. <u>Les Horv</u>													
Welder's Name <u>Wade L Hillier</u>					Welders ☐ Yes N.T. Card Required ☐ No								
S.I.N. <table border="1"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>													
Base Materials													
1. Specification <u>ASTM B221-02</u> Grade <u>6061-T6511</u>													
2. Specification <u>ASTM B221-02</u> Grade <u>6061-T6511</u>													
Preheat Temperature <u>Ambient</u>		25°		Interpass Temperature		MIN MAX							
Post-Weld Treatment <u>None</u>		<u>NOT Recorder</u>											
Cleaning Procedures <u>S.S. Wire Brush, Grinder</u>													
Welding Position(s) ☐ FLAT ☐ VERTICAL UP ☐ OVERHEAD ☒ HORIZ. ☐ VERTICAL DOWN ☐ OTHER													

INVOICING DATA			
Hours on Site	1.5 HRS. @ 80.00	/HR. = 120.00	PR-01
Hours Travelling	0.5 HRS. @ 80.00	/HR. = 40.00	PR-02
Kilometres (kms)	27 KM. @ 0.48	/KM. = 12.96	PR-03
Travel Expenses			PR-08
Lab Charges	HRS. @	/HR. =	PR-04
Specimen Assessment	HRS. @	/HR. =	PR-05
Engineering Charge	HRS. @	/HR. =	PR-09
Outside Lab. Charges			PR-06/7

Welding Process ☐ SAW ☒ GTAW ☐ SMAW ☐ PAW ☐ FCAW ☐ GMAW ☐ OTHER _____	Process Mode ☒ Manual ☐ Semi-Automatic ☐ Machine ☐ Automatic	Method of Backgouging N/A
		Depth of Backgouging

	Classification	Trade Name	Manufacturer
Filler Metal A	ER5356		Indalco
Filler Metal B			
Flux			

Tungsten Type: EWP		Tungsten Diameter: 4.0 mm	
Shielding Gas: Argon	Flow Rate: 10L/min	Nozzle Size: 12 mm	
Certified Electrode Used? ☒ Yes ☐ No	Current Type and Polarity: AC/EF	Electrode Extension: ✓	

[illegible][illegible]

In the space below
make a sketch to show:

- Joint geometry.
- Full welding symbol.

c) Pass/layer sequence **6**
d) Test specimens required

Specimen Extracted
As per CSA W47.2
F19 13

LABORATORY EVALUATION

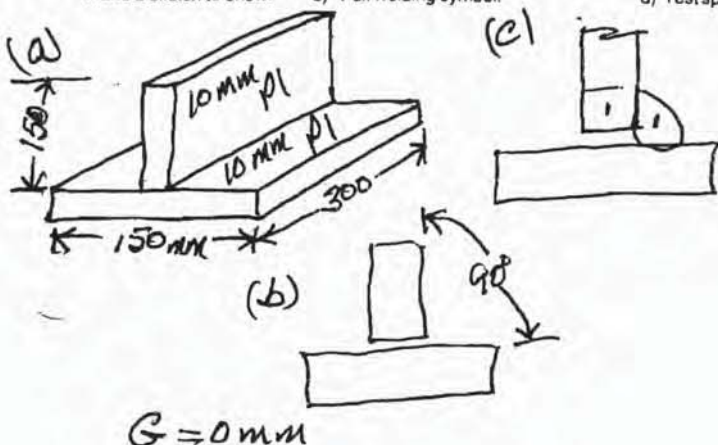
TEST	NO.	SAT.	UN-SAT.	N/A
Root Bend		☐	☐	☐
Face Bend		☐	☐	☐
Side Bend		☐	☐	☐
Tensile		☐	☐	☐
Macro Etch		☐	☐	☐
Fracture		☐	☒	☐
Other(s)		☐	☐	☐

NOTES

NOTES Failed due to Lack of Root Fusion & Penetration

EVALUATION BY _____

DATE	07	09	2008
	MONTH	DAY	YEAR





CANADIAN WELDING BUREAU
DIVISION OF CWB GROUP - INDUSTRY SERVICES

WELDING PROCEDURE QUALIFICATION REPORT

CWB Form 130E/99-1

REPORT _____ OF _____

06 24 2008
MONTH DAY YEAR

DATE OF TEST

APPLICABLE STANDARD

- ☐ CSA W47.1 ☒ CSA W47.2
☐ CSA W186 ☐ AWS D1.3
☐ OTHER

Company Code

D F B A R 2

P 5694

WPDS No. A3332-1H

WPS No. A3300

QUALIFICATION REQUESTED BY:

☒ COMPANY

☐ CWB

Company Name

D. F. Barnes Ltd

Location of Test

Goulds

CWB Witness

Lew Fetham

Test Plate Number

202

Signature of Comp. Rep.

[Signature]

Welder's Name

Wade L. Hillier

Welders N.T. Card Required

☐ Yes
☒ No

S.I.N.

Base Materials

1. Specification ASTM B 221-02 Grade 6061-T6511
2. Specification ASTM B 221-02 Grade 6061-T6511

Preheat Temperature

Ambient

Interpass Temperature

N/A

MIN

MAX

Post-Weld Treatment

None

Cleaning Procedures

Stainless Steel Wire Brush

Welding Position(s)

☒ FLAT
☐ HORIZ.

☐ VERTICAL UP
☐ VERTICAL DOWN

☐ OVERHEAD
☐ OTHER

RETEST ☐ YES ☒ NO

LAB WORK REQUIRED

☐ YES ☒ NO

INVOICING DATA

Hours on Site

1.5

HRS. @

80.00

/HR. = 120.00

Hours Travelling

0.5

HRS. @

80.00

/HR. = 40.00

Kilometres (kms)

27

KM. @

0.48

/KM. = 12.96

Travel Expenses

Welding Process

☐ SAW

☒ GTAW

☐ SMAW

☐ PAW

☐ FCAW

☐ GMAW

☐ OTHER

Process Mode

☒ Manual

☐ Semi-Automatic

☐ Machine

☐ Automatic

Method of Backgouging

N/A

Depth of Backgouging

N/A

Classification

Trade Name

Manufacturer

Filler Metal A

ER5356

Indalco

Filler Metal B

Flux

Tungsten Type: EWP

Tungsten Diameter: 4.0mm

Shielding Gas

Argon

Flow Rate

10L/min

Nozzle Size

10mm

Certified Electrode Used?

☒ Yes
☐ No

Current Type and Polarity

AC/EF

Electrode Extension

✓

Welding Sequence

Filler Metal

Arc Parameters

Side	Layer	Pass	Size	W. Feed Speed	Amperes	Volts	Arc Travel Speed
UNITS			(mm)	(mm/min)	A	V	(mm/min)
1	1	1	3.2	NA	298	19	59

Welding Sequence

Filler Metal

Arc Parameters

Side	Layer	Pass	Size	W. Feed Speed	Amperes	Volts	Arc Travel Speed
UNITS			()	()	A	V	()

In the space below make a sketch to show:

a) Joint geometry.
b) Full welding symbol.

c) Pass/layer sequence.
d) Test specimens required.

(d) Specimen Extracted

AS per CSA, W47.2

Fig. 13

Failed due to lack of penetration in Fracture specimen

LABORATORY EVALUATION

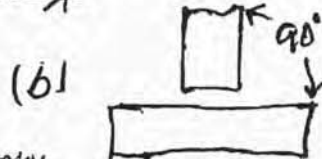
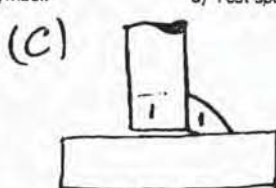
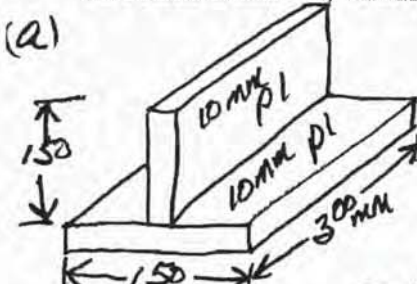
TEST	NO.	SAT.	UN. SAT.	N/A
Root Bend		☐	☐	☐
Face Bend		☐	☐	☐
Side Bend		☐	☐	☐
Tensile		☐	☐	☐
Macro Etch		☐	☒	☐
Fracture		☐	☒	☐
Other(s)		☐	☐	☐

NOTES Failed due to LACK of Root Fusion + Penetration

EVALUATION BY [Signature]

DATE 07 09 2008

MONTH DAY YEAR





CANADIAN WELDING BUREAU
DIVISION OF CWB GROUP - INDUSTRY SERVICES

WELDING PROCEDURE QUALIFICATION REPORT

P 036341

REPORT OF

WPDS No.

WPS No. 3100

06 26 2008
MONTH DAY YEAR
DATE OF TEST

APPLICABLE STANDARD

☒ CSA W47.1 ☐ CSA W47.2
☐ CSA W186 ☐ AWS D1.3
☐ OTHER S473

Company Code

METW01

RETEST ☐ YES ☒ NO LAB WORK REQUIRED ☒ YES ☐ NO

INVOICING DATA

Hours on Site	4 HRS. @ 80.00	/HR. = 320.00	PR-01
Hours Travelling	0.5 HRS. @ 80.00	/HR. = 40.00	PR-02
Kilometres (kms)	20 KM. @ 0.48	/KM. = 9.60	PR-03
Travel Expenses			PR-08
Lab Charges	HRS. @	/HR. =	PR-04
Specimen Assessment	HRS. @	/HR. =	PR-05
Engineering Charge	HRS. @	/HR. =	PR-09
Outside Lab. Charges			PR-06/7

QUALIFICATION REQUESTED BY: ☒ COMPANY ☐ CWB

Company Name Metal World

Location of Test St. John's, NL

CWB Witness Low Feltham Test Plate Number 220

Signature of Comp. Rep. [Signature]

Welder's Name Joe Fewer Welders ☐ Yes ☒ No
N.T. Card Required ☐ Yes ☒ No

S.I.N. [Blank]

Base 1. Specification EN10225 Grade S355 G10
Materials 2. Specification EN10225 Grade S355 G10

Preheat Temperature 75°C Interpass Temperature MIN 80°C MAX 120°C

Post-Weld Treatment None

Cleaning Procedures Chipping Hammer, Wire Brush, Grinder

Welding Position(s) ☒ FLAT ☐ VERTICAL UP ☐ OVERHEAD
☒ HORIZ. ☐ VERTICAL DOWN ☐ OTHER

Welding Process ☐ SAW ☐ GTAW ☒ Manual ☒ Semi-Automatic ☐ FCAW ☐ PAW ☐ Machine ☐ GMAW ☐ Automatic
Method of Backgouging N/A
Depth of Backgouging

Classification Trade Name Manufacturer

Filler Metal A E5518-C1 LA 8018 Air Liquide

Filler Metal B 81T1-N11 SAEDUAL 128 SAF

Flux

Tungsten Type: Tungsten Diameter:
Shielding Gas 75% Ar 25% Co2 Flow Rate 22 L/min Nozzle Size 16 mm
Certified Electrode Used? ☒ Yes ☐ No Current Type and Polarity DCRP Electrode Extension 16-20 mm

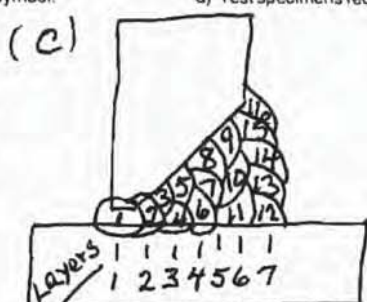
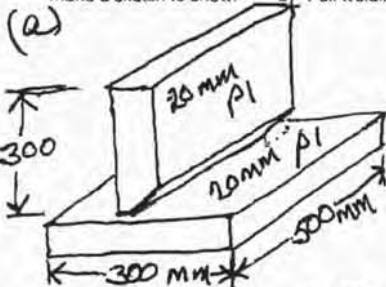
Welding Sequence			Filler Metal		Arc Parameters		
Side	Layer	Pass	Size	W. Feed Speed	Amperes	Volts	Arc Travel Speed
UNITS			(mm)	(mm/min)	A	V	(mm/min)
1	1	1	3.2	N/A	132	21	45
1	2	2	1.6	4.4	240	23	191
1	3	3	1.6	4.4	238	23	291
1	3	4	1.6	5.0	250	23	315
1	4	5	1.6	5.0	265	23	250
1	4	6	1.6	5.0	282	22.5	297
1	5	7	1.6	5.0	270	22.5	370

Welding Sequence			Filler Metal		Arc Parameters		
Side	Layer	Pass	Size	W. Feed Speed	Amperes	Volts	Arc Travel Speed
UNITS			(mm)	(mm/min)	A	V	(mm/min)
1	5	8	1.6	5.0	262	22.5	268
1	6	9	1.6	5.0	275	22.5	306
1	6	10	1.6	5.0	265	22.5	341
1	6	11	1.6	5.0	275	22.5	366
1	7	12-16	1.6	5.0	279	22.5	435

In the space below make a sketch to show:

a) Joint geometry.
b) Full welding symbol.

c) Pass/layer sequence.
d) Test specimens required.



Specimen Extracted as per Client's Instructions

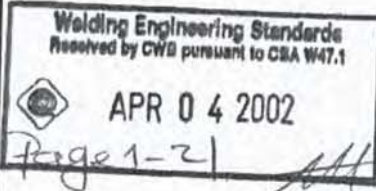
Failed Radiography due to slag inclusion

LABORATORY EVALUATION

TEST	NO.	SAT.	UN. SAT.	NA
Root Bend		☐	☐	☐
Face Bend		☐	☐	☐
Side Bend		☐	☐	☐
Tensile		☐	☐	☐
Macro Etch		☐	☐	☐
Fracture		☐	☐	☐
Other(s)		☐	☐	☐

NOTES Failed Radiography due to slag inclusion

EVALUATION BY [Signature]
DATE 07 09 2008
MONTH DAY YEAR

MOSHER ENGINEERING LIMITED 2089 Upper Water Street Halifax, Nova Scotia, B3J 2R7		TABLE
		MARCH 28, 2002
WELDING STANDARDS to CSA W47.1	CWB APPROVAL	ENGINEERS STAMP
TABLE OF CONTENTS		
PART 1 - WELDING ENGINEERING STANDARDS 1 - GENERAL NOTES 2 - WELDING JOINTS, SYMBOLS AND DETAILS a) Welding symbols and basic joints b) Clarifications of "Arrow" and "Other" Side c) Clarification of Intermittent & Staggered Fillet Welds d) General Drafting and Design Information 3 - SUPPLEMENTARY WELD INFORMATION a) Fillet Welds b) Groove Welds 4 - SHOP STANDARDS a) Acceptable and Unacceptable Weld Profile b) Splicing c) Preparation of Material d) Assembly Practices e) Allowable Workmanship Tolerances From Detailed Drawing f) Control of Distortion and Shrinkage Stresses g) Quality of Welds PART II - WELDING PROCEDURE SPECIFICATIONS RTR - 1 for SMAW RTR - 4 for FCAW (With Shielding Gas) RTR - 5 for GMAW PART III - WELDING PROCEDURE DATA SHEETS RTR - 1 for SMAW RTR - 4 for FCAW (With Shielding Gas) RTR - 5 for GMAW		

MOSHER ENGINEERING LIMITED
2089 Upper Water Street
Halifax, Nova Scotia, B3J 2R7

Page 1

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

GENERAL NOTES



1. General Notes

1.1 The Welding Standards of this firm are prepared in accordance with CSA Standard W47.1 - 1992. All welding will be performed in conformance with CSA Standard W59 - M1989, and to any revisions to the above mentioned Codes.

1.2 All welding operators employed will be qualified in accordance with CSA W47.1 and will be allowed to weld only the classifications (T and S), and positions for which they are qualified. They shall use only those welding processes and electrode classifications for which they are qualified.

