

**ARGO**  
**S A L E S L T D**

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## **HUSKY ENERGY**

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

Serial # 13664  
PO# 8400899432

Quality Control Data Manual  
2015



Serial #: 13664  
Tag # T-100

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**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:	13864	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

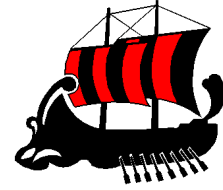
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# ARGO

S A L E S L T D



## **Quality Control**



Data Collected By: Ryan Rirao Entry Date: 24-Mar-15

Equipment Class: Bin, Gas Boot, Pond, Silo, Sump, Tank

P&ID #: Parent Equip #:

Equipment Description: 100BBL skidded tank Exist. Equip. ID: 13664 Tag No.: T-100

Unit Yard: ea Acquis Value \$: \$13,115.00 Acquis Date: 2015

Equipment Status: In-Service Fully Utilized, In Service Under-utilized, Idle, Scrap, Field Idle

Ownership Status: Leased, Rented, Owned

Manufacturer: Argo Sales Year Built: 2015

Equipment Condition: new Model No.: 100 BBL Serial No.: 13664

Construction: Skidded, Packaged, Housed, Packaged Portable, Packaged Stationary

Skid Weight: 153/338 Kg / Lbs Skid Size: W 96" x L 126" x H 6" m / ft

Common Characteristics

Fluid Description: Service: Sweet, Sour Volume: 16 m3

MAWP: 16 oz. kPag / psig / oz @ Max. Temp: 80 C °C / °F MDMT: -29C °C / °F

Diameter: 2896/ 114 mm / in Length/Height (S/S): 2.438/ 8 m / ft Depth: 2.438/ 8 m / ft

Shell Mat'l: A36 Shell Thickness: 4.8/ 3/16" mm / in Shell C.A.: 0 mm / in

Floor Mat'l: A36 Floor Thickness: 6.4/ 1/4" mm / in Floor C.A.: 0 mm / in

Roof Mat'l: A36 Roof Thickness: 4.8/ 3/16" mm / in Roof C.A.: 0 mm / in

Nozzle Mat'l: A105/A106 Nozzle Thickness: Sch. 40 mm / in Nozzle Rating: 150 Ansi

Insulated: Yes, No Insulation Type: None Insulation Thick.: NIL mm / in

# Manways: 1 # of Inspection Ports: Painted / Primed: Yes, No

Secondary Containment Type: Earthen Clay, Imperious Synthetic Material, Double Wall, Other

Internals:

Component Types: N/A Component Man.: N/A Component Model: N/A

Component Removable: Yes, No Component C.A.: N/A mm / in

Internal Coating: Yes, No Int. Coating / Cladding Type: NIL

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: N/A

Vacuum Breaker Model: N/A

Fire Tubes Exists: Yes, No Vacuum Breaker Service Date: N/A

# of Firetube: N/A Firetube S/N: N/A Firetube Rating: N/A Btu/hr

Desand Type: N/A Desand Connection: N/A mm / in Truck Connection: N/A mm / in

Enviro Vault: Yes, No Burner Manufacturer: N/A

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)

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. *Do not 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 - 3<sup>rd</sup> Party  
 R: Review - 3<sup>rd</sup> 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)

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		

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 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			

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**EXAMINATION & INSPECTION REPORT (TANKS)**

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 Size: \_\_\_\_\_ Drawing Number: \_\_\_\_\_ Quote#: \_\_\_\_\_  
 P.O. #: \_\_\_\_\_ LSD: \_\_\_\_\_

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 <i>H</i>	Ship Loose:	Drawing			

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

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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)**

Serial #: 13664 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		<u>12.02.2014</u> <i>[Signature]</i>
2. Drawings Approved		IFC Drawings	Client		<u>12.02.2014</u> <i>[Signature]</i>
3. Welding Procedures Approved		WPS/PQRS/WPDS	Client / CWB ASME SEC IX API 650 Sect 9		<u>12.02.2014</u> <i>[Signature]</i>
4. Welders Qualified			ASME SEC IX W47.1 API 650 Sect 9		<u>12.02.2014</u> <i>[Signature]</i>
5. Materials Checked	II / VC	Material Test Reports	Drawing API 650 Sect 4		<u>01.20.2015</u> <i>[Signature]</i>
6. Int./Ext. Dimensional (Layout & Fit-up)	DC / VI		Drawing		<u>01.20.2015</u> <i>[Signature]</i>
7. Nozzle Material, Rating, Fit-up & Orientation	VI / DC		Drawing		<u>01.20.2015</u> <i>[Signature]</i>
8. Ladder/Skid Fit-up & Welding	VI / DC	Ladder trial fit and all welding of clips completed & checked prior to tank air test.	Drawing		<u>01.20.2015</u> <i>[Signature]</i>

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**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)

Serial #: 13664 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>01-20-2015</i> <i>ML</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	N/A	<i>01-21-2015</i> <i>ML</i>
15. Sand Blast Inspection (Int.)	VI / BR		Drawing SSPC-VIS 1	N/A	N/A
16. Sand Blast Inspection (Ext.)	VI / BR	<b>SSPC-SP7 Brush Blast:</b> Shell, Roof, Ladder & Skid.	Drawing SSPC-VIS 1	N/A	<i>01-22-2015</i> <i>ML</i>

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**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)

Serial #: 13664 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: TQ14-1168 Quote: \_\_\_\_\_

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	<b>Shell &amp; Roof:</b> Argo Grey.	Drawing		<i>BM</i> 01-24-2015 <i>ll</i>
20. External Finish (Accessories)	VI / FI / CR	<b>Ladder &amp; Skid:</b> Argo Grey.	Drawing		<i>BM</i> 01-24-2015 <i>ll</i>
21. Final Inspection for Shipping	VI / SI / FI / CI	<b>Tank Name Plate:</b> Installed & Verified stamping. <b>Cleaning:</b> Tank cleaned out, all openings blanked off and tank is ready for shipping.	Drawing		<i>TA</i> 02-02-2015 <i>ll</i>
22. Ship Loose	VI / SI / FI	(1)6" Gooseneck c/w Gasket & Bolt-ups.	Drawing		02-02-2015 <i>ll</i> <i>(WINE INITIALES)</i> 02-02-2015 <i>ll</i>
23. NCRs		All NCRs to be finalized and closed.			

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

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**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 21/15

Job #: 13664 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.

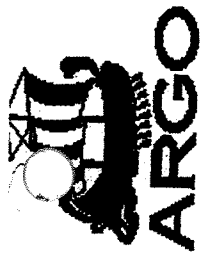
U-Type Manometer used to monitor the air test.

