

Time Assessed T. Builder Victorial Assessment

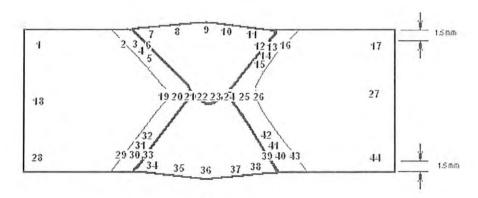


HARDNESS TEST REPORT

for Procedure Qualification Record # SAS-2-2

Client:	Sub-Arc Systems Inc.	Job Number:	636-10004
Address:	4605-47 Street Vermillion AB T9X 1L6	Date:	June 4, 2010
Materials:	SA-516 Grade 70		
Size:	1.000" Plate	Condition:	As Welded
Test Specification:	NACE RP047	2	

Test Method: Hardness testing performed in accordance with ASTM E-92 (Vickers Hardness of Metallic Materials) using a Vickers tester with a 1kg load.



Vickers Hardness Values

1	165	10	231	19	195	28	173	37	212
2	191	11	212	20	183	29	191	38	224
3	234	12	220	21	180	30	206	39	214
4	216	13	245	22	179	31	193	40	206
5	219	14	246	23	184	32	187	41	197
6	235	15	232	24	184	33	199	42	207
7	208	16	187	25	173	34	209	43	174
8	194	17	164	26	170	35	208	44	161
9	181	18	158	27	152	36	202		

We certify that the statements in this record are acceptable, in accordance with the requirements of NACE RP 0472. RP 0472-2005 paragraph 5.3 states "The maximum allowable HAZ hardness shall be 248 HV the maximum weld deposit hardness should be 248 HV and the average weld deposit hardness should not exceed 210 HV"

TEST RESULTS CERTIFIED BY:

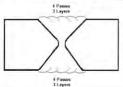
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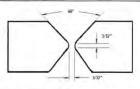
Sean Lepine, E.I.T.

PROCEDURE QUALIFICATION RECORD (PQR) QW-483 (Section IX, ASME Boiler and Pressure Vessel Code)

Company Name:	Sub-Arc Systems Inc.	By:	Gary Kohlman
PQR No.:	SAS-2-3	Date:	January 20, 2014
Revision No.:	11	Revision Date:	October 3, 2014
Welding Process(es):	SAW / SAW	Type(s):	Machine / Machine

JOINTS QW-402





BASE M	ETALS QV	-403		POST	WE	LD HEAT TREATI	MENT QW-407
Material Spec.:	SA-516		SA-516	Temperat			
Grade/Type/Class:	Grade 60/70	815	Grade 60/70		ime:		
P-No. Group No.:	P-1 Group 1/2	to	P-1 Group 1/2	- 1 (10° 10° 10° 10° 10° 10° 10° 10° 10° 10°	ing:	(None -	- As Welded)
Heat No.:	H6/5888	0.57	H6/5888	Cool	-		710 77012007
Carbon Equivalent (ASME):	0.41		0.41		her:		
Carbon Equivalent (CSA):	0.41		0.41	1			
Thickness & Diameter:	1.000" w.t. Plate			1			
Max Weld Deposit:	<0.500" per pas			1			
PREH						POSITIONS Q	W-405
Preheat Temp. Min.:	50°F			Proce	ess:	SAW (Leading)	SAW (Trailing)
Interpass Temp. Max.:	550°F			Posit	ion:	2-G	2-G
Interpass Temp. Min.:	50°F			Progress	ion:	Horizontal	Horizontal
Other:	Temperature mo	nitore	ed using tempilstiks	-	her:	Not Applicable	Not Applicable
			LLER METALS	QW-404	1		
Process:			W (Leading)			SAW (T	railing)
SFA Specification No.:			5.17			5.1	17
AWS Classification No.:			EM12K-H8			EM12	K-H8
F-No.:			F-6			F-	6
A-No.:			A-1			A-	1
Size of Filler Metal:			3/32"		3/32"		
Deposited Weld Metal:			0.500"		0.500"		
Manufacturer:		Lir	coln Electric			Lincoln	Electric
Trade Name:			LA-61			LA-	61
Heat / Lot Number:	-	N	ot Recorded			Not Re	corded
Electrode-Flux (Class):		F7A	A6-EM12K-H8		F7A6-EM12K-H8		
Flux Tradename:		Linco	Inweld 882 Flux		Lincolnweld 882 Flux		
Flux Heat / Lot Number.:		N	ot Recorded		Not Recorded		
Product Form:		Coi	led Solid Wire		Coiled Solid Wire		
		SI	HELDING GAS	QW-408	3		
Shielding Gas:							
Composition:		(No	t Applicable)			(Not App	olicable)
Flow Rate:					-		
Backing Gas:							
	ELEC.	TRIC	AL CHARACTE	RISTICS	QV	<i>l</i> -409	
Current:			Direct (DC)	- 1-1		Direct	A
Polarity:		R	everse (EP)		Reverse (EP)		
Volts:			28 - 30		28 - 30		
Amps:			380 - 420			380 -	
Travel Speed (ipm):	25.0			25			
Maximum Heat Input (J/in):			30 240			30 2	240
				QW-410			
String or Weave:			String			Stri	
Oscillation:		No	ot Applicable			Not App	olicable
Single / Multi Pass:				iple Passes fi	rom b		
Single / Multi Electrodes:			Multi			Mu	
Wire Stick Out:	F		/4" to 1 1/4"			1/4" to	1 11.1
Electrode Spacing:		_	ot Recorded			Not Red	
Nozzle / Cup Size:		N	ot Recorded	Not Recorded		corded	

¹Revision 1: Review and update to the current edition of the ASME code.

PROCEDURE QUALIFICATION RECORD (PQR) QW-483 (Section IX, ASME Boiler and Pressure Vessel Code)

PQR# SAS-2-3 Revision 1

Tensile Test

QW-462

Specimen No.	Width (in)	Thickness (in)	Are a (in ²)	Ultimate Total Load (lbs)	Ultimate Unit Stress (ksi)	Type of Failure & Location
				(Not Applicable)		

Guided Bend Tests

QW-462

Specimen No.	T	477 102	
Specimen No.	Туре	Figure	Result
			7.000.0
		(Not Assiliants)	
		(Not Applicable)	

Toughness Tests QW-170

A .				Q 11 110				
Specimen No.	Notch Location	Notch Type	Qual. Temp	Full Size Values (ft-lbs)	% Shear	Lateral Exp Inches		Weight
BH-1	Weld	V-Notch	-50°F	94	60		Break	No Brk
BH-2	Weld	V-Notch	-50°F	105		0.064		
BH-3	Weld	V-Notch	-50°F		70	0.063		
BH-4	HAZ	V-Notch	-50°F	115	80	0.072		
BH-5	HAZ	V-Notch		74	40	0.046		
BH-6	HAZ		-50°F	68	30	0.044		
**Shear and Lat		V-Notch	-50°F	83	**	**		

^{*}Shear and Lateral Expansion not recorded – specimen did not break

		Fillet-Weld Tests Not Applicable
Result-Satisfactory: Macro-Results:	Yes No	
		Other Tests
Type of Test: Other:	Not Applicable Not Applicable	
Welder's Nam	e: Keith Breedon	Reg. No.: _W-11618
Tests Conducted B	y: Qualimet	Lab. Test No.: 636-13001
Revised B	y: Qualimet	
We hereby recertify are correct and that Section IX of the ASM	the test welds were p	his record have been revised in accordance with paragraph QW-200.2 repared, welded, and tested in accordance with the requirements of
Manufacto	urer: Sub-Arc Systems I	nc
Original Cert. D	Date: January 20, 2014	By: Gary Kohlman
Recertification D	Date: October 3, 2014	By: Gary Kohlman





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 www.qualimet.ca

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CHARPY IMPACT TEST REPORT

for Procedure Qualification Record # SAS-2-3

Client:	Sub-Arc Systems Inc.	Job Number:	636-13001
Address:	4605-47 Street Vermillion AB T9X 1L6	Date:	January 20, 2014
Materials:	SA-516 Grade 60/70 to SA-516 Grade 60/70		
Size:	1.000" w.t. Plate	Condition:	As Welded
Test Specification:	ASME Section IX, ASME Section VIII UG-84,	ASTM A-370	
Test Equipment:	Satec Model S1-10, S/N: 1164		

Specimen Type:	Charpy V-Notch	
Qualification Temperature:	-50.0°F	
Test Temperature:	-50.0°F	

Specimen Size (mm): 10

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
	BH-1	94	94	60	0.064
Weld	BH-2	105	105	70	0.063
(includes all processes)	BH-3	115	115	80	0.072
	Average:	105	105	70	0.066

We certify that the statements in this record are acceptable and that the specimen(s) were prepared and tested in accordance with the requirements of the current edition of ASTM A370, ASTM E23 and their latest editions.

TEST RESULTS CERTIFIED BY:

Qualimet

Hanibal Ghile, E.I.T.