1.3 Any welding sub-contracted by this form will be sublet only to firms approved and certified to CSA W47.1 - 1992 by the Canadian Welding Bureau. Drawings and welding procedures will be issued to the above sub-contractor so that welding quality is insured. (The subcontractor's CWB approved welding procedure may be used if satisfactory to the prime contractor.)

1.4 Changes in welding methods or welding engineering standards and additions to joints welded will be submitted to CWB for approval in accordance with Clause 6.4 of CSA Standard 47.1 before being used in production.

1.5 Only electrodes approved under CSA electrode standard or those conditionally approved under CSA Standard W47.1 shall be used. Each welding procedure data sheet will designate the electrode(s) to be used for the joint, the applicable codes and the number of the welding procedure specification which governs the data sheet application.

1.6 The individual data sheets will show the material specification(s) which may be welded.

MOSHER ENGINEERING LIMITED
2089 Upper Water Street
Halifax, Nova Scotia, B3J 2R7

Page 2

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

GENERAL NOTES



1.7 Unless called for otherwise on a specific data sheet, vertical welds shall be made with progression of each pass in an upward direction.

1.8 All slag or flux remaining on any bead of welding shall be removed before laying down the next successive bead. Similarly with any new cracks, blow holes or porosity.

1.9 Metal surface to be welded shall be dry, clean and free from loose scale, paint and grease.

1.10 Specially designed anti-spatter compounds shall be used where called for on shop drawings.

1.11 No welding shall be done when temperature of the base metal is lower than -18 C (0 F) except with the express consent of the engineer. At temperatures below 0 C (32 F) the surfaces of all areas within 75mm (3") of the joint where a weld is to be deposited, shall be heated to a temperature at least warm to the hand before welding is commenced.

1.12 The operator and the work shall be adequately protected against the direct effect of wind, snow and rain.

MOSHER ENGINEERING LIMITED
2089 Upper Water Street
Halifax, Nova Scotia, B3J 2R7

Page 3

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

**2.a WELDING SYMBOLS AND
BASIC JOINTS**



1. Welding symbols shall be as shown in AWS Standard A2.4, Symbols for Welding and Nondestructive Testing. See Appendix D of CSAW59-M1989 for symbols from that Standard and additional conventions developed for incorporation into this Standard. Special requirements shall be fully explained by notes or details.

Detail of butt joints, corner joints, T-joints, lap joints and edge joints are shown in Appendix D, CSA W59-M1989. Standard location on elements of a welding symbol are also shown in this appendix.

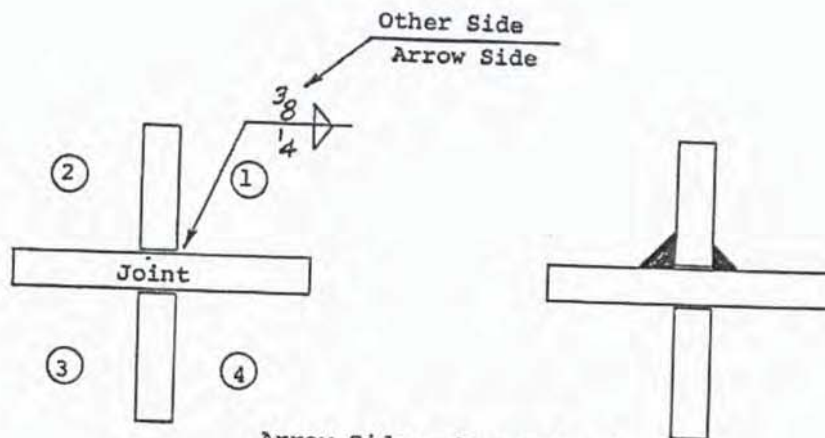
MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

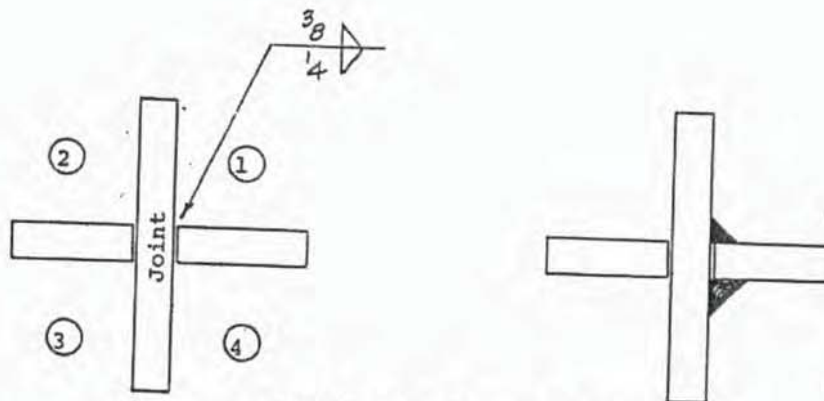
CWB APPROVAL

ENGINEERS STAMP

**2.b CLARIFICATION OF "ARROW"
AND "OTHER" SIDE**



Arrow Side = Corner No. 1
Joint = Contact Area 1 - 2
Other Side = Corner No. 2



Arrow Side = Corner No. 1
Joint = Contact Area 1 - 4
Other Side = Corner No. 4

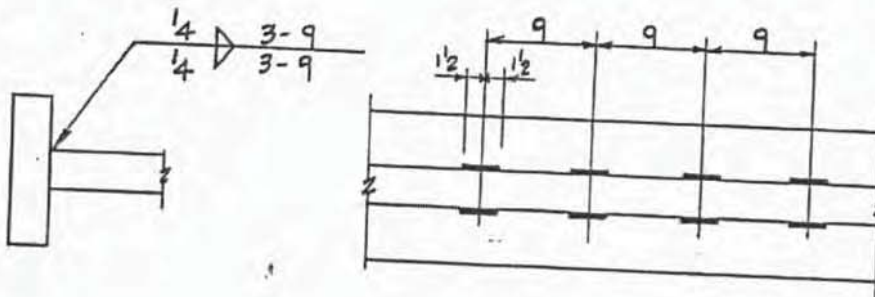
MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

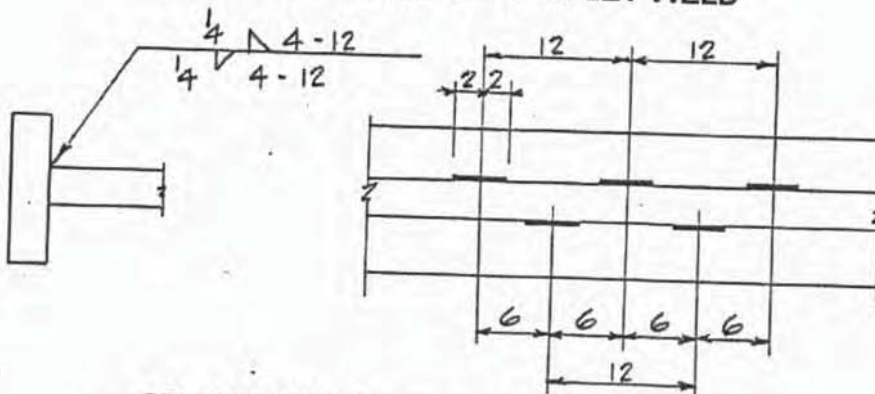
CWB APPROVAL

ENGINEERS STAMP

**2.c CLARIFICATION OF INTERMITTENT
AND STAGGERED FILLET WELDS**



CHAIN INTERMITTENT FILLET WELD



STAGGERED INTERMITTENT FILLET WELD

Note:

- When intermittent fillet welding is used by itself, the symbol indicates that increments shall be located at the ends of the dimensioned length.
- If required by actual length of the joint the length of increment of the welds at the end of the joint should be increased to terminate the weld at the end of the joint.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

**2.d GENERAL DRAFTING AND DESIGN
INFORMATION**



(1) Welds on both sides of the joint shall be shown by placing weld symbols on both sides of the reference line. The size of a fillet weld or groove weld (Depth unless it is complete joint penetration) shall be shown to the left of the weld symbol.

The length of a fillet or groove weld, when indicated on the welding symbol, shall be shown to the right of the weld symbol. Unless otherwise indicated on the welding symbol all welds shall be continuous.

When no general note governing the dimensions of fillet welds or groove welds appears on the drawing the dimensions of fillet welds and groove welds on both sides of the joint shall be shown as follows.

(a) When both welds have the same dimensions, both shall be dimensioned.

(b) When the welds differ in dimensions, both shall be dimensioned.

(2) Symbols apply between abrupt changes in the direction of the welding or to the extent of hatching or dimension lines. Weld extending beyond abrupt changes in the direction of the welding shall be indicated by means of additional arrow points to each section of the joint to be welded. The above applies except when the weld all around symbol is used.

(3) When desired, General Notes, may be placed on a drawing to provide detailed information pertaining to predominant welds.

i.e. Unless otherwise indicated all fillet welds are 8mm (5/16") in size.

Such information need not be repeated on the symbol.

MOSHER ENGINEERING LIMITED
2089 Upper Water Street
Halifax, Nova Scotia, B3J 2R7

Page 7

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

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2.d GENERAL DRAFTING AND DESIGN
INFORMATION



(4) When only one member of a joint is to be prepared the arrow shall point with a definite break toward that member.

(5) All welds to be called up in Imperial Units unless drawing is designated as a metric drawing in which case all welds will be in Metric Units.

(6) The following finishing symbols, indicate the method, not the degree, of finish required for a weld.

C - Chipping

R - Rolling

G - Grinding

H - Hammering

M - Matching

The above does not include for normal cleaning which is always required after each weld pass.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

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**3 SUPPLEMENTARY WELD
INFORMATION**



3.a Fillet Welds

1. The effective area of a fillet weld shall be the effective weld length multiplied by the effective throat thickness.
2. The effective length of a fillet weld shall be the overall length of the full-size fillet, including end returns. No reduction in effective length shall be made for either the start or termination of the weld if the weld is full size throughout its length.
3. The effective length of a curved fillet weld shall be measured along the centreline of the effective throat.
4. The effective throat thickness shall be the shortest distance from the root to the face of the diagrammatic weld for all processes except SAW which will be governed by CSA W59-4.3.2.4.
5. Fillet welds may be used in skewed T-joints having a dihedral angle of not less than 60 degrees nor more than 120 degrees as shown in figure 4-2 and clause 4.3.2.5 of CSA W59-M1989

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

**3 SUPPLEMENTARY WELD
INFORMATION**



3.A Fillet Welds

4. The maximum fillet weld size permitted along the edge of material shall be:
 - (a) The thickness of the material for material less than 6mm (1/4") thick.
 - (b) 2mm(1/16") less than the thickness of material for 6mm (1/4") or more in thickness unless the weld is designated on the detail drawing to be built out to obtain full throat thickness.
 - (c) The size of fillet welds on top of groove welds when required by the engineer for smoother transition in "T" and corner joints shall not be less than $t/4$ where t is the thickness of the groove welded member, but need not to be more than 10mm (3/8"). They shall be mandatory for T-Joint subject to tension normal to the axis of the weld.
5. The minimum effective length of a fillet weld shall be 40mm (1 1/2") or 4 times the size of the fillet whichever is larger.
6. Fillet welds may be continuous or intermittent except for CSA W59-12.4.14.1.d which notes restriction on the use of intermittent welds in dynamically loaded structures.
7. The minimum overlap of parts in stress carrying lap joints shall be 5 times the thickness of the thinner part joined. Unless lateral deflection of the parts is prevented, they shall be connected by two transverse lines of fillet, or by longitudinal fillet welds along the edges or in slots.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

**3 SUPPLEMENTARY WELD
INFORMATION**



3.A Fillet Welds

8. Fillet welds shall not terminate at corners of parts of members but shall be returned continuously, full size around the corner for a length equal to twice the weld size where such return can be made in the same plane.
9. The minimum fillet size as measured shall be shown in the table below (Table 3-1). Except that the weld size need not exceed the thickness of the thinner part joined unless a larger size is required by calculated stress. For this exception particular care shall be taken to provide sufficient heat input to ensure weld soundness.

When welding attachments to members which do not carry calculated stress, the requirements of the table below need not apply.

TABLE 3-1 MINIMUM FILLET SIZE

MATERIAL THICKNESS OF THICKER PART JOINED IN MILLIMETERS (INCHES)	MINIMUM SIZE OF FILLET WELD IN MILLIMETERS (INCHES)	
To 12mm (1/2") Inclusive	5mm (3/16")	
Over 12mm (1/2") to 20mm (3/4")	6mm (1/4")	
Over 20mm (3/4")	8mm (5/16")	Single Pass welds Must be used

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

**3 SUPPLEMENTARY WELD
INFORMATION**



3.b Groove Welds

1. A complete penetration groove weld is defined as one made from one side on a backing bar or on both sides combined with back gouging to provide complete penetration and fusion of weld and base metal throughout the depth of the joint.
2. The effective area of a groove weld shall be the effective weld length multiplied by the effective throat thickness.
3. The effective throat thickness of a complete joint penetration groove weld shall be the thickness of the thinner part joined. (No increase is permitted for weld reinforcement.).
4. The minimum groove depth of single partial joint penetration groove welds or on each side of double partial joint penetration groove welds shall be in accordance with the Table 3.2 on page 12.
5. For details of Plug and Slot Welds refer to section 4.4.2 of CSA W59-M1989
6. For details of Flare Grooves and their effective throats refer to Section 4.3.1.6 of CSA W59-M1989

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

3 SUPPLEMENTARY WELD
INFORMATION



**MINIMUM GROOVE DEPTH FOR PARTIAL
JOINT PENETRATION GROOVE WELDS
(NOT COMBINED WITH FILLET WELDS)
TABLE 3-2**

THICKNESS OF THICKER PART JOINED IN MILLIMETERS	MINIMUM GROOVE DEPTH	
	Groove Angle At Root	Groove Angle At Root
	> 45 < 60 (V, Bevel Grooves)	> 60 (V, bevel J-,U-Grooves)
To 12mm (1/2") Inclusive	8mm (5/16")	5mm (3/16")
Over 12mm (1/2") to 20mm (3/4") Inclusive	10mm (3/8")	6mm (1/4")
Over 20mm (3/4") to 40mm (1 1/2") Inclusive	12mm (1/2")	8mm (5/16")
Over 40mm (1 1/2") to 60mm (2 1/4") Inclusive	14mm (9/16")	10mm (3/8")
Over 60mm (2 1/4") Inclusive	16mm (5/8")	12mm (1/2")

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

**3 SUPPLEMENTARY WELD
INFORMATION**



3.b Groove Welds

5. The effective throat thickness of a partial joint penetration groove weld for joints with no root openings shall be the depth of camfer less 3mm (1/8") for grooves having an included angle at the root of the groove less than 60 but not less than 45 .
6. The effective throat thickness of a partial joint penetration groove weld shall be the depth of camfer for grooves having an included angle at the root of the groove of 60 or greater.
7. The effective throat thickness of a partial joint penetration groove weld reinforced with a fillet weld shall be the shortest distance between the root of the groove and the surface of the fillet less 3mm (1/8") where such reduction is required by Paragraph (5).
8. For hollow structural sections the effective throat thickness of Flare-V and Flare-Bevel Groove welds shall be established by the contractor. Unless otherwise approved by the engineer, this shall be done by means of trial welds for each set of procedural conditions shall then be sectioned and measured to establish welding techniques which will ensure that the design throat thickness is achieved in production.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

