



HUSKY ENERGY

One (1) 16 Cu. M. (100BBL)
2896 DIA (9'-6") x 2438 HIGH (8'-0")
Base Skidded Storage Tank

Serial # 13665
PO# 8400899432

Quality Control Data Manual
2015

Serial #: 13665

Tag # T-100

Table of Contents

Section 1

Nameplate

- Nameplate

Section 2

Quality Control Data

- SEIM Report
- Approved/Stamped Examination & Inspection Report
- Examination & Inspection Report
- Pneumatic Test Report
- Surface Preparation & Inspection Report
- Paint & Coating Report
- Final Fit-out

Section 3

Welders' Qualifications

- Cyril Kaiser
- Randy Gagnier
- Terry Johnson

Section 4

Material Specifications and Test Reports

- Material Specification Sheet
- Material Test Reports

Section 5

Miscellaneous Tank Equipment Specifications

- Enardo 660 Hatch

Section 6

As Built Drawings

- Orientation
- Bill of Materials
- Miscellaneous Details
- Manway Detail
- Cage Ladder Detail
- Skid Detail
- Weld Details

ARGO

S A L E S L T D



NAMEPLATE DATA

ARGO

S A L E S L T D



655-30 Avenue
Nisku AB
Canada
T9E 0R4
(780)-955-8660

API 12F MODIFIED

SERIAL NUMBER:

13665

CUSTOMER TAG #

T-100

YEAR BUILT:

2015

DESIGN PRESSURE

160Z

NOMINAL DIAMETER:

9 FT-6 IN

NOMINAL HEIGHT

8 FT

NOMINAL CAPACITY:

100 BBL

SHIPPING WEIGHT

5880 LBS

THICKNESS

MATERIAL

ROOF

3/16 IN (4.8mm)

A36

FLOOR

1/4 IN (6.4mm)

A36

SHELL

3/16 in (4.8mm)

A36

INTERNAL FINISH

--

ARGO
S A L E S L T D



Quality Control

Husky Energy		Non Pressure Storage		Husky Purchase Order No. P.O. 8400899432	
Data Collected By: <u>Ryan Rirao</u>		Entry Date: <u>24-Mar-15</u>			
Equipment Class	☐ Bin	☐ Gas Boot	☐ Pond	P&ID # : _____	
	☐ Silo	☐ Sump	☒ Tank	Parent Equip # : _____	
Equipment Description: <u>100BBL skidded tank</u>		Exist. Equip. ID : _____		13665 Tag No.: <u>T-100</u>	
Unit Yard <u>ea</u>		Acquis Value \$ <u>\$13,115.00</u>		Acquis Date <u>2015</u>	
Equipment Status:	☐ In-Service Fully Utilized ☐ In Service Under-utilized ☐ Idle ☐ Scrap ☐ Field Idle				
Ownership Status:	☐ Leased ☐ Rented ☒ Owned				
Manufacturer: <u>Argo Sales</u>	Year Built: <u>2015</u>				
Equipment Condition: <u>new</u>	Model No.: <u>100 BBL</u>		Serial No.: <u>13665</u>		
Construction:	☒ Skidded ☐ Packaged ☐ Housed ☐ Packaged Portable ☐ Packaged Stationary				
Skid Weight: <u>153/338</u> Kg / Lbs		Skid Size: W <u>96"</u> x L <u>126"</u> x H <u>6"</u> m / ft			

Common Characteristics					
Fluid Description: _____		Service: ☒ Sweet ☐ Sour		Volume: <u>16 m3</u> m3 / ft3	
MAWP: <u>16 oz.</u> kPag / psig / oz	@ Max. Temp: <u>80 C</u> °C / °F	MDMT: <u>-29C</u> °C / °F			
Diameter: <u>2896/ 114</u> mm / in	Length/Height (S/S): <u>2.438/ 8</u> m / ft	Depth: <u>2.438/ 8</u> m / ft			
Shell Mat'l: <u>A36</u>	Shell Thickness: <u>4.8/ 3/16"</u> mm / in	Shell C.A.: <u>0</u> mm / in			
Floor Mat'l: <u>A36</u>	Floor Thickness: <u>6.4/ 1/4"</u> mm / in	Floor C.A.: <u>0</u> mm / in			
Roof Mat'l: <u>A36</u>	Roof Thickness: <u>4.8/ 3/16"</u> mm / in	Roof C.A.: <u>0</u> mm / in			
Nozzle Mat'l: <u>A105/A106</u>	Nozzle Thickness: <u>Sch. 40</u> mm / in	Nozzle Rating: <u>150</u> Ansi			
Insulated: ☐ Yes ☒ No	Insulation Type: <u>None</u>	Insulation Thick.: <u>NIL</u> mm / in			
# Manways: <u>1</u>	# of Inspection Ports: <u>1</u>	Painted / Primed: ☒ Yes ☐ No			
Secondary Containment Type:		☐ Earthen Clay ☐ Imperious Synthetic Material ☐ Double Wall ☒ Other _____			
Internals:					
Component Types: <u>N/A</u>		Component Man. <u>N/A</u>		Component Model: <u>N/A</u>	
Component Removable: ☐ Yes ☐ No		Component C.A.: <u>N/A</u> mm / in			
Internal Coating: ☐ Yes ☒ No		Int. Coating / Cladding Type: <u>NIL</u>			

Additional Characteristics for Tank					
Tank Type: ☐ Underground ☒ Surface		# Of Walls: ☒ single ☐ Double			
Design Standard: ☐ API 650 ☐ API 620 ☒ API 12F ☒ Other Mod.					
Fabrication Type: ☒ Shop ☐ Field					
Pressure Protection: ☒ Vent ☒ Thief Hatch		Vacuum Breaker Manufacturer: <u>N/A</u>			
☐ Vacuum Breaker		Vacuum Breaker Model: <u>N/A</u>			
Fire Tubes Exists: ☐ Yes ☒ No		Vacuum Breaker Service Date: <u>N/A</u>			
# of Firetube: <u>N/A</u>		Firetube S/N: <u>N/A</u>		Firetube Rating: <u>N/A</u> Btu/hr	
Desand Type: <u>N/A</u>		Desand Connection: <u>N/A</u> mm / in		Truck Connection: <u>N/A</u> mm / in	
Enviro Vault: ☒ Yes ☐ No		Burner Manufacturer: <u>N/A</u>			
Sacrificial Anodes: ☐ Yes ☒ No		# of Sacrificial Anodes: _____			

Additional Characteristics for Gas Boot					
Prov.Reg. No.: _____		CRN# _____			
Head Mat'l: _____		Head Thickness: _____ mm / in		Head C.A.: _____ mm / in	

Additional Characteristics for Pond, Silo					
Volume: _____ m³		Liner : ☐ Yes ☐ No		Liner Material: _____	
Fluid Description: _____		Service: ☐ Sweet ☐ Sour			
Diameter: _____ m		Depth: _____ mm			
Design Min Temp: _____ °C		Design Max Temp: _____ °C			
Capacity: _____ tonne					

Comments

Material Transfer Information					
Transfer Recorded by: _____		Date _____			
From	LSD _____	Sec _____	Twp _____	Rge _____	W/ _____
Transfer Yard _____					
To	LSD _____	Sec _____	Twp _____	Rge _____	W/ _____
Facility _____					
Receiving AFE: _____					



EXAMINATION & INSPECTION REPORT (TANKS)

Page 1 of 4

Serial #: _____ Tag #: _____ Customer: _____
Description: _____
Size: _____ Drawing Number: _____
P.O. #: _____ LSD: _____ Quote#: _____

Signature of Approval: _____

Sequence of Operation	Inspection & Test Requirements	Customer Requirements	Accept. Criteria	Hold, Witness & Review Points
1. Drawings Approved			Client	Customer Hold Points & Insp. Signature (MM/DD/YY) Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
2. Welding Procedures Approved	R/H		Client / CWB ASME SEC IX	
3. Welders Qualified	R		ASME SEC IX W47.1	
4. Materials Checked	II / VC		Drawing	
5. External Dimensional (Layout)	DC		Drawing	
6. Nozzle Fit-up & Orientation	VI / DC		Drawing	

FOCUS-VENDOR-DRAWING-REVIEW
☐ A. Approved. Manufacturing may proceed without changes. Submit Certified As Built Drawing
☐ B. Reviewed with comments. Resubmit. Manufacturing may proceed subject to incorporating the changes.
☐ C. Reviewed with comments. Resubmit. Proceed with material order only.
☐ D. Reviewed with comments. Resubmit. DO NOT proceed with manufacturing or material order.
☐ E. Information/Certified/As-Built
☒ F. Fix. Don't resubmit.
Permission to proceed does not constitute acceptance or approval of design details, calculations, test methods or material developed or selected by the supplier and does not relieve the supplier from compliance with the contract or the purchaser's requirements.
DATE Dec. 16 2014 SIGNED [Signature]

II: Incoming Inspection
VC: Verify Color Coding or Marking
DC: Dimensional Check
VI: Visual Inspection
VT: Vacuum Test
AT: Air Test
CI: Cleaning Inspection
SI: Inspection Prior to Shipping
FI: Final Inspection
TR: Test Report
BR: Blast Report
CR: Coating Report
H: Hold - 3rd Party
R: Review - 3rd Party

Argo Sales Q.C.M./Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.



ARGO
SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

Page 2 of 4

Serial #: _____ Tag #: _____ Customer: _____
 Description: _____
 Size: _____ Drawing Number: _____
 P.O. #: _____ LSD: _____ Quote#: _____

	Sequence of Operation	Inspection & Test Requirements	Customer Requirements	Accept. Criteria	Hold, Witness & Review Points	
					Customer Hold Points & Insp. Signature (MM/DD/YY)	Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
7.	Platform/Ladder Fit-up & Welding	VI / DC		Drawing		
8.	MPI Floor to Shell Joint	API-650 ASME SEC.V	Inner fillet weld to be inspected prior to performing outer fillet weld.	Drawing ASME Sec VIII		
9.	Radiography	API-650	Spot Radiography	ASME SEC VIII		
10.	Repad Air/Soap Leak Test	AT / VI / TR	Test at 15 PSI	Drawing		
11.	Floor Vacuum Box Test	VT / VI / TR	Test at 3-5 PSI Vacuum	Drawing		
12.	Tank & Repad Air/Soap Leak Test	AT / VI / TR	Test to .75 PSI	Drawing		

II: Incoming Inspection
 VC: Verify Color Coding or Marking
 DC: Dimensional Check
 VI: Visual Inspection
 VT: Vacuum Test
 AT: Air Test
 CI: Cleaning Inspection
 SI: Inspection Prior to Shipping
 FI: Final Inspection
 TR: Test Report
 BR: Blast Report
 CR: Coating Report
 H: Hold - 3rd Party
 R: Review - 3rd Party

Argo Sales Q.C.M./Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.



EXAMINATION & INSPECTION REPORT (TANKS)

Page 3 of 4

Serial #: _____ Tag #: _____ Customer: _____
 Description: _____
 Size: _____ Drawing Number: _____
 P.O. #: _____ LSD: _____ Quote#: _____

	Sequence of Operation	Inspection & Test Requirements	Customer Requirements	Accept. Criteria	Hold, Witness & Review Points	
					Customer Hold Points & Insp. Signature (MM/DD/YY)	Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
13.	Sand Blast Inspection (Internal)	VI / BR		Drawing		
14.	Sand Blast Inspection (External)	VI / BR		Drawing		
15.	Internal Coating	CI / VI / CR		Drawing		
16.	Holiday Test (Internal)	VI / CR	Internal coating to be 100% holiday free	Drawing		

II: Incoming Inspection
 VC: Verify Color Coding or Marking
 DC: Dimensional Check
 VI: Visual Inspection
 VT: Vacuum Test
 AT: Air Test
 CI: Cleaning Inspection
 SI: Inspection Prior to Shipping
 FI: Final Inspection
 TR: Test Report
 BR: Blast Report
 CR: Coating Report
 H: Hold - 3rd Party
 R: Review - 3rd Party

Argo Sales Q.C.M./Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.



SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

Page 4 of 4

Serial #: _____ Tag #: _____ Customer: _____
 Description: _____
 Size: _____ Drawing Number: _____
 P.O. #: _____ LSD: _____ Quote#: _____

	Sequence of Operation	Inspection & Test Requirements	Customer Requirements	Accept. Criteria	Hold, Witness & Review Points	
					Customer Hold Points & Insp. Signature (MM/DD/YY)	Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
17.	External Finish	VI / FI / CR		Drawing		
18.	External Finish (Accessories)	VI / FI / CR		Drawing		
19.	Final Inspection for Shipping	VI / SI / FI H	Ship Loose:	Drawing		

Signature of Q.C.M./Q.C.I. _____

II: Incoming Inspection
 VC: Verify Color Coding or Marking
 DC: Dimensional Check
 VI: Visual Inspection
 CI: Cleaning Inspection
 SI: Inspection Prior to Shipping
 VT: Vacuum Test
 AT: Air Test
 BR: Blast Report
 CR: Coating Report
 H: Hold - 3rd Party
 R: Review - 3rd Party

Argo Sales Q.C.M./Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.

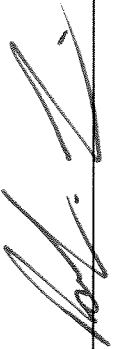


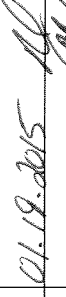
SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

Page 1 of 3

Serial #: 13665 Tag #: Customer: HUSKY
Description: 100 BBL (64 CU. M.) BASE SKIDDED STORAGE TANK
Size: 9'-6" (2896) Dia. X 8'-0" (2438) High Drawing Number: B-13663-65 OR
P.O. #: 8400899432 LSD: Quote TQ14-1168

Signature of Approval: 

Sequence of Operation	Inspection & Test Requirements	Customer Requirements / Comments	Accept. Criteria	Hold, Review, Verify & Witness Points Customer Hold Points & Insp. Signature (MM/DD/YY)	Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
1. Clients approval of ITP			Client		12.02.2014 
2. Drawings Approved		IFC Drawings	Client		12.02.2014 
3. Welding Procedures Approved		WPS/PQRS/WPDS	Client / CWB ASME SEC IX API 650 Sect 9		12.02.2014 
4. Welders Qualified			ASME SEC IX W47.1 API 650 Sect 9		12.02.2014 
5. Materials Checked	II / VC	Material Test Reports	Drawing API 650 Sect 4		12.02.2014 
6. Int./Ext. Dimensional (Layout & Fit-up)	DC / VI		Drawing		01.19.2015 
7. Nozzle Material, Rating, Fit-up & Orientation	VI / DC		Drawing		01.19.2015 
8. Ladder/Skid Fit-up & Welding	VI / DC	Ladder trial fit and all welding of clips completed & checked prior to tank air test.	Drawing		01.19.2015 

II: Incoming Inspection
VC: Verify Color Coding or Marking

DC: Dimensional Check
VI: Visual Inspection

VT: Vacuum Test
AT: Air Test

CI: Cleaning Inspection
SI: Inspection Prior to Shipping

FI: Final Inspection
TR: Test Report

BR: Blast Report
CR: Coating Report

H: Hold - 3rd Party
R: Review - 3rd Party
V: Verify - 3rd Party
W: Witness - 3rd Party

Argo Sales Q.C.M. / Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.



SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

Page 2 of 3

Serial #: 13665 Tag #: Customer: HUSKY
 Description: 100 BBL (64 CU. M.) BASE SKIDDED STORAGE TANK
 Size: 9'-6" (2896) Dia. X 8'-0" (2438) High Drawing Number: B-13663-65 OR
 P.O. #: 8400899432 LSD: Quote TQ14-1168

	Sequence of Operation	Inspection & Test Requirements	Customer Requirements / Comments	Accept. Criteria	Hold, Review, Verify & Witness Points	
					Customer Hold Points & Insp. Signature (MM/DD/YY)	Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
9.	Final Int./Ext. Welding Inspection	VI		Drawing		<i>01.19.2015</i> <i>MC</i>
10.	MPI Floor to Shell Joint	API-650 / TR ASME SEC.V	Inner fillet weld to be inspected prior to performing outer fillet weld.	Drawing ASME Sec VIII	N/A	N/A
11.	Radiography	API-650 / TR	Spot Radiography	ASME SEC VIII	N/A	N/A
12.	Repad Air/Soap Leak Test	AT / VI / TR	Test at 15 PSI	Drawing	N/A	N/A
13.	Floor Vacuum Box Test	VT / VI / TR	Test at 3-5 PSI Vacuum	Drawing	N/A	N/A
14.	Tank & Repads Air/Soap Leak Test.	AT / VI / TR	Test to 1.5 PSI	Drawing		<i>01.20.2015</i> <i>MC</i>
15.	Sand Blast Inspection (Int.)	VI / BR		Drawing SSPC-VIS 1	N/A	N/A
16.	Sand Blast Inspection (Ext.)	VI / BR	SSPC-SP7 Brush Blast: Shell, Roof, Ladder & Skid.	Drawing SSPC-VIS 1		<i>01.22.2015</i> <i>AT</i>

II: Incoming Inspection
 VC: Verify Color Coding or Marking

DC: Dimensional Check
 VI: Visual Inspection

VT: Vacuum Test
 AT: Air Test

CI: Cleaning Inspection
 SI: Inspection Prior to Shipping

FI: Final Inspection
 TR: Test Report

BR: Blast Report
 CR: Coating Report

H: Hold – 3rd Party
 R: Review – 3rd Party
 V: Verify – 3rd Party
 W: Witness – 3rd Party

Argo Sales Q.C.M. / Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.



ARGO
SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

Page 3 of 3

Serial #: 13665 Tag #: Customer: HUSKY
 Description: 100 BBL (64 CU. M.) BASE SKIDDED STORAGE TANK
 Size: 9'-6" (2896) Dia. X 8'-0" (2438) High Drawing Number: B-13663-65 OR
 P.O. #: 8400899432 LSD: Quote TQ14-1168

Sequence of Operation	Inspection & Test Requirements	Customer Requirements / Comments	Accept. Criteria	Hold, Review, Verify & Witness Points	
				Customer Hold Points & Insp. Signature (MM/DD/YY)	Argo Sales Ltd. Q.C. Dates & Signature (MM/DD/YY)
17. Internal Coating	CI / VI / CR		Drawing SSPC-PA2	N/A	N/A
18. Holiday Test (Internal)	VI / CR	Internal coating to be 100% holiday free	Drawing NACE RP0188	N/A	N/A
19. External Finish	VI / FI / CR	Shell & Roof: Argo Grey.	Drawing		<i>BM</i> 01.24.2015 <i>AL</i>
20. External Finish (Accessories)	VI / FI / CR	Ladder & Skid: Argo Grey.	Drawing		<i>BM</i> 01.24.2015 <i>AL</i>
21. Final Inspection for Shipping	VI / SI / FI / CI	Tank Name Plate: Installed & Verified stamping. Cleaning: Tank cleaned out, all openings blanked off and tank is ready for shipping.	Drawing		<i>TA</i> 02.02.2015 <i>AL</i>
22. Ship Loose	VI / SI / FI	(1)6" Gooseneck c/w Gasket & Bolt-ups.	Drawing		02.02.2015 <i>AL</i>
23. NCRS		All NCRs to be finalized and closed.			02.02.2015 <i>(WWE INITIATED)</i> <i>AL</i>

Signature of Q.C.M./Q.C.I.

II: Incoming Inspection
 VC: Verify Color Coding or Marking
 DC: Dimensional Check
 VI: Visual Inspection
 VT: Vacuum Test
 AT: Air Test
 CI: Cleaning Inspection
 SI: Inspection Prior to Shipping
 FI: Final Inspection
 TR: Test Report
 BR: Blast Report
 CR: Coating Report
 H: Hold – 3rd Party
 R: Review – 3rd Party
 V: Verify – 3rd Party
 W: Witness – 3rd Party

Argo Sales Q.C.M. / Q.C.I. to verify, inspect and/or witness all sequence of operations indicated on this report.



SALES LTD

PNEUMATIC TEST REPORT

Date: Jan 20/15

Job #: 13665 Tag #: T-100

Customer: HUSKY

Description of Product: 100 BBL (64 CU. M.) SW BASE SKIDDED STORAGE TANK

Size: 9'-6" (2896) OD x 8'-0" (2438) HIGH Test Pressure: 1.5 PSI

Test Conducted By: M. Klatt & M. Saunders

Holding Time at Test Pressure: TEST DURATION

Comments: Air/Soap leak test of all seams, floor, shell, roof, manway, all fitting welds
and all attachment welds associated with a single wall storage tank.

