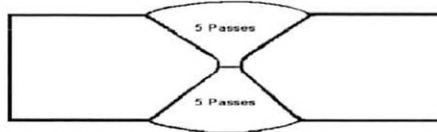
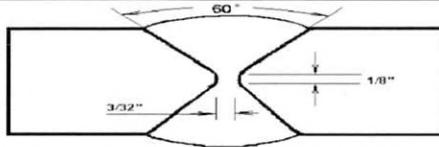


PROCEDURE QUALIFICATION RECORD (PQR) QW-483
(Section IX, ASME Boiler and Pressure Vessel Code)

Company Name: Sub-Arc Systems Inc.
PQR No.: SAS-2-2
Revision No.: 1¹
Welding Process(es): SAW / SAW

By: Gary Kohlman
Date: June 4, 2010
Revision Date: October 3, 2014
Types: Machine / Machine

JOINTS QW-402



BASE METALS QW-403		POSTWELD HEAT TREATMENT QW-407	
Material Spec.:	SA-516	SA-516	Temperature:
Grade/Type/Class:	Grade 70	Grade 70	Time:
P-No. Group No.:	P-1 Group 2	to P-1 Group 2	Heating:
Heat No.:	8277J	8277J	Cooling:
Carbon Equivalent (CE):	0.40	0.40	Other:
Thickness & Diameter:	1.000" Plate		
Max Weld Deposit:	<0.500" per pass		
PREHEAT QW-406		POSITIONS QW-405	
Preheat Temp. Min.:	50°F	Process:	SAW (Leading)
Interpass Temp. Max.:	550°F	Position:	2-G
Interpass Temp. Min.:	50°F	Progression:	Horizontal
Other:	Temperature monitored by tempilsticks	Other:	Not Applicable
FILLER METALS QW-404		SAW (Trailing)	
Process:	SAW (Leading)	SAW (Trailing)	
SFA Specification No.:	5.17	5.17	
AWS Classification No.:	EM12K-H8	EM12K-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:	Lincoln Electric Co.	Lincoln Electric Co.	
Trade Name:	LA-61	LA-61	
Heat / Lot Number:	Not Recorded	Not Recorded	
Electrode-Flux (Class):	F7A6-EM12K-H8	F7A6-EM12K-H8	
Flux Tradename:	Lincolnweld 882 Flux	Lincolnweld 882 Flux	
Flux Heat / Lot Number.:	Not Recorded	Not Recorded	
Product Form:	Coiled Solid Wire	Coiled Solid Wire	
Other:	Recrushed Slag Not Permitted	Recrushed Slag Not Permitted	
ELECTRICAL CHARACTERISTICS QW-409			
Process:	SAW (Leading)	SAW (Trailing)	
Current:	Direct - DC	Direct - DC	
Polarity:	Reverse - EP	Reverse - EP	
Volts:	27	27 - 29	
Amps:	400 - 420	320 - 415	
Travel Speed (ipm):	18.0 - 25.0	18.0 - 25.0	
Maximum Heat Input (J/in):	35 998	33 615	
Wirefeed Speed (ipm):	410	400	
STT Program Settings:	Not Applicable	Not Applicable	
Other:	Not Applicable	Not Applicable	
TECHNIQUE QW-410			
String or Weave:	String	String	
Oscillation:	Not Applicable	Not Applicable	
Single / Multi Pass:	Multiple Passes Per Side		
Single / Multi Electrodes:	Multiple Electrodes		
Wire Stick Out:	1/4" to 1 1/4"	1/4" to 1 1/4"	
Electrode Spacing:	Not Recorded	Not Recorded	
Nozzle / Cup Size:	Not Recorded	Not Recorded	

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-2-2 Revision 1

Tensile Test
QW-462

Specimen No.	Width in	Thickness in	Area in ²	Ultimate Total Load Lb	Ultimate Unit Stress ksi	Type of Failure & Location
YE-T1	0.741	0.983	0.728	58 240	80.0	Ductile - Base
YE-T2	0.735	0.994	0.731	57 482	79.0	Ductile - Base

Guided Bend Tests
QW-462

Specimen No.	Type	Figure	Result
YE-B1	TSB	QW-462.2	Pass
YE-B2	TSB	QW-462.2	Pass
YE-B3	TSB	QW-462.2	Pass
YE-B4	TSB	QW-462.2	Pass

Toughness Tests
QW-170

Specimen No.	Notch Location	Notch Type	Test Temp	Impact Values (ft-lbs)	% Shear	Lateral Exp Inches	Drop Weight	
							Break	No Brk
YE-1	Weld	V-Notch	-50°F	24	40	0.038	N/A	N/A
YE-2	Weld	V-Notch	-50°F	16	30	0.019	N/A	N/A
YE-3	Weld	V-Notch	-50°F	50	50	0.015	N/A	N/A
YE-4	HAZ	V-Notch	-50°F	58	60	0.044	N/A	N/A
YE-5	HAZ	V-Notch	-50°F	16	30	0.013	N/A	N/A
YE-6	HAZ	V-Notch	-50°F	53	60	0.078	N/A	N/A

Fillet-Weld Tests
Not Applicable

Result-Satisfactory: <u>Yes</u> <u>No</u>	Pen. into Parent Material: <u>Yes</u> <u>No</u>
Macro-Results:	

Other Tests

Type of Test: <u>Hardness Testing - See Attached Report</u>
Other:

Welder's Name: Matt MacKenzie Reg. No.: Not Applicable
Welder's Name: Joel Overguard Reg. No.: Not Applicable Stamp ID: YE
Tests Conducted By: Qualimet Lab. Test No.: 636-10004
Revised By: Qualimet

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: June 4, 2010 By: Gary Kohlman
Recertification Date: October 3, 2014 By: Gary Kohlman

MECHANICAL 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:	ASME Section IX

Tensile Tests

QW-462.1(a)

Sample Identification:	YE-T1	YE-T2
Sample Size - inch:(W x T)	0.741 x 0.983	0.735 x 0.994
Least X-Sect. Area - in²:	0.728	0.731
Ultimate Load - lbs:	58 240	57 482
Ult. Ten. Strength - ksi:	80.0	79.0
Character of Failure:	Ductile	Ductile
Location of Failure:	Base Metal	Base Metal
Req'd Tensile Strength - ksi:	70.0	70.0
Pass or Fail:	Pass	Pass
Remarks:	----	----

Bend Tests

QW-462.2

Sample Identification:	YE-B1	YE-B2	YE-B3	YE-B4
*Type of Bend Test:	TSB	TSB	TSB	TSB
Pass or Fail:	Pass	Pass	Pass	Pass
Remarks:	----	----	----	----

*Types of Bend Tests TSB, TFB, TRB = transverse side, face or root bend LSB, LFB, LRB = longitudinal side, face or root bend

We certify that the statements in this record are acceptable, in accordance with the requirements of ASME Section IX.

TEST RESULTS CERTIFIED BY:



Sean Lepine, E.I.T.