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CHARPY IMPACT TEST REPORT

for Procedure Qualification Record # SAS-2-3

Client:	Sub-Arc Systems Inc.	Job Number:	636-13001
Address:	4605-47 Street Vermillion AB T9X 1L6	Date:	January 20, 2014
Materials:	SA-516 Grade 60/70 to SA-516 Grade 60/70		
Size:	1.000" w.t. Plate	Condition:	As Welded
Test Specification:	ASME Section IX, ASME Section VIII UG-84,	ASTM A-370	
Test Equipment:	Satec Model S1-10, S/N: 1164		

Specimen Type:	Charpy V-Notch	
Qualification Temperature:	-50.0°F	
Test Temperature:	-50.0°F	

Specimen Size (mm): 10

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
	BH-4	74	74	40	0.046
HAZ	BH-5	68	68	30	0.044
	BH-6	83	83	**	**
	Average:	75	75	**	**

^{**}Shear and Lateral Expansion not recorded - specimen did not break

We certify that the statements in this record are acceptable and that the specimen(s) were prepared and tested in accordance with the requirements of the current edition of ASTM A370, ASTM E23 and their latest editions.

TEST RESULTS CERTIFIED BY:

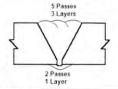
Qualimet

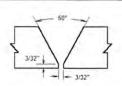
Hanibal Ghile, E.I.T.

PROCEDURE QUALIFICATION RECORD (PQR) QW-483 (Section IX, ASME Boiler and Pressure Vessel Code)

Sub-Arc Systems Inc.	By:	Gary Kohlman	
SAS-2-4	Date:	January 20, 2014	
11	Revision Date:	October 3, 2014	
SAW / SAW	Type(s):	Machine / Machine	
	SAS-2-4 1 ¹	SAS-2-4 Date: 1 ¹ Revision Date;	SAS-2-4 Date: January 20, 2014 11 Revision Date: October 3, 2014

JOINTS QW-402





BASE M	ETALS	QW-4	103		POS	TWE	D HEAT TREAT	MENT QW-407	
Material Spec.:	SA-516			SA-516	Tempera				
Grade/Type/Class:	Grade 60	/70		Grade 60/70		Time:			
P-No. Group No.:	P-1 Grou	p 1/2	to	P-1 Group 1/2	Heating:		(None -	- As Welded)	
Heat No.:	53293			53293	Co	oling:			
Carbon Equivalent (ASME):	0.39		- 3	0.39		ther:			
Carbon Equivalent (CSA):	0.39			0.39					
Thickness & Diameter:	0.249" w.	t. Plate (n	nachi	ined)					
Max Weld Deposit:	<0.500" p								
PREH	EAT C	W-406						W-405	
Preheat Temp. Min.:	50°F				Pro	cess:	SAW (Leading)	SAW (Trailing)	
Interpass Temp. Max.:	550°F				Pos	ition:	2-G	2-G	
Interpass Temp. Min.:	50°F				Progres		Horizontal	Horizontal	
Other:	Temperat	ture moni		using tempilstiks		ther:	Not Applicable	Not Applicable	
			FIL	LER METALS	QW-40)4			
Process:			SAV	V (Leading)			SAW (T		
SFA Specification No.:				5.17				17	
AWS Classification No.:			E	M12K-H8		1		2K-H8	
F-No.:				F-6			F-		
A-No.:			_	A-1			A-		
Size of Filler Metal:	_	3/32"				3/32" 0.125"			
Deposited Weld Metal:	0.125"				Lincoln Electric				
Manufacturer: Trade Name:	Lincoln Electric LA-61				-	Lincoin	275.6.7.7.7.6		
Heat / Lot Number:	Not Recorded				+	Not Re			
	F7A6-EM12K-H8				+				
Electrode-Flux (Class): Flux Tradename:			111	weld 882 Flux		F7A6-EM12K-H8 Lincolnweld 882 Flux			
Flux Heat / Lot Number.:		LII		Recorded		+-			
Product Form:			_	d Solid Wire		Not Recorded Coiled Solid Wire			
r Todact Tomi.				ELDING GAS	QW-40	10	Colled S	Olid VVII'E	
Shielding Gas:			SH	ELDING GAS	QVV-40	T			
Composition:			(Not	Applicable)		-	(Not An	nlicable)	
Flow Rate:			(1101	принсивіс)		(Not Applicable)			
Backing Gas:			_						
	E	LECTE	RIC/	L CHARACTE	RISTICS	OW	/-409		
Current:				rect (DC)		T	Direct	t (DC)	
Polarity:				verse (EP)			Revers		
Volts:				30				0	
Amps:				420			42	20	
Travel Speed (ipm):				25.0		25.0			
Maximum Heat Input (J/in):				30 240			30 2	240	
			7	TECHNIQUE	QW-410				
String or Weave:				String			Str	ing	
Oscillation:			Not	Applicable			Not App	plicable	
Single / Multi Pass:					tiple Passes	from b	oth sides		
Single / Multi Electrodes:				Multi			Mu	ulti	
Wire Stick Out:				" to 1 1/4"				1 1/4"	
Electrode Spacing:				Recorded			Not Re		
Nozzle / Cup Size:			Not	Recorded			Not Re	corded	

¹Revision 1: Review and update to the current edition of the ASME code.

PROCEDURE QUALIFICATION RECORD (PQR) QW-483

(Section IX, ASME Boiler and Pressure Vessel Code)

PQR # SAS-2-4 Revision 1

Tensile Test

QW-462

	Specimen No.	Width (in)	Thickness (in)	Area (in²)	Ultimate Total Load (lbs)	Ultimate Unit Stress (ksi)	Type of Failure & Location
ŀ				(Not Applicable)			
l							

Guided Bend Tests

QW-462

Specimen No.	Type	Figure	Result
		(Not Applicable)	
		(Not Applicable)	

Toughness Tests

QW-170

Specimen	Notch	Notch	Qual.	Full Size	% Shear	Lateral Exp	Drop V	Weight
No.	Location	Туре	Temp	Values (ft-lbs)		Inches	Break	No Brk
BG-1	Weld	V-Notch	-50°F	104	80	0.078		
BG-2	Weld	V-Notch	-50°F	81	70	0.060		
BG-3	Weld	V-Notch	-50°F	77	70	0.058		
BG-4	HAZ	V-Notch	-50°F	40	30	0.027		
BG-5	HAZ	V-Notch	-50°F	35	30	0.027		
BG-6	HAZ	V-Notch	-50°F	46	40	0.024		
			00 1		40	0.033		

Fillet-Weld Tests

Result-Satisfactory:	Yes	No	Not Applicable	Pen. into Parent Material	Yes No
Macro-Results:			_	. c.i. into i diciti Matchai	NO
			Other Tests		
Type of Test:	Not Applicable				
Other:	Not Applicable				
Welder's Name:	Keith Breedon		Reg. No	o.: W-11618	Stamp ID: BG
Tests Conducted By:	Qualimet		_		No.: 636-13001
Revised By:					

We hereby recertify that the statements in this record have been revised in accordance with paragraph QW-200.2 are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Code.

Manufacturer:	Sub-Arc Systems Inc.			() ()
Original Cert. Date:	January 20, 2014	Ву:	Gary Kohlman	AS OF THE PROPERTY OF THE PROP
Recertification Date:	October 3, 2014	Ву:	Gary Kohlman	Hono

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CHARPY IMPACT TEST REPORT

for Procedure Qualification Record # SAS-2-4

Client:	Sub-Arc Systems Inc.	Job Number:	636-13001
Address:	4605-47 Street Vermillion AB T9X 1L6	Date:	January 20, 2014
Materials:	SA-516 Grade 60/70 to SA-516 Grade 60/70		
Size:	0.249" w.t. Plate (machined)	Condition:	As Welded
Test Specification:	ASME Section IX, ASME Section VIII UG-84,	ASTM A-370	
	Satec Model S1-10, S/N: 1164		

Specimen Type:	Charpy V-Notch	
Qualification Temperature:	-50.0°F	
Test Temperature:	-50.0°F	

Specimen Size (mm):

5.2

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
	BG-1	54	104	80	0.078
Weld	BG-2	42	81	70	0.060
(includes all processes)	BG-3	40	77	70	0.058
	Average:	45	87	73	0.065

We certify that the statements in this record are acceptable and that the specimen(s) were prepared and tested in accordance with the requirements of the current edition of ASTM A370, ASTM E23 and their latest editions.

TEST RESULTS CERTIFIED BY:

Qualimet

Hanibal Ghile, E.I.T.





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CHARPY IMPACT TEST REPORT

for Procedure Qualification Record # SAS-2-4

Client:	Sub-Arc Systems Inc.	Job Number:	636-13001
Address:	4605-47 Street Vermillion AB T9X 1L6	Date:	January 20, 2014
Materials:	SA-516 Grade 60/70 to SA-516 Grade 60/70		
Size:	0.249" w.t. Plate (machined)	Condition:	As Welded
Test Specification:	ASME Section IX, ASME Section VIII UG-84,	ASTM A-370	
	Satec Model S1-10, S/N: 1164		

Specimen Type:	Charpy V-Notch	
Qualification Temperature:	-50.0°F	
Test Temperature:	-50.0°F	

Specimen Size (mm): 5.2

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
	BG-4	21	40	30	0.027
HAZ	BG-5	18	35	30	0.024
	BG-6	24	46	40	0.033
	Average:	21	40	33	0.028

We certify that the statements in this record are acceptable and that the specimen(s) were prepared and tested in accordance with the requirements of the current edition of ASTM A370, ASTM E23 and their latest editions.