Results: _____

No leaks were observed. Air test found acceptable.

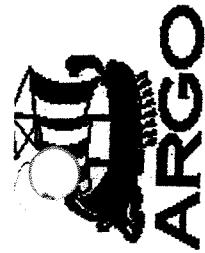
U-Type Manometer used to monitor the air test.

(Customer Inspector – please print)

(Signature of Customer Inspector)

Mike Klatt
(Argo Sales Q.C.M. / Q.C.I. – Please Print)

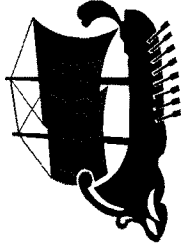
M. Klatt
(Argo Sales Q.C.M. / Q.C.I. - Signature)



SALES LTD

Surface Preparation & Inspection Report / By GT SANDBLASTING LTD.

Start Date: Jan 22/15		Start Time: 6:00 am		Foreman: (please print) Guy Tremblay	
Work Order #: 13665		Tag # T-100		Serial #: 13663-64-65	
Fabricator: ARGO SALES Ltd.		Customer: Husky		Hold Point: Yes No	
Ambient Temp(C°):		Rel. Humidity (%):		Dew Point (C°):	
(Blast Equipment Air Supply):		Internal Blast SSPC#:		Internal Replica Tape:	
Source: Kaeser		Internal Blasting Profile:		External Replica Tape:	
Size: (2) 1500 CFM		External Blast SSPC#:		non-applicable if SP7	
Nozzle Size: 6 7 8 other		External Blasting Profile:		Place Tape Here	
Nozzle Pressure (PSI): 90 100 105 110 120 other		Completion Time: 11:00 AM		Blaster(s): (please print) Justin Tremblay Kyle Mackewesky	
Product Description & Accessories: 3 X 100 BBL w/ vents skid		Rel. Humidity (%):		Dew Point (C°):	
Measurement Equipment: Hypodermic Needle Gauge ☐ Line Pressure Gauge ☒		Completion Time: 11:00 AM		Air Dryer: Yes No	
Completion Date: Jan 22/15		Final Acceptance: Guy Tremblay		Signature: [Signature]	
Ambient Temp(C°):		Rel. Humidity (%):		Dew Point (C°):	
Abrasive Used: Si 17		Final Acceptance: Guy Tremblay		Signature: [Signature]	



Paint & Coating Report

Date:	JAN 23/15	Serial #:	13665	Tag #:	T-100
Customer:	HUSKY				
Description:	100 BBL				
Surface Preparation:	Internal:	External:		SP7	

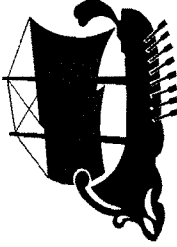
Application Equipment							
Application Method:	AIRLESS	Pump Size:	60-1	Tip Size:	519	Inline Heater Temp:	✓

Internal Coating				
1 st Coat:	Batch # Base:	Batch # Catalyst:		Color:
2 nd Coat:	Batch # Base:	Batch # Catalyst:		Color:
3 rd Coat:	Batch # Base:	Batch # Catalyst:		Color:
4 th Coat:	Batch # Base:	Batch # Catalyst:		Color:

Internal Coating Conditions									
1 st Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%	D.P.	°F	Date:
2 nd Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%	D.P.	°F	Date:
3 rd Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%	D.P.	°F	Date:
4 th Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%	D.P.	°F	Date:

ARGO

S A L E S L T D



Paint & Coating Report

External Coating					Serial #:
1 st Coat:	CLOOTER PARK T-101	Batch # Base:	C14J5892	Batch # Catalyst:	Color: GRAY
2 nd Coat:	CLOOTER PARK 7400	Batch # Base:	S1469512	Batch # Catalyst:	Color: AR60 GRAY
3 rd Coat:		Batch # Base:		Batch # Catalyst:	Color:
4 th Coat:		Batch # Base:		Batch # Catalyst:	Color:

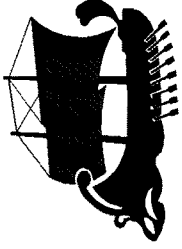
External Coating Conditions						
1 st Coat:	Ambient Temp:	70°F	Substrate Temp:	70°F	R.H.	30%
2 nd Coat:	Ambient Temp:	70°F	Substrate Temp:	70°F	R.H.	30%
3 rd Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%
4 th Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%

Internal Inspection & Testing				
1 st Coat:	Min:	Max:	Avg:	Nozzles
2 nd Coat:	Min:	Max:	Avg:	Nozzles
3 rd Coat:	Min:	Max:	Avg:	Nozzles
4 th Coat:	Min:	Max:	Avg:	Nozzles

Holiday Testing			
Test standard:	Tested By:	Date:	Area Tested
Discon. & Loc'n Comments:			

ARGO

S A L E S L T D



Page 3 of 3

Paint & Coating Report

Internal Repair Coating					Serial #:
1 st Repair:		Batch # Base:	Batch # Catalyst:		13665
2 nd Repair:		Batch # Base:	Batch # Catalyst:		
3 rd Repair:		Batch # Base:	Batch # Catalyst:		
				Color:	
				Color:	
				Color:	

Internal Coating Conditions						
1 st Repair:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%
2 nd Repair:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%
3 rd Repair:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%
					D.P.	°F
					D.P.	°F
					D.P.	°F

Cure History				
Temp. Range:	°F	From:	to	Total Hrs:
				Ambient Air:
				Forced Cured:

Final Acceptance		
Visual By:	Bob Massuk	Date: JAN 24 / 15

(Please Print)

(Signature)



SALES LTD

Final Fit Out Traveler

Customer:

HUSKY.

Job #:

13665

Tag #:

T-100

Tank Size:

100 BBL.

Internal:

Initials

Check for Down Comer(s)/Riser(s) are correct length(s)

☒

Check all internals/lengths, gasket(s), bolt(s), stud(s) as per drawing

☒

Check internals for Teflon/nylon washers on coated flanges

N/A.

Visual inspection for cleanliness prior to installing manway cover

☒

Final holiday test completed

N/A.

External:

Manway bolted on complete ☒ 6 bolt

☒

All openings blanked off (caulk weep holes if applicable)

☒

Blind flange(s) are coated as per drawing, and installed as per drawing

N/A.

Check gauge system & decals

☒

Paint/insulation check for damages/misses

☒

Record Heater Serial Number:

N/A.

Heater Piping & Tubing Leak Tested:

N/A.

Heater Electrical Tested:

N/A.

Correct nameplate installed

☒

Accessories:

Accessories accounted for & coated.

☒

Platforms

[N/A.]

Safety Gates

[N/A.]

Grating Installed

[N/A.]

Ladders

☒

Fall Arrest

[N/A.]

Brackets

[N/A.]

Final Dressout Complete

Date: Feb 02/2015.

Print Name

TRAVIS ANDERSON

(Signature)

ARGO
S A L E S L T D



WELDERS' QUALIFICATIONS

Symbol "K"



EDMONTON PIPE TRADES

Educational Trust Fund

AOQP No. 7152(C)

WELDER PERFORMANCE QUALIFICATION CARD

Name Cyril A. Kaiser File No. W-12988

This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

08/28/2013

Date of Test (mm/dd/yyyy)

Cyril Kaiser

Welder/Welding Operator Signature

Tim Osrunn

Welding Examiner Name

14411

Card No.

PERFORMANCE QUALIFICATION

Card No.

14411

Process(es)	SMAW	SMAW	Materials (P. No.)	P1 THRU P11
Max Deposited Weld Metal Th.	6mm	16mm	Minimum Pipe Dia.	25mm and Up
Filler Metal Group (F No.)	F3	F4	Positions Qualified	ALL
Backing	NB	WMB	Backing Gas	N/A
Progression	Uphill	Uphill		

08/28/2015

P.Q. Expiry Date
(mm/dd/yyyy)

Tim Osrunn

Signature of Examiner

E-00312

File No.

Edmonton Pipe Trades Educational Trust Fund
16214 118 Avenue, Edmonton, Alberta T5V 1M6, (780) 452-7080

Welder Qualification Record (WQR)

Welder's Name: Cyril A. Kaiser ABSA File No.: 12988 Stamp No.: _____
Identification of WPS followed by welder during welding of coupon: UA-1000 WP Reg. # WP- 0687.2
Base material(s) welded: A106 Gr.B Thickness: 11mm ☒ Test Coupon ☐ Production Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)

Welding Process(es) Used:
Type Of Welding (i.e. Manual, Semi-Automatic) Used:
Base Metal P- or S- Number: to P- or S Number
☐ Plate ☒ Pipe (enter diameter if pipe or tube)
Backing (metal, weld metal, double-welded, etc.)
Filler Metal or Electrode Specification(s) (SFA) (info only):
Filler Metal or Electrode Classification(S) (info only):
Filler Metal or Electrode f-Numbers F-Number(s):
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):
Consumable Insert for GTAW or PAW:
Deposited thickness for each process or electrode type, etc.:
Process /Electrode 1: E6010 3 layers minimum ☐ Yes ☒ No
Process /Electrode 2: E7018 3 layers minimum ☒ Yes ☐ No
Welding Position (2G,6G,3F etc.):
Vertical Progression (Uphill or Downhill):
Fuel Gas (OFW) or Inert Gas Backing for GTAW,PAW,GMAW:
Transfer Mode (spray/globular or pulse to short circuit-GMAW):
GTAW Current Type/Polarity (AC,DCEP,DCEN):

Actual Values		Range Qualified	
SMAW	SMAW	SMAW	SMAW
MANUAL	MANUAL	MANUAL	MANUAL
P1			P1 THRU P11
51mm			25mm and Up
NB	WMB	NB	WMB
5.1	5.1	5.1	5.1
E6010	E7018	E6010	E7018
F3	F4	F3	F4
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
3mm	8mm	6mm	16mm
6G			ALL
Uphill	Uphill	Uphill	Uphill
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Visual Examination of Fit-Up; Root Gap: OK Tack welds: OK (Length: 3/8 Number: 3)

Root Pass (Describe discontinuity unacceptable): _____

Completed Weld: (Describe defects if unacceptable): _____

Bend Test: ☒ Transverse Root and Face QW-462.3(a) ☐ Longitudinal Root and Face QW-462.3(b) ☐ Side QW-462.2
☐ Pipe Bend Specimen, corrosion-resistant overlay (QW-462.5(c)) ☐ Plate Bend Specimen, corrosion-resistant overlay (QW-462.5(d))
☐ Macro Test for Fusion [QW-462.5(b)] ☐ Macro Test for Fusion [QW-462.5(e)]

Type	Results	Type	Results	Type	Results
FACE 1	PASS	FACE 3	PASS	FACE 5	N/A
ROOT 2	PASS	ROOT 4	PASS	ROOT 6	N/A

For alternative qualification of groove welds by radiography to QW-191:

Radiography Results: _____

Fillet Weld - Fracture Test (QW-182) (Describe location, nature and size of any crack or tearing of specimen): _____

Length and Percent of Defects: _____ Inches

☐ Fillet welds in plate [QW-462.4(b)]

☐ Fillet welds in pipe [QW-462.4(c)]

Macro Test-Fusion (QW-184)

Appearance-Fillet size (leg.) X (in.) Concavity (in.) or Concavity (in.)

Other Tests _____

RECORD INFORMATION

Film or Specimen Evaluated By: N/A

Company ABSA

Mechanical tests conducted by: Edmonton Pipe Trades Educational Trust Fund

Laboratory Test No. _____

Welding Supervised By: Tim Osrunn

FRONT

EDMONTON PIPE TRADES
Educational Trust Fund AOQP No. 7152(C)

WELDER PERFORMANCE QUALIFICATION CARD

Name Cyril A. Kaiser File No. W-12988

This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

08/28/2013
Date of Test (mm/dd/yyyy)

Welder/Welding Operator Signature
Tim Osrunn

14411
Welding Examiner Name Card No.

Welding Ticket copy - For Files

BACK

PERFORMANCE QUALIFICATION Card No. 14411

Process(es)	SMAW	SMAW	Materials (P. No.)	P1 THRU P11
Max Deposited Weld Metal Th.	6mm	16mm	Minimum Pipe Dia. Positions Qualified	25mm and Up
Filler Metal Group (F No.)	F3	F4	Backing	N/A
Progression	NB	WMB	Uphill	Uphill

08/28/2015
P.Q. Expiry Date (mm/dd/yyyy)

Signature of Examiner
Tim Osrunn

E-00312
File No.

Welding Ticket copy - For Files

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: Edmonton Pipe Trades Educational Trust

AOQP NO.: 7152(C)

Expiry Date: 09/26/2015

Certified By: Tim Osrunn

Examiner File No. E-00312

Date: 08/28/2013

P.Q. Card No. (when Issued): 14411

Manufacturer or Contractor: ABSA

Date: 08/28/2013

OFFICE USE ONLY

Conducted for: ABSA

Site Location: Welding Shop

Company PO# ABSA

Test Coupon I.D. No. _____

Date Coupon to be retained: 09/28/2013

Heat No. _____



WELDER QUALIFICATION RECORD (WQR)

AB-76A 2010-09

Welder's Name: Cyril Kaiser ABSA File No.: N/A Stamp No.: CK
Identification of WPS followed by welder during welding of test coupon: ASL-16 W.P. Reg. # WP-983.2
Base material(s) welded: SA-36 Thickness: 0.375" ☒ Test Coupon ☐ Prod. Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)	Actual Values	Range Qualified
Welding Process(es) Used:	SMAW	SMAW
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL
Base Metal P Number: P To P Number:	P1	P1-P1
☒ Plate ☐ Pipe (enter diameter if pipe or tube):	N/A	N/A
Backing (metal, weld metal, double-welded, etc.):	without	with/without
Filler Metal or Electrode Specification(s) (SFA) (info only):	5.1	F3
Filler Metal or Electrode Classification(s) (info only):	E6010	
Filler Metal or Electrode F-Number(s):	F3	
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):	N/A	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A
Deposit Thickness for each process or electrode type, etc. (in.):	0.375"	0.750"
Process/Electrode 1: 3 layers minimum ☐ Yes ☒ No	Process/Electrode 2: 3 layers minimum ☐ Yes ☒ No	
Welding Position (2G, 6G, 3F, etc.):	3G	1G, 3G
Vertical Progression (Uphill or Downhill):	downhill	downhill
Fuel Gas for OFW or Inert Gas Backing for GTAW, PAW, GMAW:	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit- GMAW):	N/A	N/A
GTAW Current Type/Polarity (AC, DCEP, DCEN):	DCEP	DCEP

Results

Visual Examination of Fit-Up; Root Gap: OK Tack Welds: OK (Length: 1/2" Number: 2)

Root Pass (Describe Discontinuity if Unacceptable): OK

Completed Weld (Describe defects if unacceptable): OK

Bend Test: ☐ Transverse Root and Face [QW-462.3(a)] ☐ Longitudinal Root and Face [QW-462.3(b)] ☐ Side [QW-462.2]

☐ Pipe Bend Specimen, corrosion-resistant overlay [QW-462.5(c)] ☐ Plate Bend Specimen, corrosion-resistant overlay [QW-462.5(d)]

☐ Macro Test for Fusion [QW-462.5(b)] ☐ Macro Test for Fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

(For alternative qualification of groove welds by volumetric examination to QW-191)

R.T. Results: PASS U.T. Results: N/A

Fillet Weld - Fracture Test (Describe location, nature and size of any crack or tearing of specimen): N/A

Length and Per Cent of Defects: N/A inches N/A

Macro Test-Fusion: N/A

Appearance-Fillet Size (leg.): N/A X N/A inch. Convexity: N/A inch. or Concavity: N/A inch.

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Keri Wanlin Company: Canada Inspection

Welding supervised by: Rob Irvine

Mechanical tests conducted by: N/A Laboratory test no.: N/A

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: N/A AOQP No.: N/A Expiry Date: N/A

Certified by: Rob Irvine Examiner File No. N/A Date: September 12, 2012

P.Q. Card No. (When issued): N/A Performance Test Reference No.: ASL-16

Test Coupon I.D. No.: Welder Name Date Coupon is to be retained to: N/A



the pressure equipment safety authority

WELDER QUALIFICATION RECORD (WQR)

AB-76A 06/02

Welder's Name: Cyril Kaiser ABSA File No.: W12988 Stamp No.: CK
 Identification of WPS followed by welder during welding of test coupon: ASL-9 W.P. Reg. # WP-983-2
 Base material(s) welded: SA36 Thickness: 0.375" ☒ Test Coupon ☐ Prod. Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)	Actual Values		Range Qualified	
Welding Process(es) Used:	SMAW	SMAW	SMAW	SMAW
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL	MANUAL	MANUAL
Base Metal P- or S-Number: 1 To P- or S-Number:	1-8		1-8	
☒ Plate ☐ Pipe (enter diameter if pipe or tube):	.375"		.188" - .500"	
Backing (metal, weld metal, double-welded, etc.):	NONE	WELD METAL	Without/with	WITH
Filler Metal or Electrode Specification(s) (SFA) (info only):	5.4	5.4		
Filler Metal or Electrode Classification(s) (info only):	E309-15	E309-15		
Filler Metal or Electrode F-Number(s):	F5	F5	F5	F5
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):	N/A	N/A	N/A	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A	N/A	N/A
Deposit Thickness for each process or electrode type, etc. (in.):	0.125"	0.311"	0.1375"	0.500"
Process/Electrode 1: SMAW 3 layers minimum ☐ Yes ☒ No	Process/Electrode 2: SMAW 3 layers minimum ☐ Yes ☒ No			
Welding Position (2G, 6G, 3F, etc.):	4G	4G	ALL	ALL
Vertical Progression (Uphill or Downhill):	Uphill	Uphill	Uphill	Uphill
Fuel Gas for OFW or Inert Gas Backing for GTAW, PAW, GMAW:	None	N/A	With / without	N/A
Transfer Mode (spray/globular or pulse to short circuit- GMAW):	N/A	N/A	N/A	N/A
GTAW Current Type/Polarity (AC, DCEP, DCEN):	DCEP	DCEP	DCEP	DCEP

Results

Visual Examination of Fit-Up; Root Gap: 3/32" Tack Welds: BRIDGE (Length: 1/2" Number: 2)

Root Pass (Describe Discontinuity if Unacceptable): OK

Completed Weld (Describe defects if unacceptable): OK

Bend Test: ☐ Transverse Root and Face [QW-462.3(a)] ☐ Longitudinal Root and Face [QW-462.3(b)] ☐ Side [QW-462.2]

☐ Pipe Bend Specimen, corrosion-resistant overlay [QW-462.5(c)]

☐ Plate Bend Specimen, corrosion-resistant overlay [QW-462.5(d)]

☐ Macro Test for Fusion [QW-462.5(b)]

☐ Macro Test for Fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

(For alternative qualification of groove welds by radiography to QW-191)

Radiographic Results: PASS

Fillet Weld - Fracture Test (Describe location, nature and size of any crack or tearing of specimen): N/A

Length and Per Cent of Defects: N/A inches N/A

Macro Test-Fusion: N/A

Appearance-Fillet Size (leg.): N/A X N/A inch. Convexity: N/A inch. or Concavity: N/A inch.

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Bob Wanlin

Company: Canada Inspection Ass.