Qualimet

CHARPY IMPACT 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: ASME Section IX, ASME Section VIII UG-84, ASTM A-370	

Specimen Type: Charpy V-Notch
Qualification Temperature: -50°F
Test Temperature: -50°F

Specimen Size (mm): 10

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
Weld	YE-1	24	24	40	0.038
	YE-2	16	16	30	0.019
	YE-3	50	50	50	0.015
	Average:	30	30	40	0.024

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 ASME Section IX and the latest addenda.

TEST RESULTS CERTIFIED BY:



Sean Lepine, E.I.T.

Qualimet

CHARPY IMPACT 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: ASME Section IX, ASME Section VIII UG-84, ASTM A-370	

Specimen Type: Charpy V-Notch
Qualification Temperature: -50°F
Test Temperature: -50°F

Specimen Size (mm): 10

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
HAZ	YE-4	58	58	60	0.044
	YE-5	16	16	30	0.013
	YE-6	53	53	60	0.078
	Average:	42	42	50	0.045

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 ASME Section IX and the latest addenda.

TEST RESULTS CERTIFIED BY:



Sean Lepine, E.I.T.

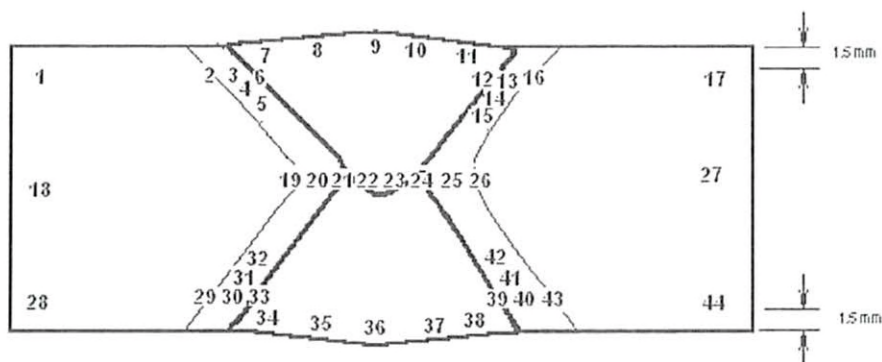
Qualimet

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 RP0472

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:

Sean Lepine, E.I.T.

Qualimet

Qualimet Inc.

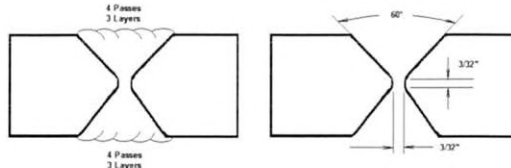
15000 10th Avenue NE, Suite 100, Edmonton, Alberta T6A 1K6, Canada
 (204) 461-4270 • Fax (204) 461-4270 • www.qualimet.com

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

Company Name: Sub-Arc Systems Inc.
PQR No.: SAS-2-3
Revision No.: 1¹
Welding Process(es): SAW / SAW

By: Gary Kohlman
Date: January 20, 2014
Revision Date: October 3, 2014
Type(s): Machine / Machine

JOINTS QW-402



BASE METALS QW-403		POSTWELD HEAT TREATMENT QW-407	
Material Spec.:	SA-516	SA-516	Temperature:
Grade/Type/Class:	Grade 60/70	Grade 60/70	Time:
P-No. Group No.:	P-1 Group 1/2	P-1 Group 1/2	Heating:
Heat No.:	H6/5888	H6/5888	Cooling:
Carbon Equivalent (ASME):	0.41	0.41	Other:
Carbon Equivalent (CSA):	0.41	0.41	
Thickness & Diameter:	1.000" w.t. Plate		
Max Weld Deposit:	<0.500" per pass		
PREHEAT QW-406		POSITIONS QW-405	
Preheat Temp. Min.:	50°F	Process:	SAW (Leading) SAW (Trailing)
Interpass Temp. Max.:	550°F	Position:	2-G 2-G
Interpass Temp. Min.:	50°F	Progression:	Horizontal Horizontal
Other:	Temperature monitored using tempilstiks	Other:	Not Applicable Not Applicable
FILLER METALS QW-404			
Process:	SAW (Leading)	SAW (Trailing)	
SFA Specification No.:	5.17	5.17	
AWS Classification No.:	EM12K-H8	EM12K-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:	Lincoln Electric	Lincoln Electric	
Trade Name:	LA-61	LA-61	
Heat / Lot Number:	Not Recorded	Not Recorded	
Electrode-Flux (Class):	F7A6-EM12K-H8	F7A6-EM12K-H8	
Flux Tradename:	Lincolnweld 882 Flux	Lincolnweld 882 Flux	
Flux Heat / Lot Number.:	Not Recorded	Not Recorded	
Product Form:	Coiled Solid Wire	Coiled Solid Wire	
SHIELDING GAS QW-408			
Shielding Gas:			
Composition:	(Not Applicable)	(Not Applicable)	
Flow Rate:			
Backing Gas:			
ELECTRICAL CHARACTERISTICS QW-409			
Current:	Direct (DC)	Direct (DC)	
Polarity:	Reverse (EP)	Reverse (EP)	
Volts:	28 - 30	28 - 30	
Amps:	380 - 420	380 - 420	
Travel Speed (ipm):	25.0	25.0	
Maximum Heat Input (J/in):	30 240	30 240	
TECHNIQUE QW-410			
String or Weave:	String	String	
Oscillation:	Not Applicable	Not Applicable	
Single / Multi Pass:	Multiple Passes from both sides		
Single / Multi Electrodes:	Multi	Multi	
Wire Stick Out:	1/4" to 1 1/4"	1/4" to 1 1/4"	
Electrode Spacing:	Not Recorded	Not Recorded	
Nozzle / Cup Size:	Not Recorded	Not Recorded	

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)	Area (in ²)	Ultimate Total Load (lbs)	Ultimate Unit Stress (ksi)	Type of Failure & Location
			(Not Applicable)			

Guided Bend Tests

QW-462

Specimen No.	Type	Figure	Result
		(Not Applicable)	

Toughness Tests

QW-170

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

**Shear and Lateral Expansion not recorded – specimen did not break

Fillet-Weld Tests

Not Applicable

Result-Satisfactory: Yes ☐ No ☐	Pen. into Parent Material: Yes ☐ No ☐
Macro-Results:	

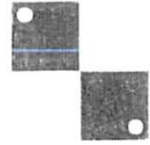
Other Tests

Type of Test: Not Applicable
Other: Not Applicable

Welder's Name: Keith Breedon Reg. No.: W-11618 Stamp ID: BH
 Tests Conducted By: Qualimet Lab. Test No.: 636-13001
 Revised By: Qualimet

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 By: Gary Kohlman
 Recertification Date: October 3, 2014 By: Gary Kohlman



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
Weld (includes all processes)	BH-1	94	94	60	0.064
	BH-2	105	105	70	0.063
	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.

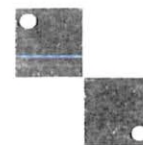
TEST RESULTS CERTIFIED BY:

Qualimet

Hanibal Ghile, E.I.T.