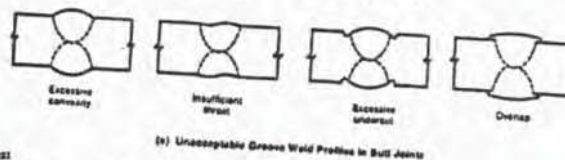
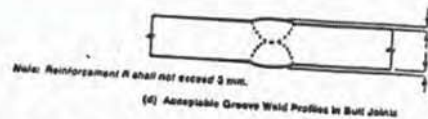
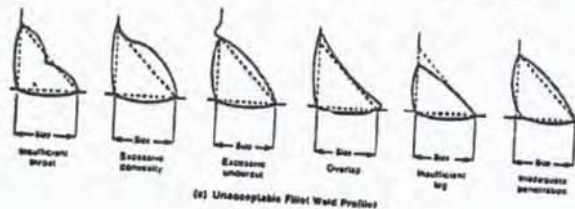
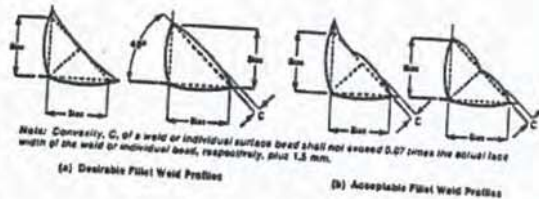
ENGINEERS STAMP

4 SHOP STANDARDS



4.a Acceptable and Unacceptable Weld Profiles

TABLE - 1



Notes:
(1) The faces of fillet welds may be slightly convex, flat, or slightly concave. Except at outside corner joints, the convexity shall not exceed 0.07 x width of face or bead + 1.5 mm.
(2) The finishing passes of all groove welds in butt joints shall provide a reinforcement at the centre of weld not exceeding 3 mm. The reinforcement shall be built up uniformly from the surface of the parent metal to a maximum at the centre of the weld. There shall be no valley or groove along the edge or in the centre of the weld. The deposited metal shall be smooth and uniform in cross-section.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

4 SHOP STANDARDS



4.b Splicing

1. Connections or splices in beams or girders when made by groove welds shall be complete penetration groove welds, unless otherwise approved by the Engineer.
2. Splices of tension members made by groove welds shall be complete joint penetration groove welds unless otherwise approved by the Engineer.
3. All shop splices in each component of a cover-plated or built-up member shall be made before such component part is welded to other component parts of the member.
4. Tension butt joints in plates of different material thickness or widths shall be made in such a manner that the slope through the transition zone is not steeper than 1 in 2 1/2. The transition shall be accomplished by chamfering the thicker part, tapering the wider part, sloping the weld metal, or by any combination of these.
5. Compression butt joints do not require a transition zone in members of different thickness or width, if approved by the Engineer.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

4 SHOP STANDARDS



4.c Preparation of Material (From CSA W59-M1989 Clause 5.3)

1. Surfaces and edges to be welded shall be smooth, uniform and free from fins, cracks and other defects that would adversely affect the quality or strength of the weld. Surfaces to be welded shall also be free, within 50 mm (2") of any weld locations, from loose or thick scale (except for tightly adhering small islands of scale), slag, loose rust, paint, grease, moisture and other foreign material that will prevent welding to meet acceptance levels of this standard or produce objectionable fumes.
2. Preparation of edges for welding shall be smooth and regular and shall be left free of slag. The edges resulting from cutting shall be smoothed when necessary to provide a surface equivalent to that specified in Clause 5.3 (CSA W59) (Pre-ceeding paragraph). All re-entrant corners shall be shaped, notch-free, to a radius of at least 15mm. All cutting shall follow closely the lines prescribed. Oxygen gouging not to be used on quenched and tempered steels.
3. For reference to occassional notches and their repair see Clause 5.3.2 CSA W59-M1989 and for planar edge discontinuities refer to Clause 5.3.3 CSA W59-M1989

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

4 SHOP STANDARDS



4.d Assembly Practices

1. The parts to be joined by fillet welds shall be brought into as close contact as practicable, (see Clause 54.1 of CSA W59-M1989) and in no event shall be separated by more than 5mm (3/16"). If the separation is 1mm (1/32") or greater, the size of the fillet weld shall be increased by the amount of the separation. The separation between faying surfaces of lap joints and of butt joints landing on a backing shall not exceed 2mm (1/16"). Where irregularities in rolled shapes or plates after straightening, do not permit contact within the above limits, the procedure necessary to bring the material within these limits shall be subject to the approval of the Engineer. The use of fillers is prohibited except as specified on the drawings or as specially approved by the Engineer, and made in accordance with Clause 4.5 CSA W59-M1989.

Abutting parts to be joined by groove welds shall be carefully aligned. Where the parts are effectively restrained against bending due to eccentricity in alignment, an offset not exceeding 10% of the thickness of the thinner part joined, but in no case more than 3mm (1/8"), may be permitted as a departure from the theoretical alignment. In correcting misalignment in such cases, the parts shall not be drawn into a greater slope than 1 in 25. Measurement of offset shall be based upon midplane of parts unless otherwise shown on the drawings.

Members to be welded shall be brought into correct alignment and held safely in position until welding has been completed. Suitable allowances shall be made for warpage and shrinkage.

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

4 SHOP STANDARDS



4.e Allowable Workmanship Tolerances from Detailed Drawings

Dimensions of the cross-section of groove welded joints which vary from those on the detail drawings by more than the following workmanship tolerances shall be corrected as per Appendix C, Clause C1.1 (f) (CSA W59), or referred to the Engineer for approval.

	Root Not Gouged	Root Gouged
a) Root Face of Joint	+/- 2mm (1/16")	Not limited
b) Root Opening of Joints without steel backing	+/- 2mm (1/16")	+ 2mm (1/16") - 3mm (1/8")
Root Opening of Joints with steel backing	+ 6mm (1/4") - 2mm (1/16")	Not applicable Not applicable
Root openings wider than permitted by the above tolerances but not greater than twice the thickness of the thinner part of 20mm maximum be built up by welding to acceptable dimensions prior to the joining if the parts by welding.		
c) Groove angle of Joint	+10 Degrees - 5 degrees	+10 Degrees - 5 degrees

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

4 SHOP STANDARDS



4.f Control of Distortion and Shrinkage Stresses

1. Insofar as practicable, all welds shall be deposited in a sequence that will balance the applied heat of welding while the welding progresses.

Before the start of welding on a member or structure in which shrinkage stresses or distortion is likely to effect the adequacy of the structure, the program for welding sequence and distortion control shall be developed by the Contractor and submitted to the Engineer for approval.

The direction of the general progression in welding on a member shall be from points where the parts are relatively fixed in position with respect to each other toward points where they have a greater relative freedom of movement.

Joints expected to have large shrinkage shall normally be welded before joints expected to have lesser shrinkage and with as little restraint as possible.

All shop splices in each component of a coverplated or built-up member shall be made before such component part is welded to other component parts of the member. With the approval of the Engineer, long girders or girder section may be made by shop splicing sub-sections, each made in accordance with this Clause (Clause 5.4, CSA W59 - M1989).

For conditions of severe external shrinkage restraint refer to clause 5.1.7 (CSA W59-M1989).

MARCH 28, 2002

**WELDING STANDARDS
to CSA W47.1**

CWB APPROVAL

ENGINEERS STAMP

4 SHOP STANDARDS



4.g Quality of Welds

1. Welds shall have no cracks
2. Welds shall be free from overlap
3. Undercut shall not exceed the permissible values as given in Clauses 11.5.4 and 12.5.4 of CSA W59-M1989 for statically and Dynamically Loaded structures respectively.
4. The minimum acceptable quality of welds, including visual examination, shall confirm to clause 11.5.4 for Statically Loaded Structures, and Clause 12.5.4 for Dynamically Loaded Structures.

Item 6 – Welding Consumable

Contents

1. N/A

Item 7 – Foundation

Contents

1. Foundation Acceptance Report

Item 7 - Foundation Acceptance Report

TANK #3

TANK #4

Note: Tank #5 is labeled as Tank #4 here as AEM has changed their internal labeling system.

	<i>AEM</i>	Date des travaux : <i>August 2017</i>	Date d'envoi : <i>2017-10-14</i>
	Système de Coord.: <i>NAD83 UTM15</i>	<i>MINE SITE FUEL FARM</i> <i>Sand As-Built</i>	Dessine par: <i>JF Landreville</i>
	Echelle: <i>n.t.s.</i>	No plan: <i>AB 403 - Top Sand</i>	Approuve par: <i>Hamel Arp.</i>



Item 8 – Floor

Contents

1. MTR
2. Weld Map / Visual Report
3. Vacuum Box Test Report
4. Floor Leveling Report



12400 Highway 43 North, Axis, Alabama 36505, US

Item 8 - Floor - MTR

Test Certificate

Form TC1: Revision 2: Date 23 Apr 2014

Customer: SAMUEL, SON & CO. LTD 1250 APPLEBY LINE		Customer P.O.No.: C41965 & 41-496189		Mill Order No. 41-496191-01		Shipping Manifest: AR240215								
Product Description: CSA G40.21(2013) 38WT/260WT - CAT 5:LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P ALLOY'S API650(12TH ED) TABLE 4-1 GR.IIIA NORMALIZED		Ship Date: 22 Feb 17		Cert No: 081597726 (Page 1 of 2)										
BURLINGTON ON L7L5G6		Size: 0.250 X 120.0 X 480.0 (IN)												
Tested Pieces:		Tensiles:		Charpy Impact Tests										
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Abs.Energy(FTLB) 1 2 3 Avg	% Shear 1 2 3 Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
E7B102	E13	0.255 (DISCRT)	C 55	76			26	T	35 34 30 33		-50F	L	5.0	
W7B598	E07	0.256 (DISCRT)	C 52	72			25	T	27 44 41 37		-50F	T	5.0	
W7B598	E08	0.256 (DISCRT)	C 51	71			25	T	36 34 32 34		-45F	L	5.0	
W7B598	E09	0.256 (DISCRT)	C						30 29 27 29		-45F	T	5.0	
W7B598	E10	0.256 (DISCRT)	C						43 31 55 43		-50F	L	5.0	
									33 30 31 31		-50F	T	5.0	
									32 40 31 34		-50F	L	5.0	
									28 34 28 30		-50F	T	5.0	
Heat														
E7B102														ORGN
W7B598														USA

KILLED STEEL

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT.

KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE

MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT

CHARPY FULL SIZE EQUIVALENT = ABSORBED ENERGY AVG X 10 / TEST SIZE IN MM

NORMALIZED PLATES. HEATED AT 1665F FOR 15 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

W7B598 E10	6705182	PCES:	1, LBS:	4084
W7B598 E07	6705203	PCES:	1, LBS:	4084
W7B598 E07	6705205	PCES:	1, LBS:	4084
W7B598 E07	6705211	PCES:	1, LBS:	4084
W7B598 E07	6705213	PCES:	1, LBS:	4084
W7B598 E07	6705215	PCES:	1, LBS:	4084
W7B598 E10	6705217	PCES:	1, LBS:	4084
W7B598 E10	6705219	PCES:	1, LBS:	4084
W7B598 E09	6705221	PCES:	1, LBS:	4084
W7B598 E09	6705223	PCES:	1, LBS:	4084
E7B102 E13	6705233	PCES:	1, LBS:	4084

W7B598 E07	6705204	PCES:	1, LBS:	4084
W7B598 E09	6705210	PCES:	1, LBS:	4084
W7B598 E07	6705212	PCES:	1, LBS:	4084
W7B598 E07	6705214	PCES:	1, LBS:	4084
W7B598 E10	6705216	PCES:	1, LBS:	4084
W7B598 E10	6705218	PCES:	1, LBS:	4084
W7B598 E09	6705220	PCES:	1, LBS:	4084
W7B598 E09	6705222	PCES:	1, LBS:	4084
E7B102 E13	6705232	PCES:	1, LBS:	4084
E7B102 E13	6705245	PCES:	1, LBS:	4084

(P)	Cust Part #:	WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION	Justin Ward +1 251 662 4400 SENIOR METALLURGIST - PRODUCT
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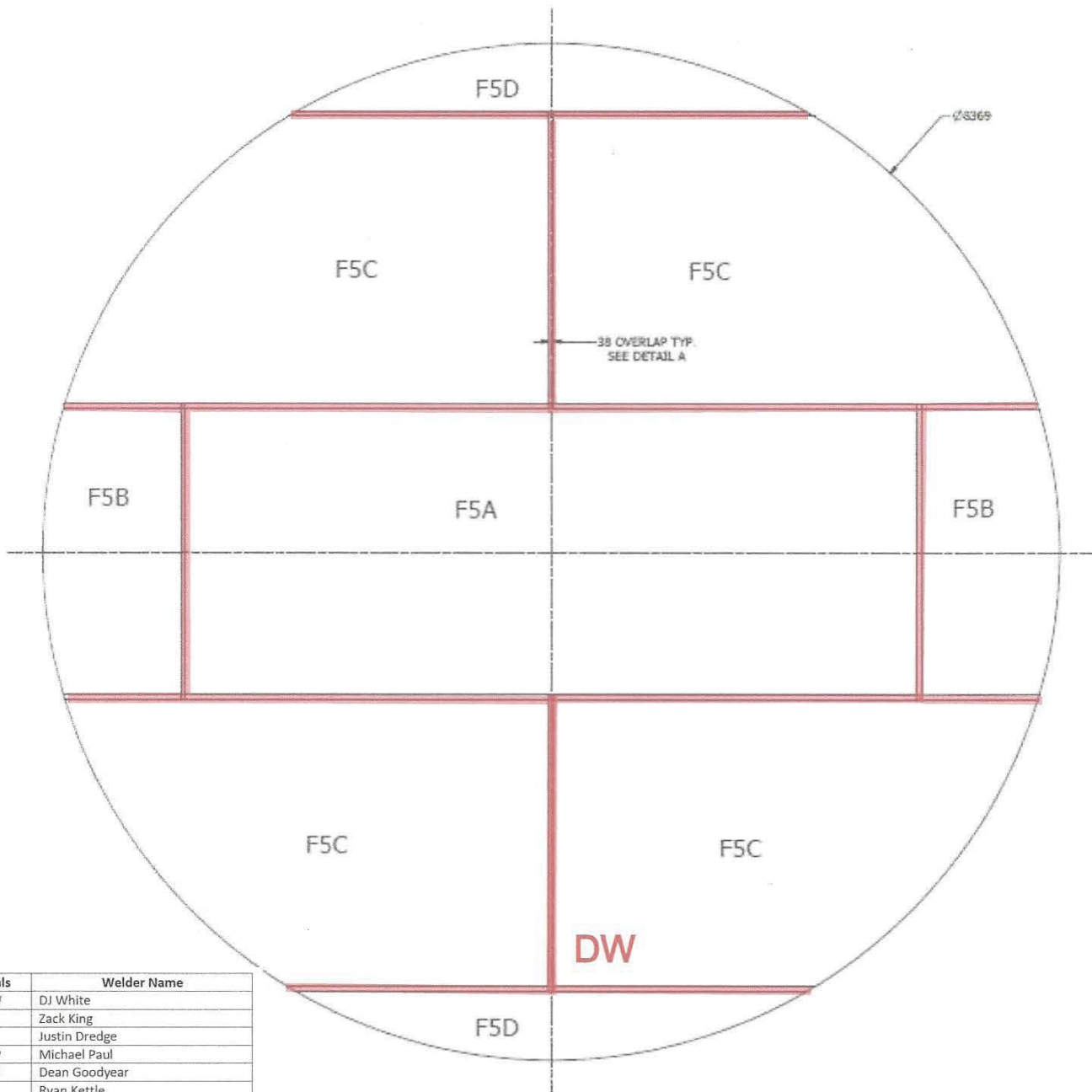
Form TC1: Revision 2: Date 23 Apr 2014