Welding supervised by: JIM CALLIN

Mechanical tests conducted by: NA Laboratory test no.: NA

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: ARGO SALES LTD. AOQP No.: 1176 Expiry Date: APRIL 5, 2011

Certified by: Jim Callin Examiner File No. N/A Date: Sept. 29, 2009

P.Q. Card No. (When issued): NA Performance Test Reference No.: ASL-9

Test Coupon I.D. No.: welder name Date Coupon is to be retained to: N/A

Welder Performance Qualification (WPQ) (API TANKS)

Welder's name: CYRIL KAISER Stamp no: CK
Welding Process(es) used: SMAW Type: MANUAL
Identification of WPS followed by welder during welding of test coupon: ASL-13
Base Material(s) welded: P1-P1 Thickness: 0.375"

Manual or Semiautomatic Variables for Each Process	Actual Values	Range Qualified
Backing (metal, weld metal, welded from both sides, etc.)	<u>N/A</u>	<u></u>
A.S.M.E. P-no. <u>1</u> to A.S.M.E. P-no. <u>1</u>	<u>P1-P1</u>	<u></u>
☐ Plate ☒ Pipe (enter diameter, if pipe)	<u>.375" PLATE</u>	<u></u>
Filler Metal Specification (SFA): <u></u> classification	<u>5.1</u>	<u></u>
Filler Metal F-no.	<u>F3/F4</u>	<u></u>
Consumable insert for GTAW or PAW	<u>N/A</u>	<u></u>
Weld deposit thickness for each process	<u>0.125"</u>	<u>0.250 max</u>
Welding Position (1G, 5G, etc.)	<u>VERTICAL DOWN</u>	<u></u>
Progression (uphill / downhill)	<u>DOWNHILL</u>	<u></u>
Backing Gas for GTAW, PAW, or GMAW gas for OFW	<u>N/A</u>	<u></u>
GMAW transfer mode	<u>N/A</u>	<u></u>
GTAW welding current type / polarity	<u>N/A</u>	<u></u>

Machine Welding Variables for the Process Used	Actual Values	Range Qualified
Direct / Remote visual control	<u>N/A</u>	<u>N/A</u>
Automatic voltage control (GTAW)	<u>N/A</u>	<u>N/A</u>
Automatic joint tracking	<u>N/A</u>	<u>N/A</u>
Welding position (1G, 5G, etc.)	<u>N/A</u>	<u>N/A</u>
Consumable Insert	<u>N/A</u>	<u>N/A</u>
Backing (metal, weld metal, welded from both sides, etc.)	<u>N/A</u>	<u>N/A</u>

Guided Bend Test Results

Guided bend tests type ☐ Side Results ☐ Trans. (R&F) Type ☐ Long. (R&F) Results

ROOT #1	ROOT #2	FACE #1	FACE #2
N/A	N/A	N/A	N/A

Visual examination results: ACCEPTABLE
Radiographic test results: PASS
(for alternative qualification of groove welds by radiography)
Fillet weld - fracture test Length & percent of defects in.
Macro test fusion Fillet leg size in. X in. concavity/convexity in.
Welding test conducted by:

Mechanical tests conducted by: ARGO SALES LTD. Laboratory test no:

We certify that the statements in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME code.

Organization: Argo Sales Ltd.

Date: July 26, 2004

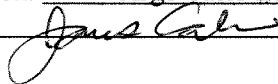
By: 

Exhibit 9.3A / AB-76 A Modified **WELDER QUALIFICATION RECORD (WQR)**Welder's Name: **Randal Gagnier**ABSA File No.: W- **09208**

Stamp No.: "X"

Identification of WPS followed by welder during welding of test coupon: **ASL-1-AW (rev 0)**W.P. Reg. # WP- **983.2**Base material(s) welded: **SA 106 GR B**Thickness: **0.436"**☒ Test Coupon ☐ Prod. Weld**Testing Variables and Qualification Limits****Welding Variables (QW-350)**

	Actual Values		Range Qualified	
Welding Process(es) Used:	SMAW	SMAW	SMAW	SMAW
Type of Welding (manual, semi-automatic) Used:	Manual	Manual	Manual	Manual
Base Metal P Number to P Number:	P1	P1	P1	P1
Plate ☐ Pipe ☒ enter diameter:	NPS 2	NPS 2	1" OD Min.	1" OD Min.
Backing (metal, weld metal, double weld etc.):	None / Weld	Weld Metal	Without / With	With
Filler Metal or Electrode Specification(s) SFA#:	5.1	5.1		
Filler Metal or Electrode Classification(s):	E6010	E7018-1		
Filler Metal or Electrode F - number(s):	F3	F4	F3	F4
Filler Type (solid metal, or flux cored/powder) GTAW or PAW:	N/A	N/A	N/A	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A	N/A	N/A
Deposit Thickness for each process, electrode type, etc. (in.):	0.094"	0.342"	0.188"	0.684"
Process/Electrode 1: 3 layers minimum Yes ☐ No ☒	Process/Electrode 2: 3 layers minimum Yes ☐ No ☒			
Welding position (2G, 5G, 6G, 3F, etc.):	6G	6G	All	All
Progression (Uphill or Downhill):	Uphill	Uphill	Uphill	Uphill
Inert Gas backing for GTAW, PAW, GMAW:	N/A	N/A	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit):	N/A	N/A	N/A	N/A
GTAW Current Type/ Polarity (AC, DCEP, DCEN):	DCEP	DCEP	DCEP	DCEP

ResultsVisual Examination of Fit-Up Root Gap: **3/32"** Tack Welds: **Bridge** Length: **0.5"** Number: **3**Root Pass (Describe Discontinuity if Unacceptable): **OK**Complete Weld (Describe Defects if Unacceptable): **OK****Bend Test**

- ☒ Transverse Root and Face QW-462.3a ☐ Longitudinal Root and Face QW-462.3b
☐ Pipe Bend Specimen, corrosion-resistant overlay QW-462.5c ☐ Plate Bend Specimen, corrosion-resistant overlay QW-462.5d
☐ Side Bend QW-462.2 ☐ Macro Test for Fusion QW-462.5b ☐ Macro Test for Fusion QW-462.5e

Bend Type	Result	Bend Type	Result	Bend Type	Result	Bend Type	Result
# 1 Root	Pass	# 3 Root	Pass				
# 2 Face	Pass	# 4 Face	Pass				

For alternative qualification of groove welds by radiography to QW-191Radiographic Results: **N/A**Fillet Weld-Fracture Test (QW-180): **N/A**Length and Percent of Defects: **N/A**Macro Examination (QW-184): **N/A**Fillet Legs Size (in.): **N/A** X **N/A** Concavity/Convexity (in.): **N/A**Other Tests: **N/A****Record Information**Film or Specimens Evaluated by: **G.R.Bellehumeur**Company: **GRB Enterprises Ltd.**Welding Test Conducted by: **G.R.Bellehumeur**Mechanical Tests Conducted by: **GRB Enterprises Ltd.**Laboratory Test no.: **N/A**Welding Supervised by: **Argo Sales Ltd. Representative: Rob Irvine**

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Accredited Organization: GRB ENTERPRISES LTD. AOQP No: 7107(C) Expiry Date: **May 21 2015**Certified by: **Bruce Cormier**W.E.File: **E-00252**Date: **February 19, 2013**PQ Card No. (When Issued): **18683**Performance Test Reference No.: **13-02-19-01**Test Coupon ID No.: **Welder Name**Date Coupon is Retained To: **N/A**

GRB Enterprises Ltd
Edmonton Alberta

AOQP 7107(C)

WELDER PERFORMANCE QUALIFICATION CARD

RANDAL

Name

GAGNIER

W-09208

ABSA File Number

Name

This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.

FEB 19, 2013

Date of Test

Welder Signature

BRUCE CORNIER

18683

Welding Examiner (Print/Type)

GRB Card No.

Performance Qualification GRB Card No. 18683

Process(es) SMAW Materials (P.No.) P1

Filler Metal (F.No.) F3 F4 Min. Outside Pipe Diameter 1" OD

Max Deposited Weld Metal 0.188" 0.684" Position(s) Qualified ALL

Backing WITHOUT WITH WITH Backing Gas NONE

Progression UPHILL #E00 252

Examiner File No.

FEB 19, 2015

P.Q. Expiry Date

Welding Examiner Signature

Exhibit 9.3A / AB-76 A Modified **WELDER QUALIFICATION RECORD (WQR)**Welder's Name: **Randal Gagnier**ABS A File No.: W- **09208**Stamp No.: **X**Identification of WPS followed by welder during welding of test coupon: **ASL-8 (rev 0)**W.P. Reg. # WP- **983.2**Base material(s) welded: **SA 106 GR B**Thickness: **0.436"**☒ Test Coupon ☐ Prod. Weld**Testing Variables and Qualification Limits****Welding Variables (QW-350)**

	Actual Values		Range Qualified	
Welding Process(es) Used:	GMAW	SMAW	GMAW	SMAW
Type of Welding (manual, semi-automatic) Used:	Semi-Automatic	Manual	Semi-Automatic	Manual
Base Metal P Number to P Number:	P1	P1	P1	P1
Plate ☐ Pipe ☒ enter diameter:	NPS 2	NPS 2	1" OD Min.	1" OD Min.
Backing (metal, weld metal, double weld etc.):	None / Weld	Weld Metal	Without / With	With
Filler Metal or Electrode Specification(s) SFA#:	5.18	5.1		
Filler Metal or Electrode Classification(s):	ER70S-6	E7018-1		
Filler Metal or Electrode F - number(s):	F6	F4	F6	F4
Filler Type (solid metal, or flux cored/powder) GTAW or PAW:	Solid	N/A	Solid	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A	N/A	N/A
Deposit Thickness for each process, electrode type, etc. (in.):	0.125"	0.311"	0.1375"	0.622"
Process/Electrode 1: 3 layers minimum Yes ☐ No ☒	Process/Electrode 2: 3 layers minimum Yes ☐ No ☒			
Welding position (2G, 5G, 6G, 3F, etc.):	SP	1G	Flat/SP	Flat
Progression (Uphill or Downhill):	N/A	N/A	N/A	N/A
Inert Gas backing for GTAW, PAW, GMAW:	N/A	N/A	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit):	Short Circuit	N/A	Short Circuit	N/A
GTAW Current Type/ Polarity (AC, DCEP, DCEN):	DCEP	DCEP	DCEP	DCEP

ResultsVisual Examination of Fit-Up Root Gap: **5/32"** Tack Welds: **Bridge** Length: **0.5"** Number: **3**Root Pass (Describe Discontinuity if Unacceptable): **OK**Complete Weld (Describe Defects if Unacceptable): **OK****Bend Test**

- ☒ Transverse Root and Face QW-462.3a ☐ Longitudinal Root and Face QW-462.3b
☐ Pipe Bend Specimen, corrosion-resistant overlay QW-462.5c ☐ Plate Bend Specimen, corrosion-resistant overlay QW-462.5d
☐ Side Bend QW-462.2 ☐ Macro Test for Fusion QW-462.5b ☐ Macro Test for Fusion QW-462.5e

Bend Type	Result	Bend Type	Result	Bend Type	Result	Bend Type	Result
# 1 Root	Pass						
# 2 Face	Pass						

For alternative qualification of groove welds by radiography to QW-191Radiographic Results: **N/A**Fillet Weld-Fracture Test (QW-180): **N/A**Length and Percent of Defects: **N/A**Macro Examination (QW-184): **N/A**Fillet Legs Size (in.): **N/A** X **N/A** Concavity/Convexity (in.): **N/A**Other Tests: **Special Position: 30 degrees from top dead center****Record Information**Film or Specimens Evaluated by: **Bruce Cormier**Company: **GRB Enterprises Ltd.**Welding Test Conducted by: **Bruce Cormier**Mechanical Tests Conducted by: **GRB Enterprises Ltd.**Laboratory Test no.: **N/A**Welding Supervised by: **Argo Sales Ltd. Representative: Rob Irvine**

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Accredited Organization: GRB ENTERPRISES LTD. AOQP No: 7107(C) Expiry Date: **May 21 2015**Certified by: **Bruce Cormier**W.E. File: **E-00252**Date: **May 07, 2012**PQ Card No. (When Issued): **17753**Performance Test Reference No.: **12-05-07-03**Test Coupon ID No.: **Welder Name**Date Coupon is Retained To: **N/A**

GRB Enterprises Ltd
Edmonton Alberta

AOQP 7107(C)

WELDER PERFORMANCE QUALIFICATION CARD

RANDAL

Name

GAGNIER

W-09208

ABSA File Number

Name

This card is issued pursuant to the Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with Section IX of the ASME BPV Code and subject to the limitations on the reverse side.

MAY 7, 2012

Date of Test

[Signature]

Welder Signature

BRUCE CORNIER

Welding Examiner (Print/Type)

17753

GRB Card No.

Performance Qualification GRB Card No. 17753

Process(es) GMAW SMAW Materials (P.No.) PI

Filler Metal (F.No) F6 F4 Min. Outside Pipe Diameter 1" OD

Max Deposited Weld Metal 0.1375" 0.622" Position(s) Qualified F6: SP/F

Backing WITHOUT WITH WITH Backing Gas NONE

Progression N/A N/A #E00 252

Examiner File No.

MAY 7, 2014

P.Q. Expiry Date

[Signature]
Welding Examiner Signature



Confined Space
Entry / Monitor
OSSA # 20110414-24
STS # CSE/M2010



Terry Lee Johnson

Candidate Name (Print - Full First, Full Middle, Full Last)

Apr 25/13

Date Issued

DOUG CHISHOLM

Authorization (Print)

[Signature]

Authorization (Signature)

Apr 25/16

Expiry Date
(3 years from date issued)

☒ Initial

☐ Renewal

ABCS #: 503917



CANADIAN
RED CROSS

Terry Johnson

Name

Is Certified In

STANDARD FIRST AID CPR/AED Level K A C HCP

This card is invalid if more than one level of CPR is checked.

June 2, 2012

Date of Issue

60184263

Instructor I.D.#

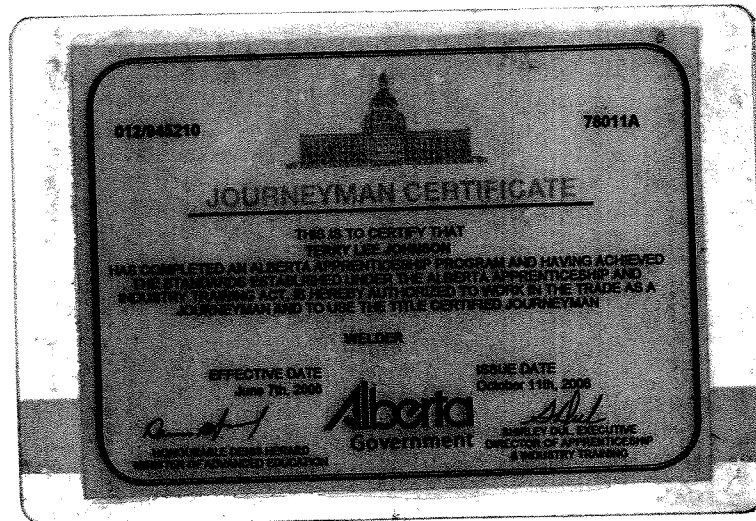
June 2, 2015

Expiry Date

[Signature]

Instructor

YOU MAY RECERTIFY SOONER IF REQUIRED FOR EMPLOYMENT





Welder Qualification

This card is valid only while employed by a CWB certified company

Transferable Welder

Name: **TERRY L. JOHNSON** Exp. Date: **Feb 17, 2016**
Employer: **Argo Sales Ltd., Nisku Plant, Nisku, AB**
Thickness Range: **3mm & above** Material: **Carbon Steel**
Process: **FCAW/MCAW**
Mode: **SEMI-AUTO** Standard: **CSA W47.1**
Single Electrode Mechanized Classification: **FW**
Single Electrode Automatic
Class: **FLAT/HORIZONTAL/VERTICAL UP**

See Reverse for Conditions



Welder Qualification

This card is valid only while employed by a CWB certified company

Transferable Welder

Name: **TERRY L. JOHNSON** Exp. Date: **Feb 14, 2016**
Employer: **Argo Sales Ltd., Nisku Plant, Nisku, AB**
Thickness Range: **3mm & above** Material: **Carbon Steel**
Process: **FCAW/MCAW**
Mode: **SEMI-AUTO** Standard: **CSA W47.1**
Single Electrode Mechanized Classification: **S**
Single Electrode Automatic
Class: **FLAT**

See Reverse for Conditions



Welder Qualification

This card is valid only while employed by a CWB certified company

Transferable Welder

Name: **TERRY L. JOHNSON** Exp. Date: **Feb 12, 2016**
Employer: **Argo Sales Ltd., Nisku Plant, Nisku, AB**
Thickness Range: **3mm & above** Material: **Carbon Steel**
Mode of Transfer: **Spray/Globular/Pulsed** Process: **GMAW**
Mode: **SEMI-AUTO** Standard: **CSA W47.1**
Single Electrode Mechanized Classification: **FW**
Single Electrode Automatic
Class: **FLAT/HORIZONTAL**

See Reverse for Conditions



the pressure equipment safety authority

WELDER QUALIFICATION RECORD (WQR)

AB-76A 2010-09

Welder's Name: Terry Johnson ABSA File No.: N/A Stamp No.: TJ
Identification of WPS followed by welder during welding of test coupon: ASL-1-AW W.P. Reg. # WP-983.2
Base material(s) welded: SA-36 Thickness: 0.375" ☒ Test Coupon ☐ Prod. Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)	Actual Values		Range Qualified	
	SMAW	SMAW	SMAW	SMAW
Welding Process(es) Used:	MANUAL	MANUAL	MANUAL	MANUAL
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL	MANUAL	MANUAL
Base Metal P Number: P To P Number:	P1		P1-P1	
☒ Plate ☐ Pipe (enter diameter if pipe or tube):	N/A		N/A	
Backing (metal, weld metal, double-welded, etc.):	without	with	without/with	with
Filler Metal or Electrode Specification(s) (SFA) (info only):	5.1	5.1		
Filler Metal or Electrode Classification(s) (info only):	E6010	E7018-1		
Filler Metal or Electrode F-Number(s):	F3	F4	F3	F4
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):	N/A	N/A	N/A	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A	N/A	N/A
Deposit Thickness for each process or electrode type, etc. (in.):	0.125"	0.250"	0.250"	0.500"
Process/Electrode 1: 3 layers minimum ☐ Yes ☒ No	Process/Electrode 2: 3 layers minimum ☐ Yes ☒ No			
Welding Position (2G, 6G, 3F, etc.):	3G	3G	1G, 3G, 1F, 2F, 3F	1G, 3G, 1F, 2F, 3F
Vertical Progression (Uphill or Downhill):	Uphill	Uphill	Uphill	Uphill
Fuel Gas for OFW or Inert Gas Backing for GTAW, PAW, GMAW:	N/A	N/A	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit- GMAW):	N/A	N/A	N/A	N/A
GTAW Current Type/Polarity (AC, DCEP, DCEN):	DCEP	DCEP	DCEP	DCEP

Results

Visual Examination of Fit-Up; Root Gap: OK Tack Welds: OK (Length: 0.5" Number: 2)

Root Pass (Describe Discontinuity if Unacceptable): OK

Completed Weld (Describe defects if unacceptable): OK

Bend Test: ☐ Transverse Root and Face [QW-462.3(a)] ☐ Longitudinal Root and Face [QW-462.3(b)] ☐ Side [QW-462.2]

☐ Pipe Bend Specimen, corrosion-resistant overlay [QW-462.5(c)]

☐ Plate Bend Specimen, corrosion-resistant overlay [QW-462.5(d)]

☐ Macro Test for Fusion [QW-462.5(b)]

☐ Macro Test for Fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

(For alternative qualification of groove welds by volumetric examination to QW-191)

R.T. Results: PASS U.T. Results: N/A

Fillet Weld - Fracture Test (Describe location, nature and size of any crack or tearing of specimen): N/A

Length and Per Cent of Defects: N/A inches N/A

Macro Test-Fusion: N/A

Appearance-Fillet Size (leg.): N/A X N/A inch. Convexity: N/A inch. or Concavity: N/A inch.