Qualimet Inc.

Certified by Canadian Welding Bureau & Transport Canada & Authorized Welder Test Facility
ESTABLISHED 1973



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
HAZ	BH-4	74	74	40	0.046
	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.

Qualimet Inc.

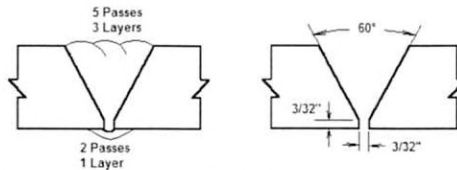
Certified by Canadian Welding Bureau & Transport Canada & Authorized Welder Test Facility
 ESTABLISHED 1973

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

Company Name: Sub-Arc Systems Inc.
PQR No.: SAS-2-4
Revision No.: 1¹
Welding Process(es): SAW / SAW

By: Gary Kohlman
Date: January 20, 2014
Revision Date: October 3, 2014
Type(s): Machine / Machine

JOINTS QW-402



BASE METALS QW-403		POSTWELD HEAT TREATMENT QW-407	
Material Spec.:	SA-516	SA-516	Temperature:
Grade/Type/Class:	Grade 60/70	Grade 60/70	Time:
P-No. Group No.:	P-1 Group 1/2	P-1 Group 1/2	Heating:
Heat No.:	53293	53293	Cooling:
Carbon Equivalent (ASME):	0.39	0.39	Other:
Carbon Equivalent (CSA):	0.39	0.39	
Thickness & Diameter:	0.249" w.t. Plate (machined)		
Max Weld Deposit:	<0.500" per pass		
PREHEAT QW-406		POSITIONS QW-405	
Preheat Temp. Min.:	50°F	Process:	SAW (Leading) SAW (Trailing)
Interpass Temp. Max.:	550°F	Position:	2-G 2-G
Interpass Temp. Min.:	50°F	Progression:	Horizontal Horizontal
Other:	Temperature monitored using tempilstiks	Other:	Not Applicable Not Applicable
FILLER METALS QW-404			
Process:	SAW (Leading)	SAW (Trailing)	
SFA Specification No.:	5.17	5.17	
AWS Classification No.:	EM12K-H8	EM12K-H8	
F-No.:	F-6	F-6	
A-No.:	A-1	A-1	
Size of Filler Metal:	3/32"	3/32"	
Deposited Weld Metal:	0.125"	0.125"	
Manufacturer:	Lincoln Electric	Lincoln Electric	
Trade Name:	LA-61	LA-61	
Heat / Lot Number:	Not Recorded	Not Recorded	
Electrode-Flux (Class):	F7A6-EM12K-H8	F7A6-EM12K-H8	
Flux Tradename:	Lincolnweld 882 Flux	Lincolnweld 882 Flux	
Flux Heat / Lot Number.:	Not Recorded	Not Recorded	
Product Form:	Coiled Solid Wire	Coiled Solid Wire	
SHIELDING GAS QW-408			
Shielding Gas:			
Composition:	(Not Applicable)	(Not Applicable)	
Flow Rate:			
Backing Gas:			
ELECTRICAL CHARACTERISTICS QW-409			
Current:	Direct (DC)	Direct (DC)	
Polarity:	Reverse (EP)	Reverse (EP)	
Volts:	30	30	
Amps:	420	420	
Travel Speed (ipm):	25.0	25.0	
Maximum Heat Input (J/in):	30 240	30 240	
TECHNIQUE QW-410			
String or Weave:	String	String	
Oscillation:	Not Applicable	Not Applicable	
Single / Multi Pass:	Multiple Passes from both sides		
Single / Multi Electrodes:	Multi	Multi	
Wire Stick Out:	1/4" to 1 1/4"	1/4" to 1 1/4"	
Electrode Spacing:	Not Recorded	Not Recorded	
Nozzle / Cup Size:	Not Recorded	Not Recorded	

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 (in ²)	Ultimate Total Load (lbs)	Ultimate Unit Stress (ksi)	Type of Failure & Location
			(Not Applicable)			

Guided Bend Tests
QW-462

Specimen No.	Type	Figure	Result
		(Not Applicable)	

Toughness Tests
QW-170

Specimen No.	Notch Location	Notch Type	Qual. Temp	Full Size Values (ft-lbs)	% Shear	Lateral Exp Inches	Drop Weight 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	0.024	----	----
BG-6	HAZ	V-Notch	-50°F	46	40	0.033	----	----

Fillet-Weld Tests
Not Applicable

Result-Satisfactory: Yes ☐ No ☐	Pen. into Parent Material: Yes ☐ No ☐
Macro-Results:	

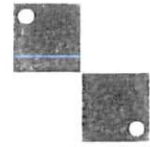
Other Tests

Type of Test: <u>Not Applicable</u>
Other: <u>Not Applicable</u>

Welder's Name: Keith Breedon Reg. No.: W-11618 Stamp ID: BG
 Tests Conducted By: Qualimet Lab. Test No.: 636-13001
 Revised By: Qualimet

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 By: Gary Kohlman 
 Recertification Date: October 3, 2014 By: Gary Kohlman 



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	
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): 5.2

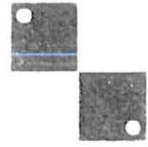
Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
Weld (includes all processes)	BG-1	54	104	80	0.078
	BG-2	42	81	70	0.060
	BG-3	40	77	70	0.058
	Average:	45	87	73	0.065

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.



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	
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): 5.2

Sample Set	Sample Number	Actual Impact Energy (ft-lb)	Full Size (ft-lb)	Shear (%)	Lateral Expansion Inches
HAZ	BG-4	21	40	30	0.027
	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.

Field Erected Fuel Storage Tank Handover Package

Item 6 – Welding Consumable

Contents

N/A

Field Erected Fuel Storage Tank Handover Package

Item 7 – Foundation

Contents

1. Foundation Acceptance Report

PROJECT #: AEM Tank #1 Pad Sand Grade
PROJECT TITLE: AEM Tank Farm
SITE: Rankin Inlet , NU
Date: August 1 , 2017

No. Northing Easting Elevation Description

300	6963737.346	545954.026	8.054	PAD1
301	6963740.458	545952.630	8.059	PAD1
302	6963743.315	545951.784	8.057	PAD1
303	6963746.513	545951.383	8.054	PAD1
304	6963749.682	545951.423	8.054	PAD1
305	6963752.775	545951.879	8.053	PAD1
306	6963755.838	545952.869	8.058	PAD1
307	6963758.834	545954.348	8.063	PAD1
308	6963761.671	545956.401	8.063	PAD1
309	6963764.206	545958.864	8.056	PAD1
310	6963766.093	545961.489	8.048	PAD1
311	6963767.641	545964.474	8.058	PAD1
312	6963768.748	545967.669	8.067	PAD1
313	6963769.364	545971.524	8.064	PAD1
314	6963769.359	545974.717	8.066	PAD1
315	6963768.771	545978.029	8.061	PAD1
316	6963767.673	545981.331	8.065	PAD1
317	6963766.171	545984.319	8.061	PAD1
318	6963764.018	545987.196	8.055	PAD1
319	6963761.651	545989.480	8.058	PAD1