\_\_\_\_\_  
(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)



**ARGO 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 #: 13664	Tag # T-100	Serial #: 13663(64)-65
Fabricator: <b>ARGO SALES Ltd.</b>	Customer: Husky	Hold Point: Yes <input checked="" type="radio"/> No <input type="radio"/>
Ambient Temp(C°):	Rel. Humidity (%):	Dew Point (C°):
(Blast Equipment Air Supply):	Internal Blast SSPC#:	Internal Replica Tape:
Source: <b>Kaesar</b>	Internal Blasting Profile:	External Replica Tape:
Size: <b>(2) 1500 CFM</b>	External Blast SSPC#:	non-applicable if SP7
Nozzle Size: 6 7 8 <input checked="" type="radio"/> other _____	External Blasting Profile:	Place Tape Here
Nozzle Pressure (PSI): 90 100 105 <b>(110)</b> 120 other _____	Completion Time: 11:00 AM	Air Dryer: Yes <input checked="" type="radio"/> No <input type="radio"/>
Product Description & Accessories: 3 X 100 BBL w/ skid vents	Line Pressure Gauge <input checked="" type="checkbox"/>	Blastar(s): (please print) Justin Tremblay Kyle Mackewsky
Measurement Equipment: Hypodermic Needle Gauge <input type="checkbox"/>	Rel. Humidity (%):	Dew Point (C°):
Completion Date: Jan 22/15	Final Acceptance: Guy Tremblay	Signature: <i>[Signature]</i>
Ambient Temp(C°)		
Abrasive Used: Si 17		

*[Handwritten initials]*



## Paint & Coating Report

Date:	JAN 23/15	Serial #:	13664	Tag #:	T-100
Customer:	HUSKY				
Description:	100 BBC				
Surface Preparation:	Internal:	External:	SP 7		

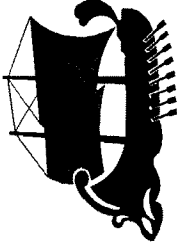
Application Equipment					
Application Method:	AIRLESS	Pump Size:	600-1	Tip Size:	5/16
				Inline Heater Temp:	/

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

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

# ARGO

S A L E S L T D



## Paint & Coating Report

External Coating				Serial #:
1 <sup>st</sup> Coat:	CLOVERDALE 7401	Batch # Base:	C14J5892	13664
2 <sup>nd</sup> Coat:	CLOVERDALE 7401	Batch # Base:	S14G9512	Color: GRAY
3 <sup>rd</sup> Coat:		Batch # Base:		Color: ARGO GRAY
4 <sup>th</sup> Coat:		Batch # Base:		Color:

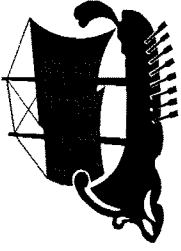
External Coating Conditions										
1 <sup>st</sup> Coat:	Ambient Temp:	70 °F	Substrate Temp:	70 °F	R.H.	30 %	D.P.	36 °F	Date:	JAN 23 / 15
2 <sup>nd</sup> Coat:	Ambient Temp:	70 °F	Substrate Temp:	70 °F	R.H.	30 %	D.P.	36 °F	Date:	JAN 23 / 15
3 <sup>rd</sup> Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%	D.P.	°F	Date:	
4 <sup>th</sup> Coat:	Ambient Temp:	°F	Substrate Temp:	°F	R.H.	%	D.P.	°F	Date:	

Internal Inspection & Testing					
1 <sup>st</sup> Coat:	Min:	Max:	Avg:	Nozzles	Comments
2 <sup>nd</sup> Coat:	Min:	Max:	Avg:	Nozzles	Comments
3 <sup>rd</sup> Coat:	Min:	Max:	Avg:	Nozzles	Comments
4 <sup>th</sup> Coat:	Min:	Max:	Avg:	Nozzles	Comments

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

# ARGO

## S A L E S L T D



### Paint & Coating Report

Internal Repair Coating				Serial #:
1 <sup>st</sup> Repair:	Batch# Base:	Batch # Catalyst:	Color:	13664
2 <sup>nd</sup> Repair:	Batch# Base:	Batch # Catalyst:	Color:	
3 <sup>rd</sup> Repair:	Batch# Base:	Batch # Catalyst:	Color:	

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

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

Final Acceptance	
Visual By:	Date:

Bob Massuk  
(Please Print)

*[Signature]*  
(Signature)

JAN 24 / 15

*[Signature]*





ARGO SALES LTD

### Final Fit Out Traveler

Customer:	HUSKY				
Job #:	13664	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:	Initials
Manway bolted on complete <input checked="" type="checkbox"/> 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:	Initials
Accessories accounted for & coated.	

Platforms [N/A]	Safety Gates [N/A]	Grating Installed [N/A]
Ladders	Fall Arrest [N/A]	Brackets [N/A]

<b>Final Dressout Complete</b>	<b>Date:</b> Feb 02 / 2015
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Print Name: TREVOR ANDERSON	(Signature)
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**ARGO**  
**S A L E S L T D**

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# **WELDERS' QUALIFICATIONS**



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	
	SMAW	SMAW	SMAW	SMAW
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 <input type="checkbox"/> Pipe <input checked="" type="checkbox"/> 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Process/Electrode 2: 3 layers minimum Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
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

**Results**

Visual 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-191**

Radiographic 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**

Laboratory Test no.: **N/A**

Mechanical Tests Conducted by: **GRB Enterprises Ltd.**

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

[Signature]  
Welder Signature

BRUCE CORNIER

Welding Examiner (Print/Type)

18683  
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 Examiner File No. #E00 252

FEB 19, 2015

P.Q. Expiry Date

[Signature]  
Welding Examiner Signature

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-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 )**

Welding Process(es) Used: \_\_\_\_\_  
 Type of Welding (manual, semi-automatic) Used: \_\_\_\_\_  
 Base Metal P Number to P Number: \_\_\_\_\_  
 Plate  Pipe  enter diameter: \_\_\_\_\_  
 Backing (metal, weld metal, double weld etc.): \_\_\_\_\_  
 Filler Metal or Electrode Specification(s) SFA#: \_\_\_\_\_  
 Filler Metal or Electrode Classification(s): \_\_\_\_\_  
 Filler Metal or Electrode F - number(s): \_\_\_\_\_  
 Filler Type (solid metal, or flux cored/powder) GTAW or PAW: \_\_\_\_\_  
 Consumable Insert for GTAW or PAW: \_\_\_\_\_  
 Deposit Thickness for each process, electrode type, etc. (in.): \_\_\_\_\_  
 Process/Electrode 1: 3 layers minimum Yes  No   
 Welding position (2G, 5G, 6G, 3F, etc.): \_\_\_\_\_  
 Progression (Uphill or Downhill): \_\_\_\_\_  
 Inert Gas backing for GTAW, PAW, GMAW: \_\_\_\_\_  
 Transfer Mode (spray/globular or pulse to short circuit): \_\_\_\_\_  
 GTAW Current Type/ Polarity (AC, DCEP, DCEN): \_\_\_\_\_

Actual Values		Range Qualified	
GMAW	SMAW	GMAW	SMAW
Semi-Automatic	Manual	Semi-Automatic	Manual
P1	P1	P1	P1
NPS 2	NPS 2	1" OD Min.	1" OD Min.
None / Weld	Weld Metal	Without / With	With
5.18	5.1		
ER70S-6	E7018-1		
F6	F4	F6	F4
Solid	N/A	Solid	N/A
N/A	N/A	N/A	N/A
0.125"	0.311"	0.1375"	0.622"
Process/Electrode 2: 3 layers minimum Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
SP	1G	Flat/SP	Flat
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
Short Circuit	N/A	Short Circuit	N/A
DCEP	DCEP	DCEP	DCEP

**Results**

Visual 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-191**

Radiographic 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" 00

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



Alberta

LABOUR  
General Safety Services Division  
Boilers and Pressure Vessels Branch

Grade "B" Pressure Welder's  
Certificate of Competency

This is to Certify that: Robert C. Peters  
having complied with provisions of the Boilers and Pressure Vessels Act is  
hereby granted a Grade "B" Pressure Welder's Certificate of Competency, and  
is authorized to engage in pressure welding in accordance with the prescribed  
Regulations.



Dated at Edmonton, this Fifth  
day of October 19 90

W- 13528  
ABB File No.