TEST RESULTS CERTIFIED BY:

Qualimet

Hanibal Ghile, E.I.T.

Item 6 – Welding Consumable

Contents

1. N/A

Item 7 – Foundation

Contents

1. Foundation Acceptance Report

Inukshuk Construction Limited Industrial Contracting Project Management

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

Item 7 - Foundation Acceptance Report

PROJECT #: AEM Tank #2 Pad Sand Grade

PROJECT TITLE: AEM Tank Farm

SITE: Rankin Inlet , NU

Date: July 28, 2017

No	. Northing	Easting Ele	vation	Description
1	6963697.448	546007.935	0.000	270
3	6963726.036	546030.269	0.000	90
4	6963722.909	546004.808	0.000	180
2	6963700.575	546033.396	0.000	0
5	6963711.742	546019.102	0.000	center
11	6963648.504	546002.922	7.816	BM1
12	6963667.273	546022.542	7.956	BM2
20	6963662.458	546016.328	6.718	nail
100	6963711.698	546019.037	8.233	PAD
101	6963715.178	546021.045	8.198	B PAD
102	6963713.312	546022.745	8.196	PAD
103	6963711.476	546023.032	8.194	PAD
104	6963709.701	546022.557	8.188	B PAD
105	6963708.140	546020.837	8.186	PAD
108	6 6963707.859	546017.903	8.193	B PAD
107	6963709.297	546015.856	8.194	PAD
108	8 6963711.861	546015.038	8.188	B PAD
109	9 6963714.849	546016.565	8.188	B PAD
110	0 6963718.123	546014.307	8.164	4 PAD
11:	1 6963719.743	546019.425	8.16	7 PAD
113	2 6963717.700	546024.421	8.16	4 PAD
113	3 6963714.725	5 546026.494	8.158	B PAD
114	4 6963709.295	546026.704	8.164	4 PAD

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

Item 7 - Foundation Acceptance Report

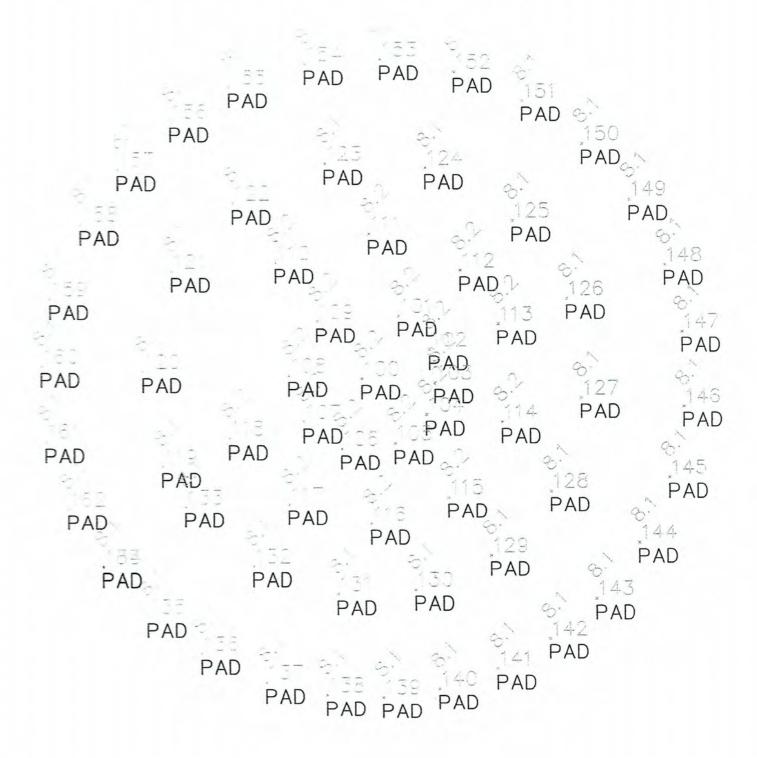
115	6963705.182	546023.754	8.164	PAD	
116	6963703.695	546019.525	8.166	PAD	
117	6963704.779	546015.018	8.170	PAD	
118	6963708.409	546011.772	8.164	PAD	
119	6963706.886	546008.105	8.134	PAD	
120	6963712.083	546007.038	8.128	PAD	
121	6963717.635	546008.628	8.128	PAD	
122	6963721.388	546011.970	8.128	PAD	
123	6963723.540	546017.010	8.133	PAD	
124	6963723.302	546022.515	8.134	PAD	
125	6963720.466	546027.280	8.131	PAD	
126	6963716.145	546030.254	8.124	PAD	
127	6963710.646	546031.041	8.126	PAD	
128	6963705.524	546029.362	8.128	PAD	
129	6963701.923	546026.064	8.134	PAD	
130	6963700.029	546021.916	8.130	PAD	
131	6963699.785	546017.655	8.136	PAD	
132	6963701.338	546013.053	8.131	PAD	
133	6963704.648	546009.354	8.126		
134	6963701.326	546004.827	8.084	PAD -> ®	utter
135	6963698.560	546007.256	8.080	PAD	
136	6963696.498	546010.177	8.075	PAD	
137	6963694.887	546013.707	8.082	PAD	
138	6963694.193	546017.025	8.079	PAD	
139	6963694.063	546020.096	8.084	PAD	
140	6963694.529	546023.186	8.087	PAD	
141	6963695.624	546026.381	8.087	PAD	
142	6963697.302	546029.256	8.083	PAD	
143	6963699.509	546031.814	8.086	PAD	

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

Item 7 - Foundation Acceptance Report

144	6963702.622	546034.180	8.086	PAD
145	6963706.256	546035.852	8.082	PAD
146	6963710.155	546036.642	8.083	PAD
147	6963714.305	546036.546	8.087	PAD
148	6963718.009	546035.606	8.082	PAD
149	6963721.614	546033.677	8.077	PAD
150	6963724.642	546031.096	8.073	PAD
151	6963727.047	546027.824	8.079	PAD
152	6963728.664	546024.091	8.078	PAD
153	6963729.355	546020.065	8.080	PAD
154	6963729.081	546015.944	8.078	PAD
155	6963727.801	546011.792	8.075	PAD
156	6963725.881	546008.572	8.080	PAD
157	6963723.215	546005.675	8.078	PAD
158	6963720.263	546003.644	8.078	PAD
159	6963716.126	546001.962	8.080	PAD
160	6963712.384	546001.478	8.075	PAD
161	6963708.257	546001.727	8.079	PAD
162	6963704.537	546002.941	8.085	PAD
163	6963701.310	546004.821	8.088	PAD

Tank Pad #2 Sand Top Elevations



Item 8 – Floor

Contents

- 1. MTR
- 2. Weld Map
- 3. Visual Report
- 4. Vacuum Box Test Report



12400 Highway 43 North, Axis, Alabama 36505, US

Item 8 - Floor - MTR

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

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

Size: 0.250 X 120.0 X 480.0 (IN)

Mill Order No. 41-491119-13 Shipping Manifest: AR240131 **Ship Date: 21 Feb 17 | Cert No:** 081597448

Cert Date: 21 Feb 17 (Page 1 of 2)

	Tested	d Pieces:			•	Tensile	s:							(Chai	гру I	mpa	ct Tests	3			
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elon 2in		Tst Dir	Hardness	Ab 1	s. E 2	nerg	y(FTLB) Avg	1	% 2	She 3	ar Avg	Tst Tmp	Tst Dir	Tst Siz	BDWTT Tmp %Shr
E7B102	E11	0.256 (DISCRT)	С								33	44	37	38					-50F		5.0	
			C								35	27	34	32					-50F		5.0	
E7B102	E12	0.256 (DISCRT)	C								39	40	36	38					-50F	L	5.0	
			C								27	25	22	25					-50F	Т	5.0	
E7B102	E13	0.255 (DISCRT)	С	55	76		2	26	Т		35	34	30	33					-50F	L	5.0	
			C								27	44	41	37					-50F	Т	5.0	
E7B102	E14	0.256 (DISCRT)	С	55	75		2	24	Т		56	41	58	52					-50F	L	5.0	
			С								27	32	30	30					-50F	Т	5.0	
W7B598	E06	0.256 (DISCRT)	С								30	30	30	30					-50F	L	5.0	
			С								37	27	23	29					-50F	Т	5.0	
W7B598	E07	0.256 (DISCRT)	С	52	72		2	25	Т													
W7B598	E08	0.256 (DISCRT)	С	51	71		2	25	Т													
W7B598	E10	0.256 (DISCRT)	С								32	40	31	34					-50F	L	5.0	
			С								28	34	28	30					-50F	Т	5.0	

Heat									Chem	ical Ana	lysis						
ld	С	Mn	Р	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Мо	Cb	V	Ti	В	N	ORGN
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

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:

TODOCI												
W7B59	8 E06	6705201	PCES:	1,	LBS:	4084	W7B598 E06	6705200	PCES:	1,	LBS:	4084
E7B10	2 E14	6705250	PCES:	1,	LBS:	4084	E7B102 E14	6705249	PCES:	1,	LBS:	4084
		6705243					E7B102 E12	6705236	PCES:	1,	LBS:	4084
E7B10	2 E13	6705244	PCES:	1,	LBS:	4084	W7B598 E06	6705199	PCES:	1,	LBS:	4084
		6705235					E7B102 E13	6705234	PCES:	1,	LBS:	4084
E7B10	2 E11	6705193	PCES:	1,	LBS:	4084	E7B102 E11	6705190	PCES:	1,	LBS:	4084



12400 Highway 43 North, Axis, Alabama 36505, US

Item 8 - Floor - MTR

Form TC1: Revision 2: Date 23 Apr 2014

Customer: SAMUEL, SON & CO. LTD 1250 APPLEBY LINE

BURLINGTON ON L7L5G6

Customer P.O.No.:C41966 & Product Description: CSA G40.21

5;LCVN 15F

ALLOYS AF

NORMALIZED

Size: 0.250 X 120.0 X 480.0 (IN)

k 41-490196	Mill Order No. 41-491	119-13	Shipping	Manifest: AR240131
21(2013) 38WT/260W 5FT.LBS,TCVN13FT.L API650(12TH ED) TAB	.BS@-45F/A673-P			Cert No: 081597448 (Page 2 of 2)
750 750	TEL 4-1 OIX.IIIA			

			5	pact Tests	py In	Char	(1	:	nsiles	lens		l		l Pieces:	Tested	
BDWT Tmp %	Tst Siz	Tst Dir	Tst Tmp	Shear 3 Avg		1	(FTLB) Avg		Abs. I 2	iess	Hardr	Tst Dir	Elong % 2in 8in		UTS %R (KSI)			Tst Loc	Tested Thickness	Piece Id	leat Id
			4084	LBS:	1,	ES:	PCE	5183	67	E11	7B102	F		34	4084	LBS:	1, L	PCES:	6705178	8 E10	W7B598
			4084	LBS:	1,	ES:	PCE	5181	67	E10	17B598	V		34	4084	LBS:	1, L	PCES:	6705177	8 E10	W7B598
			4084	LBS:	1,	ES:	PCE	5189	67	E10	17B598	V		34	4084	LBS:	1, L	PCES:	6705179	8 E10	W7B598
			4084	LBS:	1,	ES:	PCE	5172	67	E11	7B102	F		34	4084	LBS:	1, L	PCES:	6705186	8 E10	W7B598
			4084	LBS:	1,	ES:	PCE	5180	67	E10	17B598	V		34	4084	LBS:	1, L	PCES:	6705176	2 E11	E7B102
			4084	LBS:	1,	ES:	PCE	5194	67	E11	7B102	F		34	4084	LBS:	1, L	PCES:	6705192	2 E11	E7B102
			4084	LBS:	1,	ES:	PCE	5185	67	E11	7B102	F		34	4084	LBS:	1, L	PCES:	6705184	2 E11	E7B102
			4084	LBS:	1,	ES:	PCE	5206	67	E06	17B598	V		34	4084	LBS:	1, L	PCES:	6705207	8 E06	W7B598
			4084	LBS:	1,			5231	67	E12	7B102	F		34	4084	LBS:	1, L	PCES:	6705239	2 E12	E7B102
			4084	LBS:	1,	ES:	PCE	5242	67	E13	7B102	F		34	4084	LBS:	1, L	PCES:	6705247	2 E14	E7B102
			4084	LBS:	1,	IS:	PCE	5237	67	E12	:7B102	F		3 4	4084	BS:	1, L	PCES:	6705248	2 E14	E7B102
			4084	LBS:	1,	ES:	PCE	5240	67	E13	7B102	F		34	4084	∴BS:	1, L	PCES:	6705209	8 E06	W7B598
			4084	LBS:	1,	IS:	PCE	5198	67	E06	17B598	V.		34	4084	LBS:	1, L	PCES:	6705238	2 E12	E7B102
			4084	LBS:	1,	ES:	PCE	5197	67	E06	17B598	V.		34	4084	∴BS:	1, L	PCES:	6705251	2 E14	E7B102
			4084	LBS:	1,	ES:	PCE	5230	67	E12	7B102	F		34	4084	LBS:	1, L	PCES:	6705241	2 E13	E7B102

Sub-Arc Systems Inc.

4605-47 Street Vermillion, AB, T9X 1L6 780-608-9589

Exhibit 15c, Rev 1

QUALITY CONTROL MANUAL VISUAL TEST REPORT

Customer: Agnico Eagle

Location: Rankin Inlet

Code Requiring Test: API 650 (section 8.5.2)

Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

- a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
- b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
- c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
- d) The reinforcement of the welds on all thicknesses:

Piete Thickness		rcement I hickness
man year	Vartical Joints	Horizontal Joints
≤ 13 (7/2)	2.5 (3/32)	3 (1/6)
> 13 (Vz) to 25 (1)	3 (1/s)	5 (3) iai
> 25 (1)	5 (3/16)	6 (741)

Surface Condition (As Welde	ed)
Test Solution: N/A	Test Date(s):
Tested by:	Ambient Conditions:
Items Tested:	
FLOOP WELD	S.
Results: ALL FLOOR WE ACCEPTABLE.	2D VISUALY TESTED. ALL WEDS
Sub-Arc Representative Sign	nature: Natt foeten. Date: Aug 31/17
Client Representative Signa	nature: Natt place Date: Aug 31/17 nature: Clam Bonica Date: Sept 04/17
Client Signature:	Date:

Revision 1 March 1, 2017 Sub-Arc Systems Inc.

4605-47 Street Vermillion, AB, T9X 1L6 780-608-9589

QUALITY CONTROL MANUAL

Exhibit 14, Rev 1

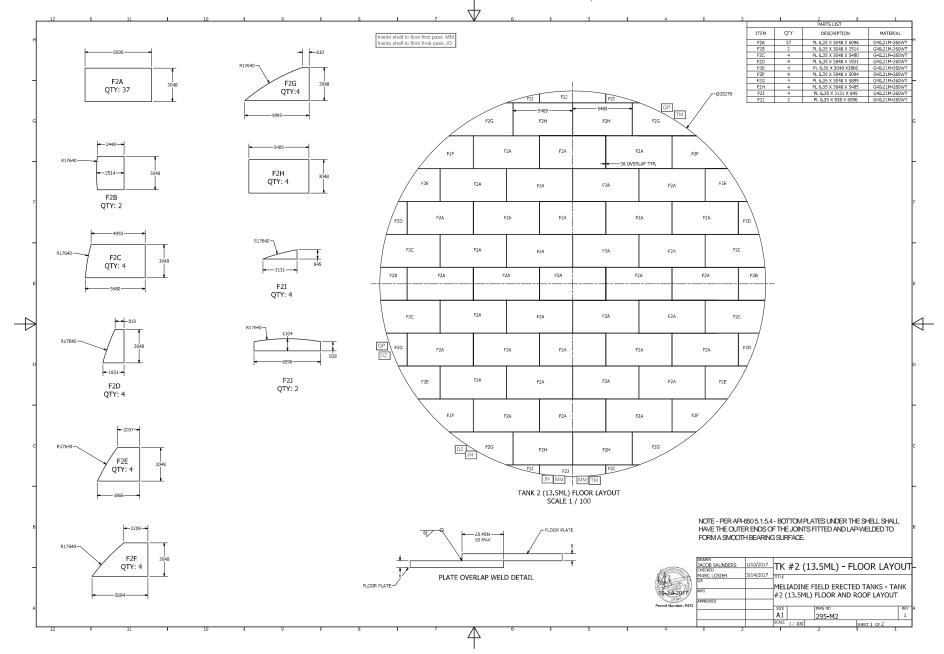
VACUUM BOX TE	ST REPORT – FLOOR PLATE WELDS
Customer: AGNICO EAGLE	
Location: RANKIN INCET T	PANK # Z
Equipment Tag No.: N/A	
Equipment Description: N/A	
Code Requiring Test: API 650	Reason for Test: New Construction
(A vacuum box/soap solution test for f alterations, no visible leaks should be	floor plate weld seams is required for new construction or major observed)
Test Solution: Water / Snoop	Ambient Conditions: 10°
Test Date(s): Aus 7/17	Surface Condition: CLEAN
Tested by: MATI MACKENZE	Surface Test Temperature: 10°
Pressure Gauge:	
Items Tested:	
FLOOR WELDS.	
Results:	
ALL FLOOR WEDS WERE	E VACUMM BOX TESTED
ONE LEAK WAS DETECTE	D. AREA WAS FIKED, THEN RE-TESTED
NO FURTHER LEAKS W	
Sub-Arc Representative Signature:	16th 16-160. Date: Aug 7/17
Client Representative Signature:	Date:
Client Signature: Com Bones	a CLEM BONIA Date: dug 23/17

Revision 1 March 1, 2017

Item 9 – Shell to Floor Seams

Contents

- 1. Initial and Final Pass Weld Map
- 2. Visual Report
- 3. Diesel Test Leak Test Report



Sub-Arc Systems Inc.