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Frank Meisinger

Company: IRIS NDT

Welding supervised by: Rob Irvine

Mechanical tests conducted by: N/A Laboratory test no.: N/A

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: N/A AOQP No.: N/A Expiry Date: N/A

Certified by: Rob Irvine Examiner File No. N/A Date: July 16, 2013

P.Q. Card No. (When issued): N/A Performance Test Reference No.: ASL-1-AW

Test Coupon I.D. No.: Welder Name Date Coupon is to be retained to: N/A



the pressure equipment safety authority

WELDER QUALIFICATION RECORD (WQR)

AB-76A 2010-09

Welder's Name: Terry Johnson ABSA File No.: N/A Stamp No.: TJ

Identification of WPS followed by welder during welding of test coupon: ASL-8 W.P. Reg. # WP-983.2

Base material(s) welded: A106 Grade B Thickness: 0.436" ☒ Test Coupon ☐ Prod. Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)

Actual Values

Range Qualified

Welding Process(es) Used:	GMAW	SMAW	GMAW	SMAW
Type of Welding (i.e., Manual, Semi-Automatic) Used:	Semi-Auto	MANUAL	Semi-Auto	MANUAL
Base Metal P Number: P To P Number:	P1		P1-P1	
☐ Plate ☒ Pipe (enter diameter if pipe or tube):	2.375" OD		1" OD Min.	
Backing (metal, weld metal, double-welded, etc.):	without	with	without/with	with
Filler Metal or Electrode Specification(s) (SFA) (info only):	5.18	5.1		
Filler Metal or Electrode Classification(s) (info only):	ER70S-2	E7018-1		
Filler Metal or Electrode F-Number(s):	F6	F4	F6	F4
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):	Solid	N/A	Solid	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A	N/A	N/A
Deposit Thickness for each process or electrode type, etc. (in.):	0.125"	0.311"	0.137"	0.622"
Process/Electrode 1: 3 layers minimum ☐ Yes ☒ No			Process/Electrode 2: 3 layers minimum ☐ Yes ☒ No	
Welding Position (2G, 6G, 3F, etc.):	FLAT	FLAT	FLAT	FLAT
Vertical Progression (Uphill or Downhill):	N/A	N/A	N/A	N/A
Fuel Gas for OFW or Inert Gas Backing for GTAW, PAW, GMAW:	N/A	N/A	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit- GMAW):	Short Circuit	N/A	Short Circuit	N/A
GTAW Current Type/Polarity (AC, DCEP, DCEN):	DCEP	DCEP	DCEP	DCEP

Results

Visual Examination of Fit-Up; Root Gap: OK Tack Welds: OK (Length: 0.5" Number: 3)

Root Pass (Describe Discontinuity if Unacceptable): OK

Completed Weld (Describe defects if unacceptable): OK

Bend Test: ☒ Transverse Root and Face [QW-462.3(a)] ☐ Longitudinal Root and Face [QW-462.3(b)] ☐ Side [QW-462.2]

☐ Pipe Bend Specimen, corrosion-resistant overlay [QW-462.5(c)]

☐ Plate Bend Specimen, corrosion-resistant overlay [QW-462.5(d)]

☐ Macro Test for Fusion [QW-462.5(b)]

☐ Macro Test for Fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result
FACE	PASS				
ROOT	PASS				

(For alternative qualification of groove welds by volumetric examination to QW-191)

R.T. Results: N/A U.T. Results: N/A

Fillet Weld - Fracture Test (Describe location, nature and size of any crack or tearing of specimen): N/A

Length and Per Cent of Defects: N/A inches N/A

Macro Test-Fusion: N/A

Appearance-Fillet Size (leg.): N/A X N/A inch. Convexity: N/A inch. or Concavity: N/A inch.

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Rob Irvine Company: Argo Sales Ltd.

Welding supervised by: Randy Gagnier

Mechanical tests conducted by: Argo Sales Ltd. Laboratory test no.: N/A

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: N/A AOQP No.: N/A Expiry Date: N/A

Certified by: Rob Irvine Examiner File No. N/A Date: October 15, 2013

P.Q. Card No. (When issued): N/A Performance Test Reference No.: ASL-8

Test Coupon I.D. No.: Welder Name Date Coupon is to be retained to: January 15, 2014



WELDER QUALIFICATION RECORD (WQR)

AB-76A 2010-09

Welder's Name: Terry Johnson ABSA File No.: N/A Stamp No.: TJ
Identification of WPS followed by welder during welding of test coupon: ASL-10 W.P. Reg. # WP-983.2
Base material(s) welded: SA-36 Thickness: 0.375" ☒ Test Coupon ☐ Prod. Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)

Actual Values

Range Qualified

Welding Process(es) Used:	SMAW	SMAW
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL
Base Metal P Number: P To P Number:	P1	P1-P8
☒ Plate ☐ Pipe (enter diameter if pipe or tube):	N/A	N/A
Backing (metal, weld metal, double-welded, etc.):	without	without/with
Filler Metal or Electrode Specification(s) (SFA) (info only):	5.4	F5
Filler Metal or Electrode Classification(s) (info only):	E309-15	
Filler Metal or Electrode F-Number(s):	F5	
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):	N/A	N/A
Consumable Insert for GTAW or PAW:	N/A	N/A
Deposit Thickness for each process or electrode type, etc. (in.):	0.375"	0.750"
Process/Electrode 1: 3 layers minimum ☐ Yes ☒ No	Process/Electrode 2: 3 layers minimum ☐ Yes ☒ No	
Welding Position (2G, 6G, 3F, etc.):	2G	1G, 2G, 1F-2F
Vertical Progression (Uphill or Downhill):	N/A	N/A
Fuel Gas for OFW or Inert Gas Backing for GTAW, PAW, GMAW:	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit- GMAW):	N/A	N/A
GTAW Current Type/Polarity (AC, DCEP, DCEN):	DCEP	DCEP

Results

Visual Examination of Fit-Up; Root Gap: OK Tack Welds: OK (Length: 1/2" Number: 2)

Root Pass (Describe Discontinuity if Unacceptable): OK

Completed Weld (Describe defects if unacceptable): OK

Bend Test: ☐ Transverse Root and Face [QW-462.3(a)] ☐ Longitudinal Root and Face [QW-462.3(b)] ☐ Side [QW-462.2]

☐ Pipe Bend Specimen, corrosion-resistant overlay [QW-462.5(c)]

☐ Plate Bend Specimen, corrosion-resistant overlay [QW-462.5(d)]

☐ Macro Test for Fusion [QW-462.5(b)]

☐ Macro Test for Fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

(For alternative qualification of groove welds by volumetric examination to QW-191)

R.T. Results: PASS

U.T. Results: N/A

Fillet Weld - Fracture Test (Describe location, nature and size of any crack or tearing of specimen): N/A

Length and Per Cent of Defects: N/A inches N/A

Macro Test-Fusion: N/A

Appearance-Fillet Size (leg.): N/A X N/A inch. Convexity: N/A inch. or Concavity: N/A inch.

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Jianguo (Peter) Wang

Company: IRIS NDT

Welding supervised by: Rob Irvine

Mechanical tests conducted by: N/A

Laboratory test no.: N/A

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: N/A

AOQP No.: N/A

Expiry Date: N/A

Certified by: Rob Irvine

Examiner File No. N/A

Date: October 31, 2013

P.Q. Card No. (When issued): N/A

Performance Test Reference No.: ASL-10

Test Coupon I.D. No.: Welder Name

Date Coupon is to be retained to: N/A



the pressure equipment safety authority

WELDER QUALIFICATION RECORD (WQR)

AB-76A 2010-09

Welder's Name: Terry Johnson ABSA File No.: N/A Stamp No.: TJ
 Identification of WPS followed by welder during welding of test coupon: BM-19 W.P. Reg. # WP-983.2
 Base material(s) welded: A106 Grade B Thickness: 0.436" ☒ Test Coupon ☐ Prod. Weld

Testing Conditions and Qualification Limits

Welding Variables (QW-350)		Actual Values		Range Qualified	
Welding Process(es) Used:		GMAW-rmd	GMAW-MC	GMAW-RMD	GMAW-MC
Type of Welding (i.e., Manual, Semi-Automatic) Used:		Semi-Auto	Semi-Auto	Semi-Auto	Semi-Auto
Base Metal P Number: P To P Number:		P1		P1-P1	
☐ Plate ☒ Pipe (enter diameter if pipe or tube):		2.375" OD		1" OD Min.	
Backing (metal, weld metal, double-welded, etc.):		without	with	without/with	with
Filler Metal or Electrode Specification(s) (SFA) (info only):		5.18	5.18		
Filler Metal or Electrode Classification(s) (info only):		ER70S-2	E70C-6M		
Filler Metal or Electrode F-Number(s):		F6	F6	F6	F6
Filler Type (solid/metal or flux cored/powder) (GTAW or PAW):		Solid	Metal Core	Solid	Metal Core
Consumable Insert for GTAW or PAW:		N/A	N/A	N/A	N/A
Deposit Thickness for each process or electrode type, etc. (in.):		0.110"	0.326"	0.121"	0.652"
Process/Electrode 1: 3 layers minimum ☐ Yes ☒ No		Process/Electrode 2: 3 layers minimum ☐ Yes ☒ No			
Welding Position (2G, 6G, 3F, etc.):		FLAT	FLAT	FLAT	FLAT
Vertical Progression (Uphill or Downhill):		N/A	N/A	N/A	N/A
Fuel Gas for OFW or Inert Gas Backing for GTAW, PAW, GMAW:		N/A	N/A	N/A	N/A
Transfer Mode (spray/globular or pulse to short circuit- GMAW):		RMD	Pulse	RMD	Pulse
GTAW Current Type/Polarity (AC, DCEP, DCEN):		DCEP	DCEP	DCEP	DCEP

Results

Visual Examination of Fit-Up; Root Gap: OK Tack Welds: OK (Length: 0.375" Number: 3)

Root Pass (Describe Discontinuity if Unacceptable): OK

Completed Weld (Describe defects if unacceptable): OK

Bend Test: ☒ Transverse Root and Face [QW-462.3(a)] ☐ Longitudinal Root and Face [QW-462.3(b)] ☐ Side [QW-462.2]

☐ Pipe Bend Specimen, corrosion-resistant overlay [QW-462.5(c)]

☐ Plate Bend Specimen, corrosion-resistant overlay [QW-462.5(d)]

☐ Macro Test for Fusion [QW-462.5(b)]

☐ Macro Test for Fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result
FACE	PASS				
ROOT	PASS				

(For alternative qualification of groove welds by volumetric examination to QW-191)

R.T. Results: N/A

U.T. Results: N/A

Fillet Weld - Fracture Test (Describe location, nature and size of any crack or tearing of specimen): N/A

Length and Per Cent of Defects: N/A inches N/A

Macro Test-Fusion: N/A

Appearance-Fillet Size (leg.): N/A X N/A inch. Convexity: N/A inch. or Concavity: N/A inch.

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Rob Irvine

Company: Argo Sales Ltd.

Welding supervised by: Randy Gagnier

Mechanical tests conducted by: Argo Sales Ltd.

Laboratory test no.: N/A

We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION: N/A AOQP No.: N/A Expiry Date: N/A

Certified by: Rob Irvine

Examiner File No. N/A

Date: December 1, 2014

P.Q. Card No. (When issued): N/A

Performance Test Reference No.: BM-19

Test Coupon I.D. No.: Welder Name

Date Coupon is to be retained to: March 1, 2014

ARGO
S A L E S L T D



**MATERIAL
SPECIFICATION &
TEST REPORTS**



Serial Number: 13665 Customer: HUSKY
Description: 100 BBL. (64 CU. M.) BASE SKIDDED STANDARD STORAGE TANK
Tag Number: _____ Drawing Number: B-13663-65 Size: 9'-6"OD x 8'-0" HIGH

[illegible]



New Zealand Steel Limited
A BlueScope Steel Company
131 Mission Bush Road, Glenbrook, South Auckland
Postal: Private Bag 92121, Auckland 1142, New Zealand
Telephone: (09) 375 8111 Auckland
Fax: (09) 375 8959



All tests performed
in accordance with
AS/NZS 3678:2001
and AS/NZS 1554:2001



TEST CERTIFICATE

CUSTOMER		Wilkinson Steel & Metals -Vancouver				SPECIFICATION		ASTMA36(2012)		CERTIFICATE No		TC299911													
CUSTOMER O/N		107463		USER REF		P40123EM002V		PRODUCT		HOT ROLLED COIL		DATE		01 April 2014											
MILL O/N		1022960		DIMENSIONS		0.238" x 60" x Coil																			
PACK NUMBER	HEAT No	CHEMICAL COMPOSITION PERCENT (TEST METHOD - ASTM E415 & JIS G1253)												MECHANICAL TEST (TEST METHOD - ASTM A370)											
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	Al	B	N2	CE(A)	BEND	YIELD (B) psi	T.S. psi	%ELONG GL= F	HARDNESS	TEST DIR	LENGTH (feet)	
		x100												x1000			x10000			x100					
HH-E39710-00	920748	17	1	62	13	16	12	17	24	TR	8	TR	1	49	TR	50	27	NA	45800	66400	23	NA			1
HH-E39708-00	920748	17	1	62	13	16	12	17	24	TR	8	TR	1	49	TR	50	27	NA	45800	66400	23	NA			1
HH-E39707-00	920748	17	1	62	13	16	12	17	24	TR	8	TR	1	49	TR	50	27	NA	45800	66400	23	NA			7
HH-E39706-00	920748	17	1	62	13	16	12	17	24	TR	8	TR	1	49	TR	50	27	NA	45800	66400	23	NA			7
HH-E39849-00	920756	17	TR	63	17	16	12	17	29	TR	14	TR	1	32	TR	30	28	NA	48900	68000	27	NA			7
HH-E39712-00	920757	16	TR	61	19	17	12	17	29	1	12	1	1	40	TR	40	26	NA	48300	66700	26	NA			7
HH-E39711-00	920757	16	TR	61	19	17	12	17	29	1	12	1	1	40	TR	40	26	NA	48300	66700	26	NA			1
HH-E39704-00	920760	17	TR	60	19	17	12	17	24	TR	9	TR	1	40	TR	40	27	NA	46100	66000	22	NA			1
HH-E39703-00	920760	17	TR	60	19	17	12	17	24	TR	9	TR	1	40	TR	40	27	NA	46100	66000	22	NA			7

CHEM COMP %		Nb (TR) < 0.001%		YIELD		GAUGE LENGTH (G.L.)		IMPACT TEST		CARBON EQUIVALENT VALUE (CE)	
Si (TR) < 0.01%	Ti (TR) < 0.001%	(A)=0.2% (B)=LOWER YIELD STRESS		(A)=200mm (B)=50mm		(A)=2" (F)=8"		(C)=5mm x 5mm (D)=2.5mm x 10mm (E)=5mm x 10mm		(A)=C+Mn/6 (B)=C+Mn/6+(Cr+V+Mo)/5+(Cu+Ni)/15 (C)=C+Mn/6+Si/24	
Mo (TR) < 0.001%	B (TR) < 0.0001%										
TEST DIR : L=Longitudinal, T=Transverse											

- Steel produced through the basic oxygen steelmaking process by New Zealand Steel.
- Heat analyzed from ladle.
- Results relate to test on a representative sample of the items covered in this test certificate.
- This certificate may not be reproduced except in full.
- New Zealand Steel, Chemical Laboratory IANZ Accreditation Number 101, KTP Mr David Sherie.
- New Zealand Steel, Mechanical Laboratory IANZ Accreditation Number 965, Approved Signatory Mr Schaik Bester.
- New Zealand Steel Laboratories are accredited by International Accreditation New Zealand (IANZ), a signatory to the International Laboratory Accreditation Cooperation - Mutual Recognition Agreement.

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN TESTED AND INSPECTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE SPECIFICATION

Page 1 of 1

APPROVED

Andrew Mackay

SENIOR METALLURGIST

201299(.188x96)

PO#77849



EVRAZ INC. NA
Evraz Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO. 1351476
DATE Jan 29, 2014
PAGE 1

ISO 9001 REGISTERED U.S. PATENTED	S O L D T O WILKINSON STEEL & METALS INC [VANC] ATTN: ACCOUNTS PAYABLE 888 SE MARINE DR VANCOUVER, BC V5X 2V3 CANADA	WILKINSON STEEL AND METALS INC-VANC 888 SE MARINE DR VANCOUVER, BC V5X 2V3 CANADA
	MILL ORDER NO. 271707 CUSTOMER ORDER NO. P31212EM001V JOB/REQ. NO.	SHIPPING NO. 1351476 DATE 01/29/2014
	CARRIER BURLINGTON NORTHERN CAR/TRUCK NO. BN686052	
	THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS STRUCTURAL QUALITY COIL FOR CONVERSION TO CSA G40.21-04 GRADE 38W/44W / ASTM A36/ASME SA36-10/11 ADD. MEETING MATERIAL REQUIREMENTS OF API650 GROUP III(12TH EDITION). KILLED FINE GRAIN PRACTICE.	

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BEND BHN	TEST	IMPACTS
1	0.1780 X 96.000ME X COIL .178 MIN GAUGE SCHEDULE B: 7208.38.00.00									
	1 PC 74290 LBS	N01297		545	725	21				(+ (OUTER)
	SCHEDULE B: 7208.38.00.00									
	1 PC 74330 LBS	N01299		498	705	22				(+ (OUTER)
				560	715	23				(+ (OUTER)
	2 PCS 148620 LBS TOTALS									

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	V	Cr	Mo	Ti	B	N	Ca	CE
N01297	.13	.84	.011	.007	.26	.02	.04	.002	.04	.00	.002		.0037		
N01299	.13	.85	.014	.008	.21	.01	.05	.004	.041	.00	.002		.0030		
HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (^) WERE ROLLED IN THE USA.															
.....	END OF REPORT														

Richard Deschand
Richard Deschand Quality Coordinator

I certify the above to be correct as contained in the records of EVRAZ INC. NA By _____



New Zealand Steel Limited
A BlueScope Steel Company
131 Mission Bush Road, Glenbrook, South Auckland
Postal: Private Bag 92121, Auckland 1142, New Zealand
Telephone: (09) 375 8111 Auckland
Fax: (09) 375 8959



TEST CERTIFICATE

CUSTOMER	Wilkinson Steel & Metals - Vancouver	SPECIFICATION	ASTMA36(2012)	CERTIFICATE No	TC299909
CUSTOMER O/N	107463	USER REF	P40123EM02V	DATE	01 April 2014
MILL O/N	1022957	PRODUCT	HOT ROLLED COIL		
		DIMENSIONS	0.178" x 60" x Coil		

PACK NUMBER	HEAT No	CHEMICAL COMPOSITION PERCENT (TEST METHOD - ASTM E415 & JIS G1253)																	MECHANICAL TEST (TEST METHOD - ASTM A370)						
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	Al	B	N2	CE(A)	BEND	YIELD (B) psi	T.S. psi	%ELONG G.L.= F	HARDNESS	TEST DIR	LENGTH (feet)	
																									x10000
HN-E38326-01	920388	17	TR	63	23	18	13	17	29	1	11	TR	1	46	TR	50	27	NA	46800	65000	28	NA		3	
HN-E38324-01	920388	17	TR	63	23	18	13	17	29	1	11	TR	1	46	TR	50	27	NA	46800	65000	28	NA		3	
HN-E38330-01	920389	18	TR	62	24	19	12	17	26	TR	11	TR	1	32	TR	50	28	NA	47100	67000	20	NA		3	
HN-E38328-01	920389	18	TR	62	24	19	12	17	26	TR	11	TR	1	32	TR	50	28	NA	47100	67000	20	NA		3	
HN-E38327-01	920389	18	TR	62	24	19	12	17	26	TR	11	TR	1	32	TR	50	28	NA	47100	67000	20	NA		3	
HN-E39852-01	920564	17	TR	62	14	15	12	17	23	TR	7	TR	1	45	TR	50	27	NA	45400	65400	21	NA		3	

CHEM COMP %	Nb (TR) < 0.001%	Ti (TR) < 0.01%	B (TR) < 0.001%	YIELD (A)=0.2% PROOF STRESS (B)=LOWER YIELD STRESS	GAUGE LENGTH (G.L.)			IMPACT TEST (A)=10mm x 10mm (B)=7.5mm x 10mm	CARBON EQUIVALENT VALUE (CE)		
					(A)=200mm	(B)=50mm	(C)=80mm		(C)=5mm x 5mm (D)=2.5mm x 10mm (E)=5mm x 10mm	(A)=C+Mn/6 (B)=C+Mn/6+(Cr+V+Mo)/5+(Cu+Ni)/15 (C)=C+Mn/6+Si/24	
Si (TR) < 0.01%								(E)=2"			
Mo (TR) < 0.001%							(D)=5.65 √ So	(F)=8"			
TEST DIR: L=Longitudinal, T=Transverse											

- Steel produced through the basic oxygen steelmaking process by New Zealand Steel.
- Heat analyzed from ladle.
- Results relate to test on a representative sample of the items covered in this test certificate.
- This certificate may not be reproduced except in full.
- New Zealand Steel, Chemical Laboratory IANZ Accreditation Number 101, KTP Mr David Sherie.
- New Zealand Steel, Mechanical Laboratory IANZ Accreditation Number 985, Approved Signatory Mr Schaik Bestier.
- New Zealand Steel Laboratories are accredited by International Accreditation New Zealand (IANZ), a signatory to the International Laboratory Accreditation Cooperation - Mutual Recognition Agreement.