*[Signature]*  
Chief Inspector

APPRENTICESHIP AND  
TRADE CERTIFICATION

Alberta  
CAREER DEVELOPMENT  
AND EMPLOYMENT

ROBERT C. PETERS

is certified to engage in the trade of

WELDER

AS A JOURNEYMAN

EFFECTIVE: MAY 28, 1987

FILE: 12-A012644

10289P

*[Signature]*  
EXECUTIVE DIRECTOR

Performance Qualification GRB Card No.

Process(es) SMAY Materials (P.No.) #1-772 P.051  
Filler Metal (F.No) F3 F4 Min. Outside Pipe Diameter 1" OD  
Max Deposited Weld Metal 0.188" 0.500" Position(s) Qualified ALL  
Backing in back with wire Backing Gas N/A  
Progression uphill uphill #E00 022  
PD. Expiry Date JAN-20-2016 [Signature] Welding Examiner Signature

GRB Enterprises Ltd  
Edmonton Alberta

AOQP 7107(C)

WELDER PERFORMANCE QUALIFICATION CARD

Name Robert S. PETERS W- 13528

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.

Date of Test JAN-20-2014 Welder Signature [Signature]  
Welding Examiner (Print Type) G. BELHUMIER GRB Card No. 50113

9.3A / AB-76 A Modified **WELDER QUALIFICATION RECORD (WQR)**

Welder's Name: **Robert C. Peters**

ABSA File No.: **W-13528**

Stamp No.: "R"

Identification of WPS followed by welder during welding of test coupon: **GRB-01 (rev 5)**

W.P. Reg. # **WP-1361.2**

Base material(s) welded: **SA 106 GR B**

Thickness: **0.344"**

Test Coupon  Prod. Weld

**Testing Variables and Qualification Limits**

**Welding Variables ( QW-350 )**

Welding Process(es) Used: SMAW  
 Type of Welding (manual, semi-automatic) Used: Manual  
 Base Metal P Number to P Number: P1  
 Plate  Pipe  enter diameter: NPS 2  
 Backing (metal, weld metal, double weld etc.): None / Weld  
 Filler Metal or Electrode Specification(s) SFA#: 5.1  
 Filler Metal or Electrode Classification(s): E6010  
 Filler Metal or Electrode F - number(s): F3  
 Filler Type (solid metal, or flux cored/powder) GTAW or PAW: N/A  
 Consumable Insert for GTAW or PAW: N/A  
 Deposit Thickness for each process, electrode type, etc. (in.): 0.094"  
 Process/Electrode 1: 3 layers minimum Yes  No   
 Welding position (2G, 5G, 6G, 3F, etc.): 6G  
 Progression (Uphill or Downhill): Uphill  
 Inert Gas backing for GTAW, PAW, GMAW: N/A  
 Transfer Mode (spray/globular or pulse to short circuit): N/A  
 GTAW Current Type/ Polarity (AC, DCEP, DCEN): DCEP

Actual Values		Range Qualified	
SMAW	SMAW	SMAW	SMAW
Manual	Manual	Manual	Manual
P1	P1	P1through P15F	P1through P15F
NPS 2	NPS 2	1" OD Min.	1" OD Min.
None / Weld	Weld Metal	Without / With	With
5.1	5.1		
E6010	E7018-1		
F3	F4	F3	F4
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
0.094"	0.250"	0.188"	0.500"
Process/Electrode 1: 3 layers minimum Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Process/Electrode 2: 3 layers minimum Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
6G	6G	All	All
Uphill	Uphill	Uphill	Uphill
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
DCEP	DCEP	DCEP	DCEP

**Results**

Visual 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-191**

Radiographic 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.Belhumeur**

Company: **GRB Enterprises Ltd.**

Welding Test Conducted by: **Byron Oulton**

Mechanical Tests Conducted by: **GRB Enterprises Ltd.**

Laboratory Test no.: **N/A**

Welding Supervised by: **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 Code.**

Accredited Organization: **GRB ENTERPRISES LTD.** AOQP No: 7107(C) Expiry Date: **May 21 2015**

Certified by: **Gerald R. Belhumeur**

W.E. File: **E-00022**

Date: **January 20, 2014**

PQ Card No. (When Issued): **20113**

Performance Test Reference No.: **14-01-20-2**

Test Coupon ID No.: **Welder Name**

Date Coupon is Retained To: **N/A**



the pressure equipment safety authority

# WELDER QUALIFICATION RECORD (WQR)

AB-76A 2010-09

Welder's Name: Rob Peters ABSA File No.: N/A Stamp No.: RP  
 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:	<b>SMAW</b>	<b>SMAW</b>
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL
Base Metal P Number: P To P Number:	P1	P1-P1
<input checked="" type="checkbox"/> Plate <input type="checkbox"/> 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 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Process/Electrode 2: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

## Welder Performance Qualification (WPQ) (API TANKS)

Welder's name: ROB PETERS Stamp no: R  
 Welding Process(es) used: SMAW Type: MANUAL  
 Identification of WPS followed by welder during welding of test coupon: ASL-11 / ASL-2  
 Base Material(s) welded: \_\_\_\_\_ Thickness: \_\_\_\_\_

Manual or Semiautomatic Variables for Each Process	Actual Values	Range Qualified
Backing (metal, weld metal, welded from both sides, etc.)	<u>N/A</u>	_____
A.S.M.E. P-no. <u>1</u> to A.S.M.E. P-no. <u>1</u>	<u>P1-P1</u>	_____
<input type="checkbox"/> Plate <input type="checkbox"/> Pipe (enter diameter, if pipe)	<u>PLATE</u>	_____
Filler Metal Specification (SFA): _____ classification	<u>5.1</u>	_____
Filler Metal F-no.	<u>F3/F1</u>	_____
Consumable insert for GTAW or PAW	<u>N/A</u>	_____
Weld deposit thickness for each process	<u>.093"- .282"</u>	_____
Welding Position (1G, 5G, etc.)	<u>FLAT</u>	_____
Progression (uphill / downhill)	<u>N/A</u>	_____
Backing Gas for GTAW, PAW, or GMAW gas for OFW	<u>N/A</u>	_____
GMAW transfer mode	<u>N/A</u>	_____
GTAW welding current type / polarity	<u>N/A</u>	_____

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

### Guided Bend Test Results

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


Visual examination results: SATISFACTORY  
 Radiographic test results: PASSED  
 (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: CANADA INSPECTION 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.

Date: JNUE 18, 2001 By: *James Call* Organization: Argo Sales Ltd.



the pressure equipment safety authority

# WELDER QUALIFICATION RECORD (WQR)

AB-76A 06/02

Welder's Name: Rob Peters ABSA File No.: W13528 Stamp No.: R  
 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	
	SMAW	SMAW	SMAW	SMAW
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	
<input checked="" type="checkbox"/> Plate <input type="checkbox"/> 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 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Process/Electrode 2: SMAW 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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



Alberta

LABOUR  
General Safety Services Division  
Boilers and Pressure Vessels Branch

Grade B Pressure Welder's  
Certificate of Competency

This is to Certify that: Robert C. Peters  
having complied with provisions of the Boilers and Pressure Vessels Act is  
hereby granted a Grade "B" Pressure Welder's Certificate of Competency, and  
is authorized to engage in pressure welding in accordance with the prescribed  
Regulations.



Dated at Edmonton, this Fifth  
day of October, 1990.

W- 13528  
ABB File No.