LOW HIGH
48-67

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320	6963758.918	545991.414	8.061	PAD1
321	6963756.150	545992.846	8.058	PAD1
322	6963753.008	545993.885	8.060	PAD1
323	6963749.564	545994.437	8.062	PAD1
324	6963746.202	545994.439	8.057	PAD1
325	6963742.665	545993.877	8.061	PAD1
326	6963739.693	545992.922	8.060	PAD1
327	6963736.281	545991.195	8.059	PAD1
328	6963733.505	545989.112	8.056	PAD1
329	6963731.219	545986.748	8.056	PAD1
330	6963729.294	545984.046	8.055	PAD1
331	6963727.759	545980.958	8.054	PAD1
332	6963726.757	545977.744	8.060	PAD1
333	6963726.262	545974.288	8.058	PAD1
334	6963726.277	545971.053	8.059	PAD1
335	6963726.886	545967.806	8.059	PAD1
336	6963727.897	545964.563	8.056	PAD1
337	6963729.624	545961.285	8.054	PAD1
338	6963732.149	545958.086	8.055	PAD1
339	6963734.862	545955.642	8.054	PAD1
340	6963738.258	545960.139	8.085	PAD1
341	6963740.005	545958.939	8.084	PAD1
342	6963742.360	545957.903	8.080	PAD1
343	6963744.398	545957.251	8.088	PAD1
344	6963746.898	545956.970	8.086	PAD1
345	6963749.179	545956.740	8.086	PAD1
346	6963751.493	545957.461	8.087	PAD1

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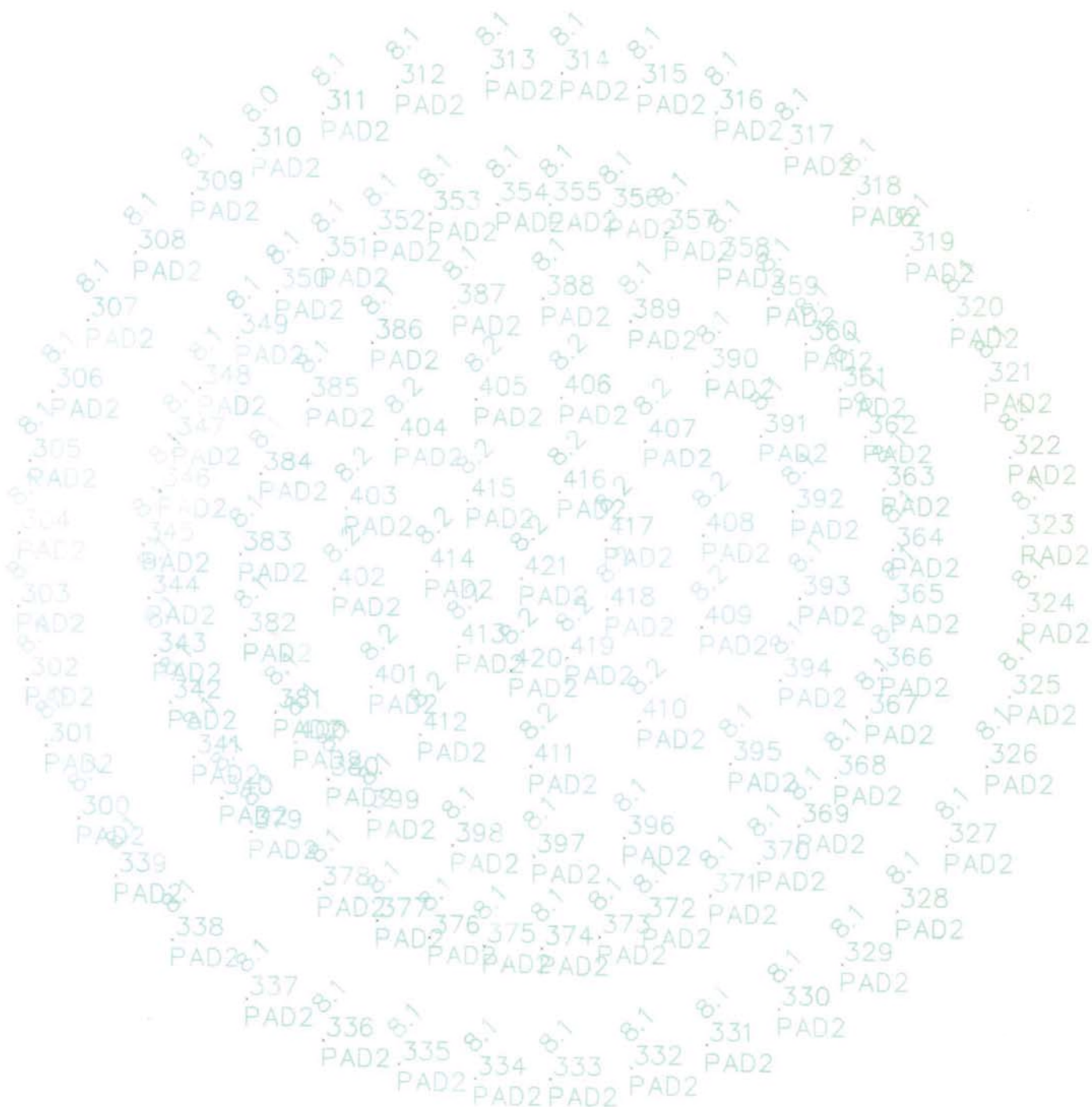
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349	6963758.159	545960.796	8.088	PAD1
350	6963760.065	545962.491	8.090	PAD1
351	6963761.401	545964.427	8.087	PAD1
352	6963762.523	545966.670	8.086	PAD1
353	6963763.350	545969.057	8.083	PAD1
354	6963763.749	545971.959	8.083	PAD1
355	6963763.769	545974.217	8.086	PAD1
356	6963763.489	545976.759	8.080	PAD1
357	6963762.564	545979.161	8.086	PAD1
358	6963761.413	545981.417	8.082	PAD1
359	6963759.793	545983.526	8.084	PAD1
360	6963757.914	545985.149	8.083	PAD1
361	6963755.952	545986.609	8.089	PAD1
362	6963753.910	545987.691	8.083	PAD1
363	6963751.616	545988.463	8.086	PAD1
364	6963749.022	545988.862	8.084	PAD1
365	6963746.593	545988.864	8.087	PAD1
366	6963743.858	545988.421	8.086	PAD1
367	6963741.812	545987.766	8.087	PAD1
368	6963739.211	545986.428	8.088	PAD1
369	6963737.125	545984.869	8.090	PAD1
370	6963735.526	545983.172	8.090	PAD1
371	6963734.118	545981.104	8.088	PAD1
372	6963733.070	545978.285	8.088	PAD1
373	6963732.355	545976.367	8.088	PAD1