12400 Highway 43 North, Axis, Alabama 36505, US

Customer: SAMUEL, SON & CO. LTD 1250 APPLEBY LINE BURLINGTON ON L7L5G6										Customer P.O.No.: C41965 & 41-496189 Mill Order No. 41-496191-01 Shipping Manifest: AR240215									
Product Description: CSA G40.21(2013) 38WT/260WT - CAT 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA NORMALIZED										Ship Date: 22 Feb 17 Cert No: 081597726 (Page 2 of 2)									
Size: 0.250 X 120.0 X 480.0 (IN)																			
Tested Pieces:					Tensiles:					Charpy Impact Tests									
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB) 1 2 3 Avg			% Shear 1 2 3 Avg			Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
E7B102 E13 6705246 PCES: 1, LBS: 4084																			

(P)	Cust Part #:	WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION	Justin Ward +1 251 662 4400 SENIOR METALLURGIST - PRODUCT
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Item 8: Floor - Weld Map

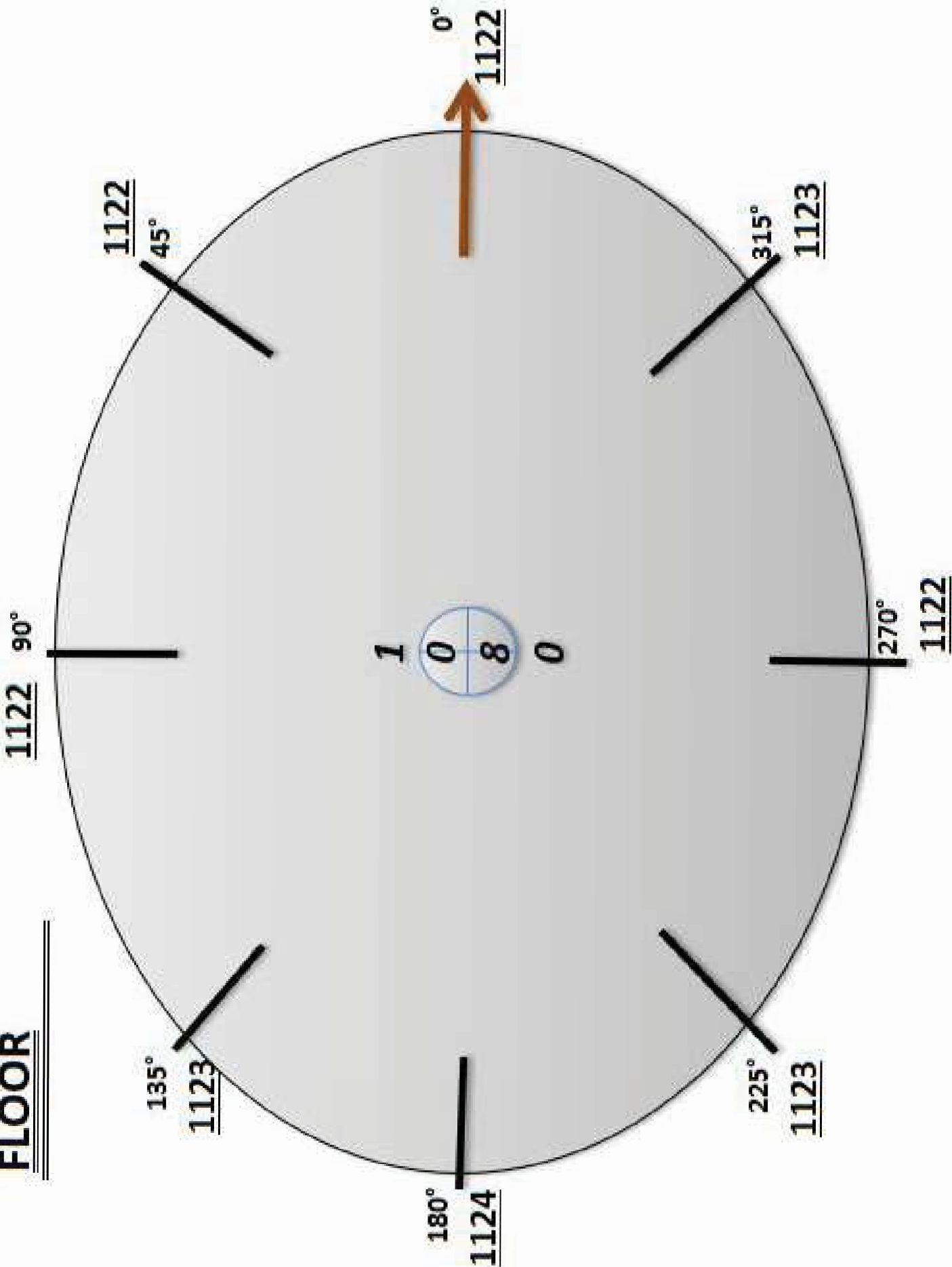


Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Berry (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldon Berry

FLOOR



Item 8 - Floor - Vacuum Test Report

Inukshuk Construction Limited
Industrial Contracting  Project Management

PO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064

4. TESTING MEDIA: Vacuum Test at -12 PSI
with soapy water
TANK 5

5. CALCULATED PRESSURE / ACTUAL PRESSURE AT LOWEST ELEVATION:

[illegible]

Include all pressure, temperature and pressure valve recording charts where applicable. Charts to be signed and approved by Engineer before acceptance. The location and course of any leaks or failures and description of repair action(s) taken to be included on additional sheets. All certificates to be submitted to Engineer for each Test Section.

CONTRACTOR REPRESENTATIVE

Sheldon Brory
(Print Name)
Sh Brory
(Signature)

ENGINEER *ac*

(Print Name)

(Signature)

(Date)

(Date)

Tank # 5

Item 8 - Floor - Vacuum Test Report

Inukshuk Construction Limited

Industrial Contracting



Project Management

PO Box 654

Rankin Inlet, NU X0C 0G0

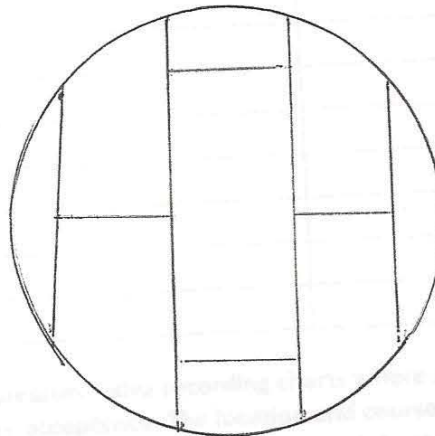
T 867.645.4030 F 867.645.4064

PRESSURE TEST CERTIFICATE

SITE: Mehindine WORK ORDER # _____
DATE: Aug 9 2017 TITLE: Tank Farm

1. DESCRIPTION OF PIPE AND LOCATION: Tank # 5
Vacuum Test The Floor at -12 PSI

2. SKETCH INDICATING TEST POINT (S):



3. PIPE STANDARD / SPECIFICATION OF TEST SECTION:

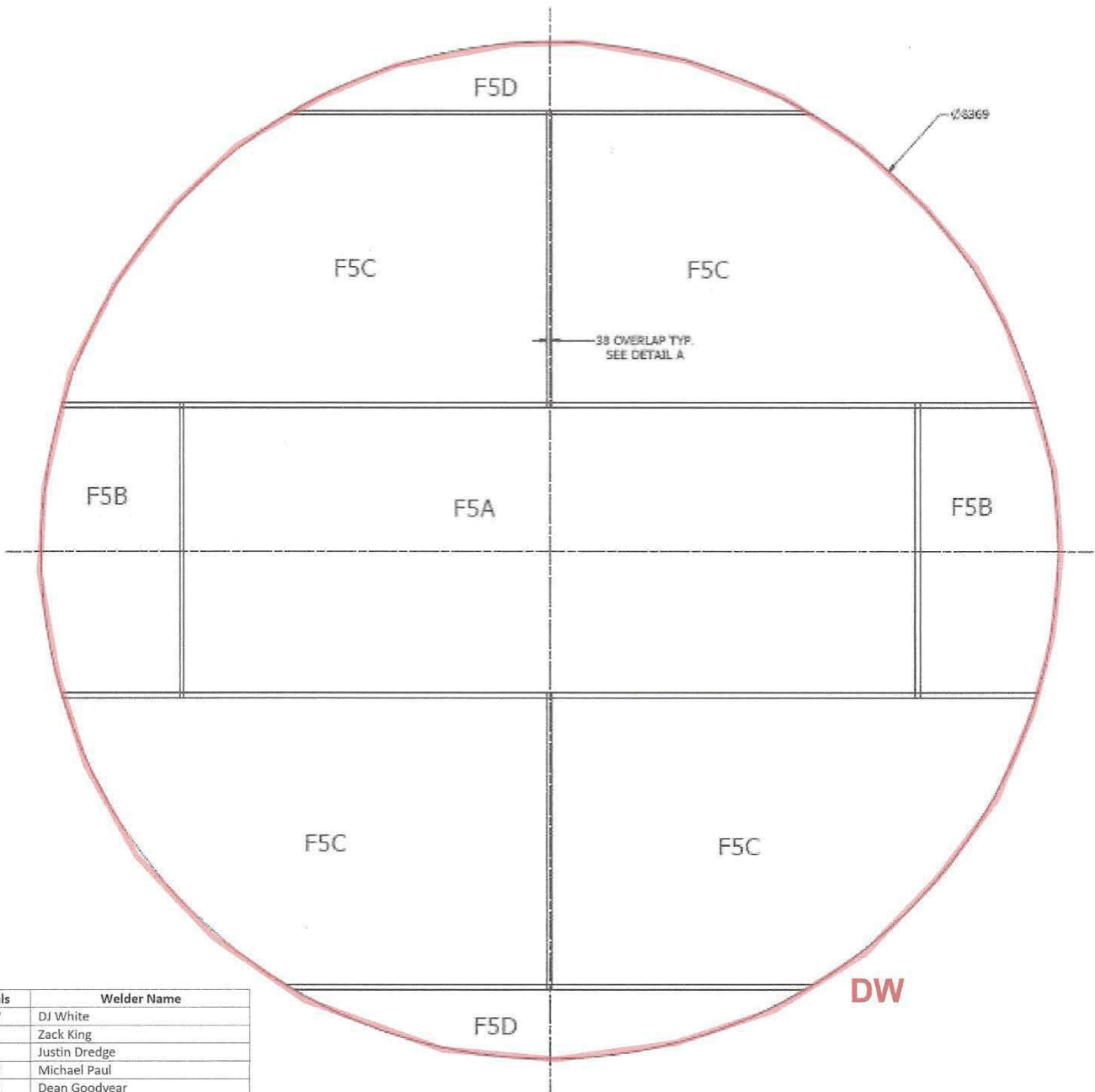
[Faint handwritten signatures and text are visible in this section, including what appears to be 'Paul D. Perry' and 'Edna Perry'.]

Item 9 – Shell to Floor Seams

Contents

1. Initial and Final (Inside and Outside) Pass Weld Map
2. Visual Report
3. Diesel Test – Leak Test Report

Item 9: Shell to Floor Seams - Initial Weld Map

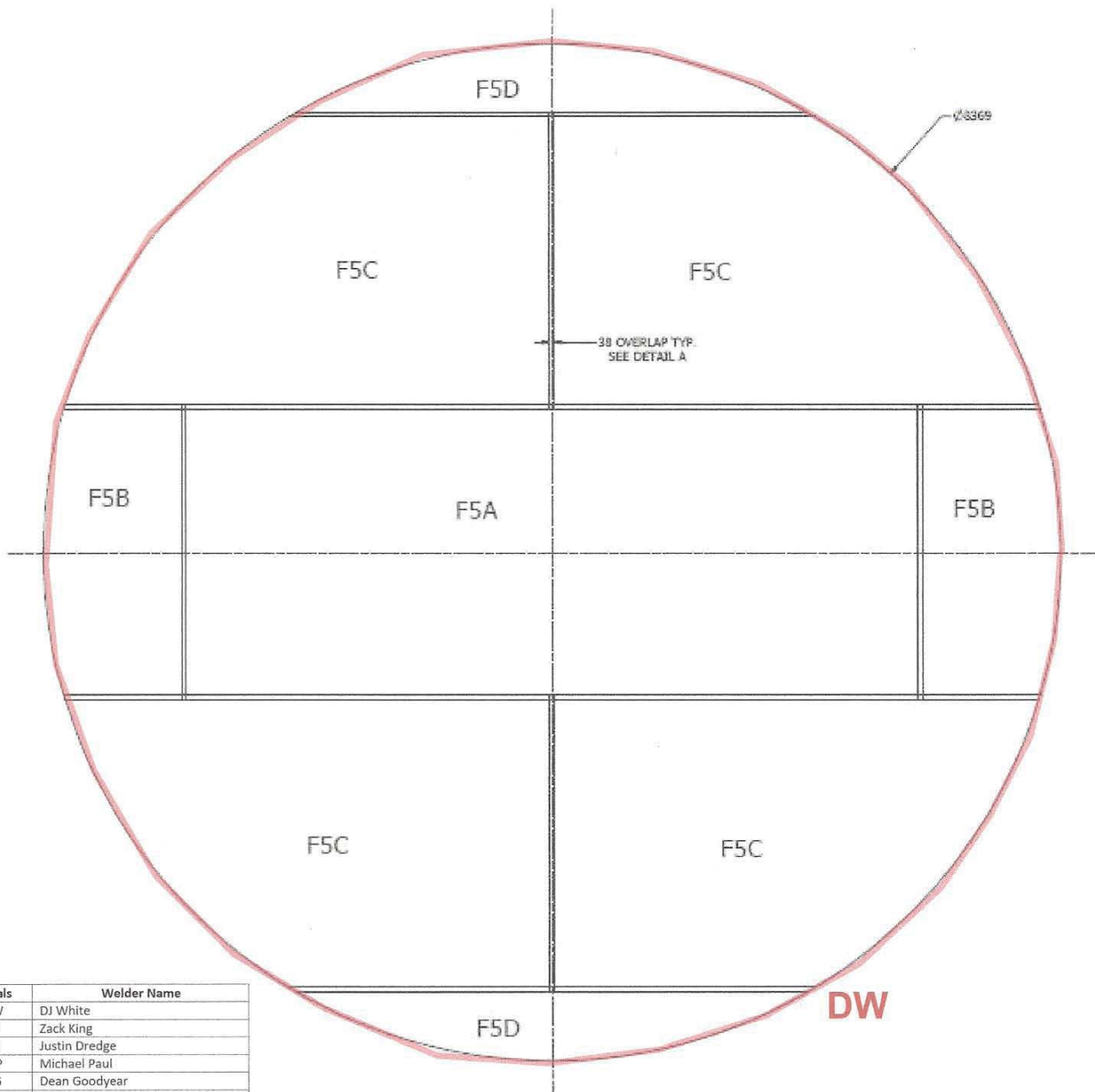


Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Bury (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldon Bury

Item 9: Shell to Floor Seams - Final Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldaa Berry (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldaa Berry

Item 9 - Shell to Floor Seams - Diesel Test Report

Inukshuk Construction Limited

Industrial Contracting Project Management

PO Box 654

Rankin Inlet, NU X0C 0G0

T 867.645.4030 F 867.645.4064

4. TESTING MEDIA:

Disol Test on Shell to Floor
Tank # 5

5. CALCULATED PRESSURE / ACTUAL PRESSURE AT LOWEST ELEVATION:

[illegible]

Include all pressure, temperature and pressure valve recording charts where applicable. Charts to be signed and approved by Engineer before acceptance. The location and course of any leaks or failures and description of repair action(s) taken to be included on additional sheets. All certificates to be submitted to Engineer for each Test Section.