4605-47 Street Vermillion, AB, T9X 1L6 780-608-9589

QUALITY CONTROL MANUAL VISUAL TEST REPORT

Exhibit 15c, Rev 1

Revision 1

March 1, 2017

Customer: Agnico Eagle

Location: Rankin Inlet

Code Requiring Test: API 650 (section 8.5.2)

Reason for Test: New Construction

Page 49 of 49

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.

b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.

c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.)

of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).

d) The reinforcement of the welds on all thicknesses:

Plate Thickness		rcement hickness
um. (lur) —	Vartical Joints	Horizontal Joints
≤ 13 (Vป	2.5 (3/32)	3 (1/0)
> 13 (1/2) to 25 (1)	3 (1/a)	5 (9/16)
> 25 (1)	5 (3/16)	6 (%)

Surface Condition (As Welded)

Test Solution: N/A

Test Date(s): Auc_ 18/17

Tested by: MATT MICKENZIE. Ambient Conditions: 9°

Items Tested:

SHOL TO FLOOK WEZD.

Results:

SHOL TO FLOOK WEZD.

Results:

SHOL TO FLOOK WEZD.

Client Representative Signature: Plant According E.

Client Signature: Clem Bonia Date: Quy 23/17

Sub-Arc Systems Inc.

Tank#2

4605-47 Street Vermillion, AB, T9X 1L6 780-608-9589

Page 47 of 48

QUALITY CONTROL MANUAL

Exhibit 15a, Rev 1

Customer: Agnico Eagle

Location: Rankin Inlet

March 1, 2017

DIESEL TEST REPORT (SHELL TO BOTTOM WELD)

Equipment Tag No.: N/A			
Equipment Type: N/A			
Equipment Description: N/A			
Code Requiring Test: API 650 (secti	ion 7.2.4)	Reason for Test: New C	Construction
(The initial weld pass inside the shell the weld and then examined for its e penetrating oil such as light diesel to four hours, and examining the weld f	ntire circumference to the gap between the	both visually and applying a e shell and the bottom, letti	a high Flash-point
Surface Condition (As Welded)			
Test Solution: Diesel	Test Date(s):	ug 4/17	
Tested by: Matt MacKeneine	Ambient Conditions	s: 12°C	
Items Tested: Shell to be	Hom Weld	Q	
Results: No leaks we	re found	at line of	- inspection
Sub-Arc Representative Signature:	stable !	eya Date: Hag	4/17
Client Representative Signature: _		Date:	
Client Signature: Clery Box	in Bois	Date: <u>Aug. 23//</u>	7
Revision 1			

Item 10 - Shell

Contents

- 1. MTR
- 2. Roundness Dimension Report (SAS)
- 3. Roundness Dimension Report (AmSpec)
- 4. Weld Map and MTR Traceability, Visual Report
- 5. Dimension Reports Banding
- 6. Dimension Reports Peaking
- 7. Dimension Reports Plumbness
- 8. Diesel Test Reports
- 9. UT Report (3rd Party)



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Customer:	Customer P.O.No.:C41966 & 41-490196	Mill Order No. 41-4	91119-06	Shipping	Manifest: AR239887
SAMUEL, SON & CO. LTD 1250 APPLEBY LINE BURLINGTON	Product Description: CSA G40.21(2013) 38WT/26 5;LCVN 15FT.LBS,TCVN13F ALLOYS API650(12TH ED) 1 NORMALIZED	T.LBS@-45F/A673-P			Cert No: 081596751 (Page 1 of 1)
ON L7L5G6	Size: 0.562 X 113.0 X 365.0 (IN)				

	Tested	Pieces:				Tensile	s:						(Cha	rpy l	mpa	ct Tests	}			
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Ab:	s. E	nerg 3	y(FTLB) Avg	1	% 2	She 3	ar Avg	Tst Tmp	Tst Dir	Tst Siz	BDWTT Tmp %Shr
E7B111	B15	0.568 (DISCRT)	C	51	72		26	T		114	106	131	117	-				-45F	L	(mm) 10.	
			c							76	81	74	77					-45F	Т	10.	

Heat									Chemi	cal Ana	ilysis						
ld	С	Mn	Р	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Мо	Сь	V	Ti	В	N	ORGN
E7B111	.18	.92	.010	<.001	.24	.027	.026	.26	.14	.11	.04	.002	.005	.011	.0002	.0074	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

NORMALIZED PLATES. HEATED AT 1665F FOR 26 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

E7B111 B15 6704705 PCES: 1, LBS: 6574 E7B111 B15 6704706 PCES: 1, LBS: 6574 E7B111 B15 6704707 PCES: 1, LBS: 6574

WE HEREBY CERTIFY THAT THIS MATERIAL WAS
TESTED IN ACCORDANCE WITH, AND MEETS THE
REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Customer P.O.No.:C41966 & 41-490196 Mill Order No. 41-491119-06 Shipping Manifest: AR239891 Customer: SAMUEL, SON & CO. LTD Product Description: CSA G40.21(2013) 38WT/260WT - CAT Ship Date: 16 Feb 17 | Cert No: 081596775 1250 APPLEBY LINE 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P Cert Date: 16 Feb 17 (Page 1 of 1) ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA BURLINGTON **NORMALIZED** ON L7L5G6 Size: 0.562 X 113.0 X 365.0 (IN)

									_ `												
	Tested	l Pieces:			•	Tensile	s:						(Cha	rpy l	mpa	ct Tests	3			
Heat	Piece	Tested	Tst	YS	UTS	%RA	Elong %	Tst	Hardness	Abs	Abs. Energy(FTLB)			%	She	ar	Tst	Tst	Tst	BDWTT	
ld	ld	Thickness	Loc	(KSI)	(KSI)		2in 8in	Dir		1	2	3	Avg	1	2	3	Avg	Tmp	Dir	Siz	Tmp %Shr
<u> </u>		<u> </u>																<u> </u>		(mm)	
E7B111	B15	0.568 (DISCRT)	C	51	72		26	Т		114	106	131	117	Γ				-45F	L	10.	
			c							76	81	74	77					-45F	т	10.	1
E7B111	B16	0.568 (DISCRT)	c	50	72		27	Т		135	123	122	127					-45F	L	10.	,
			С							112	84	96	97					-45F	т	10.	

Heat									Chemi	cal Ana	lysis						
ld	С	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Мо	Cb	٧	Ti	В	N	ORGN
E7B111	.18	.92	.010	<.001	.24	.027	.026	.26	.14	.11	.04	.002	.005	.011	.0002	.0074	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

NORMALIZED PLATES. HEATED AT 1665F FOR 26 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

E7B111 B16	6704877	PCES:	1, LBS:	6574	E7B111	B15	6704876	PCES:	1, LBS:	6574
E7B111 B15	6704866	PCES:	1, LBS:	6574	E7B111	B15	6704867	PCES:	1, LBS:	6574
E7B111 B15	6704865	PCES:	1, LBS:	6574	E7B111	B15	6704864	PCES:	1, LBS:	6574
E7B111 B15	6704708	PCES:	1, LBS:	6574	E7B111	B16	6704878	PCES:	1, LBS:	6574



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Shipping Manifest: AR239887

Cert No: 081596752

(Page 1 of 1)

Customer P.O.No.:C41966 & 41-490196 Mill Order No. 41-491119-08 **Customer:** Ship Date: 16 Feb 17 Product Description: CSA G40.21(2013) 38WT/260WT - CAT SAMUEL, SON & CO. LTD 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P Cert Date: 16 Feb 17 1250 APPLEBY LINE ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA

NORMALIZED

ON L7L5G6 Size: 0.437 X 113.0 X 365.0 (IN)

	Tested	Pieces:				Tensile	s:							(Cha	rpy l	Impa	ct Test	3			
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elon 2in	g % 8in	Tst Dir	Hardness	Ab:	s. Er 2	nerg 3	y(FTLB) Avg	1	% 2	She 3	ar Avg	Tst Tmp	Tst Dir	Tst Siz	BDWTT Tmp %Shr
E7B111	B14	0.443 (DISCRT)	С	53	74		- 2	27	T		1			137					-45F	1-	10. 10.	,
W7B608	B11	0.442 (DISCRT)	C C	53	75			26	Т			102 122		91 120					-45F -50F	L	10.	İ
VV, 5000			c								104	93	51	83					-50F	Т	10.	