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN TESTED AND INSPECTED
WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE SPECIFICATION

Page 1 of 1

APPROVED

Andrew Mackay

SENIOR METALLURGIST

W-122909

Chemical and Physical Test Report
MADE IN CANADA



WHITBY STEEL MILL
HOPKINS STREET SOUTH
WHITBY ON L1N 5T1 CAN
(905) 668-8811

W 300111 (5x3x.25 ANGLE)
(MW FRAME)

SHIP TO VARSTEEL LTD - CALGARY C/O CALGARY DISTRIBUTION CTR 5200 84TH STREET SE CALGARY, AB T2P 2G7	INVOICE TO VARSTEEL LTD ACCTS PAYABLE 220 4TH ST. S. STE-330 LETHBRIDGE, AB T1J 4J7	SHIP DATE 12/20/11	CUST. ACCOUNT NO 60123213
---	---	-----------------------	------------------------------

PRODUCED IN: WHITBY

SHAPE + SIZE	GRADE	SPECIFICATION	SALES ORDER	CUST P.O. NUMBER
A5 X 3 X 1/4	44W	A36/44W/50W/A529GR50/ASTM A36-05/A529GR50 M-05 CSA G40.21-04 44W/50W	1094919-01	CY-945338-01
HEAT I.D.	C	Mn P S Si Cu Ni Cr Mo V Nb B N Sn Al Ti Zn C Ekv		
W300111	.20	.95 .012 .023 .16 .36 .10 .13 .024 .000 .004 .0009 .0000 .010 .291 .00400 .01700 .421		

Mechanical Test: Yield 53372 PSI, 367.99 MPA Tensile: 74200 PSI, 511.59 MPA %El: 25.0/8in, 25.0/200MM
Customer Requirements CASTING: STRAND CAST
Mechanical Test: Yield 52865 PSI, 364.49 MPA Tensile: 75000 PSI, 517.11 MPA %El: 24.4/8in, 24.4/200MM
Customer Requirements CASTING: STRAND CAST

PRODUCED IN: WHITBY

SHAPE + SIZE	GRADE	SPECIFICATION	SALES ORDER	CUST P.O. NUMBER
C10 X 15.3#	44W	A36/44W/50W/A572GR50/ASTM A36-05/A572GR50 M-06 CSA G40.21-04 44W/50W	1085535-04	CY-942665-04
HEAT I.D.	C	Mn P S Si Cu Ni Cr Mo V Nb B N Sn Al Ti Zn C Ekv		
W300226	.15	.80 .009 .030 .18 .32 .07 .06 .020 .000 .013 .0009 .0000 .010 .146 .00400 .01200 .329		

Mechanical Test: Yield 54378 PSI, 374.92 MPA Tensile: 70638 PSI, 487.03 MPA %El: 22.5/8in, 22.5/200MM
Customer Requirements CASTING: STRAND CAST
Mechanical Test: Yield 54955 PSI, 378.9 MPA Tensile: 71680 PSI, 494.22 MPA %El: 22.5/8in, 22.5/200MM
Customer Requirements CASTING: STRAND CAST

Customer Notes

NO WELD REPAIRMENT PERFORMED. STEEL NOT EXPOSED TO MERCURY.
This material, including the billets, was melted and manufactured in Canada
Bhaskar Yalamanchili
Quality Director
Gerda

THE ABOVE FIGURES ARE CERTIFIED CHEMICAL AND PHYSICAL TEST RECORDS AS CONTAINED IN THE PERMANENT RECORDS OF COMPANY.

Shackley

Metallurgical Services Manager
WHITBY STEEL MILL

Seller warrants that all material furnished shall comply with specifications subject to standard published manufacturing variations. NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE MADE BY THE SELLER, AND SPECIFICALLY EXCLUDED ARE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
In no event shall seller be liable for indirect, consequential or punitive damages arising out of or related to the materials furnished by seller.
Any claim for damages for materials that do not conform to specifications must be made from buyer to seller immediately after delivery of same in order to allow the seller the opportunity to inspect the material in question.

Heat Number
W300111

Shipper No
368187

Customer PO#
65615

Customer Name
ARGO SALES LTD

0 A 2389 (BRF50150)

8
PO#72326

MATERIAL TEST CERTIFICATES										CUSTOMER		PAGE 1 OF 1				
 M. GELDBACH(SHANG) FLANGE & FITTINGS CO., LTD. LIJIAZHANG VILLAGE DINGXIANG COUNTY SHANGXI PROVINCE CHINA										T.F.F. CANADA INC.						
CERTIFICATE: EN1020431 CERTIFICATE #: F-13005-FR DATE: JULY 5, 2013 SPECIFICATION: ASTM SA105N AND ASME B16.5-2011/NACE MR0175-05/ISO15156 latest edition THE MATERIALS WILL SATISFY PAR 3.1.5 AND 4.3 OF THE P.E.D. ESSENTIAL SAFETY REQUIREMENTS PRODUCT CRN NUMBER: 0B11975-C										CUSTOMER REFERENCE # F-13005-F		T.F.F. REFERENCE # F-13005-F				
CHEMICAL ANALYSIS (%)																
MAT CODE	HEAT NO.	QTY	SIZE	DESCRIPTION	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu	Ce *	
1	0A2173	25	1/2"	B16.5 150 RFTHD	0.35	0.60	0.10	0.04	0.035	0.40	0.30	0.12	0.08	0.40	0.0001	0.314
2	0A2173	25	3/4"	B16.5 150 RFTHD	max	to	to	max	max	max	max	max	max	max	max	0.0001
3	0A2173	500	2"	B16.5 150 RFTHD	0.1795	0.8045	0.2340	0.0070	0.0220	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.314
4	0A2173	30	2"	B16.5 150 FFTHD	0.1795	0.8045	0.2340	0.0070	0.0220	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.314
5	0A2173	50	3"	B16.5 150 FFTHD	0.1795	0.8045	0.2340	0.0070	0.0220	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.314
6	0A2173	50	4"	B16.5 150 FFTHD	0.1795	0.8045	0.2340	0.0070	0.0220	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.314
7	0A2389	4000	3"	B16.5 150 RFSD	0.1795	0.7410	0.2000	0.0050	0.0175	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.303
8	0A2391	32	6"	B16.5 150 RFSD	0.1795	0.7410	0.2000	0.0050	0.0175	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.303
9	0A2389	100	2"	B16.5 150 FFSD	0.1795	0.7410	0.2000	0.0050	0.0175	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.303
10	0A2389	100	3"	B16.5 150 FFSD	0.1795	0.7410	0.2000	0.0050	0.0175	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.303
11	0A2389	100	4"	B16.5 150 FFSD	0.1795	0.7410	0.2000	0.0050	0.0175	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.303
MECHANICAL PROPERTIES																
MAT CODE	HEAT NO.	TYPE OF TREATMENT	HEAT TREATMENT	TEMP. 945 - 1000 C	TENSILE 485 Mpa min	YIELD 250 Mpa min	R OF A 30% min	ELONG 22% min	HARDNESS 187 HB max	* - C-Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 - 0.43max						
1	0A2173	Normalized	Normalized at temperature between 845 C and 950 C - Cooled in still air.	980	528 Mpa	299 Mpa	68 %	31 %	153	We hereby certify that the product listed have been inspected and tested in accordance with the conditions and requirements of the purchase order and unless otherwise stated conform in all respects to the specifications, drawings relevant thereto. Surface and dimensional check according to relevant standard.						
2	0A2173	Normalized	Normalized	980	528 Mpa	299 Mpa	68 %	31 %	153	Quality Manager						
3	0A2173	Normalized	Normalized	980	528 Mpa	299 Mpa	68 %	31 %	153	Signature/Date:						
4	0A2173	Normalized	Normalized	980	528 Mpa	299 Mpa	68 %	31 %	153	THE TRADEMARK OF						
5	0A2173	Normalized	Normalized	980	528 Mpa	299 Mpa	68 %	31 %	153	MG						
6	0A2173	Normalized	Normalized	980	528 Mpa	299 Mpa	68 %	31 %	153	QUALITY						
7	0A2389	Normalized	Normalized	980	531 Mpa	295 Mpa	67 %	33 %	152							
8	0A2391	Normalized	Normalized	980	531 Mpa	295 Mpa	67 %	33 %	152							
9	0A2389	Normalized	Normalized	980	531 Mpa	295 Mpa	67 %	33 %	152							
10	0A2389	Normalized	Normalized	980	531 Mpa	295 Mpa	67 %	33 %	152							
11	0A2389	Normalized	Normalized	980	531 Mpa	295 Mpa	67 %	33 %	152							

३

PO#78273

1807

ORCA FACTORY

产品质量证明书

江苏省江阴市夏港镇澄路375号
No.375,Zhencheng Rd.Xiagang Town Jiangyin City
Jiangsu Province, China (214442)
Tel:86-510-56286698 Fax:86-510-66286690

江陰市江建鋼管廠
JIANGYIN CITY SEAMLESS STEEL TUBE FACTOR

MILL TEST CERTIFICATE EN10204 3.1

[illegible]

说明:本质证书以原件为准, 复印无效。
Remark: No duplicate will be accepted.

质量管理部门负责人
Quality Manager:

审核人:

丁云隆

制证人：高叶

014086001 (4 RFSO150) PO# 78697

ORIGINAL

47840



DINGXIANG HAOKUN FORGED STAINLESS FLANGES CO., LTD

NIUTAI VILLAGE, DINGXIANG COUNTY, 035400 SHANXI PROVINCE, CHINA

TEL: +86-351-7856257 FAX: +86-351-7856258

MILL TEST CERTIFICATE

TUV

Management System as per ISO 9001 : 2000 Certificate Registration NO.04 100 062393

CERTIFICATE OF ANALYSIS: 3.1 EN-10204

PURCHASER: ALBERTA PIPE FITTINGS LTD.

TEST NO. 140587

PLACE: DINGXIANG

DATE: 30th JUNE-2014

CERT NO: XT14063001001

ORDER NO APF/2014/ 214		CONTRACT NO. HXQ28-270514		MATERIAL GRADE ASTM/A515/A515N CL2 CSA-Z245 12-09 CAT I - 280SS; NACE MR0175-2005								STANDARD ANSI B16.5 2003		WORK NO 140587									
ITEM	SIZE INCH	HEAT NO	DESCRIPTION	QTY	INSPECTION SATISFACTORY								NORMALIZING IN 900°C Hot Forging										
1	4"	014086001	150# SORF A105N	3000	Visual inspection: Satisfactory Dimensional inspection: Satisfactory Ultrasonic test:								MANUFACTURING METHOD Hot Forging										
1	4"	014086	150# SORF A105N	3000									MELTING PROCESS E										
													Manufacturer's brand H.K.										
					stamp of the testing engineer								①										
CHEMICAL COMPOSITION %																	MECHANICAL PROPERTIES						
ITEM	HEAT NO.	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	V %	Cu %	BRINELL HARDNESS NUMBER	TENSILE STRENGTH MPA	YIELD STRENGTH 0.2% offset MPA	ELONGATION in 2 inch. %	REDUCTION OF AREA, MIN %	CHARPY IMPACT TEST(J)						
	MIN		0.10	0.60								143	485	228	22	30							
	MAX	0.35	0.35	1.05	0.035	0.040	0.30	0.44	0.12	0.05	0.400	185											
1	014086001	0.200	0.27	0.79	0.015	0.008	0.015	0.011	0.005	0.012	0.020	159/164/158	546	315	38	62							
1	014086	0.200	0.27	0.79	0.015	0.008	0.015	0.011	0.005	0.012	0.020	159/164/158	546	315	38	62							
MARKING		08A/SA105N B16.5-09 CAT1 CSA Z245 12-09 HK SIZE CLASS TYPE FACE SCHEDULE 280 SS 014086001																					
		We hereby certify that the product described herein has been made in accordance with the requirements of PED97/23/EC																					

4" 150# RFSO

MILL TEST CERTIFICATE

Tel and Fax: +86 734 8873739
E-mail: hsiec@hysteelrube.com

MILL TEST CERTIFICATE

NOTCH DEPTH IS 12.5%/10%/5% THE SPECIFIED WALL THICKNESS.

正本

ORIGINAL

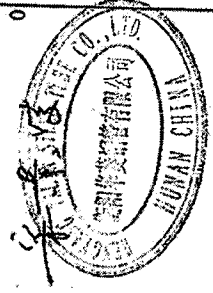
HENGYANG VALIN
STEEL TUBE CO.,LTD

MILL TEST CERTIFICATE

Add: 10 Dalinincun, Hengyang
City, Hunan, P.R.China P.C.: 421001
Tel and Fax: +86 734 8873739
E-mail: hstee@hysteelhube.com

CUSTOMER		R + R TRADING CO.,LTD		CERTIFICATE NO.		C201400238-1	
CONTRACT-ITEM NO.		2211001753-02		P.O.NO.		40583	
PRODUCT		SEAMLESS STEEL LINE PIPE		DELIVERY CONDITION		2014-1-3	
SPECIFICATION		SEE SPECIFICATION NOTE		HEAT TREATMENT		HR	
GRADE		B.GR 241		DIMENSIONS		4"-STD×21FT	
TOTAL BUNDLES: 12		TOTAL PIECES: 210		TOTAL LENGTH: 1344.000		m	
				TOTAL WEIGHT: 21.596		mt	

REMARK: 1. ORIGIN: MADE IN CHINA 2. ALL ELEMENTS TO BE LISTED:

SPECIFICATION NOTE		API 5L(45th) PSL1+ASTM/ASME A/SA 106+CSA Z245.1 CAT 1	
We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements. This certificate is issued by a computerized system and it is valid with electronic signature. In case the owner of the certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subject to the law. If you need to assure the authenticity of this certificate, please do not hesitate to contact Hengyang Valin Steel Tube CO.,LTD, E-mail: hstee@hysteelhube.com CUSTOMER THIRD PARTY			
Quality Manager:			
Certificate-maker:		刘年亚	

正本
ORIGINAL

48988
PO# 78697
YD120038(3RF50150)

DINGXIANG BEICHENG FLANGE CO.,LTD
Yangfang Development Area Dingxiang Shanxi P.R. China

Inspection Certificate
Abnahmepruefzeugnis

EN10204-3.1

Certified in accordance to Pressure Equipment Directive 97/23/EC,

Annex I, Paragraph 4.3 by TÜV Anlagentechnik GmbH

(Notified Body Identification NO.0035)

Zertifiziert nach Druckgeraete-Richtlinie 97/23/EG,

Anhang I, Abschnitt 4.3 durch TÜV Anlagentechnik GmbH

(Benannte Stelle Kenn-Nr.0035)

Certificate No.: BC-14-Y120 Page: 38/89

Pruef-Nr. Seite

Customer/Besteller: ALBERTA PIPE FITTINGS LTD

Order No./Bestell Nr.:	dated/vom	Works No./Werks Nr.	Material/Werkstoff	according to/entsprechend
APF/2014/222	2014-7-16	2014-Y120	A/SA 105N	ASTM SA105 CSAZ245.12-09 GR290
Article/Gegenstand:	Hot Forged Flange/geschmiedeter Flansch		Specification/Anforderung:	ASME B16.5-03 NACE MR0175-05
State of delivery/Lieferzustand:	HOT FORGED		Melting process/Erschmelzungsart:	
Marking/Kennzeichnung:	BC A/SA105N B16.5 CSA Z245.12 CAT I 248 SS SIZE TYPE CLASS SCH Heat-No.			
Stamp of Manufacturer/Herstellerzeichen:	BC		Inspector's stamp/Pruefstempel:	(G)

Content of the Delivery/Lieferumfang:

NO.	Pieces/stueckzahl	Description/Bezeichnung	Heat No./Schmelze-Nr	Test No./Probe-Nr
38	1052	150# SO RF 3"	YD120038	BC14Y12001

Chemical analysis/Chemische Analyse:

NO.	Heat No.	%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%Ti	%Ta	%Nb	%Co	%Cu	%Al	%V	%CE
38	YD120038	0.19	0.20	0.95	0.014	0.010	0.028	0.001	0.009					0.052		0.002	0.36

Mechanical tests/Mechanische Pruefungen:

NO.	Test No./ProbeNr	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elong %	Red of Area %	Charpy-impact Test, ISO-V Specimen	Hardness
38	BC14Y12001	345	515	31.5	69.0	Kerbschlagversuch, ISO-V-Probe	Haerte HB
						Σ/N	140 141 143

Visual and dimensional inspection/Besichtigung und Ausmessung:

Place/Ort: DINGXIANG 2014-9-20

without complaint/ohne Beanstandung
Works Inspector/Werksachverstaendiger

BEICHENG FLANGE CO., LTD

3" 150# RF30

733(6RF50150)

P0#76023



SUDHIR FORGINGS PVT.LTD
KANGANWAL ROAD,P.O.JUGIANA,
G.T.ROAD,LUDHIANA (INDIA)

Control No. TC/01
Rev. 01
Eff Date 01.07.2009

TEST CERTIFICATE

(in accordance with EN 10204 3.1 B)

ITEM	6" 150 SORF (6875236)	CERTIFICATE No.	SF/FLANGE/01029/013	DATED	26-Feb-2014
QUANTITY	300 PCS	LAB Ref. No.	733		
FINISH	BLACK PAINT	CUSTOMER NAME	CCTF CORPORATION		
MAT. SPECIFICATION	ASME SA 105N-10 / ASTM A105N-03	INVOICE No.	SF/2013-14/064		
P.O. No.	4032912	DATED	7-Feb-2014	INVOICE DATE	26-Feb-2014

Chemical Analysis

Heat No.	Supplier Heat No.	Description	C%	Mn%	P%	S%	Si%	Cu%	Ni%	Cr%	Mo%	V%	C.E %
733	A-73	Specified	0.25 max	0.60 - 1.05	0.035 max	0.040 max	0.10 - 0.35	0.40 max	0.40 max	0.30 max	0.12 max	0.08 max	0.47 max
		Observed	0.230	0.890	0.035	0.032	0.200	0.130	0.049	0.096	0.001	0.000	0.414

Physical / Mechanical Properties

Heat No.	Supplier Heat No.	Description	UTS N / MM ²	YIELD N / MM ²	Elongation%	R.A.%	Hardness (BHN)
733	A-73	Specified	485 min	250 min	22 min	30 min	187 max
		Observed	580.61	347.16	36.80	36.00	156

HEAT TREATMENT PROCESS :- TEMP. 870°C - 910°C
SOAKING TIME :- 200 HOURS

REMARKS.

- Material is in accordance with NACE STD, MR-0175/ISO-15156
- Flanges are forged steel and manufactured in strict accordance with ASTM A/SA 105 & ANSI B16.5
- The flange have been normalized in accordance with ASTM A961.
- We certify that the Material Suits the Requirement of P.O./Relevant specifications.
- Flanges have serrated face as per MSS-SP-6 within the limit of 125 - 250 RMS.
- Flanges are painted with black paint & Marked as. SF 6 SORF 150 A105N B16.5 733 INDIA

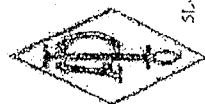
FOR SUDHIR FORGINGS PVT. LTD

for. flange
Q.C. Engg.

Q.C. Mgr

90# 78188

2014206001(6INSTEELPIPE)



YANGZHOU LONTRIN STEEL TUBE CO., LTD. MILL TEST REPORT (EN10204-3.1)

江苏江都经济开发区
No. 1 Xingyuan Road, Dongying Hu Area Along the Huo
Donghai Road, Huoqiao City, Jiangsu Province, China
Tel: 86-514-8843556 Fax: 86-514-8843533

CUSTOMER:

PRODUCT: PRIME SEAMLESS STEEL PIPE

SPEC: ASTM(2014) A106 GR.B/ASME(2013) SA106 GR.B/ASME(2013)

SAS3 GR.B/A15L(45H) GR.B/CSA Z245.1 GR241 CAT INACE MR-01-75(2009)/MR-01-03(2003)

51-0506

ISO REGISTRATION NO: 44 100 072544

CONTRACT NO:

CERTIFICATE NUMBER: 14EX06314-2-01

Material conforms to ANSI B36.10.