CONTRACTOR REPRESENTATIVE

Sheldon Bury

(Print Name)

(Print Name)

Emory

(Signature)

May 13 2017

(Date)

~~ENGINEER~~

SILVAIN CHARTIER

(Print Name)

(Print Name)

(Signature)

(Signature)

(Date)

K # 5

Item 9 - Shell to Floor Seams - Diesel Test Report

Inukshuk Construction Limited
Industrial Contracting  Project Management

PO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064

PRESSURE TEST CERTIFICATE

SITE: Nehadine

WORK ORDER # _____

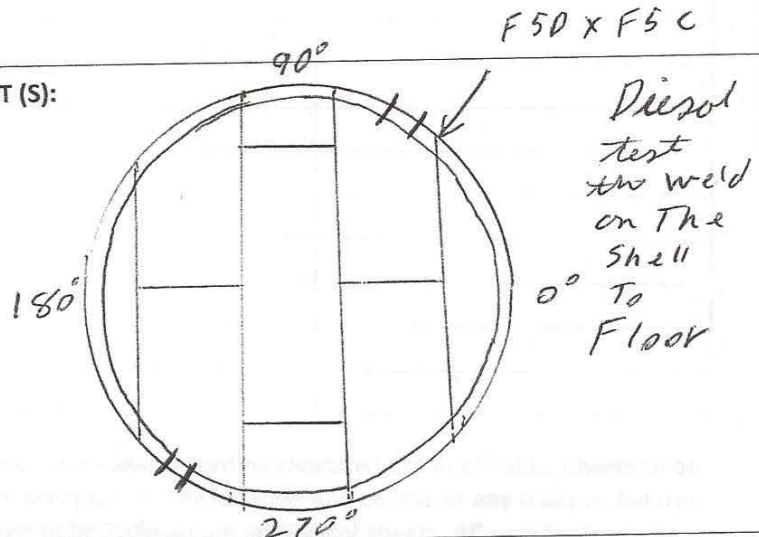
TITLE: Tank Farm

DATE: Aug 19 2017

1. DESCRIPTION OF PIPE AND LOCATION:

Tank # 5

2. SKETCH INDICATING TEST POINT (S):



3. PIPE STANDARD / SPECIFICATION OF TEST SECTION:

Item 10 - Shell

Contents

1. MTR
2. Roundness Dimension Report (AmSpec)
3. Horizontal Weld Map and Visual Report
4. Vertical Weld Map and Visual Report
5. Dimension Report – Peaking and Banding Horizontal Weld Seams
6. Dimension Report – Peaking and Banding Vertical Weld Seams
7. Dimension Report – Plumbness
8. Diesel Test Reports
9. UT Report (3rd Party)



Item 10 - Shell - MTR

Test Certificate

12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Customer: SAMUEL, SON & CO. LTD 1250 APPLEBY LINE BURLINGTON ON L7L5G6		Customer P.O.No.: C41966 & 41-490196		Mill Order No. 41-491119-14		Shipping Manifest: AR240654	
Product Description: CSA G40.21(2013) 38WT/260WT - CAT 5:LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P ALLOY'S API650(12TH ED) TABLE 4-1 GR.IIIA NORMALIZED		Ship Date: 02 Mar 17		Cert No: 081598887 (Page 1 of 1)		Cert Date: 02 Mar 17	
Size: 0.250 X 96.00 X 342.0 (IN)							

Tested Pieces:				Tensiles:				Charpy Impact Tests											
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB)			% Shear			Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
E7B075	E01	0.256 (DISCRT)	C	53	75		26	T		53	55	38	49			-50F	L	5.0	
			C							46	31	26	34			-50F	T	5.0	

Heat																	
Chemical Analysis																	
Id	C	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	ORGN
E7B075	.18	.96	.009	<.001	.25	.027	.024	.26	.13	.06	.03	.001	.004	.014	.0002	.0067	USA

KILLED STEEL
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT.
KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE
MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT
CHARPY FULL SIZE EQUIVALENT = ABSORBED ENERGY AVG X 10 / TEST SIZE IN MM
NORMALIZED PLATES. HEATED AT 1665F FOR 14 MINUTES.
TEST COUPONS TAKEN FROM HEAT TREATED PLATE.
PRODUCTS SHIPPED:

E7B075 E01 6705257 PCES: 1, LBS: 2328
E7B075 E01 6705253 PCES: 1, LBS: 2328
E7B075 E01 6705256 PCES: 1, LBS: 2328
E7B075 E01 6705260 PCES: 1, LBS: 2328
E7B075 E01 6705259 PCES: 1, LBS: 2328
E7B075 E01 6705263 PCES: 1, LBS: 2328

E7B075 E01 6705254 PCES: 1, LBS: 2328
E7B075 E01 6705255 PCES: 1, LBS: 2328
E7B075 E01 6705252 PCES: 1, LBS: 2328
E7B075 E01 6705262 PCES: 1, LBS: 2328
E7B075 E01 6705261 PCES: 1, LBS: 2328
E7B075 E01 6705258 PCES: 1, LBS: 2328

(P)	Cust Part #:	WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION		Justin Ward +1 251 662 4400 SENIOR METALLURGIST - PRODUCT
-----	--------------	--	--	--



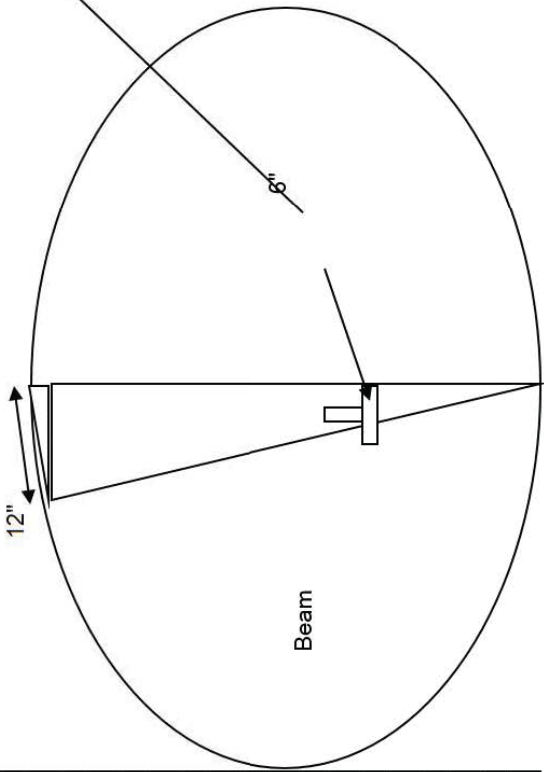
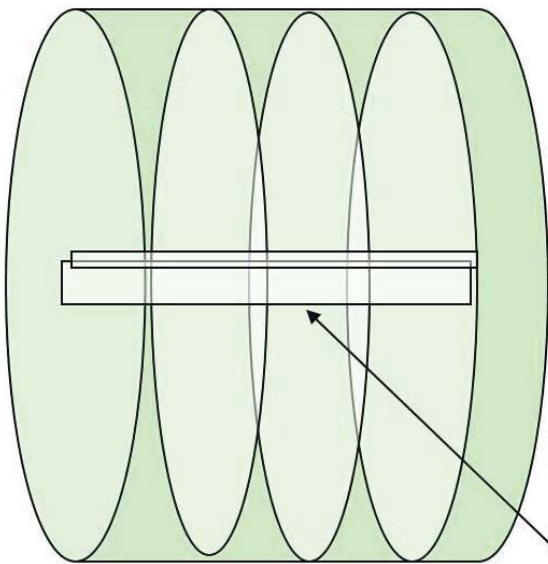
LASER DIAMETERS

Dia	Beam	Hyp
6.000	6.000	0.000

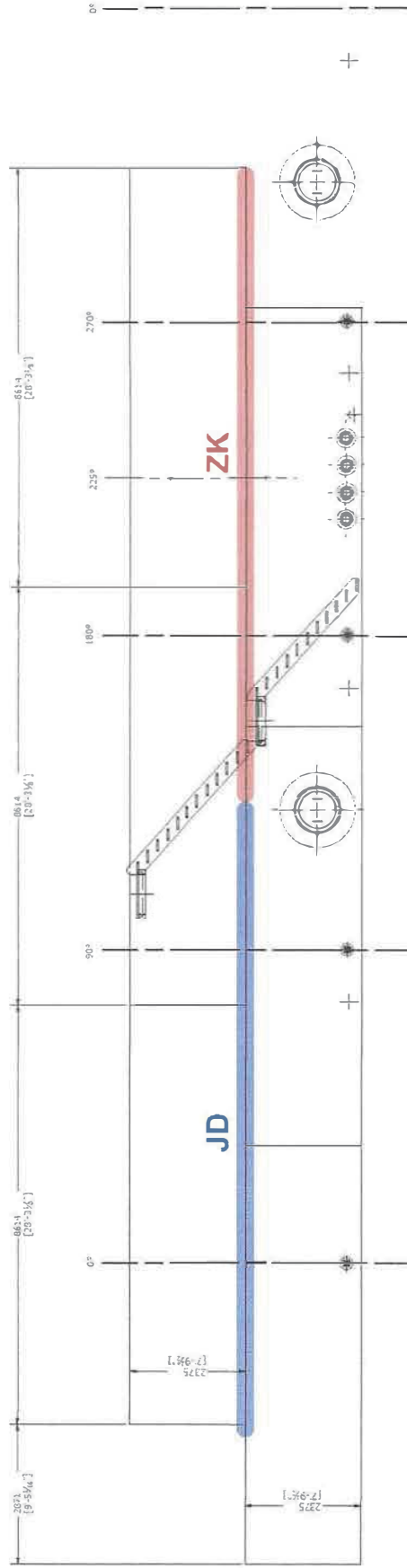
Diameter's

	left	Right
1	26.84	26.84
2	26.81	26.88
3	26.82	26.77
4	26.79	26.83
5	26.84	26.83
6	26.84	26.85
7	26.83	26.83
8	26.82	26.82
9	26.84	26.85
10	26.81	26.83
11	26.83	26.84
12	26.83	26.84
13		
14		
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22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34	26.825	26.834

Average=



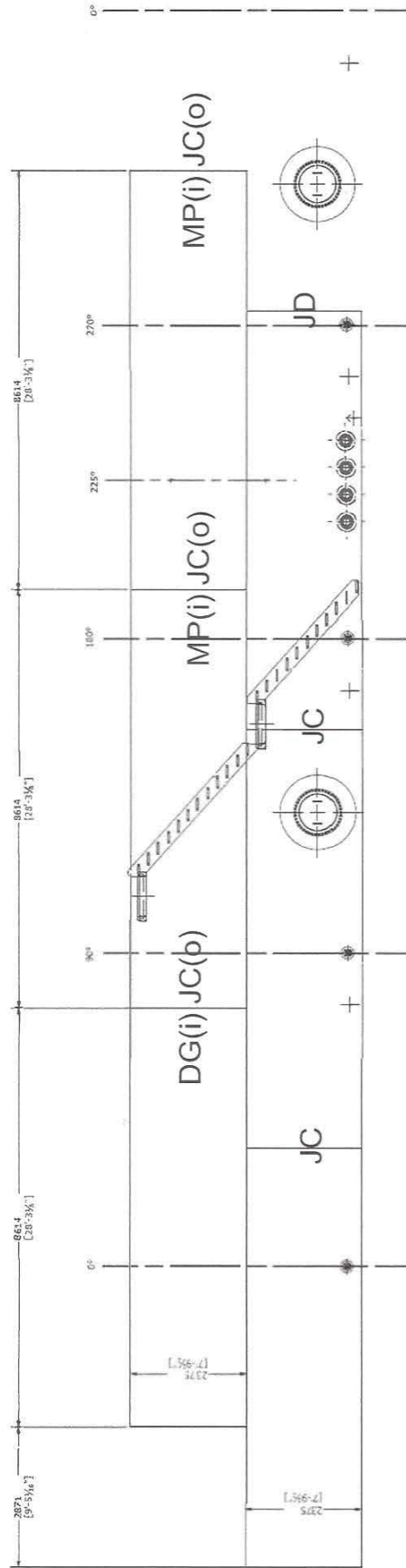
Item 10 - Shell - Horizontal Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Curry (print supervisor name) have visually inspected the welds shown on this weld map.
 Sign: Sheldon Curry

Item 10: Shell - Verticals Weld Map



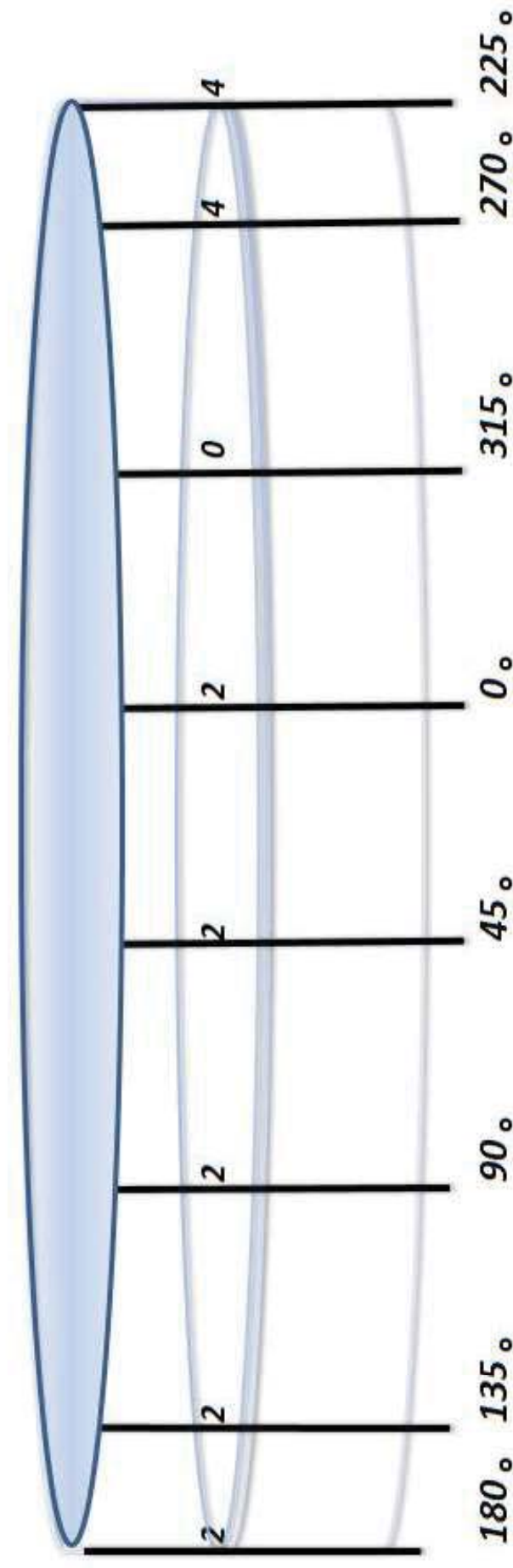
(i) = inside
(o) = outside

Initials	Welder Name
DW	DJ White
ZK	Zack King
ID	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Boory (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldon Boory