Heat	Heat Chemical Analysis																
14	C	Mn	P	s	Si	Tot Al	Sol Al	Cu	Ni	Cr	Мо	СЬ	٧	Ti	В	N	ORGN
E7B111	.18	.92	.010	<.001	.24	.027	.026	.26	.14	1.11	.04	.002	.005	.011	.0002	.0074	USA
W7B608	.18	1	.008	.001	.24	.027	.026	.26	.18	.10	.05	.001	.005	.011	.0002	.0079	USA

KILLED STEEL

BURLINGTON

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

NORMALIZED PLATES. HEATED AT 1665F FOR 21 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

5112 PCES: 1, LBS: W7B608 B11 6704648 E7B111 B14 6704652 PCES: 1, LBS: 5112 W7B608 B11 6704649 PCES: 1, LBS:

5112

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Size: 0.437 X 113.0 X 365.0 (IN)

	Tested	Pieces:				Tensile	s:							Cha	rpy i	mpa	ct Tests	•			
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs	s. En 2	erg	y(FTLB) Avg	1	% 2	She 3	ear Avg	Tst Tmp	Tst Dir	Tst Siz	BDWTT Tmp %Shr
E7B111	B14	0.443 (DISCRT)	lc	53	74		27	T		143	155	114	137	╁				-45F	L	(mm) 10.	
			С							90	102	80	91					-45F		10.	
W7B608	B11	0.442 (DISCRT)	C		75		26	T			122 93		120 83					-50F -50F	-	10. 10.	

Heat									Chemi	ical Ana	ılysis						
ld	С	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Мо	Cb	V	Ti	В	N	ORGN
E7B111	.18	.92	.010	<.001	.24	.027	.026	.26	.14	.11	.04	.002	.005	.011	.0002	.0074	USA
W7B608	.18	.92	.008	.001	.24	.027	.026	.26	.18	.10	.05	.001	.005	.011	.0002	.0079	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

NORMALIZED PLATES. HEATED AT 1665F FOR 21 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

E7B111 B14 6704428 PCES: 1, LBS: 5112 W7B608 B11 6704660 PCES: 1, LBS: 5112 5112 5112 W7B608 B11 6704659 PCES: 1, LBS: W7B608 B11 6704657 PCES: 1, LBS: W7B608 B11 6704658 PCES: 1, LBS: 5112 W7B608 B11 6704656 PCES: 1, LBS: 5112



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Size: 0.437 X 113.0 X 365.0 (IN)

	Tested	l Pieces:			•	Tensile	s:	-]				(Cha	rpy I	mpa	ct Tests	3			
Heat Id	Piece Id	Tested Thickness	Tst Loc		UTS (KSI)		Elong % 2in 8in	Tst Dir	Hardness	Ab:	s. Er 2	nerg 3	y(FTLB) Avg	1	% 2	She 3	ar Avg	Tst Tmp	Tst Dir	Tst Siz	BDWTT Tmp %Shr
E7B111	B14	0.443 (DISCRT)	C C	53	74		27	T		143 90	155 102		137 91			_		-45F -45F	L T	10. 10.	
W7B608	B11	0.442 (DISCRT)	c c		75		26	Т			122 93		120 83					-50F -50F	I_	10. 10.	

Heat									Chemi	ical Ana	lysis						
ld	С	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Mo	Cb	V	Ti	В	N	ORGN
E7B111	.18	.92	.010	<.001	.24	.027	.026	.26	.14	.11	.04	.002	.005	.011	.0002	.0074	USA
W7B608	.18	.92	.008	.001	.24	.027	.026	.26	.18	.10	.05	.001	.005	.011	.0002	.0079	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

NORMALIZED PLATES. HEATED AT 1665F FOR 21 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

E7B111 B14 6704427 PCES: 1, LBS: 5112 W7B608 B11 6704442 PCES: 1, LBS: 5112

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



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Shipping Manifest: AR239887

Cert No: 081596752

(Page 1 of 1)

Mill Order No. 41-491119-08 Customer P.O.No.:C41966 & 41-490196 **Customer:** Ship Date: 16 Feb 17 Product Description: CSA G40.21(2013) 38WT/260WT - CAT SAMUEL, SON & CO. LTD Cert Date: 16 Feb 17 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P 1250 APPLEBY LINE ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA

NORMALIZED

Size: 0.437 X 113.0 X 365.0 (IN)

Charpy Impact Tests Tensiles: Tested Pieces: Tst BDWTT % Shear Tst Tst Abs. Energy(FTLB) YS UTS %RA Elong % Tst Hardness Tst Heat Piece Tested Dir Siz Tmp %Shr 2 3 Avg Tmp 1 2 3 Ava (KSI) 2in 8in Dir **Thickness** Loc (KSI) ld ld (mm) -45F 10. 27 143 155 114 137 0.443 (DISCRT) C 53 74 E7B111 **B14** 10. 90 102 80 91 45F 10. 121 122 118 120 -50F C 53 75 26 0.442 (DISCRT) B11 W7B608 50F 10. 104 93 51 83

Chemical Analysis Heat ORGN N Cb Ti Tot Al Sol Al Ni Mo S Si Cu С ld USA .0074 .11 .04 .002 .005 .011 .0002 .026 .26 .14 .010 <.001 .24 .027 E7B111 .18 92 USA .0002 .0079 .005 .011 .026 .26 .18 10 .05 .001 92 .001 .24 .027 .18 800. W7B608

KILLED STEEL

BURLINGTON ON L7L5G6

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

NORMALIZED PLATES. HEATED AT 1665F FOR 21 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

5112 PCES: 1, LBS: W7B608 B11 6704648 PCES: 1, LBS: 6704652 5112 E7B111 B14

W7B608 B11 6704649 PCES: 1, LBS:

5112

SENIOR METALLURGIST - PRODUCT



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Shipping Manifest: AR239891 Mill Order No. 41-491119-08 Customer P.O.No.:C41966 & 41-490196 **Customer:** Cert No: 081596776 Product Description: CSA G40.21(2013) 38WT/260WT - CAT Ship Date: 16 Feb 17 SAMUEL, SON & CO. LTD Cert Date: 16 Feb 17 (Page 1 of 1) 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P 1250 APPLEBY LINE ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA NORMALIZED BURLINGTON

ON L7L5G6

Size: 0.437 X 113.0 X 365.0 (IN)

	Tested	Pieces:				Tensile	s:							Cha	rpy i	mpa	ct Tests				
Heat Id		Tested Thickness	Tst Loc	l	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs 1	. En	ergy 3	y(FTLB) Avg	1	2	She 3	ar Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
W7B608	B11	0.442 (DISCRT)	C C	53	75		26	Т		121 104			120 83					-50F -50F	1-	10. 10.	

Chemical Analysis Heat ORGN Ν Ni Мо Cb Tot Al Sol Al Cu Si id Mn USA .0002 .0079 .001 .005 .011 .026 .26 .18 1.10 .027 .18 .92 .008 .001 .24 W7B608

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

NORMALIZED PLATES. HEATED AT 1665F FOR 21 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