Normalizing temperature: 900°C to 930°C

TOTAL:		90 BUNDLES		809 PIECES		117057 KG		PACKING IN BUNDLES													
NO.	HEAT NO.	LOT	STEEL GRADE	SIZE (MM)	PCS	WEIGHT Kg	CHEMICAL COMPOSITION (Ladle Analysis) %														
							C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V	Ti	Al			
1	ZD14107006	14072AR0100	GR.B	6.000X0.000X280NCHESX40FT	196	35448	0.21	0.22	0.48	0.011	0.006	0.05	0.05	0.08	0.010	0.010	—	—			
2	ZD14206001	14072AR0101	GR.B	6.000X0.000X280NCHESX40FT	94	17001	0.19	0.22	0.48	0.015	0.011	0.06	0.03	0.09	0.010	0.010	—	—			
3	ZD14207018	14072AR0097	GR.B	6.000X0.000X280NCHESX40FT	130	42818	0.18	0.23	0.50	0.012	0.004	0.05	0.05	0.11	0.010	0.010	—	—			
4	ZD14107181	14072AR0098	GR.B	6.000X0.000X280NCHESX40FT	22	7385	0.19	0.24	0.59	0.024	0.013	0.05	0.03	0.08	0.010	0.010	—	—			
5	14-207737	14071B0280	GR.B	1.248X0.000X191NCHESX40FT	384	10976	0.20	0.22	0.49	0.028	0.007	0.03	0.01	0.01	0.010	0.010	—	—			
6	14-207737	14071B0281	GR.B	1.248X0.000X191NCHESX40FT	43	1229	0.20	0.22	0.49	0.028	0.007	0.03	0.01	0.01	0.010	0.010	—	—			
NO.	MECHANICAL PROPERTIES			TECHNOLOGICAL PROPERTIES			NONDESTRUCTIVE TEST			SURFACE QUALITY			DIMENSION TOLERANCE								
	ReL (MPa)	TENSILE STRENGTH	ELONGATION A%	HARDNESS HRB	FLATTENING TEST	FLARING TEST	BENDING	H.T 10S	ET	UT	IN	OUT	O.D.	W.T.							
1	325	478	34	77	Satisfactory	—	—	1800PSI	Satisfactory	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory							
2	317	491	34	78	Satisfactory	—	—	1800PSI	Satisfactory	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory							
3	353	520	34	78	Satisfactory	—	—	1800PSI	Satisfactory	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory							
4	324	503	35	80	Satisfactory	—	—	1800PSI	Satisfactory	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory							
5	354	492	48	74	—	—	Satisfactory	2500PSI	Satisfactory	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory							
6	329	460	50	73	—	—	Satisfactory	2500PSI	Satisfactory	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory							

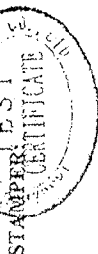
REMARKS:

We certify that the material was manufactured, tested and inspected in accordance with the material specifications and the purchase order and was found to meet the requirements.

1) No weld repairs were performed.

2) Pipes are free of mercury contamination.

QC MANAGER: Wang Pengzhan



DATE: August 25, 2014

133018 (4RF50150)

PO# 76023 46869

22.

DINGXIANG HAKUN FORGED STAINLESS FLANGES CO., LTD
NIUTAI VILLAGE, DINGXIANG COUNTY, 035400 SHANXI PROVINCE, CHINA
TEL: +86-351-7856257 FAX: +86-351-7856258

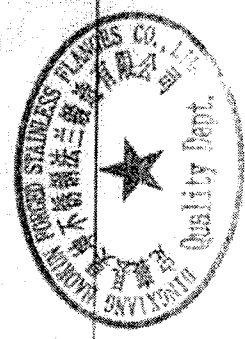
ORIGINAL

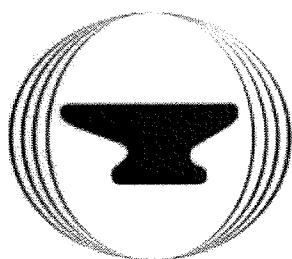


MILL TEST CERTIFICATE

Manufactured in accordance with ISO 9001:2000 Certificate Registration NO.04 100 062383
CERTIFICATE OF ANALYSIS: 3.1 EN-10204

CONTRACT NO.		TESTING MODEL		PLACE DINGXIANG		DATE 09-DEC-2013		CERT NO. XT13121803	
ORDER NO. 4RF50150		CONTRACT NO.		MATERIAL GRADE		STANDARD		WORK NO.	
ITEM		HEAT NO.		QTY		MATERIAL GRADE		STANDARD	
11		133018		500		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
12		133018		200		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
13		133018		50		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
14		133018		200		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
15		133018		100		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
16		133018		250		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
17		133018		250		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
18		133018		400		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
19		133018		500		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
20		133018		250		ASTM A166M-04A SA105N CAT 1 - 2008 NACE MR0175-2005		ANSI B16.5-2003	
CHEMICAL COMPOSITION %									
ITEM	HEAT NO.	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
11	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
12	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
13	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
14	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
15	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
16	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
17	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
18	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
19	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
20	133018	0.35	0.10	0.60	0.035	0.040	0.35	0.44	0.12
MECHANICAL PROPERTIES									
ITEM	HEAT NO.	TENSILE STRENGTH MPa	BRINELL HARDNESS NUMBER	YIELD STRENGTH 0.2% offset MPa	ELONGATION 5.2 inch %	REDUCTION OF AREA %	CHARPY IMPACT TEST J		
11	133018	485	143	228	22	30			
12	133018	485	143	228	22	30			
13	133018	485	143	228	22	30			
14	133018	485	143	228	22	30			
15	133018	485	143	228	22	30			
16	133018	485	143	228	22	30			
17	133018	485	143	228	22	30			
18	133018	485	143	228	22	30			
19	133018	485	143	228	22	30			
20	133018	485	143	228	22	30			
MANUFACTURING METHOD									
Hot Forging									
WELTING PROCESS									
Manufacturer's brand									
Stamp of the testing engineer									
APPROVED Chief of Inspection Section:									





3610 (1.25 IN 3000)

ANVIL
INTERNATIONAL, INC.



Simcoe, Ontario
Edmonton, Alberta
Montreal, Quebec

Certificate of Test

Part Number: 0366710267 Description: 11/4 3M THRD CPLG 105N
Heat Code: 3610
Reference No.: 120169
Part Specification: Y

Starting Material: 0366710267 Description: 11/4 3M THRD CPLG 105N
Specification: ASTM/ASME A/SA105N-10/ ASME SA105
NACE MRO175/ISO 15156-2:2003 TC1/2005 ANNEX A
Fitting Trademark: Anvil Intl

Chemical Analysis %

Heat No.	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb/Nb
322972	0.21	0.86	0.024	0.014	0.20	0.17	00.07	00.09	0.02	< 0.01	< 0.01

CE (LONG FORMULA) = 0.397

Mechanical Properties

Yield Strength		Tensile Strength		Elongation %	Reduction Area	Hardness BHN
psi	54,534	psi	75,565	34.00	64.00	141
MPa	376	MPa	521			

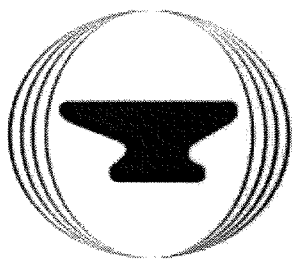
Heat Treatment: N Normalized

Z HT# 322972

We certify that this is a true and correct copy of the mill certificate, issued by the manufacturer of the steel employed or the laboratory which has determined it, as retained in the records of the company. We make no representation beyond those of the manufacturer or its agent.

4105 (1IN3000THRD)

PO# 73630

**ANVIL**
INTERNATIONAL, INC.Simcoe, Ontario
Edmonton, Alberta
Montreal, Quebec

Certificate of Test

Part Number: 0366710259 Description: 1 3M THRD CPLG 105N
Heat Code: 4105 ✓
Reference No.: 131424
Specification: ASTM/ASME A/SA105N-12/ ASME SA105
NACE MRO175/ISO 15156-2:2003 TC1/2005 ANNEX A
Fitting Trademark: Anvil Intl

Chemical Analysis %

Heat No.	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb/Nb
0093200	0.19	0.94	0.017	0.006	0.19	0.19	00.07	00.11	0.01	<0.01	0.00
CE (LONG FORMULA) = 0.394											

Mechanical Properties

Yield Strength		Tensile Strength		Elongation %	Reduction Area	Hardness BHN
psi	52,939	psi	75,275	34.00	67.00	144
MPa	365	MPa	519			
Heat Treatment: N Normalized						
Z HT# 0093200						

We certify that this is a true and correct copy of the mill certificate, issued by the manufacturer of the steel employed or the laboratory which has determined it, as retained in the records of the company. We make no representation beyond those of the manufacturer or its agent.

ARGO
S A L E S L T D



MISCELLANEOUS TANK EQUIPMENT SPECIFICATIONS

ENARDO *MODEL 660*

THIEF HATCH



SPRING-LOADED

The series 660 spring loaded thief hatch is designed with a round base and cover. It is intended for use on steel and fiberglass tanks which require a vapor tight seal.

SERIES 660: Standard 4 oz. pressure setting with 4/10 oz. vacuum relief

BOLTING PATTERN: 10-3/8" Circle API, for nominal 8" tank opening

CONSTRUCTION: Iron and aluminum castings (non-sparking)

OPTIONAL EQUIPMENT:

1. Plastic Trim (PT)
2. Pressure Setting (2, 4, 6, 8, 12, 16 or 24 oz.)
3. Base Gasket
4. Bolt Set
5. Non-Corrosive Coating

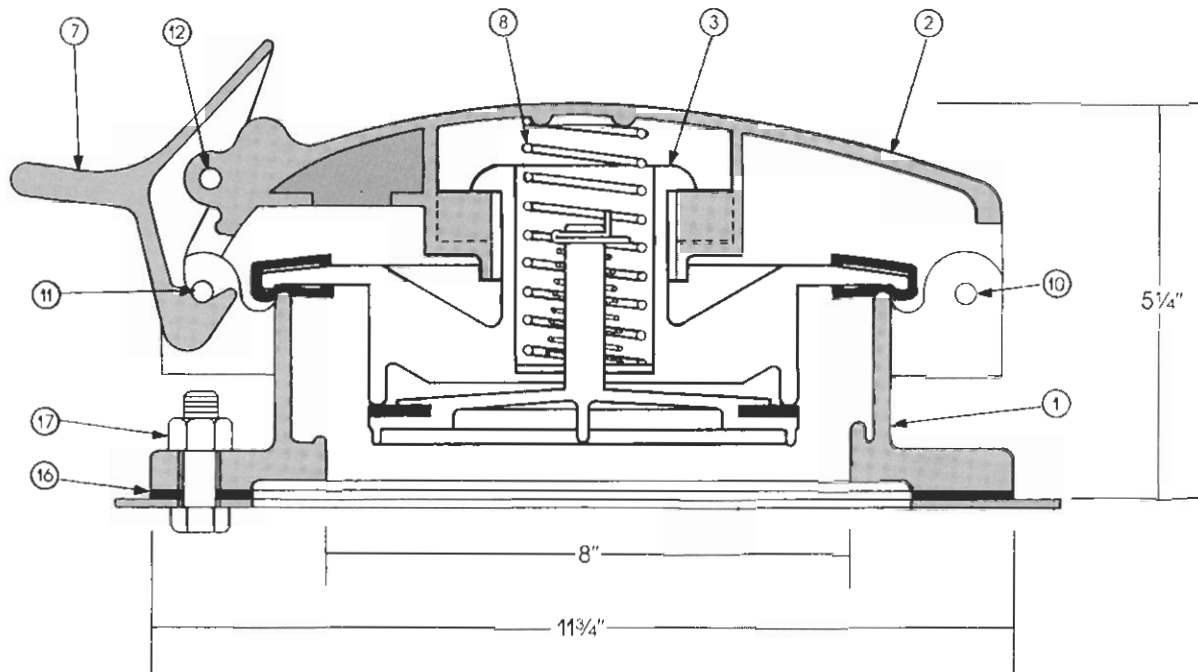
ORDERING INFORMATION:

1. Give series number (660 or 660PT)
2. State desired pressure setting
3. Indicate options desired

SHIPPING WEIGHT: (approximately)
25 lbs.

ENARDO MANUFACTURING CO.

Post Office Box 266
Tulsa, Oklahoma 74101
(918) 835-6974
(800) 336-2736 U.S. and Canada
FAX (918) 835-0044



SERIES 660

Ref.	Part No.	Part Name	Material	Quantity
1	61	Base	Cast Iron	1
2	63	Cover	Cast Aluminum	1
3	72SA	Center (see Center Assy)	Assembly	1
*3	72SA1-PT	Center (see Center Assy)	Plastic Assembly	1
7	9	Latch	Cast Aluminum	1
8	660-PS-4	4 oz. Pressure Spring	Pltd. (green coded)	1
+8	660-PS-2	2 oz. Pressure Spring	Pltd. (black coded)	1
+8	660-PS-6	6 oz. Pressure Spring	Pltd. (brown coded)	1
+8	660-PS-8	8 oz. Pressure Spring	Pltd. (orange coded)	1
+8	660-PS-12	12 oz. Pressure Spring	Pltd. (pink coded)	1
+8	660-PS-16	16 oz. Pressure Spring	Pltd. (blue coded)	1
+8	660-PS-24	24 oz. Pressure Spring	Pltd. (red coded)	1
10	5-0	Cover Hinge Pin	CRS Pltd.	1
11	5-F	Latching Pin	CRS Pltd.	1
12	5-C	Latch Pin	CRS Pltd.	1
+16	660 BG	Base Gasket	Tank Packing	1
+17	1/2-13 x 1-1/2	Bolt, Hex	Pltd.	16
+17	1/2-13	Nut, Hex	Pltd.	16
19	HCP-148	Hinge Pin Clip	Pltd.	6

*Plastic Trim Series

+Furnished upon Request only

NOTE: Inconel Springs will be furnished upon request

ENARDO

GAUGE AND THIEF HATCH VALVES

ENARDO Thief Hatches are divided into two categories:

- Dead Weight Series
- Spring-Loaded Series

DEAD WEIGHT SERIES

ENARDO Dead Weight Thief Hatches are generally used on low pressure, steel & fiberglass tanks. They are available with 1, 2, 3 or 4-ounce pressure settings and have a standard 4/10-ounce vacuum relief. Round base dead weight hatches have an API standard 10-3/8-inch bolt circle for a nominal 8-inch tank opening. Oblong base units have a 10-3/8 by 20-3/8-inch API bolt pattern for a nominal 8 by 18-inch tank opening. A thief shelf will be furnished as standard equipment on all oblong base hatches. The oblong base hatch is not recommended for tanks with decks heavier than 10-gauge metal since a vapor tight installation is less likely to be achieved.

SPRING-LOADED SERIES

ENARDO Spring-Loaded Thief Hatches are generally used on low pressure steel & fiberglass tanks. They are available in 2, 4, 8, 16 and 24-ounce pressure settings and have a standard 4/10-ounce vacuum relief. Spring-loaded hatches have a round base with an API standard 10-3/8-inch bolt circle for a nominal 8-inch tank opening. Models designated by the letter "L" will have a long basin which acts as the thief shelf.

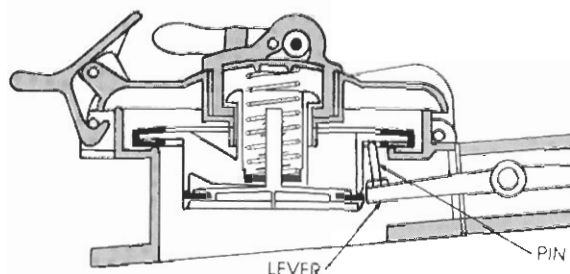
BLEEDER MODELS

ENARDO Thief Hatches having the bleeder attachment are designed to manually pre-release tank pressure which eliminates the spray that would otherwise be discharged when the hatch cover is opened. Bleeder attachments are recommended for tanks with pressures in excess of 4 ounces. They are designated by the letter "B" in the thief hatch model number.

COMBINATION THIEF HATCH WITH BYPASS

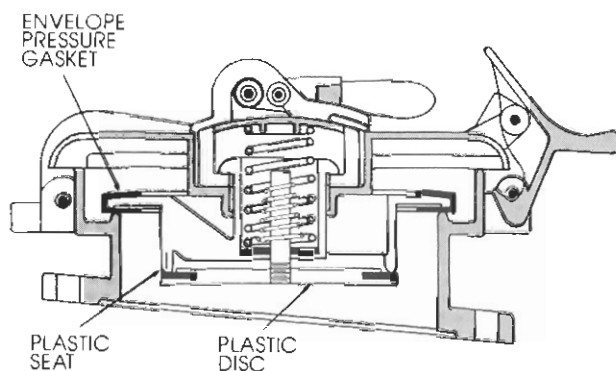
ENARDO Thief Hatches are available in a combination unit consisting of a spring-loaded thief hatch with an automatic bypass vapor valve mounted on its body. In a vapor control system, the vent line is connected to the bypass. When a tank is opened, it seals off the vent line, isolating the tank from the remaining tanks in a battery. When the hatch is closed, the vent line is open, equalizing the vapor pressure in all tanks. As a result, only the pressure and vapor in the tank being gauged or thieved is lost.

The valve in the bypass is controlled by a lever which is activated by the hatch center. Any bypass adjustments should be made at the level adjusting pin.



PLASTIC TRIM

For adaption to sour gas applications, all ENARDO Thief Hatches are available with a plastic trim kit which includes a plastic seat and vacuum disc with fluorocarbon gaskets. In the spring-loaded series, springs are wound with corrosive-resistant Inconel wire. When ordering, simply add the letters "PT" to the thief hatch series number (Example: 660LB-PT).



This sectional view of the Model 660LB-PT shows the plastic vacuum disc and valve seat used on all Plastic Trim (PT) models.

ENVELOPE PRESSURE GASKETS

Patented ENARDO Envelope Gaskets are used on all spring-loaded type hatches. As depicted in the accompanying illustrations, tiny spacers are situated evenly around the inner surfaces of the gasket resting against the center pressure disc. These spacers are designed to hold the gasket away from the lower metal surface. All tank pressure is therefore exerted against the inner surface of the gasket, causing the gasket to be pressed against the seat with a wrap-around contact that creates a positive seal with the machined valve seat. The gasket fits tight around the machined outer edge of the disc and will effectively hold pressures in excess of 24 ounces.

While conventional flat gaskets do not seal tightly and constantly leak vapor pressure, the ENARDO Pressure Gasket maintains a relatively high pressure differential around the outer rim of the valve seat to effectively maintain pressure levels.

STANDARD PRESSURE SETTINGS

Pressure settings are available in 2, 4, 8, 16 and 24 ounces. Savings in gravity and volume may be achieved by using higher pressures on the thief hatch for tanks designed to withstand such pressures. These higher pressures are obtained by using stronger or heavier springs in the pressure valve. Pressure settings on the hatch can easily be changed by removing the existing spring and replacing it with another of the desired pressure.

Pressure settings should always be in accordance with the tank manufacturers' specifications. To prevent the hatch from opening, the pressure setting on the hatch should be from 2 to 4 ounces greater than that on the vent valve in the vapor line.

HATCH USE

Unless gauging or thieving, tank thief hatches should be kept closed to prevent loss of gravity and volume. ENARDO Pressure Relief Valves and Thief Hatches are capable of relieving the pressures generated when tanks are being filled at rates of as much as 1,750 barrels per hour.

For added safety, stop plugs are incorporated to prevent the hatch cover from striking the tank and causing a spark while being opened. Hatches should be opened slowly and allowed to drop back against the stop plugs easily. When closing the hatch, the cover should be lowered easily and never allowed to drop down with its full weight.

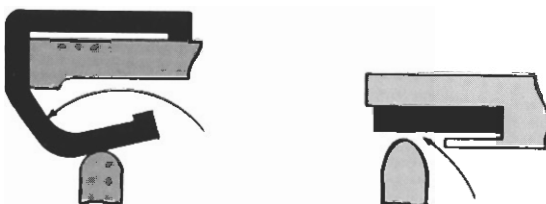
HATCH MAINTENANCE

ENARDO Hatches will provide for long, trouble-free operation if properly maintained. Pressure and vacuum seats, as well as discs, should be wiped clean each time the tank is thieved.