HORIZONTAL WELD SEAMS



*All units are in mm

Tank no. 5

Item 10 - Peaking and Banding Vertical Weld Seams

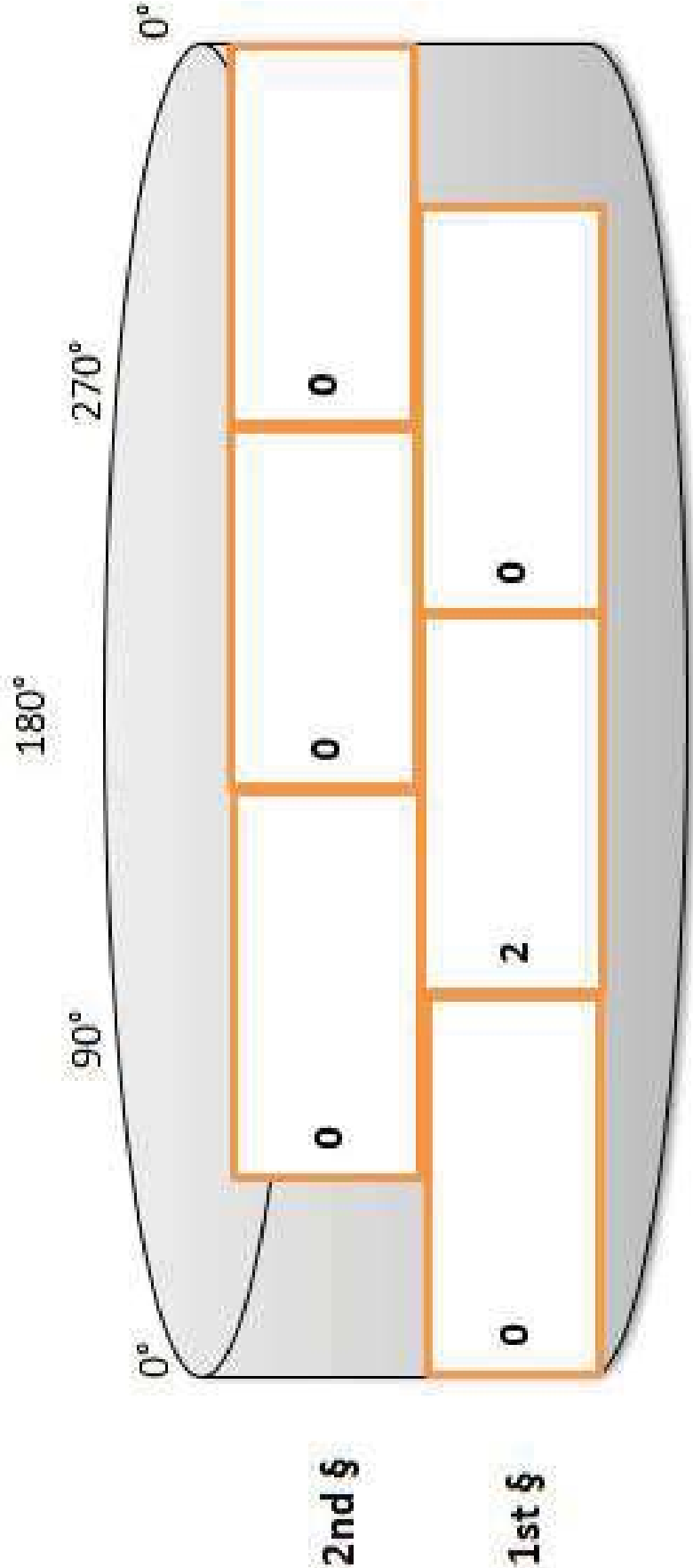
Courses

2

Plates/Course

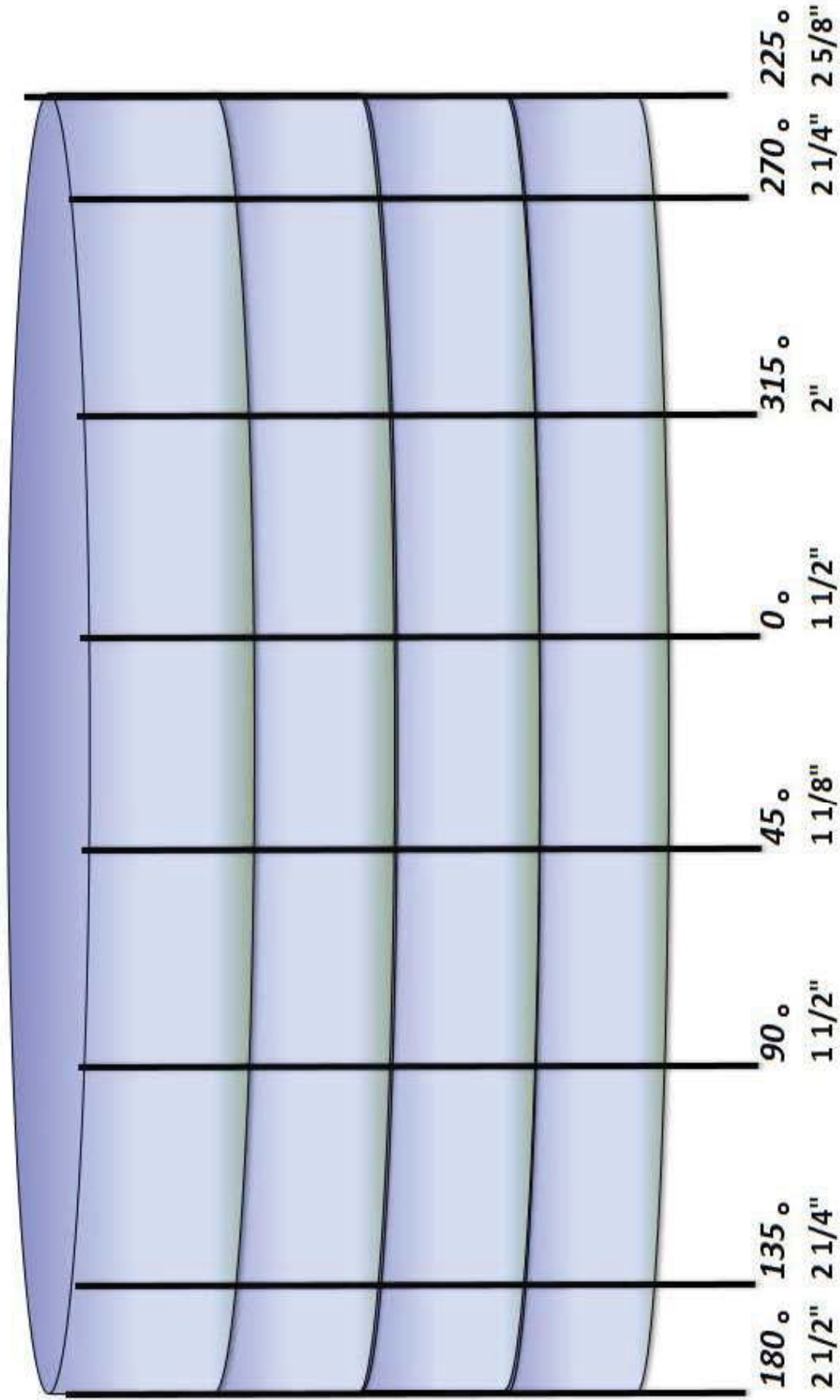
3

VERTICAL WELD SEAMS



*All units are in mm

PLUMBNESS



All measurements taken with plumb bomb from outside rim angle. Rim angle extends 2.0" from roof of tank. Subtract 2" from each measurement

Inukshuk Construction Limited

Industrial Contracting Project Management

PO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064

4. TESTING MEDIA:

Diesel test on tank Shell #5

5. CALCULATED PRESSURE / ACTUAL PRESSURE AT LOWEST ELEVATION:

[illegible]

Include all pressure, temperature and pressure valve recording charts where applicable. Charts to be signed and approved by Engineer before acceptance. The location and course of any leaks or failures and description of repair action(s) taken to be included on additional sheets. All certificates to be submitted to Engineer for each Test Section.

CONTRACTOR REPRESENTATIVE

Sha. Wg. Saunders

(Print Name)

(Print Name)
Sham Doular

(Signature)

Aug 27 12017
(Date)

(Date)

A. E. M. Quill

28-08-2017

ENGINEER

(Print Name)

(Signature)

(Date)

Inukshuk Construction Limited

Industrial Contracting



Project Management

PO Box 654

Rankin Inlet, NU X0C 0G0

T 867.645.4030 F 867.645.4064

PRESSURE TEST CERTIFICATE

SITE: Meliodine Tank Farm
Tank # 5

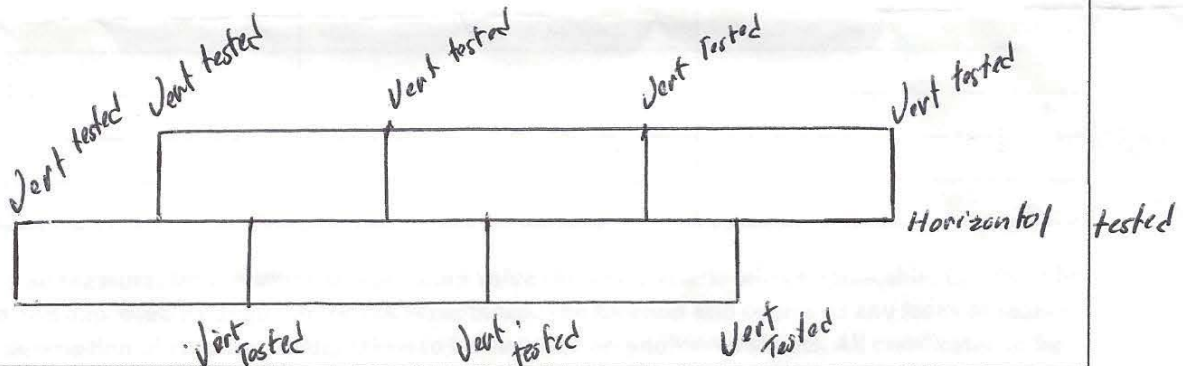
WORK ORDER # _____

TITLE: Diesel test

DATE: _____

1. DESCRIPTION OF PIPE AND LOCATION:

2. SKETCH INDICATING TEST POINT (S):



3. PIPE STANDARD / SPECIFICATION OF TEST SECTION:

A.E.M. Quattrone
28-08-2017



Client :	Inukshuk Construction Ltd,	Date d'intervention : Intervention date :	2017-08-29
Adresse/Address :	PO Box 654 Rankin Inlet, Nunavut X0C 0G0	Date du rapport : Report date :	2017-09-08
Contact :	Marc Losier	N° dossier : File no :	INS-117107-01
Entrepreneur : Contractor :	N/A	Commande : Order :	295-1046
Endroit du travail : Job location :	Rankin Inlet , Nunavut		

Page 1 de/ of 2

INSP. VISUELLE ☐ MAGNÉTOSCOPIE ☒ RESSUAGE ☐ ULTRASONS ☒ VISUAL INSP. ☐ MAGNETIC PARTICLES ☒ LIQUID PENETRANT ☐ ULTRASONIC ☒	
DESCRIPTION : Magnetic inspection and Ultrasonic inspection on tank 5 The client is opting to use an ultrasonic testing, instead of radiographic testing Remark : Visual testing was performed by client.	
INSP. VISUELLE / VISUAL INSP. NORME : SPECIFICATION : N° équip. : Equip. no : N/A	MAGNÉTOSCOPIE MAGNETIC PARTICLES Ampérage : Culasse/Yoke ☒ Continue ☒ Résiduelle ☐ Amperage : ☐ Continuous ☒ Residual ☐ Longitudinale ☐ Circulaire ☐ C.A. ☒ Longitudinal ☐ Circular ☒ A.C. ☒ Humide ☐ Wet ☐ C.C. ☐ D.C. ☐ Sèche ☒ Dry ☒ Démagnétisée ☐ Demagnetized ☐
RESSUAGE LIQUID PENETRANT Pénétrant/Penetrant : Temps/Time :	NORME : SPECIFICATION : N° équip. : Equip. no : Émulsifiant/Emulsifier : Temps/Time : Révélateur/Developer : Temps/Time :
ULTRASONS / ULTRASONIC ÉTALONNAGE/CALIBRATION : Bloc/Block : IIW Type 2 APPAREIL/EQUIPMENT : Instrument : USM GO+ N° équip./Equip. no : UT-Q-34	NORME : SPECIFICATION : API 650 Trou/Hole : N/A C.A.D. /D.A.C. : ☐ Couplant : Echogel Palpeur/Transducer : 0 degree and 70 degree Échelle/Sweep length : 0" to 2"
RÉSULTATS/RESULTS : Ultrasonic inspection was performed: - On every T (where vertical weld and horizontal touch each other) between first/second, second/third & third/forth course: Accepted - On every vertical first course from 1" to 7 and 53" to 59": Accepted - On horizontal UT on two locations, placed at center over each manhole 6" long: Accepted Magnetic particles inspection was performed on angle joint between the shell and nozzle & bottom weld to shell inside and outside the tank: -Inside tank, weld shell/nozzle and shell to the bottom weld at 100%: Accepted -Outside tank, weld between shell/pad, and weld pad/nozzle, and on weld shell to bottom weld at 100%: Accepted Remark: 12 nozzles including 2 manholes; one nozzle outside does not have pad. Please refer to drawing 295-M13; part section J-J item #35. This nozzle corresponds to a ¾" coupling for a water temperature gauge in the shell and the client has advised that no repad is needed for this specific coupling.	
Techniciens : Sylvain Germain Technicians : CSA W178.2 level 2	Assistants: Approuvé par : Pierre Dostie Approved by : Technical Supervisor CSA W178.2 Level 3

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Client :	Inukshuk Construction Ltd,	Date d'intervention :	2017-08-29
Adresse/Address :	PO Box 654 Rankin Inlet, Nunavut X0C 0G0	Intervention date :	
Contact :	Marc Losier	Date du rapport :	2017-09-08
Entrepreneur :	N/A	Report date :	
Contractor :		N° dossier :	INS-117107-01
File no :		Commande :	295-1046
Endroit du travail :	Rankin Inlet , Nunavut	Order :	
Job location :			

Picture : 1



View of tank # 5

Techniciens :	Sylvain Germain	Assistants:		Approuvé par :	Pierre Dostie
Technicians :				Approved by :	Technical Supervisor
	CSA W178.2 level 2				CSA W178.2 Level 3

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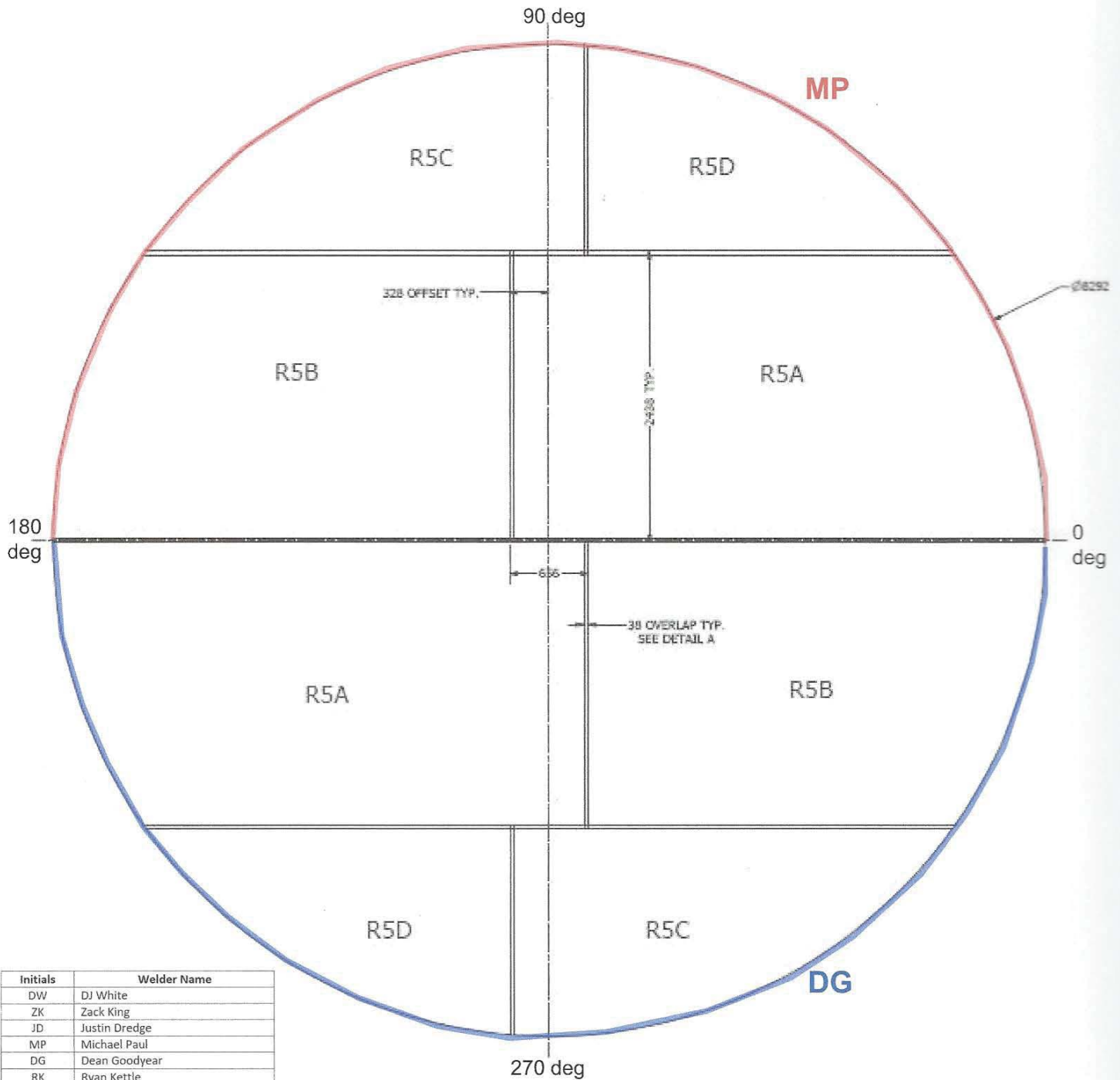
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Item 11 – Compression Ring