5112 PCES: 1, LBS: W7B608 B11 6704647



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

SENIOR METALLURGIST - PRODUCT

Mathematical Color Mathema	SAMUEL, S						Cust	omer P	. O.No. :C	1966 8	41-49019	6	M	ill Ord	er No.	41-4	91119	9-09	Shipp	oing Ma	anifest:	AR239886
Name							Prod	uct Desc	5;	LCVN 15	FT.LBS,TC	VN13	FT.LBS	@- 4 5F		•		•				
Tested Piece Tested Test		-															_					
Heat			d Diagon							X 365.	0 (IN)					harn	v Im	act Tee	to			
No.	Heat				Tet	YS				Tet	Hardnes	s A	hs En	erav(F		пагр	•			Tst	Tst	BDWTT
NTB608 B07			1					/0100			Tiai diico	1	2	3 A	vg	1					Siz	Tmp %Sh
N7B608 B07	V7B608	B06	0.381 (DI	SCRT)	С	53	75		27	T									1	L		
Heat	N7B608	B07	0.380 (DI	SCRT)	C	52	75		27	Т									1	L		
Heat C Mm P S Si Total Solal Cu Ni Cr Mo Cb V Ti B N			 		C							- 1								T	1	
Heat	V7B608	B08	0.381 (DI	SCR1)	C	53	74		26	'		- 1								T	1	
Id	Heat					<u> </u>	<u></u>		Cher	nical An	alveie									•	•	
KILLED STEL 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 CERTIFICARE 3.1 COMPLIANT CHARPY FULL SIZE EQUIVALENT = ABSORBED ENERGY AVG X 10 / TEST SIZE IN MM NORMALIZED PLATES. HEATED AT 1665F FOR 19 MINUTES. TEST COUPONS TAKEN FROM HEAT TREATED PLATE. PRODUCTS SHIPPED: W7B608 B08 6704576 PCES: 1, LBS: 4386 W7B608 B07 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704578 PCES: 1, LBS: 4386 W7B608 B08 6704577 PCES: 1, LBS: 4386 W7B608 B08 6704583 PCES: 1, LBS: 4386 W7B608 B07 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B07 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B07 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B07 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B08 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704588 PCES: 1, LBS: 4386 W7B608 B08 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704588 PCES: 1, LBS: 4386 W7B608 B07 6704581 PCES: 1, LBS: 4386 W7B608 B08 6704589 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 67045	ld								Cu Ni	Cr	Мо								`			0
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 19 MINUTES. TEST COUPONS TAKEN FROM HEAT TREATED PLATE. PRODUCTS SHIPPED: W78608 B08 6704576 PCES: 1, LBS: 4386 W78608 B07 6704580 PCES: 1, LBS: 4386 W78608 B08 6704593 PCES: 1, LBS: 4386 W78608 B08 6704577 PCES: 1, LBS: 4386 W78608 B08 6704583 PCES: 1, LBS: 4386 W78608 B07 6704582 PCES: 1, LBS: 4386 W78608 B08 6704585 PCES: 1, LBS: 4386 W78608 B08 6704589 PCES: 1, LBS: 4386 W78608 B08 6704585 PCES: 1, LBS: 4386 W78608 B08 6704589 PCES: 1, LBS: 4386 W78608 B08 6704585 PCES: 1, LBS: 4386 W78608 B07 6704580 PCES: 1, LBS: 4386 W78608 B08 6704589 PCES: 1, LBS: 4386 W78608 B07 6704581 PCES: 1, LBS: 4386 W78608 B08 6704589 PCES: 1, LBS: 4386 W78608 B07 6704581 PCES: 1, LBS: 4386 W78608 B08 6704489 PCES: 1, LBS: 4386 W78608 B08 6704587 PCES: 1, LBS: 4386 W78608 B08 6704488 PCES: 1, LBS: 4386 W78608 B08 6704587 PCES: 1, LBS: 4386 W78608 B08 6704488 PCES: 1, LBS: 4386 W78608 B08 6704587 PCES: 1, LBS: 4386 W78608 B08 6704488 PCES: 1, LBS: 4386 W78608 B08 6704587 PCES: 1, LBS: 4386 W78608 B08 6704488 PCES: 1, LBS: 4386 W78608 B08 6704587 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704587 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES: 1, LBS: 4386 W78608 B08 6704598 PCES: 1, LBS: 4386 W78608 B08 6704597 PCES:	7 0000	1.10		1.000	1.001	27 1.	027 1.02	20 1.20	, 1.10	1.10	1.00		1.000	1.011	1.000	<u> </u>	0.0		·			
W7B608 B08 6704576 PCES: 1, LBS: 4386 W7B608 B07 6704580 PCES: 1, LBS: 4386 W7B608 B07 6704579 PCES: 1, LBS: 4386 W7B608 B08 6704577 PCES: 1, LBS: 4386 W7B608 B08 6704583 PCES: 1, LBS: 4386 W7B608 B07 6704582 PCES: 1, LBS: 4386 W7B608 B07 6704582 PCES: 1, LBS: 4386 W7B608 B08 6704589 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B08 6704586 PCES: 1, LBS: 4386 W7B608 B08 6704586 PCES: 1, LBS: 4386 W7B608 B08 6704586 PCES: 1, LBS: 4386 W7B608 B08 6704580 PCES: 1, LBS: 4386 W7B608 B08 6704587 PCES: 1, LBS: 4386 W7B608 B06 6704488 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B08 6704574 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386 W7B608 B08 6704574 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS:	CHARPY NORMAL TEST C	FULL S IZED PL OUPONS	IZE EQU ATES. TAKEN F	IVALEN HEATEI	NT = AB O AT 16	SORBED 65F FO	ENERG	Y AVG	X 10 /	TEST S	SIZE IN	MM										
W7B608 B08 6704583 PCES: 1, LBS: 4386 W7B608 B07 6704582 PCES: 1, LBS: 4386 W7B608 B07 6704578 PCES: 1, LBS: 4386 W7B608 B08 6704589 PCES: 1, LBS: 4386 W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B08 6704586 PCES: 1, LBS: 4386 W7B608 B08 6704588 PCES: 1, LBS: 4386 W7B608 B07 6704581 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B08 6704587 PCES: 1, LBS: 4386 W7B608 B06 6704488 PCES: 1, LBS: 4386 W7B608 B07 6704587 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B08 6704574 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS:	W7B6	08 B08	67045																			
W7B608 B08 6704585 PCES: 1, LBS: 4386 W7B608 B08 6704586 PCES: 1, LBS: 4386 W7B608 B08 6704588 PCES: 1, LBS: 4386 W7B608 B07 6704581 PCES: 1, LBS: 4386 W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B08 6704488 PCES: 1, LBS: 4386 W7B608 B06 6704488 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B08 6704574 PCES: 1, LBS: 4386 W7B608 B08 6704574 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386			67045	83 F	PCES:	1, LB	ss:	4386		V	√7B608 B	07	6704	1582	PCE	S:	1,	LBS:	4386			
W7B608 B08 6704590 PCES: 1, LBS: 4386 W7B608 B08 6704587 PCES: 1, LBS: 4386 W7B608 B06 6704488 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386	₩7B6				2CHC -			4 3 8 6		V	M/REDX R		h / [] 4	1589		5:	Ι,		4386			
W7B608 B06 6704488 PCES: 1, LBS: 4386 W7B608 B07 6704499 PCES: 1, LBS: 4386 W7B608 B06 6704485 PCES: 1, LBS: 4386 W7B608 B08 6704574 PCES: 1, LBS: 4386 W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386	₩7B6 ₩7B6					1, LB	s:	4386			√7B608 B	80	6704									
W7B608 B08 6704575 PCES: 1, LBS: 4386 W7B608 B07 6704498 PCES: 1, LBS: 4386	W7B6 W7B6 W7B6 W7B6	08 B08 08 B08	67045 67045	85 E 88 E	PCES:	1, LB 1, LB	SS: SS:	4386 4386		V	√7B608 B √7B608 B	08 07	6704 6704	1581	PCE	S:	1,	LBS:	4386			
	W7B6 W7B6 W7B6 W7B6 W7B6 W7B6	08 B08 08 B08 08 B08 08 B06	67045 67045 67045 67044	85 E 88 E 90 E 88 E	PCES: PCES: PCES: PCES:	1, LB 1, LB 1, LB	SS: SS: SS:	4386 4386 4386 4386		5 5 5	N7B608 B N7B608 B N7B608 B N7B608 B	08 07 08 07	6704 6704 6704	1581 1587 1499	PCE PCE PCE	S: S: S:	1, 1, 1,	LBS: LBS: LBS:	4386 4386 4386			
LUE UEDEDV CEDTEV THAT THE MATERIAL WAS	W7B6 W7B6 W7B6 W7B6 W7B6 W7B6 W7B6	08 B08 08 B08 08 B08 08 B06 08 B06	67045 67045 67045 67044 67044	85 E 88 E 90 E 88 E 85 E	PCES: PCES: PCES: PCES:	1, LB 1, LB 1, LB 1, LB	S: S: S: S:	4386 4386 4386 4386 4386		5 5 5 5	N7B608 B N7B608 B N7B608 B N7B608 B N7B608 B	08 07 08 07 08	6704 6704 6704 6704	1581 1587 1499 1574	PCE PCE PCE PCE	S: S: S:	1, 1, 1,	LBS: LBS: LBS: LBS:	4386 4386 4386 4386			
THE HERENY CERTIFY THAT THIS MATERIAL WAS	W7B6 W7B6 W7B6 W7B6 W7B6 W7B6 W7B6	08 B08 08 B08 08 B08 08 B06 08 B06	67045 67045 67045 67044 67044	85 E 88 E 90 E 88 E 85 E	PCES: PCES: PCES: PCES:	1, LB 1, LB 1, LB 1, LB	S: S: S: S:	4386 4386 4386 4386 4386		5 5 5 5	N7B608 B N7B608 B N7B608 B N7B608 B N7B608 B	08 07 08 07 08	6704 6704 6704 6704	1581 1587 1499 1574	PCE PCE PCE PCE	S: S: S:	1, 1, 1,	LBS: LBS: LBS: LBS:	4386 4386 4386 4386			
THE HERENY CERTIFY THAT THE MATERIAL WAS	W7B6 W7B6 W7B6 W7B6 W7B6 W7B6 W7B6	08 B08 08 B08 08 B08 08 B06 08 B06	67045 67045 67045 67044 67044	85 E 88 E 90 E 88 E 85 E	PCES: PCES: PCES: PCES:	1, LB 1, LB 1, LB 1, LB	S: S: S: S:	4386 4386 4386 4386 4386		5 5 5 5	N7B608 B N7B608 B N7B608 B N7B608 B N7B608 B	08 07 08 07 08	6704 6704 6704 6704	1581 1587 1499 1574	PCE PCE PCE PCE	S: S: S:	1, 1, 1,	LBS: LBS: LBS: LBS:	4386 4386 4386 4386			
INF HEDERY CERTIFY THAT THE MATERIAL MAC	W7B6 W7B6 W7B6 W7B6 W7B6 W7B6 W7B6	08 B08 08 B08 08 B08 08 B06 08 B06	67045 67045 67045 67044 67044	85 E 88 E 90 E 88 E 85 E	PCES: PCES: PCES: PCES:	1, LB 1, LB 1, LB 1, LB	S: S: S: S:	4386 4386 4386 4386 4386		5 5 5 5	N7B608 B N7B608 B N7B608 B N7B608 B N7B608 B	08 07 08 07 08	6704 6704 6704 6704	1581 1587 1499 1574	PCE PCE PCE PCE	S: S: S:	1, 1, 1,	LBS: LBS: LBS: LBS:	4386 4386 4386 4386			
WE HEREBY CERTIFY THAT THIS MATERIAL WAS	W7B6 W7B6 W7B6 W7B6 W7B6 W7B6 W7B6	08 B08 08 B08 08 B08 08 B06 08 B06	67045 67045 67045 67044 67044	85 E 88 E 90 E 88 E 85 E	PCES: PCES: PCES: PCES:	1, LB 1, LB 1, LB 1, LB	S: S: S: S:	4386 4386 4386 4386 4386		5 5 5 5	N7B608 B N7B608 B N7B608 B N7B608 B N7B608 B	08 07 08 07 08	6704 6704 6704 6704	1581 1587 1499 1574	PCE PCE PCE PCE	S: S: S:	1, 1, 1,	LBS: LBS: LBS: LBS:	4386 4386 4386 4386			

REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

	Customer P.O.No.:C41966 & 41-490196 Mill Order No. 41-491	119-09	Shipping	Manifest: AR239888
1 Cilistomer:	Product Description: CSA G40.21(2013) 38WT/260WT - CAT 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P			Cert No: 081596756 (Page 1 of 1)
BURLINGTON	ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA NORMALIZED			

ON L7L5G6

Size: 0.375 X 113.0 X 365.0 (IN)

	Tested	Pieces:			•	Tensile	s:							Cha	rpy l	lmpa	act Tests	3			
Heat Id	Piece Id	Tested Thickness	Tst Loc		UTS (KSI)	1	Elong % 2in 8in	4	Hardness	Ab 1	s. E 2	nerg 3	y(FTLB) Avg	1	2	Sh 3	ear Avg	Tst Tmp	Tst Dir	Tst Siz	BDWTT Tmp %Shr
W7B608	B06	0.381 (DISCRT)	С	53	75		27	Т		77	78	103	86					-50F	L	7.5	
	B07	0.380 (DISCRT)	C	52	75		27	T		46 88	31 103	49 87	42 93					-50F -45F	T L	7.5 7.5	
W7B608	BU	0.380 (DISCIT)	C) Z				ľ		54	52	48						-45F	Т	7.5	

Heat									Chem	ical Ana	ılysis						
Id	С	Mn	Р	s	Si	Tot Al	Sol Al	Cu	Ni	Cr	Мо	Cb	V	Ti	В	N _	ORGN
W7B608	1.18	.92	.008	.001	.24	.027	.026	.26	.18	.10	.05	.001	.005	.011	.0002	.0079	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 19 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

KODOCIS	DILLILI						777 D C O O	D 0 7	6704497	PCES:	1, LBS	: 4386
W7B608	BO6	6704489	PCES:	1.	LBS:	4386	W7B608	807	6/0449/	PCES:	т, про	
				,		1206	W7B608	DA6	6704480	PCES:	1, LBS	: 4386
W7B608	B07	6704495	PCES:	Ι,	LBS:	4386	W/D000	D00			•	•::
			DODG.	1	LBS:	4386	W7B608	B06	6704491	PCES:	1. LBS	: 4386
W7B608	B06	6704492	PCES:	Ι,	прэ.				7 7 7 7 7 7 7		1 100	: 4386
W7B608	DA6	6704490	PCES:	1.	LBS:	4386	W7B608	B07	6704496	PCES:	1, LBS	: 4300
M/BOOG	DU 0						177D C O C	DA C	6704481	PCES:	1. LBS	: 4386
W7B608	B06	6704484	PCES:	1.	LBS:	4386	W7B608	BOG	0/U440T	PCES.	-,	•
		•		4	7 D.O.	1206	W7B608	DA6	6704487	PCES:	1, LBS	: 4386
W7B608	B06	6704486	PCES:	⊥,	LBS:	4386	W/D000	ВОС	0/0440/	LCDD.	1, 100	
		6704500	DODG.	1	LBS:	4386						
W7B608	BU /	6704500	PCES:	Ι,	грэ.	4300						



12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 2: Date 23 Apr 2014

Customer P.O.No.:C41966 & 41-490196 Mill Order No. 41-491119-09 Shipping Manifest: AR239891 Customer: SAMUEL, SON & CO. LTD Product Description: CSA G40.21(2013) 38WT/260WT - CAT Ship Date: 16 Feb 17 | Cert No: 081596777 1250 APPLEBY LINE 5;LCVN 15FT.LBS,TCVN13FT.LBS@-45F/A673-P Cert Date: 16 Feb 17 (Page 1 of 1) ALLOYS API650(12TH ED) TABLE 4-1 GR.IIIA BURLINGTON NORMALIZED ON L7L5G6 Size: 0.375 X 113.0 X 365.0 (IN)

	Tested	Pieces:				Tensile	s:							ha	гру і	mpa	ct Tests	;			
Heat Id	Piece Id	Tested Thickness	Tst	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in		Hardness	Ab	s. Ei	nerg		1	%	She		Tst	Tst Dir	Tst Siz	BDWTT Tmp %Shr
_ ''	iu	THICKHESS	Loc	(KSI)	(NOI)		2111 0111	Dir		'	2	3	Avg	Ľ	2	3	Avg	Tmp	Dir	(mm)	imp %sm
W7B608	B09	0.381 (DISCRT)	С	52	73		26	T		97	83	96	92					-45F	L	7.5	
			C						1	50	58	48	52					-45F	Т	7.5	
W7B608	B10	0.380 (DISCRT)	C	52	74		23	[Τ		120	92	86	99					-45F	L	7.5	
			C						1	53	51	57	54	l				-45F	T	7.5	

- 1	Hoat									CHOIL	icai Alla	iyais						
L	ld	С	Mn	Р	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Mo	СЬ	٧	Ti	В	N	ORGN
٧	V7B608	.18	.92	.008	.001	.24	.027	.026	.26	.18	.10	.05	.001	.005	.011	.0002	.0079	USA

Chamical Analysis

KILLED STEEL

Hoat

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 19 MINUTES.

TEST COUPONS TAKEN FROM HEAT TREATED PLATE.

PRODUCTS SHIPPED:

W7B608 B09	6704857	PCES:	1,	LBS:	4386	W7B608	B09	6704863	PCES:	1,	LBS:	4386
W7B608 B09	6704858	PCES:	1,	LBS:	4386	W7B608	B09	6704856	PCES:	1,	LBS:	4386
W7B608 B09	6704848	PCES:	1,	LBS:	4386	W7B608	B09	6704846	PCES:	1,	LBS:	4386
W7B608 B10	6704849	PCES:	1,	LBS:	4386	W7B608	B09	6704853	PCES:	1,	LBS:	4386
W7B608 B09	6704855	PCES:	1,	LBS:	4386	W7B608	B09	6704854	PCES:	1,	LBS:	4386
W7B608 B10	6704850	PCES:	1,	LBS:	4386	W7B608	B09	6704847	PCES:	1,	LBS:	4386

Sub-Arc Systems Inc.

4605-47 Street Vermillion, AB, T9X 1L6 780-608-9589

QUALITY CONTROL MANUAL

Exhibit 18, Rev A

DIMENSIONAL CHECK REPORT - ROUNDNESS

Customer: AGNICO EAGLE
Location: RANKIN INCET. TANK#2.
Equipment Tag No.: WA
Equipment Type: NA
Equipment Description: W/s.
Code Requiring Test: API 650 Reason for Test: New Construction
(The tank shell will be checked for roundness at 12" above the tank floor. Roundness will be checked at 45 degree intervals or less, max. 20' spacing)
Test Date(s): Auc 8/17.
Tested by:
Seam Test Results: Roundress cleeks were made every 20'
around the tak. ALL Areas were found acceptable.
Sub-Arc Representative Signature: Authorized Date: Aug 8/17.
Client Representative Signature: Date:
Client Signature: Stephane Gionet Date: Ang 21/17



LASER DIAMETERS

Diameters

115.12

115.12 114.97

114.94

115.12

115.08

115.04

115.04

115.13

115.08

115.06 115.08

115.12

115.14

114.88

15

18

20

24 25

26

115.13 115.15

115.11

114.86

115.13 115.12

115.02

115.06

115.11

115.08 115.01

115.07 115.15

115.18

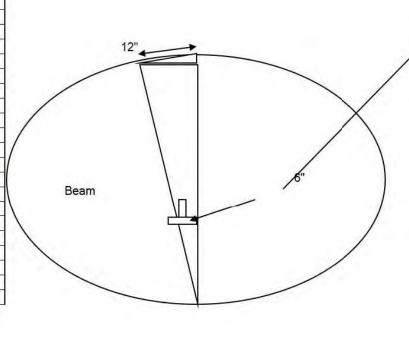
114.95

115.059 115.099

Dia Beam Hyp 14.000 0.000

Enter Diameters (or Radii) in decimal Ft. Ex: 45.90

left Right of center beam 114.92 114.81 TAKE LASER DIAMETERS ABOUT EVERY 3 to 5 FEET 115.05 114.93 AROUND THE INSIDE PERIMETER OF THE TANK FOR 180 115.15 115.14 DEGREES (HALF WAY ROUND). TAKING READINGS BOTH 115.09 115.13 (ALTERNATE) SIDES OF THE CENTER POST/COLUMN. 115.09 115.11 114.99 115.11



Average=