374	6963731.860	545973.908	8.085	PAD1
375	6963731.947	545971.447	8.085	PAD1
376	6963732.302	545969.097	8.086	PAD1
377	6963733.011	545966.853	8.087	PAD1
378	6963734.343	545964.358	8.088	PAD1
379	6963736.781	545961.426	8.080	PAD1
380	6963739.078	545964.701	8.128	PAD1
381	6963741.972	545962.437	8.131	PAD1
382	6963745.275	545961.119	8.130	PAD1
383	6963748.779	545960.906	8.120	PAD1
384	6963752.231	545961.794	8.125	PAD1
385	6963755.478	545963.811	8.128	PAD1
386	6963757.952	545966.575	8.128	PAD1
387	6963759.425	545970.088	8.133	PAD1
388	6963759.795	545973.895	8.128	PAD1
389	6963758.822	545977.619	8.123	PAD1
390	6963756.731	545980.917	8.125	PAD1
391	6963753.943	545983.205	8.124	PAD1
392	6963750.645	545984.569	8.125	PAD1
393	6963746.927	545984.870	8.126	PAD1
394	6963743.386	545984.056	8.124	PAD1
395	6963739.779	545981.925	8.125	PAD1
396	6963736.592	545977.402	8.132	PAD1
397	6963735.794	545973.546	8.133	PAD1
398	6963736.234	545970.054	8.137	PAD1
399	6963737.676	545966.460	8.139	PAD1
400	6963740.662	545963.296	8.136	PAD1

401	6963743.059	545966.527	8.182	PAD1
402	6963747.280	545964.929	8.179	PAD1
403	6963750.742	545965.430	8.178	PAD1
404	6963753.760	545967.593	8.175	PAD1
405	6963755.532	545971.013	8.170	PAD1
406	6963755.622	545974.653	8.170	PAD1
407	6963753.716	545978.252	8.173	PAD1
408	6963749.645	545980.735	8.168	PAD1
409	6963745.662	545980.664	8.162	PAD1
410	6963741.597	545978.009	8.160	PAD1
411	6963739.674	545973.383	8.164	PAD1
412	6963741.008	545968.622	8.163	PAD1
413	6963744.836	545970.234	8.191	PAD1
414	6963748.073	545968.887	8.189	PAD1
415	6963751.090	545970.655	8.183	PAD1
416	6963751.481	545974.572	8.192	PAD1
417	6963749.442	545976.572	8.193	PAD1
418	6963746.438	545976.630	8.198	PAD1
419	6963744.324	545974.917	8.193	PAD1
420	6963743.788	545972.521	8.193	PAD1
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August 1, 2017

Tank #1 Sand Grade

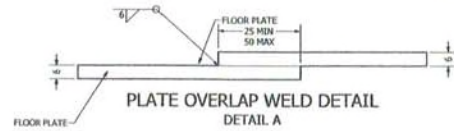
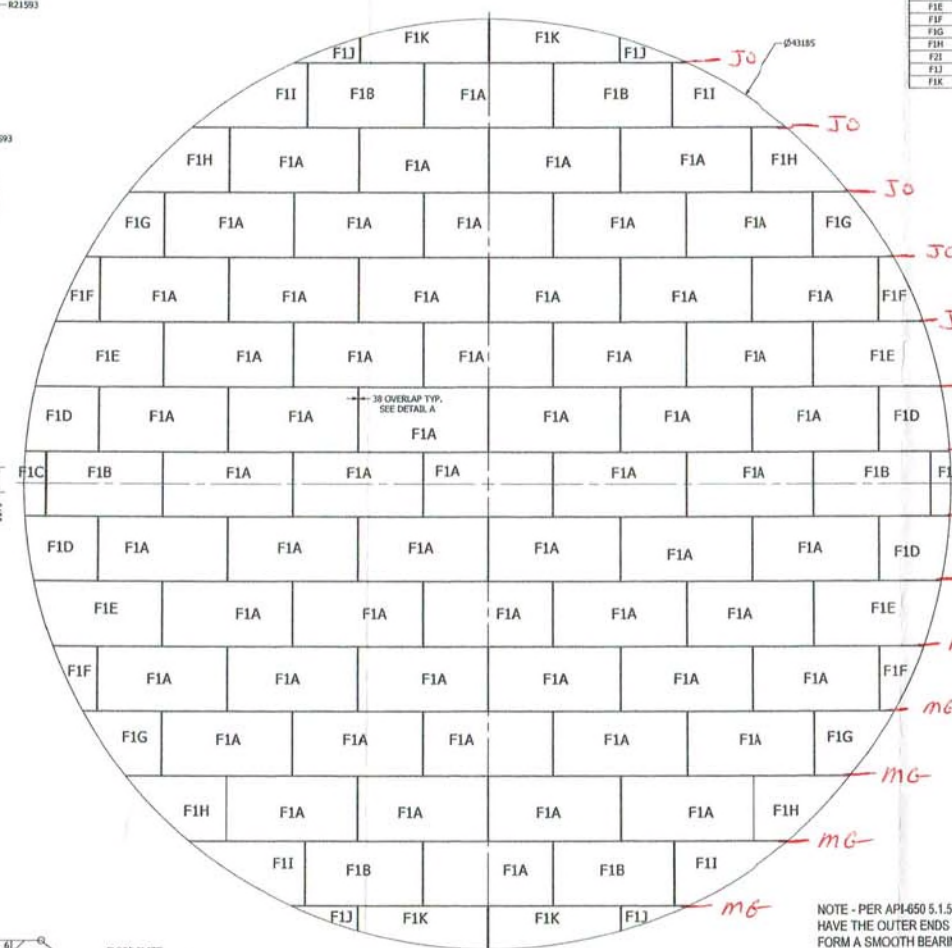
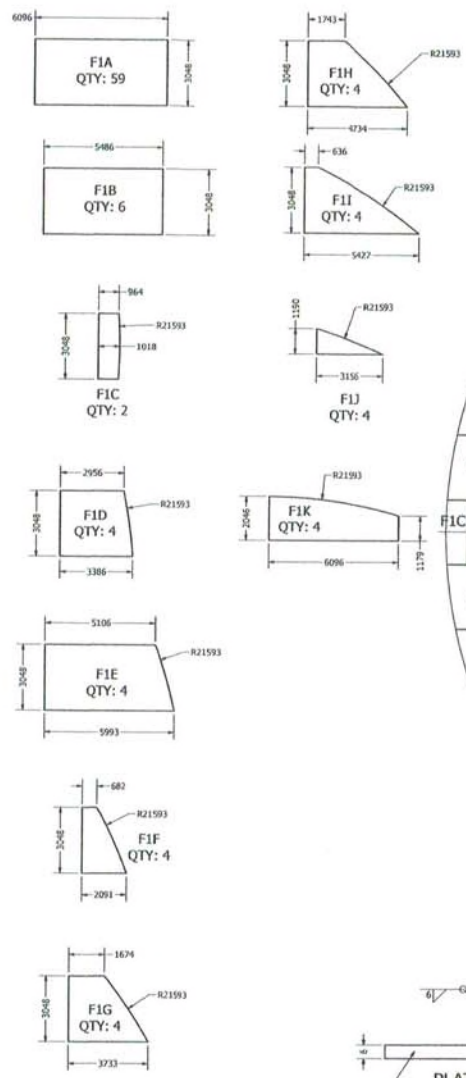