*[Signature]*  
Chief Inspector

APPRENTICESHIP AND  
TRADE CERTIFICATION

Alberta  
CAREER DEVELOPMENT  
AND EMPLOYMENT

ROBERT C. PETERS

is certified to engage in the trade of

WELDER

AS A JOURNEYMAN

EFFECTIVE: MAY 28, 1987

FILE: 12-A012644

10289P

*[Signature]*  
EXECUTIVE DIRECTOR



Form No. CB-43 (90/07)

Nº 7504







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)

D Chisholm  
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.

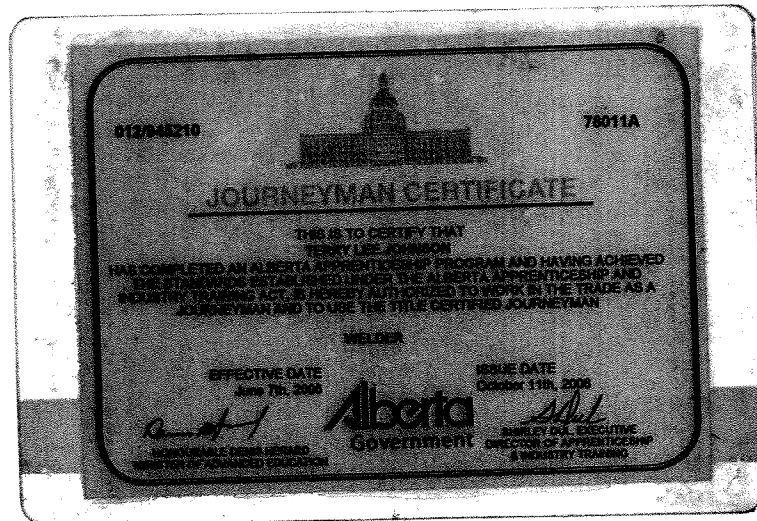
June 2, 2012  
Date of Issue

60184263  
Instructor I.D.#

June 2, 2015  
Expiry Date

J. Macdonald  
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

Welding Process(es) Used:	Actual Values		Range Qualified	
	SMAW	SMAW	SMAW	SMAW
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL	MANUAL	MANUAL
Base Metal P Number: P To P Number:	P1		P1-P1	
<input checked="" type="checkbox"/> Plate <input type="checkbox"/> 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 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Process/Electrode 2: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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:	Actual Values		Range Qualified	
	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	
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> 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 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Process/Electrode 2: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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



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-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:	<b>SMAW</b>	<b>SMAW</b>
Type of Welding (i.e., Manual, Semi-Automatic) Used:	MANUAL	MANUAL
Base Metal P Number: P To P Number:	P1	P1-P8
<input checked="" type="checkbox"/> Plate <input type="checkbox"/> 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 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Process/Electrode 2: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 Variables (QW-350)	Actual Values		Range Qualified	
	GMAW-rmd	GMAW-MC	GMAW-RMD	GMAW-MC
Welding Process(es) Used:	Semi-Auto	Semi-Auto	Semi-Auto	Semi-Auto
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	
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> 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 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Process/Electrode 2: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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**

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**MATERIAL  
SPECIFICATION &  
TEST REPORTS**







PO# 77627

918582 (100RBLLFL)



New Zealand Steel Limited  
 A BlueScope Steel Company  
 131 Mission Bush Road, Glenbrook, South Auckland  
 Postal: P.O. Box 92121, Auckland 1142, New Zealand  
 Telephone: (09) 375 6111 Auckland  
 Fax: (09) 375 6659



International Laboratory Accreditation Cooperation  
 Mutual Recognition Agreement

TEST CERTIFICATE

CUSTOMER	Wilkinson Steel & Metals - Vancouver	SPECIFICATION	ASTMAS36(2012)	CERTIFICATE No	TC292247
CUSTOMER ORN	107704	USER REF	P310795M03V	DATE	27 December 2013
MILL ORN	100529	PRODUCT	HOT ROLLED COIL		
		DIMENSIONS	0.238" x 60" x C68		

PACK NUMBER	HEAT No	CHEMICAL COMPOSITION PERCENT ( TEST METHOD - ASTM E415 & JIS G1253 )											MECHANICAL TEST ( TEST METHOD - ASTM A370 )				LENGTH (feet)						
		C	Si	Mn	P	S	Cr	Ni	Mo	V	Nb	Al	B	N2	CE(A)	BEND		YIELD (B) psi	T.S. psi	%ELONG G.L. = F	HARDNESS		
HH-E28832-00	918434	18	TR	64	12	14	12	17	25	TR	11	TR	1	45	TR	50	28	NA	51300	69200	25	NA	643
HH-E29833-00	918439	18	TR	62	12	15	13	17	27	1	12	TR	1	34	TR	50	29	NA	51500	70100	24	NA	679
HH-E28833-00	918439	18	TR	62	12	15	13	17	27	1	12	TR	1	34	TR	50	29	NA	51300	69500	22	NA	610
HH-E28835-00	918579	17	TR	60	11	13	13	17	31	TR	12	TR	1	39	TR	40	27	NA	51600	68500	26	NA	705
HH-E28834-00	918579	17	TR	60	11	13	13	17	31	TR	12	TR	1	39	TR	40	27	NA	51600	68500	26	NA	702
HH-E28839-00	918581	17	TR	59	15	15	13	16	32	1	14	TR	1	36	TR	40	27	NA	47900	68900	24	NA	597
HH-E28841-00	918582	18	TR	59	12	13	12	16	31	TR	11	TR	1	32	TR	40	28	NA	45100	64400	23	NA	600
HH-E28840-00	918582	18	TR	59	12	13	12	16	31	TR	11	TR	1	32	TR	40	28	NA	45100	64400	23	NA	600
HH-E28838-00	918582	18	TR	59	12	13	12	16	31	TR	11	TR	1	32	TR	40	28	NA	45100	64400	23	NA	604
HH-E28837-00	918582	18	TR	59	12	13	12	16	31	TR	11	TR	1	32	TR	40	28	NA	45100	64400	23	NA	597

\* 918582

CHEM COMP % SI (TR) < 0.01% Mn (TR) < 0.001%	YIELD (A)=0.2% PROOF STRESS (B)=LOWER YIELD STRESS	GAUGE LENGTH (G.L.) (A)=200mm (B)=50mm	IMPACT TEST (A)=10mm x 10mm (B)=7.5mm x 10mm	CARBON EQUIVALENT VALUE (CE) (A)=C-Mn/8 (B)=C-Mn/8+(Cr+V+Mo)/5+(Cu+Ni)/15

- Steel produced through the basic oxygen steelmaking process by New Zealand Steel.
- Heat analyzed from bar.
- 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 JANZ Accreditation Number 101, KIP Mr David Sherif.
- New Zealand Steel, Mechanical Laboratory JANZ Accreditation Number 905, Approved Signatory Mr Schalk 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 RESPECTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE SPECIFICATION

*Andrew Mackay*  
 SENIOR METALLURGIST

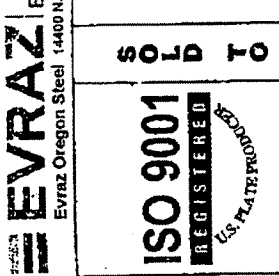
APPROVED

Page 1 of 1

B 430815 / 819 / 820

N01299(.188x96)

PO# 77849



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

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1351476	Jan 29, 2014	1
MILL ORDER NO.	DATE	
271707		
CUSTOMER ORDER NO.		
P31212EM001V		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1351476	01/29/2014	
CARRIER		
BURLINGTON NORTHERN		
CAR/TRUCK NO.		
BN686052		

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

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	^ N01297		545	725	21			
	1 PC 74290 LBS								+ (OUTER)
	SCHEDULE B: 7208.38.00.00	^ N01299		498	705	22			
	1 PC 74330 LBS			560	715	23			+ (OUTER) + (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	.044	.03	.002		.0037		
N01299	.13	.85	.014	.008	.21	.01	.05	.004	.041	.02	.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



All tests conducted in accordance with the requirements of the International Standards of Accreditation.