Contents

1. Weld Map / Visual Report

Item 11: Compression Ring - Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

TK 5 (250KL) ROOF LAYOUT
SCALE 1 / 25

I, Sheldon Berry (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldon Berry

Item 12 – Roof

Contents

1. MTR
2. Visual Report
3. Vacuum Box Test Report



12400 Highway 43 North, Axis, Alabama 36505, US

Item 12 - Roof - MTR

Test Certificate

Form TC1: Revision 2: Date 23 Apr 2014

Customer: SAMUEL, SON & CO. LTD 1250 APPLEBY LINE		Customer P.O.No.: C41965 & 41-496189		Mill Order No. 41-496191-01		Shipping Manifest: AR240215												
Product Description: CSA G40.21(2013) 38WT/260WT - CAT 5:LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P ALLOY'S API650(12TH ED) TABLE 4-1 GR.IIIA NORMALIZED		Ship Date: 22 Feb 17		Cert No: 081597726 (Page 1 of 2)		Cert Date: 22 Feb 17												
BURLINGTON ON L7L5G6		Size: 0.250 X 120.0 X 480.0 (IN)																
Tested Pieces:		Tensiles:		Charpy Impact Tests														
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Abs.Energy(FTLB) 1 2 3 Avg	% Shear 1 2 3 Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr				
E7B102	E13	0.255 (DISCRT)	C 55	76			26	T	35 34 30 33		-50F	L	5.0					
W7B598	E07	0.256 (DISCRT)	C 52	72			25	T	27 44 41 37		-50F	T	5.0					
W7B598	E08	0.256 (DISCRT)	C 51	71			25	T	36 34 32 34		-45F	L	5.0					
W7B598	E09	0.256 (DISCRT)	C						30 29 27 29		-45F	T	5.0					
W7B598	E10	0.256 (DISCRT)	C						43 31 55 43		-50F	L	5.0					
			C						33 30 31 31		-50F	T	5.0					
			C						32 40 31 34		-50F	L	5.0					
			C						28 34 28 30		-50F	T	5.0					
Heat																		
E7B102		.18	.94	.009	.001	.25	.027	.025	.26	.12	.11	.05	.002	.005	.011	.0002	.0076	USA
W7B598		.18	.92	.009	.001	.24	.028	.022	.26	.13	.08	.05	.001	.004	.011	.0002	.0078	USA
Chemical Analysis																		
KILLED STEEL MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT. KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT CHARPY FULL SIZE EQUIVALENT = ABSORBED ENERGY AVG X 10 / TEST SIZE IN MM NORMALIZED PLATES. HEATED AT 1665F FOR 15 MINUTES. TEST COUPONS TAKEN FROM HEAT TREATED PLATE. PRODUCTS SHIPPED: W7B598 E10 6705182 PCES: 1, LBS: 4084 W7B598 E07 6705203 PCES: 1, LBS: 4084 W7B598 E07 6705205 PCES: 1, LBS: 4084 W7B598 E07 6705211 PCES: 1, LBS: 4084 W7B598 E07 6705213 PCES: 1, LBS: 4084 W7B598 E07 6705215 PCES: 1, LBS: 4084 W7B598 E10 6705217 PCES: 1, LBS: 4084 W7B598 E10 6705219 PCES: 1, LBS: 4084 W7B598 E09 6705221 PCES: 1, LBS: 4084 W7B598 E09 6705223 PCES: 1, LBS: 4084 E7B102 E13 6705233 PCES: 1, LBS: 4084 W7B598 E07 6705203 PCES: 1, LBS: 4084 W7B598 E07 6705211 PCES: 1, LBS: 4084 W7B598 E10 6705213 PCES: 1, LBS: 4084 W7B598 E10 6705215 PCES: 1, LBS: 4084 W7B598 E10 6705217 PCES: 1, LBS: 4084 W7B598 E10 6705219 PCES: 1, LBS: 4084 W7B598 E09 6705221 PCES: 1, LBS: 4084 W7B598 E09 6705223 PCES: 1, LBS: 4084 E7B102 E13 6705233 PCES: 1, LBS: 4084 W7B598 E07 6705203 PCES: 1, LBS: 4084 W7B598 E07 6705211 PCES: 1, LBS: 4084 W7B598 E10 6705213 PCES: 1, LBS: 4084 W7B598 E10 6705215 PCES: 1, LBS: 4084 W7B598 E10 6705217 PCES: 1, LBS: 4084 W7B598 E10 6705219 PCES: 1, LBS: 4084 W7B598 E09 6705221 PCES: 1, LBS: 4084 W7B598 E09 6705223 PCES: 1, LBS: 4084 E7B102 E13 6705233 PCES: 1, LBS: 4084																		

(P)	Cust Part #:	WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION	Justin Ward +1 251 662 4400 SENIOR METALLURGIST - PRODUCT
-----	--------------	--	--

Inukshuk Construction Limited

Industrial Contracting  Project Management

PO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064

Item 12 - Roof - Visual Report

Fuel Tank Welding Visual Report

ICL Project #: 295 Supervisor Name: Sheldon Burry Location: Meliadine (Portal #1)

Client: Agnico Eagle Tank No: 5 Component Inspected: ROOF

Was all work on this component found to be acceptable? ☒ **Yes** ☐ **No** (if no, provide details below)

Details: _____

Corrective Action Required? ☐ **Yes** (if yes, provide details below) ☐ **No** (if no, explain why not)

Details of Corrective Action: _____

Supervisor Signature: Sheldon Burry

Date: 2 10 17

Small Business
Success
 The #1 Authority on
 Small Business
 Success

SYLVAIN CHARTIER
(Print Name)

(Signature)
2-09-2017
(Date)

PRESSURE TEST CERTIFICATE

SITE: Meliadine

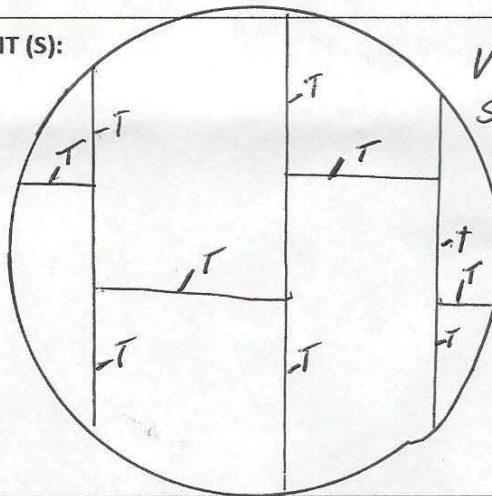
WORK ORDER # _____

DATE: Aug 31 / 2017

TITLE: Vacuum test (Tank 5 Roof)

1. DESCRIPTION OF PIPE AND LOCATION:

2. SKETCH INDICATING TEST POINT (S):



Vacuum test
Seams on Roof
Tank 5

3. PIPE STANDARD / SPECIFICATION OF TEST SECTION:

Item 13 – Roof Structure

Contents

1. Column Plumbness Report
2. Visual Report

Item 13 – Roof Structure – Column Plumbness Report

Fuel Tank Column Plumbness Report

ICL Project #: 295 Supervisor Name: Sheldon Burry Location: Meliadine (Portal #1)

Client: Agnico Eagle Tank No: 5

I, Sheldon Burry (print supervisor name) have inspected the roof structure columns for plumbness and found them to be acceptable.

Supervisor Signature: Sheldon Burry

Date: 12 10 17

Inukshuk Construction Limited

Industrial Contracting  Project Management

PO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064

Item 13 - Roof Structure - Visual Report

Fuel Tank Welding Visual Report

ICL Project #: 295 Supervisor Name: Sheldon Burry Location: Meliadine (Portal #1)

Client: Agnico Eagle Tank No: 5 Component Inspected: ROOF STRUCTURE

Was all work on this component found to be acceptable? ☒ **Yes** ☐ **No** (if no, provide details below)

Details: _____

Corrective Action Required? ☐ **Yes** (if yes, provide details below) ☐ **No** (if no, explain why not)

Details of Corrective Action: _____

Supervisor Signature: *Sheldon Burry*

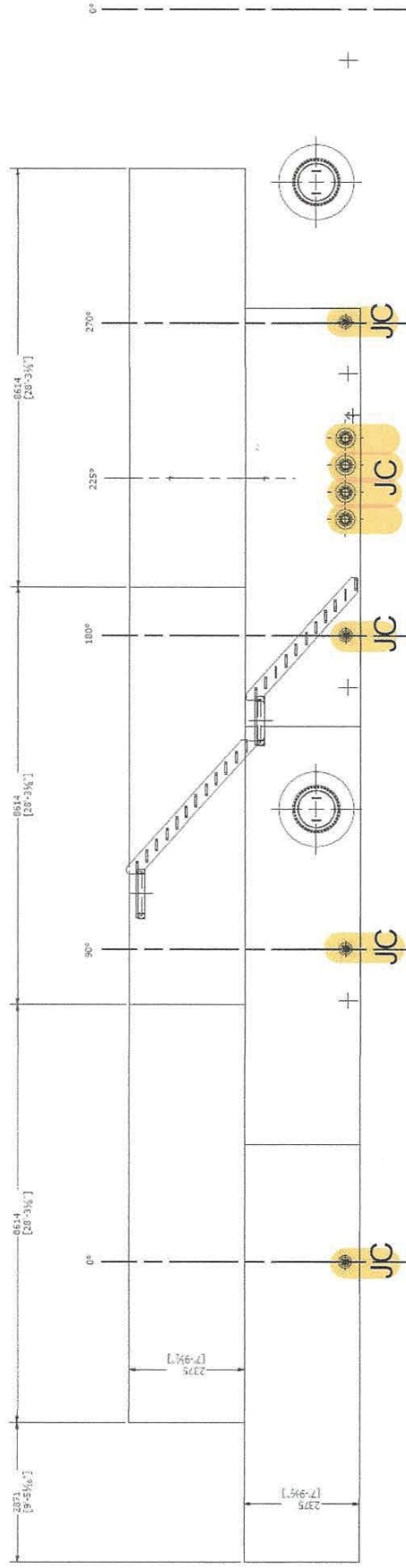
Date: 2-10-17

Item 14 - Nozzles

Contents

1. Shell Nozzle Weld Map / Visual Report
2. Roof Nozzle Weld Map / Visual Report
3. Dimension Report (AmSpec Data)
4. Air Test – Leak Test Report Water Drawoff
5. Air Test – Leak Test Report Inlet/Outlet
6. MPI Report

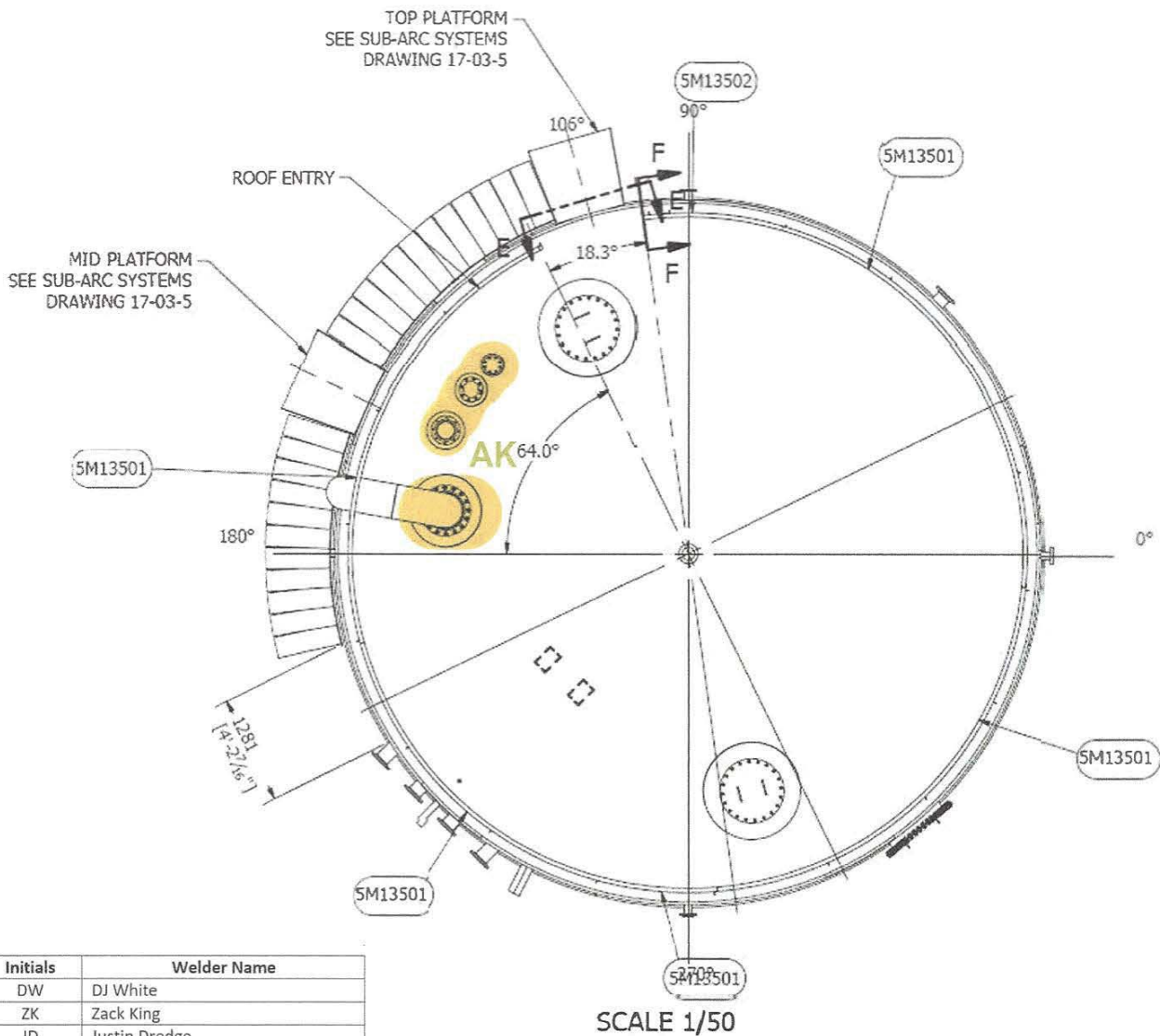
Item 14: Nozzles - Shell Nozzle Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Berry (print supervisor name) have visually inspected the welds shown on this weld map.
 Sign: Sheldon Berry