Field Erected Fuel Storage Tank Handover Package

Item 8 – Floor

Contents

1. Weld Map
2. Visual Report
3. Vacuum Box Test Report



TANK 1 (20ML) FLOOR LAYOUT
SCALE 1 / 100

PARTS LIST			
ITEM	QTY	DESCRIPTION	MATERIAL
F1A	59	PL 6.35 X 3048 X 6096	GA0.2119-260WT
F1B	6	PL 6.35 X 3048 X 5486	GA0.2119-260WT
F1C	2	PL 6.35 X 3048 X 1018	GA0.2119-260WT
F1D	4	PL 6.35 X 3048 X 3386	GA0.2119-260WT
F1E	4	PL 6.35 X 3048 X 5993	GA0.2119-260WT
F1F	4	PL 6.35 X 3048 X 2091	GA0.2119-260WT
F1G	4	PL 6.35 X 3048 X 3733	GA0.2119-260WT
F1H	4	PL 6.35 X 3048 X 4734	GA0.2119-260WT
F1I	4	PL 6.35 X 3048 X 5427	GA0.2119-260WT
F1J	2	PL 6.35 X 3156 X 1156	GA0.2119-260WT
F1K	4	PL 6.35 X 6096 X 2046	GA0.2119-260WT

ALL SHORT SEAMS
- MG -

NOTE - PER API-650 5.1.5.4 - BOTTOM PLATES UNDER THE SHELL SHALL HAVE THE OUTER ENDS OF THE JOINTS FITTED AND LAP-WELDED TO FORM A SMOOTH BEARING SURFACE.

FLOOR WELD MAP



DESIGN	JACOB SAUNDERS	1/5/2017	TITLE	TK #1 (20ML) - FLOOR LAYOUT
CHECKED	WILLIAM LOGSIE	3/14/2017		
DATE				
APPROVED				
SCALE	A1	295-M1	SHEET NO.	1

QUALITY CONTROL MANUAL

Exhibit 15c, Rev 1

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.

- There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
- 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.
- 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.).
- The reinforcement of the welds on all thicknesses:

Plate Thickness mm (in.)	Maximum Reinforcement Thickness mm (in.)	
	Vertical Joints	Horizontal Joints
≤ 13 (1/2)	2.5 (3/32)	3 (1/8)
> 13 (1/2) to 25 (1)	3 (1/8)	5 (3/16)
> 25 (1)	5 (3/16)	6 (1/2)

Surface Condition (As Welded)

Test Solution: N/A

Test Date(s): Sept. 7Tested by: Chris Jacques Ambient Conditions:

Items Tested:

Floor TK1

Results:

No defects found, all welding
acceptableSub-Arc Representative Signature: Chapman Date: Sept 7, 2017Client Representative Signature: Stephane Gauthier Date: Sept 11, 2017

Client Signature: _____ Date: _____

QUALITY CONTROL MANUAL

Exhibit 14, Rev 1

VACUUM BOX TEST REPORT – FLOOR PLATE WELDS

Customer: agnico eagleLocation: Rankin Inlet

Equipment Tag No.:

Equipment Description: Vac Box

Code Requiring Test: API 650

Reason for Test: New Construction

(A vacuum box/soap solution test for floor plate weld seams is required for new construction or major alterations, no visible leaks should be observed)

Test Solution: Water / Snoop

Ambient Conditions: 10°Test Date(s): Sept 8-9Surface Condition: CleanTested by: Quinton PottsSurface Test Temperature: 5°

Pressure Gauge:

Items Tested:

floor TK 1

Results:

No leaks found, all welds acceptableSub-Arc Representative Signature: [Signature] Date: Sept 11, 2017Client Representative Signature: [Signature] Date: Sept 11, 2017

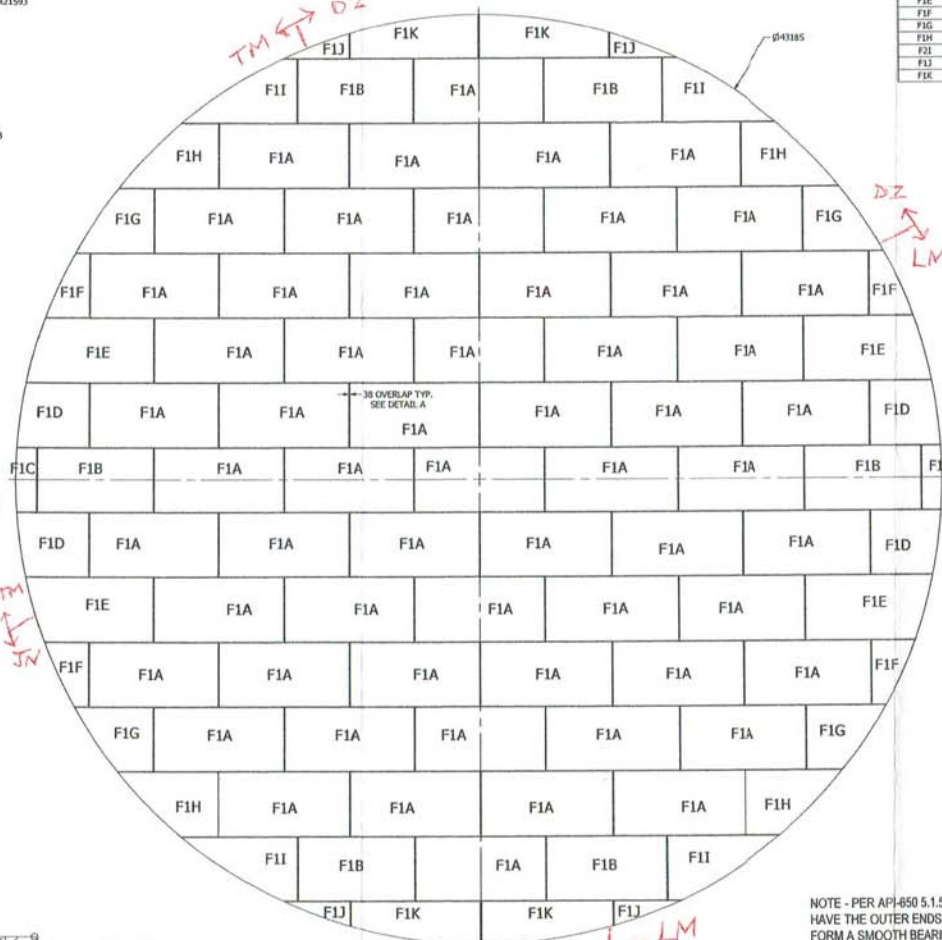
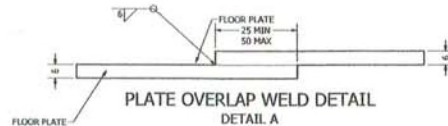
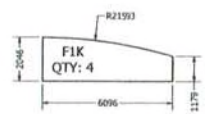
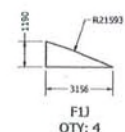
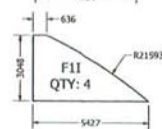
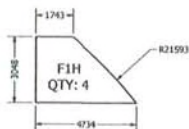
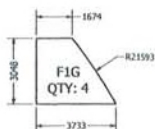
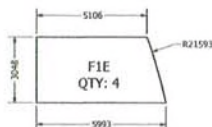
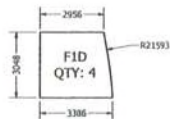
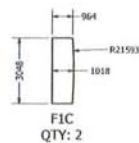
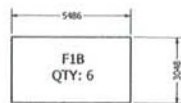
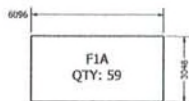
Client Signature: _____ Date: _____