# TEST CERTIFICATE

920388(100862RF)

PO#77627

CUSTOMER	Wilkinson Steel & Metals - Vancouver	SPECIFICATION	ASTMA36(2012)	CERTIFICATE No	TC299909
CUSTOMER OIN	107463	USER REF	P40123EMM02V	DATE	01 April 2014
MILL OIN	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 - ASTMA370 )								
		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)
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		
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		
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		
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		
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		
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		

CHEM COMP %	Nb (TR)	Ti (TR)	B (TR)	YIELD (A)=0.2% PROOF STRESS (B)=LOWER YIELD STRESS	GAUGE LENGTH (G.L.) (A)=200mm (B)=50mm	IMPACT TEST (A)=10mm x 10mm (B)=7.5mm x 10mm	CARBON EQUIVALENT VALUE (CE) (A)=C+Mn/6 (B)=C+Mn/6+(Cr+V+Mo)/5+(Cu+Ni)/15
< 0.01%	< 0.001%	< 0.01%	< 0.001%				
< 0.001%	< 0.0001%	< 0.001%	< 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 Schalk 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

APPROVED *Andrew Mackay* SENIOR METALLURGIST

Page 1 of 1

PO# 65615

W-122909

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

Chemical and Physical Test Report  
MADE IN CANADA



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

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

**PRODUCED IN: WHITBY**

<b>SHAPE + SIZE</b> A5 X 3 X 1/4	<b>GRADE</b> 44W	<b>SPECIFICATION</b> A36/44W/50W/A529GR50/ASTM A36-05/A529GR50 M-05/CSA G40.21-04 44W/50W	<b>SALES ORDER</b> 1094919-01	<b>CUST P.O. NUMBER</b> CY-945338-01
<b>HEAT I.D.</b> W300111	C Mn P S Si Cu Ni Cr Mo V Nb B N Sh Al Ti Zn C Eqv	.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**

<b>SHAPE + SIZE</b> C10 X 15.3#	<b>GRADE</b> 44W	<b>SPECIFICATION</b> A36/44W/50W/A572GR50/ASTM A36-05/A572GR50 M-06/CSA G40.21-04 44W/50W	<b>SALES ORDER</b> 1085535-04	<b>CUST P.O. NUMBER</b> CY-942665-04
<b>HEAT I.D.</b> W300226	C Mn P S Si Cu Ni Cr Mo V Nb B N Sh Al Ti Zn C Eqv	.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  
Gerdau

*(Signature)*  
Metallurgical Services Manager  
WHITBY STEEL MILL

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

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



YD120038(3RF50150)

48988

PO# 78697

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 1, Paragraph 4.3 by TÜV Anlagentechnik GmbH  
 (Notified Body Identification NO.0035)

Zertifiziert nach Druckgeraete-Richtlinie 97/23/EG,

Anhang 1, Abschnitt 4.3 durch TÜV Anlagentechnik GmbH

(Benannte Stelle Kenn-Nr.0035)

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

Pruef-Nr. Seite

<b>Customer/Besteller: ALBERTA PIPE FITTINGS LTD</b>									
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								
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:						
<b>Content of the Delivery/Lieferumfang:</b>									
NO.	Pieces/stueckzahl	Description/Bezeichnung		Heat No./Schmelze-Nr	Test No./ProbeNr				
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 <sup>2</sup>	Tensile Strength N/mm <sup>2</sup>	Elong %	Red of Area %	Charpy-impact Test, ISO-V Specimen	
38	BC14Y12001	345	515	31.5	69.0	Kerbschlagversuch, ISO-V-Probe	
						Σ/N	Hardness
							Haerte
							HB
							140 141 143

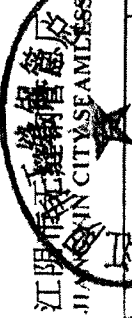
without complaint (ohne Beanstandung)  
 Works Inspector/Werksachverständiger  
 Date/Datum: 2014-9-20  
 BEICHENG FLANGE CO., LTD

3" 150# RF50

1426857 (3 IN STD PIPE)

PO# 78273

48074



ORIGINAL

产品质量证明书

江苏省江阴市夏港镇钱港路375号  
No.375,Zhenheng Rd.,Xiagang Town Jiangyin City  
Jiangsu Province, China (214442)  
Tel:86-510-66286698 Fax:86-510-66286699

MILL TEST CERTIFICATE EN10204 3.1

支数 Total Bundles	5	总重量 Total Weight	10.191	日期 Date:	2014-07-08	№:	140708WM065-2
支数 Total Pieces	141	技术规格 Spec.	ASME/ASTM SA/A 106 B; API 5L B	合同编号 Contract No.	2014CJWM065	许可证号 License No.	0503
支数 Total Pieces	141	牌号 Steel Type		交货状态 Delivery Status	HOT ROLLING		
支数 Total Pieces	141	规格 Size O.D x W.T x L (m)	3" x SCH40 x 6.4M				

序号 NO.	炉号 Heat No	批号 Batch No	捆数 Bundle	支数 Pcs	重量 (MT) Weight	拉伸试验 Tensile Test			冲击试验 Impact Test			硬度试验 Hardness Value	
						标距长度 Gauge Length (mm)	屈服强度 Y.S Mpa	抗拉强度 T.S Mpa	伸长率 E.L (%)	尺寸 Dimension (*4)	温度 (°C) Temperature		纵向冲击 AK Longitudinal
1	1426857	1407090	5	141	10.191	50	260/275	465/475	29/27				
2													
3													
4													
5													

化学成分 (%) Chemical Composition

序号 NO.	类别 Type	低倍组织 (级) M.S										金相分析 Metallurgical Analysis							
		C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V	一般疏松 Ordinary Porosity	中心疏松 Central Porosity	偏析 Segregation	显微组织 *6 Microstructure	夹杂物 Inclusion	带状组织 (级) B.S	脱碳 (mm) D.1	
1	C	0.200	0.240	0.470	0.018	0.009	0.017	0.021	0.020	0.009	0.005								
2	C																		
3	C																		
4	C																		
5	C																		

序号 NO.	类别 Type	冷弯 Cold Bending	扩口 Flaring	超声检验 U.T	涡流检验 E.T	磁粉检验 M.P.I	漏磁检验 L.M.T	通径 N.D	表面 & 尺寸 S&D	水压 Hydro Test (>5s)	硬度试验 Hardness Value								
											1	2	3	4	5				
1	C	OK	OK	OK	OK	OK	OK	OK	OK	OK	17.5								
2	C																		
3	C																		
4	C																		
5	C																		

\*1.纵向条状Longitudinal Strip: A1-12.7mm, A2-19.05mm A3-25.4mm A4-38.1mm, F-全截面Full-section \*2.棒状Clubbed: B1=12.7mm, B2=8.9mm, B3=8mm, B4=10mm \*3.横向条状 Transverse Strip: C1-12.7mm, C2-19.05mm C3-25.4mm C4-38.1mm, \*4: D1=10x10x55mm D2=10x7.5x55mm D3=10x5x55mm \*5: C-成品成分 Product composition R-熔炼成分 Melting composition \*6: F-铁素体 Ferrite B-贝氏体 Bainite P-珠光体 Pearlite S-回火索氏体 Tempered Sorbite M-马氏体 Martensite

备注 Remark: 1. AT THEORETICAL WEIGHT BASIS; 2. MANUFACTURED FROM FULLY KILLED CARBON STEEL. 3. TOLERANCE ON MEASUREMENT MENTION IN ACC. TO ANSI B36.10.