HOW THE ENARDO ENVELOPE GASKET WORKS



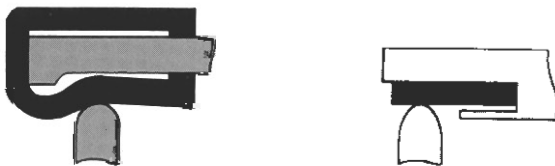
Pressure created within the tank energizes the ENARDO Envelope Gasket as shown above left, forcing it down around the outer edge of the seat to form a wide contact area. By contrast, the conventional flat gasket maintains only "line" contact with its seat.



As tank pressure mounts, it forces the thin, flat gasket of the conventional hatch to lift, breaking its seat. The ENARDO, on the other hand, continues to keep its seat as the hatch assembly rises.



When the rated pressure of the valve has been reached, the disc with the envelope gasket snaps back into its original shape. The valve has attained an immediate full-open, creating a sudden release of pressure whose escape velocity blows the seat and gasket clean.



As tank pressures fall, the disc and envelope gasket falls into position against the seat, once again to create a tight seal.

In contrast, the gasket of the conventional hatch takes longer to recover its seat. As a result, a metering action occurs which prevents the valve from seating firmly and from holding tank pressures effectively.

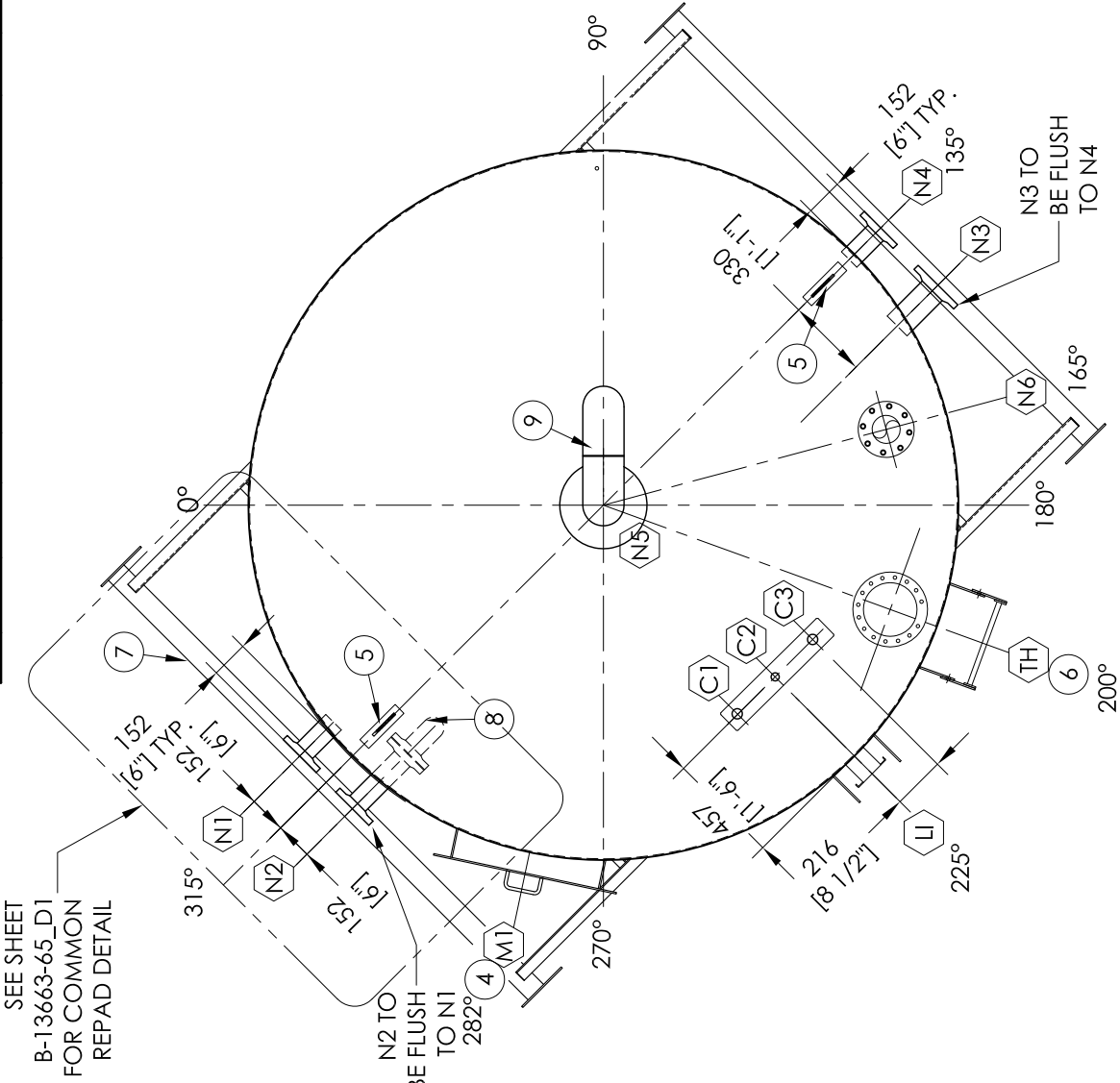
ARGO
S A L E S L T D



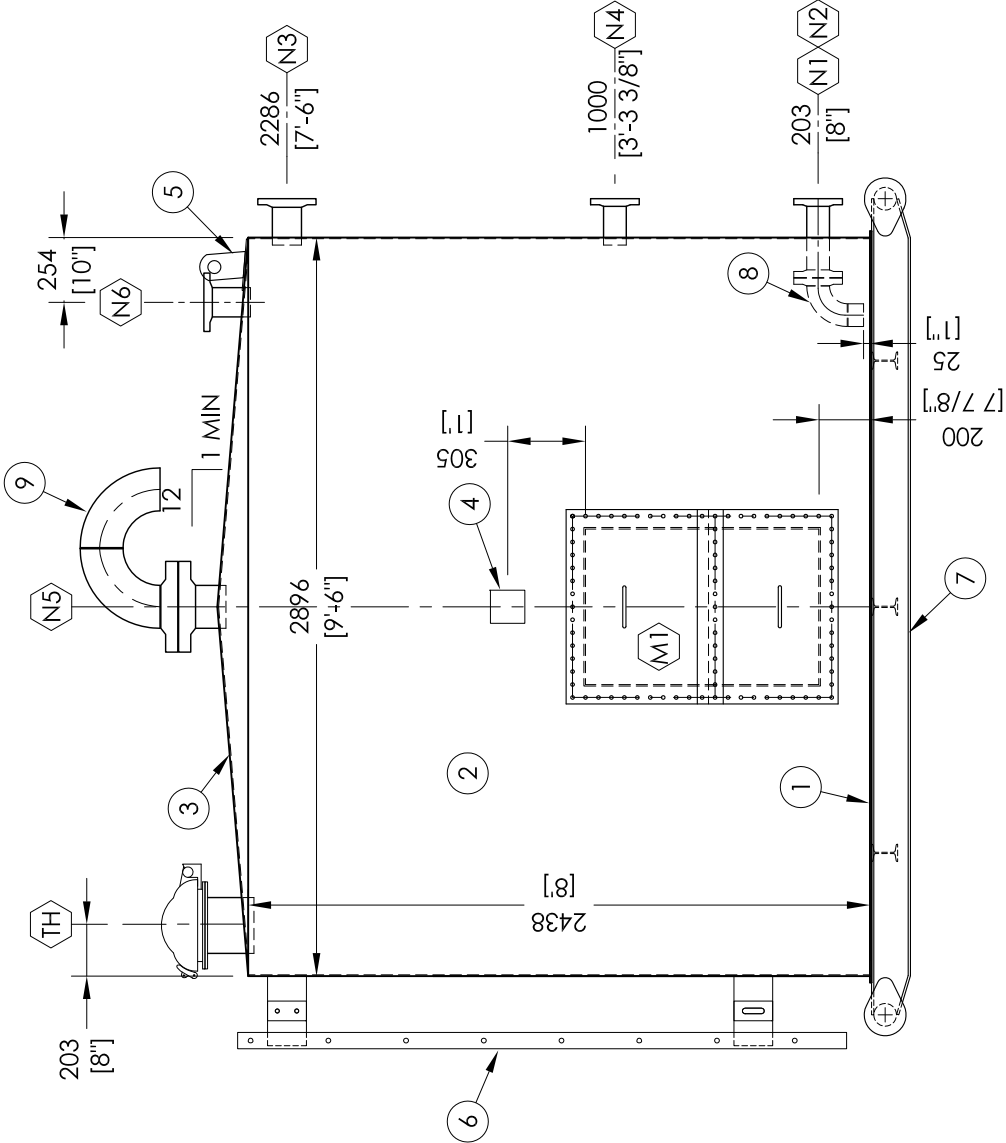
**AS BUILT
DRAWINGS**

SHIPPING INFORMATION:	
HEIGHT:	APPROX. 2988mm (9'-9 5/8")
WIDTH:	3006mm (9'-10 3/8")
LENGTH:	3461mm (11'-4 1/4")
WEIGHT:	APPROX. 5880 LBS (2671 KG)
SHIPPED LOOSE ITEMS	
(1) 6" GOOSENECK c/w BOLTUPS	

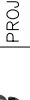
NOZZLES SCHEDULE											
MARK	SIZE	RATING	FLANGE		SCH.	MTL. LENGTH	ELEV.	PROJECTION		SERVICE	ITEM No.
			EXT.	INT.				EXT.	INT.		
N1	89 (3")	CL150	RF50	-	SCH. 40	A105 180 [7' 1/8"]	203	SEE DWG	DWG 25 (1")	INLET	A.D.H D1
N2	89 (3")	CL150	RF50	RF50	SCH. 40	A105 288 [11' 5/16"]	203	SEE DWG	DWG 152 (6")	TRUCK OUT	A.D.H D1
N3	114 (4")	CL150	RF50	-	SCH. 40	A105 221 [8' 11/16"]	2286	SEE DWG	DWG 25 (1")	VENT INLET	B.E -
N4	89 (3")	CL150	RF50	-	SCH. 40	A105 167 [6' 5/8"]	1000	135°	152 (6")	DRAIN INLET	A.D -
N5	168 (6")	CL150	RF50	-	SCH. 40	A105 171 [6' 11/16"]	ROOF	CENTER	152 (6")	VENT c/w GOOSENECK	C.F D1
N6	114 (4")	CL150	RF50	-	SCH. 40	A105 183 [7' 3/16"]	ROOF	165°	152 (6")	LIT	B.E -
C1	42 [1 1/4"]	3000#	FNPT	-	FULL	A105	ROOF	225°	MAX.	CABLE GUIDE CONNECTION	H -
C2	33 [1"]	3000#	FNPT	-	FULL	A105	ROOF	225°	MAX.	LEVEL INDICATOR	G -
C3	42 [1 1/4"]	3000#	FNPT	-	FULL	A105	ROOF	225°	MAX.	CABLE GUIDE CONNECTION	H -
M1	24"x36"	FABRICATED	-	-	-	A36	SEE DWG	282°	N/A	SHELL MANWAY	M1
TH	219 (8")	FABRICATED	API	-	SCH. 20	A106 191 [7' 1/2"]	ROOF	200°	152 (6")	THIEF HATCH	TH D1



ORIENTATION



ELEVATION

TESTING NOTES: 1) TANK TO BE AIR/LEAK TESTED TO 1.5 PSI		1. INTERNAL FINISH: BLAST: NO INTERNAL FINISH										REVISIONS										CUSTOMER: HUSKY		PO #: 8400899432		LSD. XX-XX-XXX-XX WXM							
2. EXTERNAL FINISH: BLAST: SSPC-SP7 BRUSH BLAST PRIMER: 1.5 - 2.0 MILS DFT OF CLOVERDALE T-101 PRIMER INSULATION: NONE PAINT: 1.5 - 2.0 MILS DFT OF CLOVERDALE (ARGO GREY : CC425 ENAMEL)		3. EXTERNAL BOTTOM FINISH: BLAST: NO BOTTOM FINISH																				TITLE: ONE (1) 16 CU.M. (100BBL) 2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH 100 BBL BASE SKIDDED STORAGE TANK ORIENTATION DRAWING				DWG BY: CP		QUOTE #: TQ14-116B		SCALE: 1:50		CUSTOMER TAG #: T-100	
THIRD PARTY INSPECTION: YES																						ARGO DRAWING NO.: B		13663-65		OR		1 of 7		REV. SHEET:			

BILL OF MATERIALS					
MARK	QTY	PART NAME	DESCRIPTION	LENGTH	MATERIAL
				-	
1	1	FLAT BOTTOM	PLATE 6.4 x 2946 DIA. (1/4" x 9'-8" DIA)	-	A36
2	1	CAN	PLATE 4.8x 2438x 2896 DIA, ROLLED (3/16"x 8'-0"x 9'-6")	9098 (29'-10 3/16")	A36
3	1	CONED ROOF	PLATE 4.8x 2918 O.D. (3/16"x 9'-7"), (1:12)SLOPE	-	A36
4	1	NAME PLATE	PLATE & BRACKET	-	-
5	2	SMALL LIFT LUG	12.7 (1/2") LANYARD TIE-DOWN c/w 6.4 (1/4") REPAD	D1 (SHT 3)	A36
6	1	LADDER	FIXED LADDER, 2396mm (7'-10 3/8")	CL (SHT 5)	A36/44W
7	1	SKID	BASE SKID, 2286 x 3200 (7'-6" X 10'-6")	SK (SHT 6)	A36
8	1	INTERNAL PIPING	N2-TRUCK OUT DOWNCOMER	D1	-
9	1	GOOSENECK	N5 - GOOSENECK	D1	-
M1	1	MANWAY	SPLIT RECTANGULAR, 24"x 36" (610x 914)	MW (SHT 4)	A36
LI	1	LEVEL GAUGE SYS	ARGO STANDARD GAUGE SYSTEM	-	-
			w/ METRIC LEVEL BOARD	-	
TH	1	THIEF HATCH EXT.	ARGO BUILT THIEF HATCH EXTENSION	D1 (SHT 3)	A36
TH	1	THIEF HATCH	219 DIA. (8") ENARDO 660 SWEET SERVICE THIEF HATCH	-	
			SET @ 16oz PRESS./0.4oz VAC		
				-	
			NOZZLE COMPONENTS	-	
A	4	FLANGE	89 DIA. (3") - CL150, RF50	-	A105
B	1	FLANGE	114 DIA. (4") - CL150, RF50	-	A105
C	1	FLANGE	168 DIA. (6") - CL150, RF50	-	A105
D	1	PIPE	89 DIA (3") SCH 40 SMLS	635 (2'-1 1/16")	A106
E	1	PIPE	114 DIA (4") SCH 40 SMLS	404 (15 3/4")	A106
F	1	PIPE	168 DIA (6") SCH 40 SMLS	171 (6 11/16")	A106
G	1	FULL CPLG	33 DIA. (1") 3000# NPT	-	A105
H	2	FULL CPLG	42 DIA. (1 1/4") 3000# NPT	-	A105
I	1	REPAD	COMMON REPAD: 6.4x265x570(1/4"x10 3/8"x7 7/16")	D1	A36

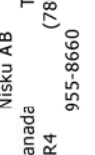
DESIGN NOTES

1. TANK TO BE BUILT AND TESTED TO **API-12F** SPECS. MODIFIED (NON LABELED).
2. DESIGN PRESSURE **16.0 oz./IN²** (6.9 KPA)/DESIGN VACUUM **-0.5 OZ./IN²** (-0.25 KPA)
3. DESIGN TEMPERATURE: **80°C**
4. MDMT: **-29°C**
5. CORROSION ALLOWANCE: **NIL**
6. REFER TO ORIENTATION DRAWING FOR PROPER LOCATION OF ALL NOZZLES, COUPLINGS, ETC.
7. ALL DIMENSIONS ARE IN mm (INCHES).
8. ALL ELEVATIONS TAKEN FROM TOP OF TANK FLOOR.
9. STUDS/NUTS/GASKETS - ANSI FLANGES : **B7 / 2H / 316SS FLEX**
10. FASTENERS/GASKETS - MANWAYS & TH: **GRADE 5 / NEOPRENE**
11. ROOF SHELL JOINT NOT BACKWELDED
12. ALL CONNECTIONS SHIPPED WITH PLUGS AND PVC PROTECTORS UNLESS NOTED OTHERWISE
13. RECORD ALL MATERIAL HEAT NUMBERS AND MTR'S. **(1 CD+ HARD COPY OF DATA BOOK)**
14. RECTANGULAR MANWAY TO BE RAISED 200mm ABOVE THE FLOOR.

[illegible]

ARGO

SALES LTD



655-30 Avenue
Nisku AB T9E
Canada
OR4 (780)-
955-8660

API 12F MODIFIED

SERIAL NUMBER:	13663-65	CUSTOMER TAG #	
YEAR BUILT:	2015	DESIGN PRESSURE	6.9 kPa(16.0oz/in2)
NOMINAL DIAMETER:	2896mm (9'-6")	NOMINAL HEIGHT	2438mm (8'-0")
NOMINAL CAPACITY:	16cu.M (100BBL)	SHIPPING WEIGHT	2671kg (5880 lbs)

THICKNESS

ROOF	4.8mm (3/16")
FLOOR	6.4mm (1/4")
SHELL	4.8mm (3/16")