Field Erected Fuel Storage Tank Handover Package

Item 9 – Floor to Shell

Contents

1. Weld Map - Inside Pass
2. Weld Map - Outside Pass
3. Leak (Diesel) Test Report - Visual Report



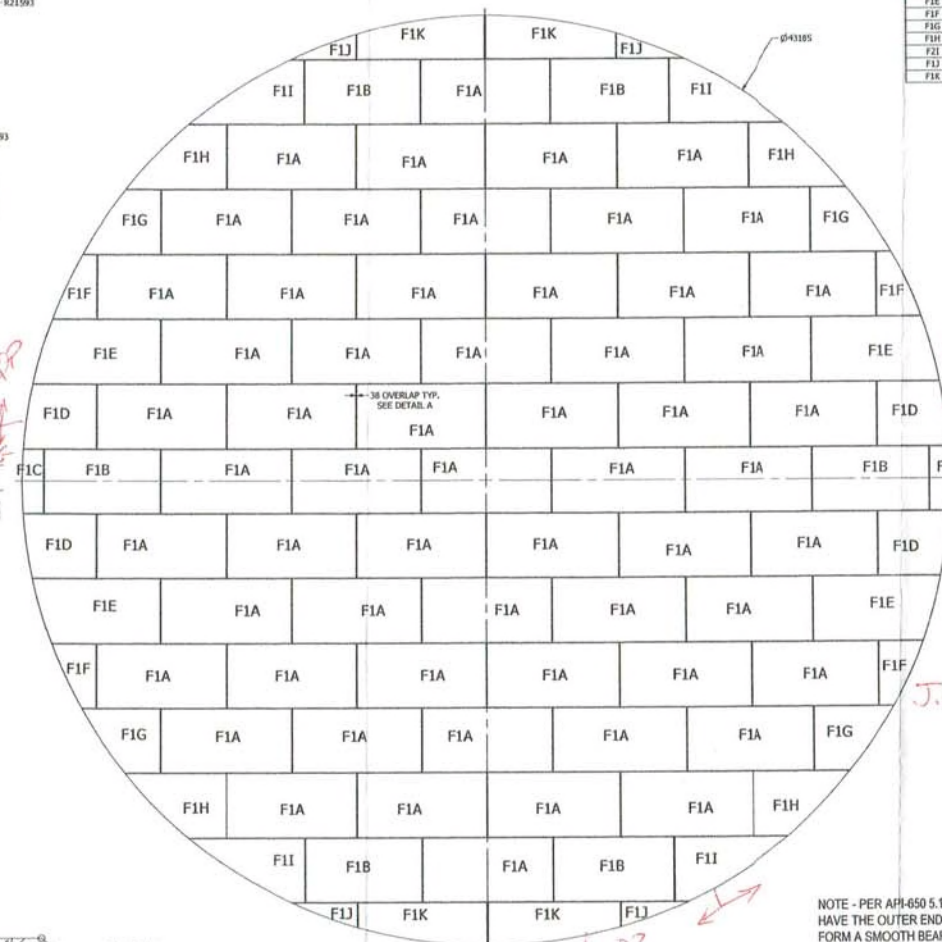
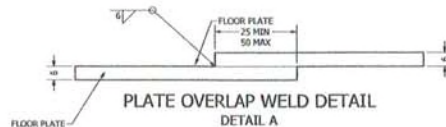
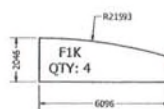
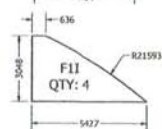
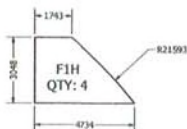
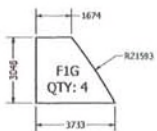
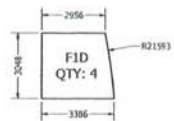
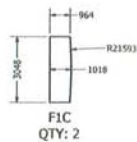
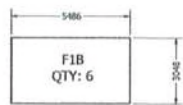
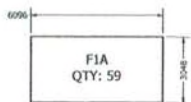
PARTS LIST			
ITEM	QTY	DESCRIPTION	MATERIAL
F1A	59	PL 6.35 X 3048 X 6096	G40.21HS-260WT
F1B	6	PL 6.35 X 3048 X 5486	G40.21HS-260WT
F1C	2	PL 6.35 X 3048 X 1018	G40.21HS-260WT
F1D	4	PL 6.35 X 3048 X 3386	G40.21HS-260WT
F1E	4	PL 6.35 X 3048 X 5993	G40.21HS-260WT
F1F	4	PL 6.35 X 3048 X 2091	G40.21HS-260WT
F1G	4	PL 6.35 X 3048 X 3733	G40.21HS-260WT
F1H	4	PL 6.35 X 3048 X 4734	G40.21HS-260WT
F1I	4	PL 6.35 X 3048 X 5427	G40.21HS-260WT
F1J	2	PL 6.35 X 3156 X 1150	G40.21HS-260WT
F1K	4	PL 6.35 X 6096 X 2048	G40.21HS-260WT

NOTE - PER API-650 5.1.5.4 - BOTTOM PLATES UNDER THE SHELL SHALL HAVE THE OUTER ENDS OF THE JOINTS FITTED AND LAP-WELDED TO FORM A SMOOTH BEARING SURFACE.