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

质量管理部负责人 Quality Manager: [丁云峰]  
审核人: [丁云峰] Auditor: [丁云峰]  
制证人: 高叶 Certification-maker:

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**



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. 14058Z PLACE: DINGXIANG DATE: 30th-JUNE-2014 CERT NO: XT14063001001

ORDER NO APF/2014/ Z14		CONTRACT NO.		MATERIAL GRADE								STANDARD		WORK NO			
		HX28-270514		ASTM/A515/A515M SA105N CL2 CSA-Z245 12-09 CAT 1 - 280SS; NACE MR0175-2005								ANSI B16.5 2003		140587			
ITEM	SIZE INCH	HEAT NO	DESCRIPTION	QTY	INSPECTION SATISFACTORY								NORMALIZING IN 800°C				
1	4"	014086001	150# SORF A105N	3000									Hot Forging				
1	4"	014086	150# SORF A105N	3000	Visual inspection:				SATISFACTORY				MANUFACTURING METHOD				
					Dimensional inspection:				SATISFACTORY								
					Ultrasonic test:												
													Hot Forging				
													MELTING PROCESS				
													E				
													Manufacturer's brand <b>H.K</b>				
													stamp of the testing engineer <b>①</b>				
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 290 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

46938  
PO# 76059

1336716 (4 IN STD PIPE)

HENGYANG VALIN  
STEEL TUBE CO., LTD

MILL TEST CERTIFICATE

ADD: 10 Dailinmian, Hengyang City, Hunan, P.R. China P.C. 421001  
Tel and Fax: +86 734 8873739  
E-mail: hsfec@hysteeltube.com

CUSTOMER		R * R TRADING CO., LTD		CERTIFICATE NO. 404583		DATE: 2014-1-3		PAGE: 1/3			
CONTRACT-ITEM NO.		2211001753-02		P.O. NO.		SEAMLESS STEEL LINE PIPE		DELIVERY CONDITION			
PRODUCT		SEE SPECIFICATION NOTE		HEAT TREATMENT		HR					
GRADE		B, GR 241		DIMENSIONS		4" * STD * 21FT		TOTAL WEIGHT: 21.596 mt			
TOTAL BUNDLES: 12		TOTAL PIECES: 210		TOTAL LENGTH: 1344.000 m							
NO.	LOT No.	HEAT No.	BUNDLES	PIECES	LENGTH m	WEIGHT mt	TENSILE TEST ASTM A370			FLATTENING TEST	
							TS(MPa)	YS(MPa)	EL(%)		R.A. (%)
1	310Y0901A	1336716	6	105	672.000	10.798	465	322	34.5	0.69	ACCEPTABLE
2	310Y0901B	1336716	6	105	672.000	10.798	447	323	33.5	0.72	ACCEPTABLE
IMPACT TEST		NOTCH TYPE/ ORIENTATION/ TEMPERATURE (C/ SIZE (mm))		AV(J)		AK2 (J)		LE		NON METALLIC INCLUSION	
NO.		H/ H		%		%		%		GRAIN SIZE	
1		/ /		/ /		/ /		/ /		HARDNESS TEST	
2		/ /		/ /		/ /		/ /		NACE MR0175	
										HB	
										158.0	
										159.7	



HE-HC  
HR-HOT-ROLLED  
N&T-NORMALIZING AND TEMPERING  
HUNAN CHINA

N-NORMALIZING  
A-ANNEALING  
AV-AVERAGE  
LE-SIDE EXPANSION

SAMPLE ORIENTATION: L- LONGITUDINAL T- TRANSVERSE  
SAMPLE TYPE: S- STRIP C- CLUBBED F- FULL-SECTION  
Q&T- QUENCHING AND TEMPERING  
AK2- ABSORB ENERGY FOR THE SECOND SET

NOTES:  
W1-THEORETICAL WEIGHT  
W2-ACTUAL WEIGHT  
NR-NORMALIZING ROLLED  
AK1-ABSORB ENERGY FOR THE FIRST SET

4" STD A106 B Smls Pipe

ORIGINAL



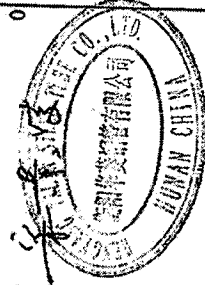
HENGYANG VALIN  
STEEL TUBE CO.,LTD

MILL TEST CERTIFICATE

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

CUSTOMER		R + R TRADING CO.,LTD		CERTIFICATE NO.		C201400238-1		
CONTRACT-ITEM NO.	2211001753-02	P.O.NO.	404583	DATE:	2014-1-3	PAGE:	3/3	
PRODUCT	SEAMLESS STEEL LINE PIPE		DELIVERY CONDITION	HR				
SPECIFICATION	SEE SPECIFICATION NOTE		HEAT TREATMENT					
GRADE	B,GR 2H1		DIMENSIONS	4*STD*21FT				
TOTAL BUNDLES:	12	TOTAL PIECES:	210	TOTAL LENGTH:	1344.000	m	TOTAL WEIGHT:	21.596
				REMARK: 1.ORIGIN:MADE IN CHINA.2.ALL ELEMENTS TO BE LISTED.				

SPECIFICATION NOTE	API 5L(45lb) PSL1+ASTM/ASME A53A 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: hstec@hysteeltube.com		
CUSTOMER THIRD PARTY		
Quality Manager:	0	
Certificate-maker:	刘年亚	



正本  
ORIGINAL

733 (6RF50150)

PO#76028



**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	INVOICE DATE	26-Feb-2014		

Heat No.	Supplier Heat No.	Description	Chemical Analysis									
			C%	Mn%	P%	S%	Si%	Cu%	Ni%	Cr%	Mo%	V%
733	A-73	Specified	0.25 max	0.60 - 1.05	0.035 max	0.040 max	0.10 - 0.35	0.40 max	0.30 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
Heat No.	Supplier Heat No.	Description	Physical / Mechanical Properties									
			UTS N / MM <sup>2</sup>	YIELD N / MM <sup>2</sup>	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 :- 2.00 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

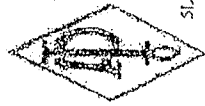
For:   
Q.C. Engg.