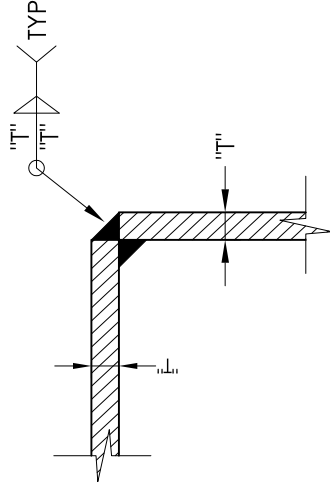
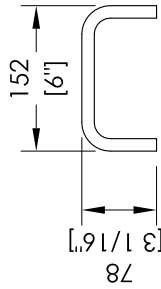
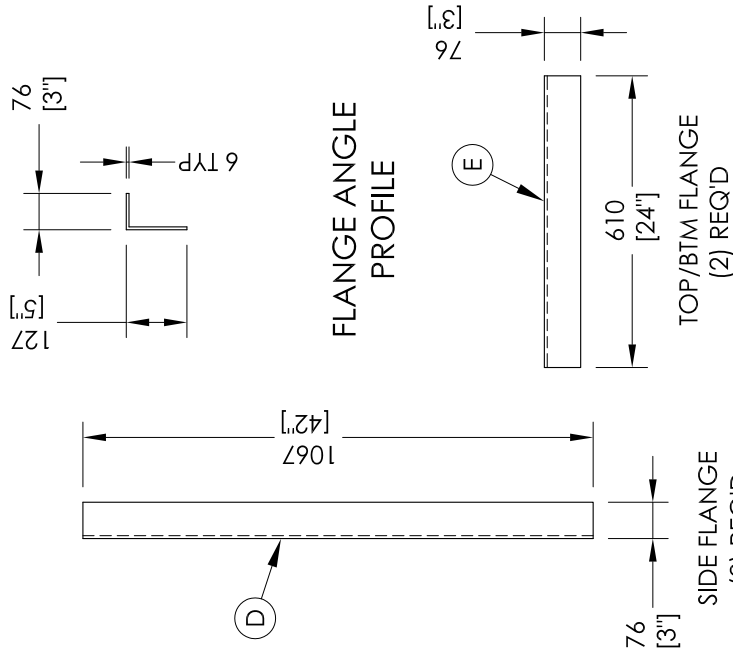
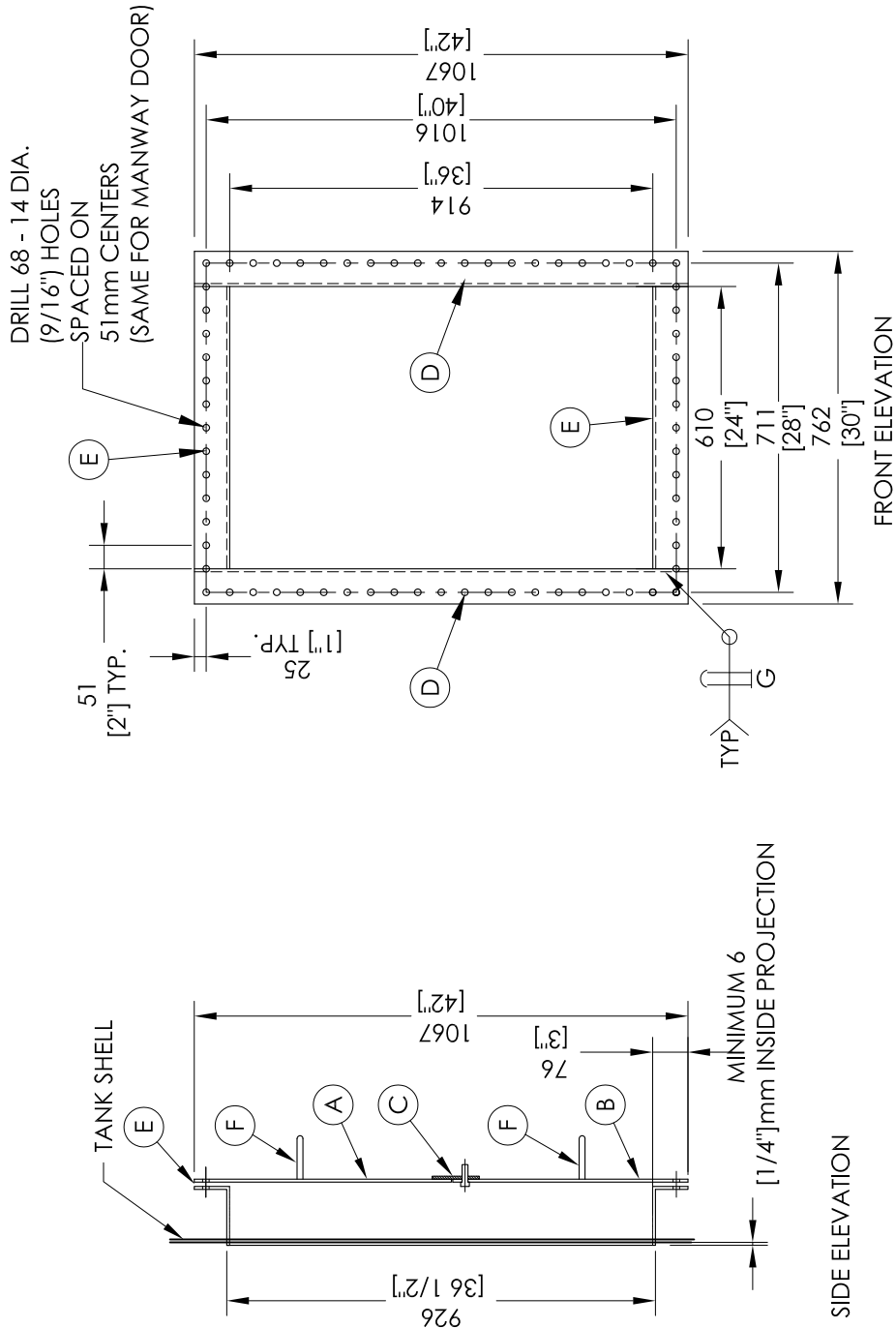
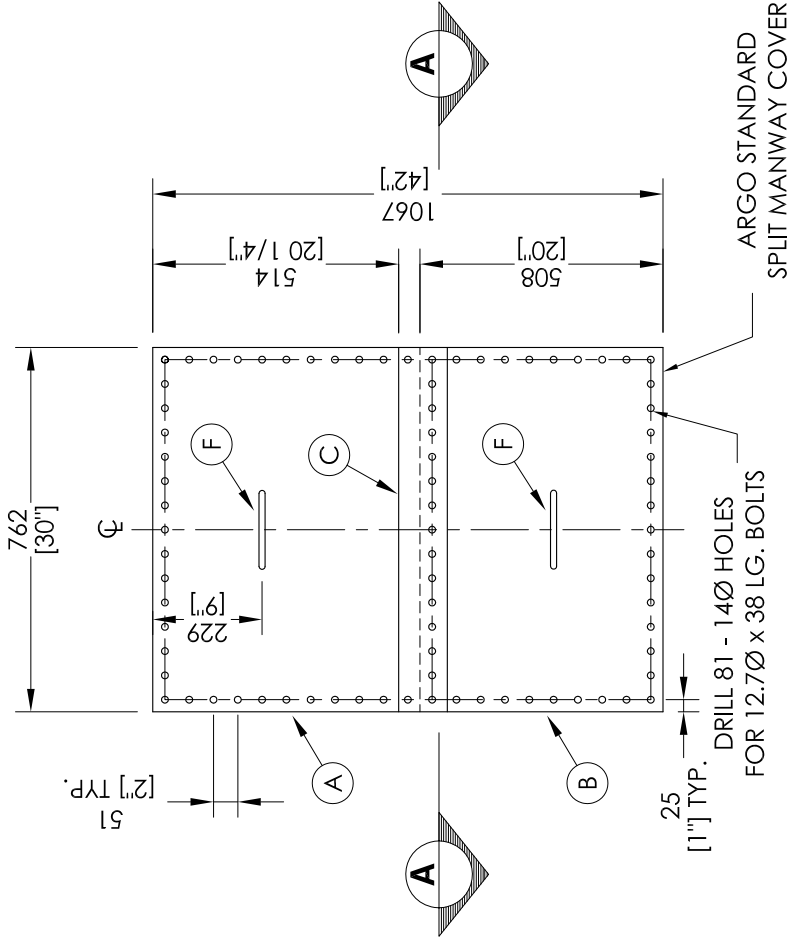
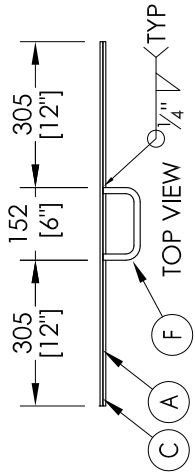
MATERIAL

A36	
A36	
A36	

INTERNAL FINISH

None

CUSTOMER:		HUSKY									
PO #:		8400899432									
		LSD. XX-XX-XXX-XX WXM									
TITLE:		ONE (1) 16 CU.M. (100BBL) 2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH 100 BBL BASE SKIDDED STORAGE TANK BILL OF MATERIAL									
 ARGO SALES LTD	DWG BY: CP	QUOTE #:	TQ14-116B	SCALE:	NTS	CUSTOMER TAG #:	T-100				
	PROJ. MANAGER: RR	SHEET:	SERIAL #:	DWG TAG:	SHEET:	REV:					
	ARGO DRAWING NO.:	B	13663-65	BOM	2	of	7				



FOR REFERENCE ONLY

ARGO STD. MANWAY FLANGE DETAIL

ITEM - M1

BILL OF MATERIALS				
MARK	QTY	PART NAME	DESCRIPTION	MATERIAL
A	1	TOP MW COVER	PLATE, 6.4x 7.62x 559 LG (1/4"x 30"x 22" LG)	A36
B	1	BOTTOM MW COVER	PLATE, 6.4x 7.62x 508 LG (1/4"x 30"x 20" LG)	A36
C	1	LAP COVER	PLATE, 6.4x 7.62x 102 LG (1/4"x 30"x 4" LG)	A36
D	2	SIDE FLANGE	ANGLE, L127x7.6x6.4 (L5x3x 1/4")	A36
E	2	TOP/BTM FLANGE	ANGLE, L127x 7.6x 6.4 (L5x 3x 1/4")	A36
F	1	MW HANDLE	ROUND BAR, 1/2" (12.7)	A36
G	1	MW GASKET	STRIP GASKET, 1/8"x 2" (3mm x 51)	NEOPRENE
H	8	MW GASKET	RADIUS GASKET, 1/8" (3mm)	NEOPRENE
I	81	BOLTS/NUTS	BOLTS w/ NUTS, 1/2" x 1 1/2" LG	GRADE 5 PLATED

WELDING NOTES:

- 1) ALL SHARP EDGES AND BURRS TO BE REMOVED.
- 2) ALL WELDING TO BE DONE TO LATEST REVISION OF CWB WPDS.
- 3) CWB SHOP SUPERVISOR TO SPECIFY WELDING PROCESS

DESIGN NOTES:

1. ALL DIMENSIONS ARE IN mm/INCH.
2. REFER TO ORIENTATION DRAWING FOR PROPER LOCATION.
3. FOR INSTALLING INTO TANK, ALL SQUARE MANWAYS WILL BE COMPLETED WITH THREE (3) PASS FILLET ON EXTERNAL CORNERS. THE SQUARE STYLE MANWAYS WILL BE WELDED INTO THE TANKS WITH TWO (2) EXTRA WRAP PASSES THAT WILL BE AT LEAST FOUR (4") INCHES IN LENGTH WITH THE CENTER OF THE WELD AT THE CORNER OF THE MANWAY. THEY WILL BE THE SAME SIZE AS THE INITIAL PASS AND ON THE TOP OF THE INITIAL FILLET PASS.
4. HOLES ARE TO BE DRILLED THROUGH COVER AND FLANGE AT THE SAME TIME. TO ENSURE HOLES MATCH UP PERFECTLY.

BOLTING:

1. ALL BOLTING TO BE 16mm ($\frac{5}{8}$ ") GRADE 5 OR EQUIVALENT.

REVISIONS						
1	AS BUILT	03.24.15	CP			
0	ISSUED FOR FABRICATION	12.02.14	CP			
B	ISSUED FOR APPROVAL	11.12.14	MG			
A	ISSUED FOR REVIEW/MARKUP	10.23.14	CP	CGC		
REV.	DESCRIPTION	DATE	BY	CHK	APP	

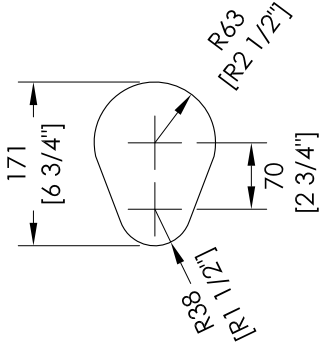
HUSKY

PO #: 8400899432

LSD: XX-XX-XX-XX WXM

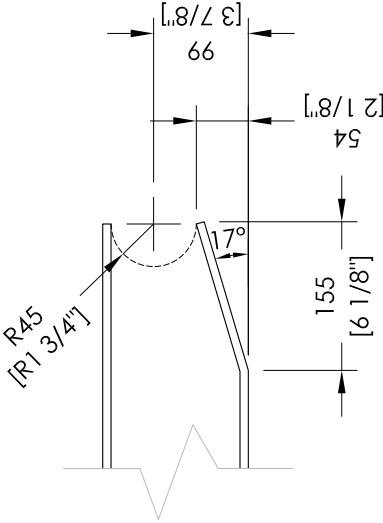
ONE (1) 16 CU.M. (100BBL)
2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH
100 BBL BASE SKIDDED STORAGE TANK
ARGO STANDARD MANWAY DETAIL

	DWG BY: CP	QUOTE #: TQ14-116B	SCALE: -	CUSTOMER TAG #: T-100	
	PROJ. MANAGER: RR		SHEET:	SERIAL #:	REV.
	ARGO DRAWING NO.: B		13663-65	DWG TAG: MW	4 of 7



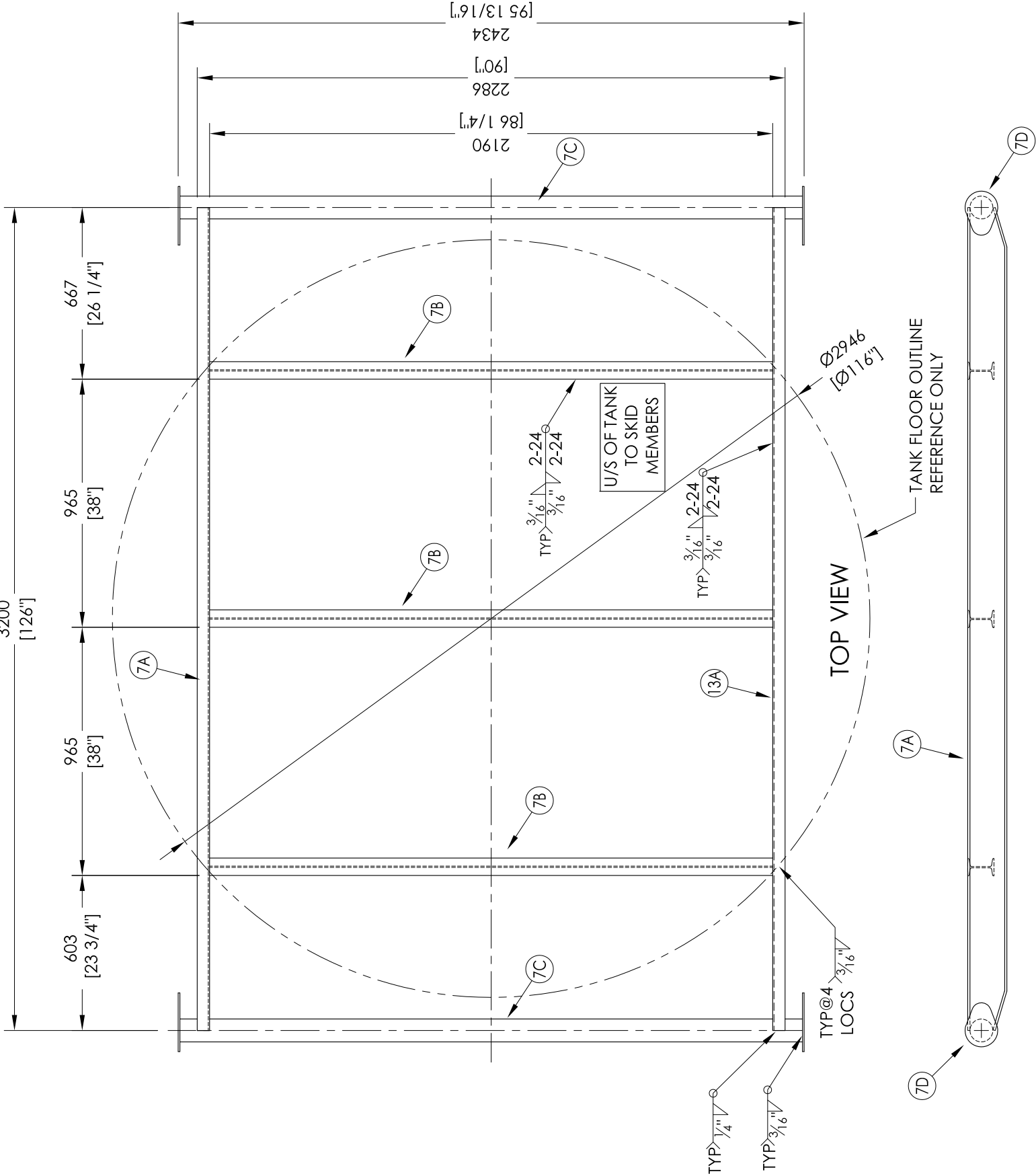
3" TEAR DROP DETAIL

SCALE: 1 TO 8



PULL BAR DETAIL

SCALE: 1:8



ELEVATION VIEW

BILL OF MATERIALS				
MARK	QTY	PART NAME	DESCRIPTION	MATERIAL
7A	2	MAIN MEMBERS	CHANNEL, C150x12 (C6x8.2)	A36
7B	3	CROSS MEMBERS	WIDE FLANGE, S100x11 (S4x7.7)	A36
7C	2	PULL BAR	PIPE, ERW, 89 DIA (3") SCH.40	A53B
7D	4	3" TEARDROP	PLATE, 6.4x 228x 165 (1/4"x 9"x 8 3/8")	A36

DESIGN/WELDING NOTES:	
1) ALL DIMENSIONS ARE IN mm/INCHES. 2) APPROXIMATE WEIGHT: 338 LBS (153 KG) 3) WIDE FLANGES ARE TO BE COPE FITTED WHERE APPLICABLE. 3) ALL WELDS ON THE TOP OF SKID TO BE GROUND SMOOTH. 5) ALL WELDING TO BE DONE TO LATEST REVISION OF CWB WPDs. 6) CWB SHOP SUPERVISOR TO SPECIFY WELDING PROCESS 7) SEE ARGO INTERNAL DRAWING ASL-SKID-FAB SKID WELDING FOR FURTHER WELDING AND COPING DETAILS.	

SKID FINISH:	
BLAST: SSPC-SP7 BRUSH BLAST PRIMER: 1.5 - 2.0 MILS DFT OF CLOVERDALE T-101 PRIMER PAINT: 1.5 - 2.0 MILS DFT OF CLOVERDALE (ARGO GREY CC425 ENAMEL)	

REVISIONS				
1	AS BUILT	03.24.15	CP	
0	ISSUED FOR FABRICATION	12.02.14	CP	
B	ISSUED FOR APPROVAL	11.12.14	MG	
A	ISSUED FOR REVIEW/MARKUP	10.23.14	CP	CGC
REV.	DESCRIPTION	DATE	BY	CHK
APP				

CUSTOMER:		HUSKY	
PO #:		8400899432	
TITLE:		ONE (1) 16 CU.M. (100BBL) 2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH 100 BBL BASE SKIDDED STORAGE TANK SKID DETAIL DRAWING	
DWG BY: CP		QUOTE #:	TQ14-116B
PROJ. MANAGER: RR		SHEET:	SCALE: -
ARGO DRAWING NO.:		SERIAL #:	CUSTOMER TAG #: T-100
B		DWG TAG:	REV.
13663-65		SHEET:	6 of 7
SK		REV.	
6		LSD. XX-XX-XXX-XX WXM	

FLOOR JOINTS ARGO WPS: ASL-1-AW OR ASL-13	ROOF JOINT ARGO WPS: ASL-1-AW OR ASL-13	ROOF TO SHELL JOINT ARGO WPS: ASL-1-AW OR ASL-13	SHELL JOINT - VERT. ARGO WPS:ASL-1-AW OR ASL-13
NOZZLE ON ROOF ARGO WPS: ASL-13	PIPE TO NOZZLE (RFSO) ARGO WPS:ASL-1 - AW PIPE SET BACK= "T" MIN.	MANWAY TO TANK SHELL ARGO WPS: ASL-13	SHELL NOZZLE ARGO WPS:ASL-13

WELDING NOTES: 1) ALL SHARP EDGES AND BURRS TO BE REMOVED. 2) E7024 WELDING ROD HAS BEEN PROHIBITED. 3) E7018 ROD USED ON ALL FLAT SURFACE WELDING. E6010 & E 7018 ROD USED ON ALL REMAINING WELDS. 4) ALL STRUCTURAL CLIPS AND OTHERS ATTACHEMENTS TO THE INTERIOR AND EXTERIOR TANK SURFACES SHALL BE WELDED WITH A CONTINUOUS FILLET WELD ALL AROUND. 5) FILLET WELD SIZES ARE DETERMINE BY THE SMALLEST THICKNESS OF THE TWO ITEMS WELDED TOGETHER UNLESS OTHERWISE NOTED. 6) ALL ATTACHMENT WELDS TO BE 1/4" FILLET UNLESS OTHERWISE NOTED										REVISIONS									
1						03.24.15	CP												
0					ISSUED FOR FABRICATION	12.02.14	CP												
B					ISSUED FOR APPROVAL	11.12.14	MG												
A					ISSUED FOR REVIEW/MARKUP	10.23.14	CP	CGC											
REV.					DESCRIPTION	DATE	BY	CHK	APP										

CUSTOMER: HUSKY															
PO #: 8400899432		LSD. XX-XX-XXX-XX WXM													
TITLE: ONE (1) 16 CU.M. (100BBL) 2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH 100 BBL BASE SKIDDED STORAGE TANK WELD DETAILS															
 ARGO SALES LTD <table><tr><td>DWG BY: CP</td><td>QUOTE #: TQ14-1116B</td><td>SCALE: NTS</td><td>CUSTOMER TAG #: T-100</td></tr><tr><td>PROJ. MANAGER: RR</td><td>SHEET: SERIAL #:</td><td>DWG TAG:</td><td>SHEET:</td></tr><tr><td>ARGO DRAWING NO.: B</td><td>13663-65</td><td>WD</td><td>7 of 7</td></tr></table>				DWG BY: CP	QUOTE #: TQ14-1116B	SCALE: NTS	CUSTOMER TAG #: T-100	PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG:	SHEET:	ARGO DRAWING NO.: B	13663-65	WD	7 of 7
DWG BY: CP	QUOTE #: TQ14-1116B	SCALE: NTS	CUSTOMER TAG #: T-100												
PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG:	SHEET:												
ARGO DRAWING NO.: B	13663-65	WD	7 of 7												