INSIDE SHELL TO FLOOR MAP



DESIGNED JACOB SAUNDERS 1/5/2017	CHECKED MARK LOSIER 3/14/2017	TITLE TK #1 (20ML) - FLOOR LAYOUT
APPROVED		SCALE A1 295-M1
REV 1		SHEET 3 OF 2



ITEM	QTY	DESCRIPTION	MATERIAL
F1A	59	PL 6.35 X 3048 X 6096	G40.21M-260WT
F1B	6	PL 6.35 X 3048 X 5486	G40.21M-260WT
F1C	2	PL 6.35 X 3048 X 1018	G40.21M-260WT
F1D	4	PL 6.35 X 3048 X 3386	G40.21M-260WT
F1E	4	PL 6.35 X 3048 X 5993	G40.21M-260WT
F1F	4	PL 6.35 X 3048 X 2091	G40.21M-260WT
F1G	4	PL 6.35 X 3048 X 3733	G40.21M-260WT
F1H	4	PL 6.35 X 3048 X 4734	G40.21M-260WT
F1I	4	PL 6.35 X 3048 X 5407	G40.21M-260WT
F1J	2	PL 6.35 X 3156 X 1190	G40.21M-260WT
F1K	4	PL 6.35 X 6096 X 2046	G40.21M-260WT

NOTE - PER API-650 5.1.5.4 - BOTTOM PLATES UNDER THE SHELL SHALL HAVE THE OUTER ENDS OF THE JOINTS FITTED AND LAP-WELDED TO FORM A SMOOTH BEARING SURFACE.



DESIGNER JACOB SAUNDERS	DATE 1/5/2017	TITLE TK #1 (20ML) - FLOOR LAYOUT
CHECKED MARIC LOSER	DATE 3/14/2017	
APPROVED		
SCALE A1	DRAWING NO. 295-M1	REV 1

QUALITY CONTROL MANUAL

Exhibit 15c, Rev 1

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.

- There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
- 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.
- 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.).
- The reinforcement of the welds on all thicknesses:

Plate Thickness mm (in.)	Maximum Reinforcement Thickness mm (in.)	
	Vertical Joints	Horizontal Joints
≤ 13 (1/2)	2.5 (9/32)	3 (1/8)
> 13 (1/2) to 25 (1)	3 (1/8)	5 (3/16)
> 25 (1)	5 (3/16)	6 (1/4)

Surface Condition (As Welded)

Test Solution: N/A

Test Date(s): JUNE 24/18

Tested by: NATH MACKENZIE

Ambient Conditions: 5°

Items Tested:

INITIAL WELD INSIDE FLOOR TO SHELL

Results:

NO DEFECTS FOUND. ALL WELDING ACCEPTABLESub-Arc Representative Signature: Nath Mackenzie Date: June 24/18Client Representative Signature: Clem Bonin Date: June 24/18

Client Signature: _____ Date: _____

QUALITY CONTROL MANUAL

Exhibit 15c, Rev 1

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.

- There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
- 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.
- 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.).
- The reinforcement of the welds on all thicknesses:

Plate Thickness mm (in.)	Maximum Reinforcement Thickness mm (in.)	
	Vertical Joints	Horizontal Joints
≤ 13 (1/2)	2.5 (3/32)	3 (1/8)
> 13 (1/2) to 25 (1)	3 (1/8)	5 (3/16)
> 25 (1)	5 (3/16)	6 (1/4)

Surface Condition (As Welded)

Test Solution: N/A

Test Date(s): June 24/18

Tested by: NATH MACKEWZIE Ambient Conditions: 5°

Items Tested:

FINAL WELD SHELL TO FLOOR.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLESub-Arc Representative Signature: [Signature] Date: June 24/18Client Representative Signature: [Signature] Date: June 24/18

Client Signature: _____ Date: _____

QUALITY CONTROL MANUAL

Exhibit 15a, Rev 1

DIESEL TEST REPORT (SHELL TO BOTTOM WELD)

Customer: Agnico Eagle

Location: Rankin Inlet

Equipment Tag No.: N/A

Equipment Type: N/A

Equipment Description: N/A

Code Requiring Test: API 650 (section 7.2.4)

Reason for Test: New Construction

(The initial weld pass inside the shell shall have all slag and non-metals removed from the surface of the weld and then examined for its entire circumference both visually and applying a high Flash-point penetrating oil such as light diesel to the gap between the shell and the bottom, letting stand for at least four hours, and examining the weld for evidence of wicking.)

Surface Condition (As Welded)

Test Solution: Diesel

Test Date(s): JUNE 23/18

Tested by: NATE MACKENZIE

Ambient Conditions: 10°

Items Tested:

INSIDE CORNER WELD. SHELL TO FLOOR.

Results:

NO LEAKS WERE FOUND. ALL WELDING ACCEPTABLE.Sub-Arc Representative Signature: Nate MackenzieDate: June 23/18Client Representative Signature: Clem BonnerDate: June 23/18

Client Signature: _____

Date: _____

Field Erected Fuel Storage Tank Handover Package

Item 10 - Shell

Contents

1. MTR Shell Plates
2. Roundness Dimension Report
3. Weld Map, Visual Report
4. Plumbness & Local Deviations (Peaking and Banding)
5. Leak (Diesel) Test Report
6. UT Report / Log / Map



Test Certificate

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.: C41966 & 41-490196				Mill Order No. 41-491119-01				Shipping Manifest: AR239887																																																	
				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: 16 Feb 17				Cert No: 081596749 (Page 1 of 1)																																													
												Size: 0.687 X 113.0 X 383.0 (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																																								
W7B609	B19	0.693 (DISCRT)	C 51	73			27	T		101	106	99	102					-45F	L	10.																																									
			C							89	78	107	91					-45F	T	10.																																									
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																				C	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N																										
W7B609																				.18	.93	.010	.002	.24	.030	.029	.27	.19	.15	.06	.002	.005	.012	.0002	.0064		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 31 MINUTES. TEST COUPONS TAKEN FROM HEAT TREATED PLATE. PRODUCTS SHIPPED: <table><tr><td>W7B609 B19</td><td>6704675</td><td>PCES:</td><td>1, LBS:</td><td>8432</td><td>W7B609 B19</td><td>6704676</td><td>PCES:</td><td>1, LBS:</td><td>8432</td></tr><tr><td>W7B609 B19</td><td>6704677</td><td>PCES:</td><td>1, LBS:</td><td>8432</td><td>W7B609 B20</td><td>6704672</td><td>PCES:</td><td>1, LBS:</td><td>8432</td></tr><tr><td>W7B609 B19</td><td>6704673</td><td>PCES:</td><td>1, LBS:</td><td>8432</td><td>W7B609 B19</td><td>6704678</td><td>PCES:</td><td>1, LBS:</td><td>8432</td></tr><tr><td>W7B609 B19</td><td>6704674</td><td>PCES:</td><td>1, LBS:</td><td>8432</td><td>W7B609 B19</td><td>6704679</td><td>PCES:</td><td>1, LBS:</td><td>8432</td></tr></table>																						W7B609 B19	6704675	PCES:	1, LBS:	8432	W7B609 B19	6704676	PCES:	1, LBS:	8432	W7B609 B19	6704677	PCES:	1, LBS:	8432	W7B609 B20	6704672	PCES:	1, LBS:	8432	W7B609 B19	6704673	PCES:	1, LBS:	8432	W7B609 B19	6704678	PCES:	1, LBS:	8432	W7B609 B19	6704674	PCES:	1, LBS:	8432	W7B609 B19	6704679	PCES:	1, LBS:	8432
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(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																																									



Test Certificate

Form TC1: Revision 2: Date 23 Apr 2014

12400 Highway 43 North, Axis, Alabama 36505, US

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