FOR SUDHIR FORGINGS PVT. LTD

Q.C. Mgr

90# 78188

2014206001(6INSTEELPIPE)



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

CUSTOMER: PRIME SEAMLESS STEEL PIPE  
 PRODUCT: ASTM(2014) A106 GR.B/ASME(2013) SA106 GR.B/ASTM(2012) A53 GR.B/ASME(2013) SPEC. SASS GR.B/A191 5L(45H) GR.B/CSA Z245.1 OR241 CAT INACE MR-01-75(2009)/MR-01-03(2003) AND ISO15156(Hardness Only)  
 51-0506

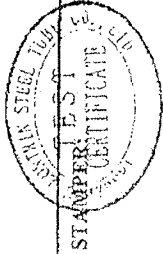
ISO REGISTRATION NO: 44 100 072544  
 CONTRACT NO:  
 CERTIFICATE NUMBER: 14EX06314-2-01

Material conforms to ANSI B36.10. Normalizing temperature: 900°C to 930°C

TOTAL: 20 BUNDLES		805 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	6.00NDX0X0.28ONCHESX21FT	196	35448	0.21	0.22	0.48	0.011	0.006	0.05	0.05	0.08	0.010	0.010	—	—	
2	ZD14206901	14072AR0101	GR.B	6.00NDX0X0.28ONCHESX1FT	94	17001	0.19	0.23	0.48	0.015	0.011	0.05	0.03	0.09	0.010	0.010	—	—	
3	ZD14207018	14072AR0097	GR.B	6.00NDX0X0.28ONCHESX40FT	130	42818	0.18	0.23	0.50	0.012	0.004	0.05	0.05	0.11	0.010	0.010	—	—	
4	ZD14107181	14072AR009E	GR.B	5.00NDX0X0.28ONCHESX40FT	22	7485	0.19	0.24	0.59	0.024	0.013	0.05	0.02	0.08	0.010	0.010	—	—	
5	14-207737	14071B0280	GR.B	1.28NDX0X0.191NCHESX1FT	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	1.28NDX0X0.191NCHESX1FT	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		H.T 10S	NONDESTRUCTIVE TEST			SURFACE QUALITY			DIMENSION TOLERANCE							
	ReL (MPa) YIELD STRENGTH	Rm (MPa) TENSILE STRENGTH	ELONGATION A%	HARDNESS HRB		FLATTENING TEST	FLARING TEST	BENDING TEST	ET	UT	IN	OUT	O.D.	W.T.					
1	325	478	34	77	1800PSI	Satisfactory	—	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory						
2	317	491	34	78	1800PSI	Satisfactory	—	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory						
3	353	520	34	78	1800PSI	Satisfactory	—	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory						
4	324	503	35	80	1800PSI	Satisfactory	—	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory						
5	354	492	48	74	2500PSI	Satisfactory	—	—	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory						
6	329	460	50	73	2500PSI	Satisfactory	—	—	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 (HRF50150)

PO# 76023 46869

ORIGINAL

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

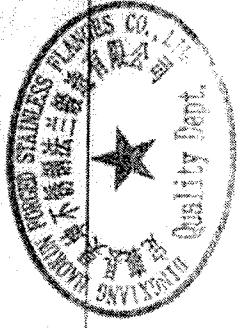


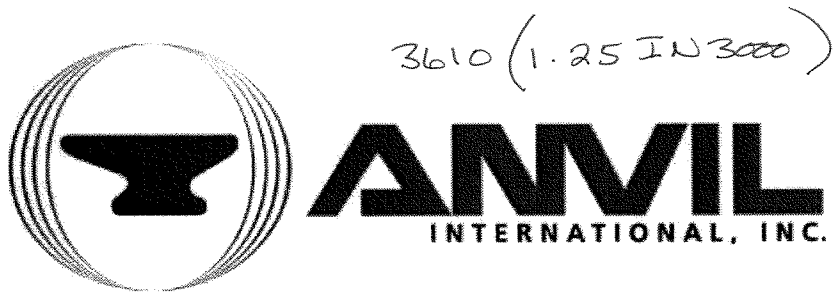
MILL TEST CERTIFICATE

Management System as per ISO 9001: 2000 Certificate Registration NO. 04 100 062388

CERTIFICATE OF ANALYSIS: 3.1 EN-10204

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 B2 inch %	REDUCTION OF AREA %	CHARPY-IMPACT TEST(J)
11	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
12	133018	0.35	0.35	1.05	0.035	0.048	0.36	0.44	0.12	0.03	0.400	185	545	280	40.0	84.2	
13	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
14	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
15	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
16	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
17	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
18	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
19	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
20	133018	0.10	0.10	0.60	0.035	0.048	0.36	0.44	0.12	0.03	0.400	143	486	228	22	30	
<p>CONTRACT NO: HXADJ-041111-NV-2</p> <p>HEAT NO: 133018</p> <p>ORDER NO: 150# SORE A105N</p> <p>QTY: 500</p> <p>MATERIAL GRADE: A105N</p> <p>PLACEMENT: Satisfactory</p> <p>STANDARD: AMS 818 S-2003</p> <p>WORK NO: 130878</p> <p>MANUFACTURING METHOD: Hot Forging</p> <p>WELDING PROCESS: Hot Forging</p> <p>MANUFACTURER'S BRAND: </p> <p>Stamp of the testing engineer: </p> <p>MECHANICAL PROPERTIES:</p> <p>YIELD STRENGTH 0.2% offset MPa: 228</p> <p>TENSILE STRENGTH MPa: 486</p> <p>ELONGATION B2 inch %: 22</p> <p>REDUCTION OF AREA %: 30</p> <p>CHARPY-IMPACT TEST(J):</p> <p>APPROVED Chief of Inspection Section:</p> <p>APPROVED Chief of Inspection Section:</p>																	





3610 (1.25 IN 3000)

PO# 71939



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											

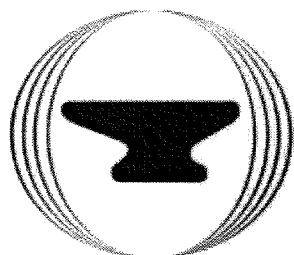
### Mechanical Properties

Yield Strength	Tensile Stength	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 (1IN3000THR) )

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 %

<u>Heat No.</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Cb/Nb</u>
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

<u>Yield Strength</u>	<u>Tensile Strength</u>		<u>Elongation %</u>	<u>Reduction Area</u>	<u>Hardness BHN</u>
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**

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**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

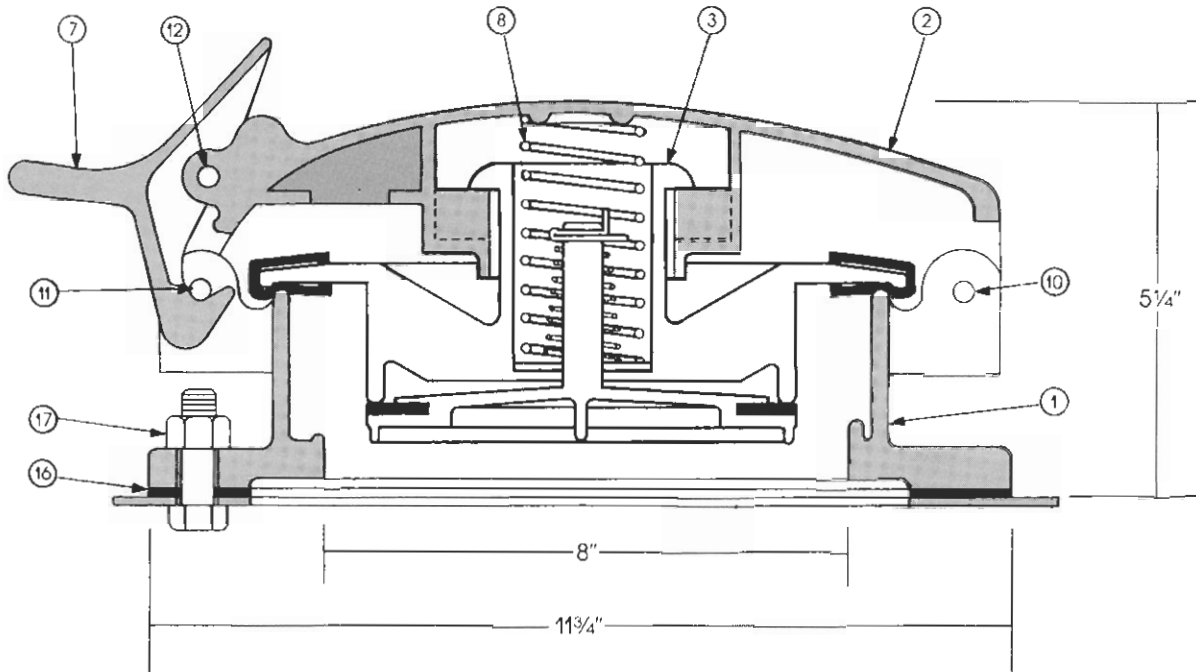
**ORDERING INFORMATION:**

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.