Item 14: Nozzles - Roof Nozzle Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Barry (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldon Barry

Inukshuk Construction LimitedIndustrial Contracting  Project ManagementPO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064**PRESSURE TEST CERTIFICATE**SITE: Meliadine

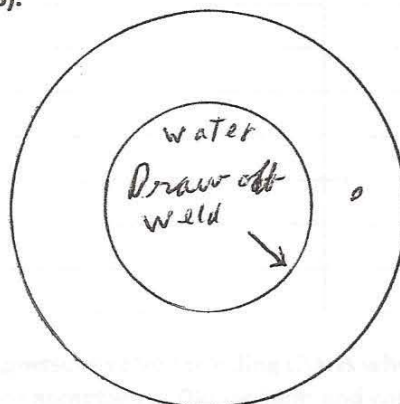
WORK ORDER #

TITLE: Tank Farm Tank # 5DATE: 9/9/17**1. DESCRIPTION OF PIPE AND LOCATION:**

3" water Draw off 4 places
0° - 90° - 180° - 270°

2. SKETCH INDICATING TEST POINT (S):

4 - water
Draw off
on Tank # 5



Reinforcing
plate
weld

3. PIPE STANDARD / SPECIFICATION OF TEST SECTION:

Inukshuk Construction Limited

Industrial Contracting



Project Management

PO Box 654

Rankin Inlet, NU X0C 0G0

T 867.645.4030 F 867.645.4064

PRESSURE TEST CERTIFICATE

SITE: Meliading

WORK ORDER #

TITLE: Tank Farm Tank # 5

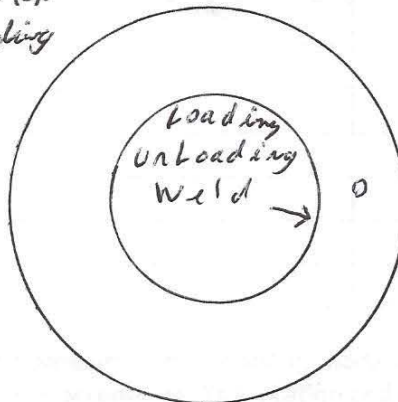
DATE: 9/9/17

1. DESCRIPTION OF PIPE AND LOCATION:

6" Loading/unloading
4 at 228° — 1 at 45°

2. SKETCH INDICATING TEST POINT (S):

5 - Loading/unloading
shell ripples
on Tank # 5



3. PIPE STANDARD / SPECIFICATION OF TEST SECTION:

Industrial Contracting Project Management

Rankin Inlet, NU XOC OGO

T 867.645.4030 F 867.645.4064

4. TESTING MEDIA: air pressure and soapy water

5. CALCULATED PRESSURE / ACTUAL PRESSURE AT LOWEST ELEVATION:

[illegible]

Include all pressure, temperature and pressure valve recording charts where applicable. Charts to be signed and approved by Engineer before acceptance. The location and course of any leaks or failures and description of repair action(s) taken to be included on additional sheets. All certificates to be submitted to Engineer for each Test Section.

CONTRACTOR REPRESENTATIVE

Sheldon Burry

(Print Name)

(Signature)

(Signature)

9/9/17

(Date)

ENGINEER

BRUNO ROY

(Print Name)

(Print Name) Bruno D.

(Signature)

(Signature)

2017-09-00

(Date)



Client :	Inukshuk Construction Ltd,	Date d'intervention : Intervention date :	2017-08-29
Adresse/Address :	PO Box 654 Rankin Inlet, Nunavut X0C 0G0	Date du rapport : Report date :	2017-09-08
Contact :	Marc Losier	N° dossier : File no :	INS-117107-01
Entrepreneur : Contractor :	N/A	Commande : Order :	295-1046
Endroit du travail : Job location :	Rankin Inlet , Nunavut		

Page 1 de/of 2

INSP. VISUELLE ☐ MAGNÉTOSCOPIE ☒ RESSUAGE ☐ ULTRASONS ☒ VISUAL INSP. ☐ MAGNETIC PARTICLES ☒ LIQUID PENETRANT ☐ ULTRASONIC ☒	
DESCRIPTION : Magnetic inspection and Ultrasonic inspection on tank 5 The client is opting to use an ultrasonic testing, instead of radiographic testing Remark : Visual testing was performed by client. I	
INSP. VISUELLE / VISUAL INSP. MAGNÉTOSCOPIE MAGNETIC PARTICLES Ampérage : Culasse/Yoke Amperage : ☐ Continuue Continuous ☒ Longitudinale ☐ Circulaire Circular ☐ Longitudinal ☐ Circular ☐	NORME : SPECIFICATION : NORME : SPECIFICATION : Api 650 Résiduelle ☐ Residual ☐ C.A. ☒ A.C. ☒ Humide ☐ Wet ☐ C.C. ☐ D.C. ☐
N° équip. : N/A Equip. no : N° équip. : MP-Q-27 Equip. no : Sèche ☒ Dry ☒ Démagnétisée ☐ Demagnetized ☐	
RESSUAGE LIQUID PENETRANT Pénétrant/Penetrant : Temps/Time :	NORME : SPECIFICATION : Émulsifiant/Emulsifier : Temps/Time :
N° équip. : Equip. no : Révélateur/Developer : Temps/Time :	
ULTRASONS / ULTRASONIC ÉTALONNAGE/CALIBRATION : Bloc/Block : IIW Type 2 APPAREIL/EQUIPMENT : Instrument : USM GO+ N° équip./Equip. no : UT-Q-34	NORME : SPECIFICATION : API 650 Trou/Hole : N/A C.A.D. /D.A.C. : ☐ Couplant : Echogel Palpeur/Transducer : 0 degree and 70 degree Échelle/Sweep length : 0" to 2 "
RÉSULTATS/RESULTS : Ultrasonic inspection was performed: - On every T (where vertical weld and horizontal touch each other) between first/second, second/third & third/forth course: Accepted - On every vertical first course from 1" to 7 and 53" to 59": Accepted - On horizontal UT on two locations, placed at center over each manhole 6" long: Accepted Magnetic particles inspection was performed on angle joint between the shell and nozzle & bottom weld to shell inside and outside the tank: -Inside tank, weld shell/nozzle and shell to the bottom weld at 100%: Accepted -Outside tank, weld between shell/pad, and weld pad/nozzle, and on weld shell to bottom weld at 100%: Accepted Remark: 12 nozzles including 2 manholes; one nozzle outside does not have pad. Please refer to drawing 295-M13; part section J-J item #35. This nozzle corresponds to a ¾" coupling for a water temperature gauge in the shell and the client has advised that no repad is needed for this specific coupling.	
Techniciens : Sylvain Germain Technicians : CSA W178.2 level 2	Assistants: Approuvé par : Pierre Dostie Approved by : Technical Supervisor CSA W178.2 Level 3

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Client :	Inukshuk Construction Ltd,	Date d'intervention :	2017-08-29
Adresse/Address :	PO Box 654 Rankin Inlet, Nunavut X0C 0G0	Intervention date :	
Contact :	Marc Losier	Date du rapport :	2017-09-08
Entrepreneur :	N/A	Report date :	
Contractor :		N° dossier :	INS-117107-01
File no :		Commande :	295-1046
Endroit du travail :	Rankin Inlet , Nunavut	Order :	
Job location :			

Page 2 de/of 2

Picture : 1



View of tank # 5

Techniciens :	Sylvain Germain	Assistants:		Approuvé par :	Pierre Dostie
Technicians :				Approved by :	Technical Supervisor
	CSA W178.2 level 2				CSA W178.2 Level 3

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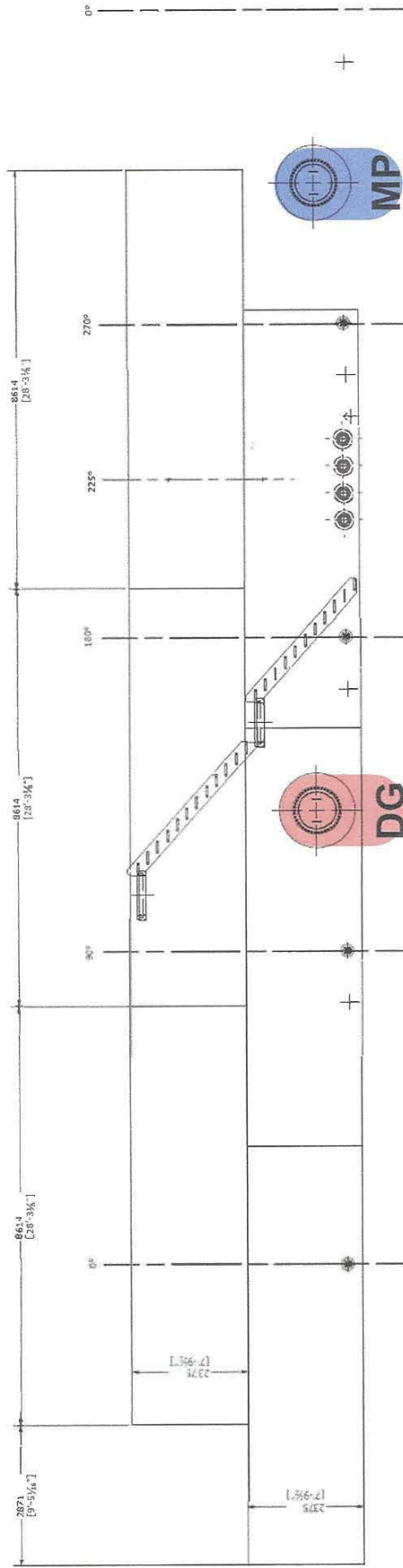
SGS Canada Inc. | Services industriels / Industrial Services 1300, boul. du Parc Technologique, Québec, QC G1P 4S3 t (800) 361-1679 f (418) 683-6328 www.sgs.ca

Item 15 – Manways

Contents

1. Shell Manway Weld Map and Visual Report
2. Roof Manway Weld Map and Visual Report
3. Dimension Report (AmSpec)
4. Leak Test Report
5. Bolting Pattern and Torque Wrench Photos
6. Torque Wrench Specs
7. MPI Report
8. Rev. 1 - Diesel Test Report on Shell Neck Weld

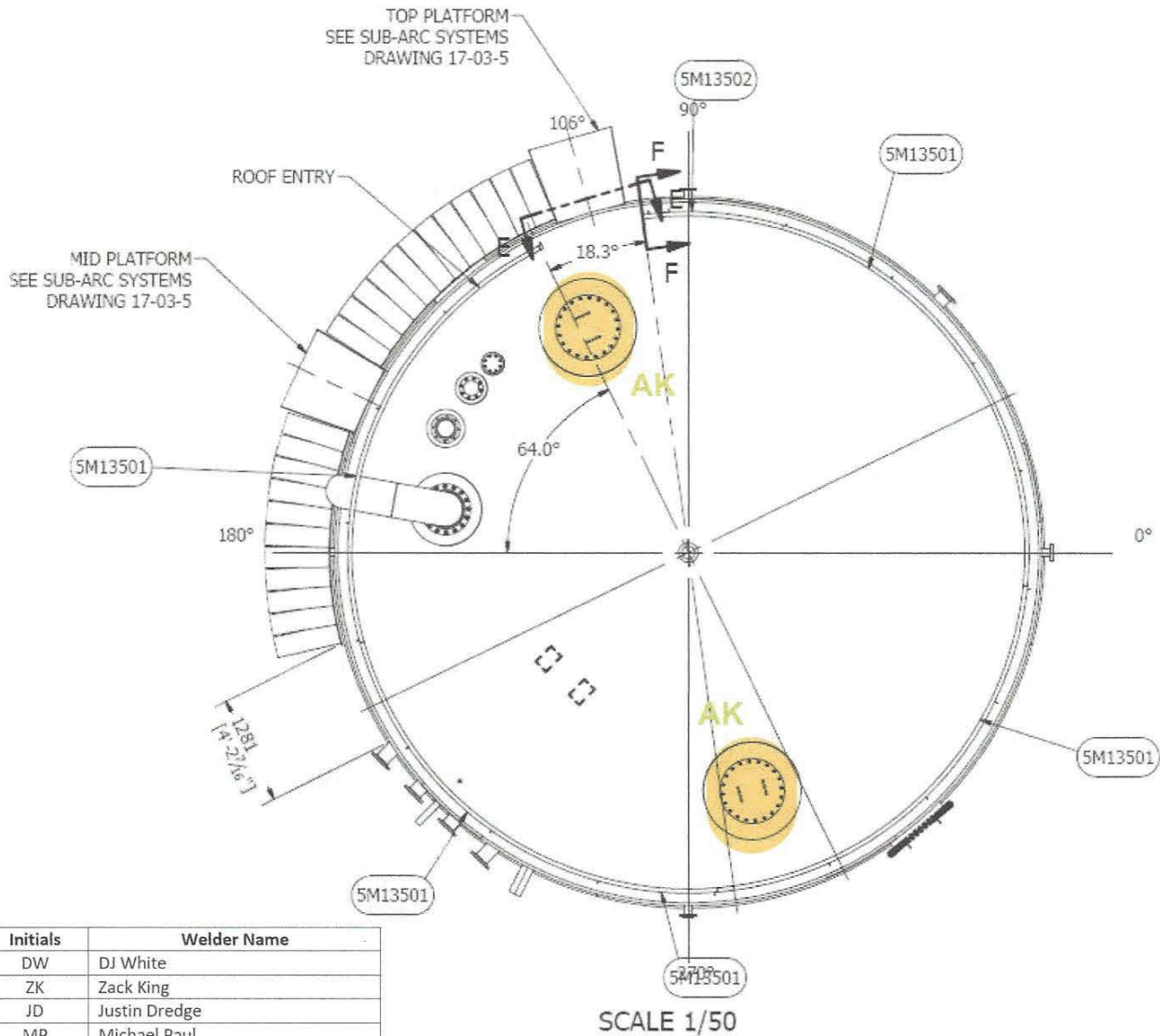
Item 15: Manways - Shell Manway Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldon Berry (print supervisor name) have visually inspected the welds shown on this weld map.
 Sign: Sheldon Berry

Item 15: Manways - Roof Manway Weld Map



Initials	Welder Name
DW	DJ White
ZK	Zack King
JD	Justin Dredge
MP	Michael Paul
DG	Dean Goodyear
RK	Ryan Kettle
JC	John Cusick
AK	Abel Kalai
JO	Joel Overgaard (Sub Arc Systems)

I, Sheldan Berry (print supervisor name) have visually inspected the welds shown on this weld map.

Sign: Sheldan Berry

Submit sketch for unusual deadwood

External

[illegible]

Inukshuk Construction Limited

Industrial Contracting  Project Management

PO Box 654
Rankin Inlet, NU X0C 0G0
T 867.645.4030 F 867.645.4064

4. TESTING MEDIA: air pressure and soapy water

5. CALCULATED PRESSURE / ACTUAL PRESSURE AT LOWEST ELEVATION:

[illegible]

Include all pressure, temperature and pressure valve recording charts where applicable. Charts to be signed and approved by Engineer before acceptance. The location and course of any leaks or failures and description of repair action(s) taken to be included on additional sheets. All certificates to be submitted to Engineer for each Test Section.

CONTRACTOR REPRESENTATIVE

Sheldon Burry

(Print Name)

(Print Name)

Shreyas

(Signature)

Shreyas

(Signature)

9/9/17

(Date)

ENGINEER

BRUNO ROY

(Print Name)

(Print Name)
Bruno M.

(Signature)

2017/09/09

(Date)