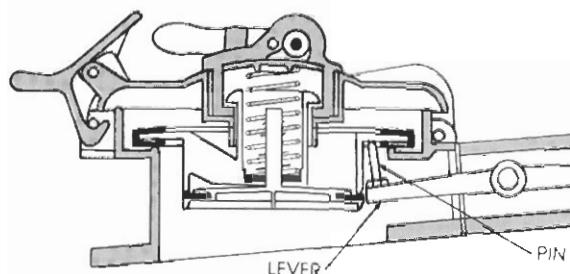
### BLEEDER MODELS

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

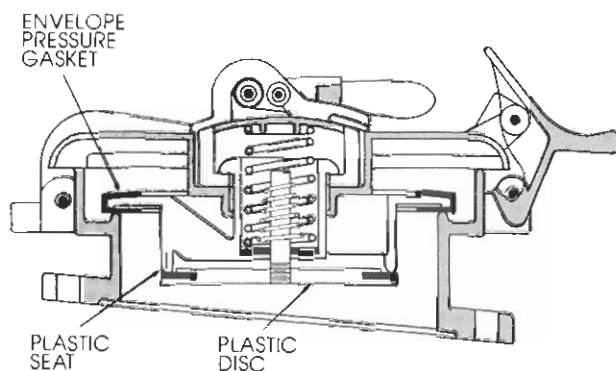
ENARDO Thief Hatches are available in a combination unit consisting of a spring-loaded thief hatch with an automatic bypass vapor valve mounted on its body. In a vapor control system, the vent line is connected to the bypass. When a tank is opened, it seals off the vent line, isolating the tank from 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.

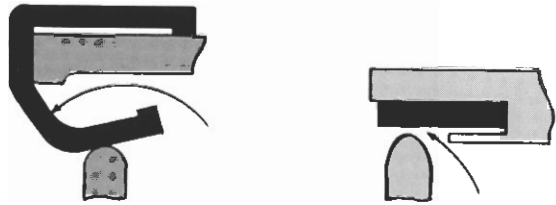
## HATCH MAINTENANCE

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



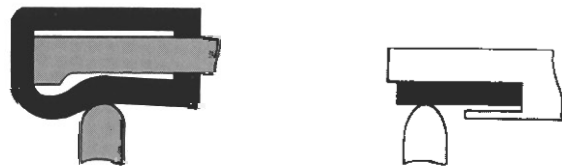
Pressure created within the tank energizes the ENARDO Envelope Gasket as shown above left, forcing it down around the outer edge of the seat to form a wide contact area. By contrast, the conventional flat gasket maintains only "line" contact with its seat.



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)

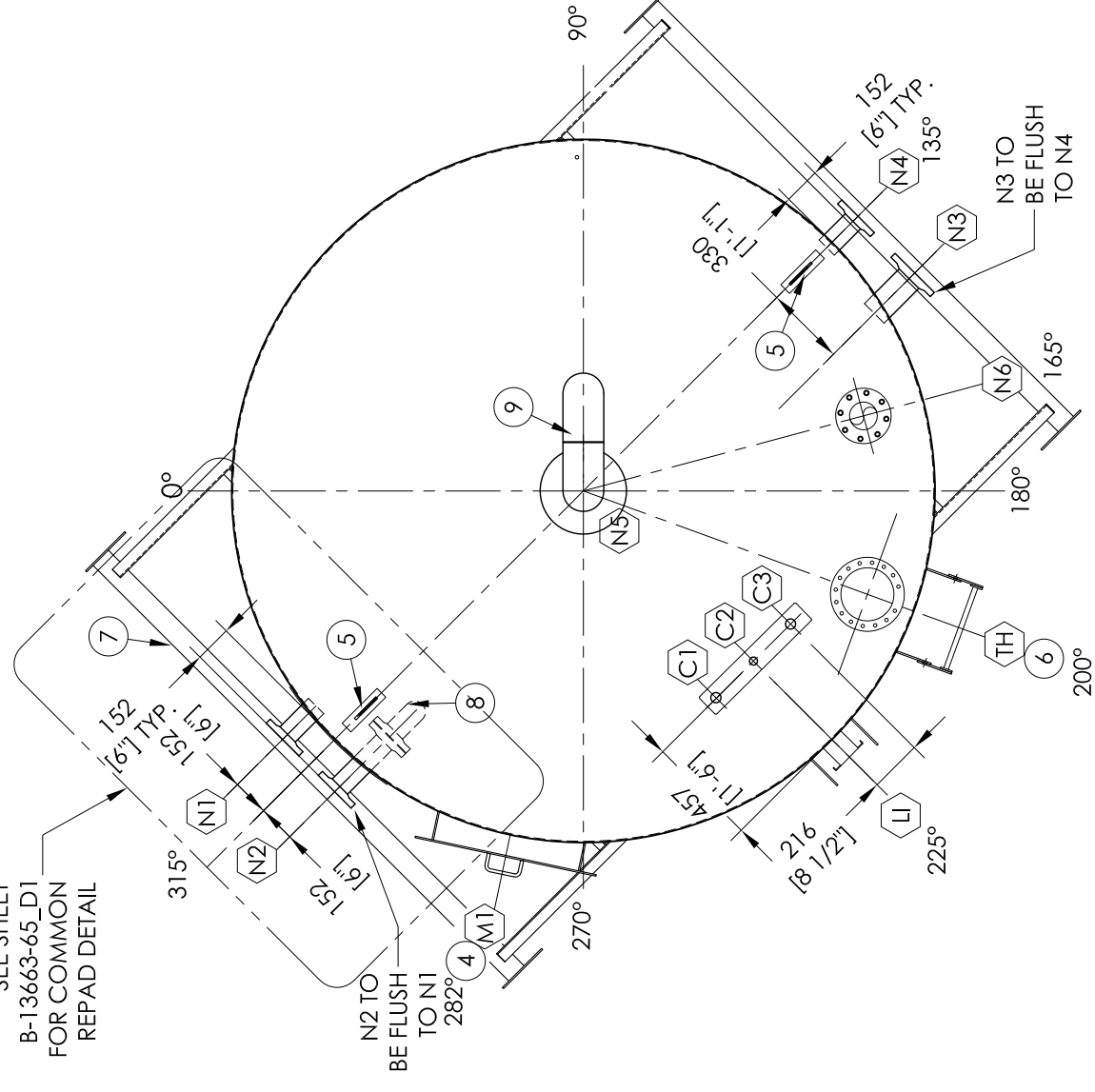
**SHIPPED LOOSE ITEMS**

(1) 6" GOOSENECK c/w BOLTUPS

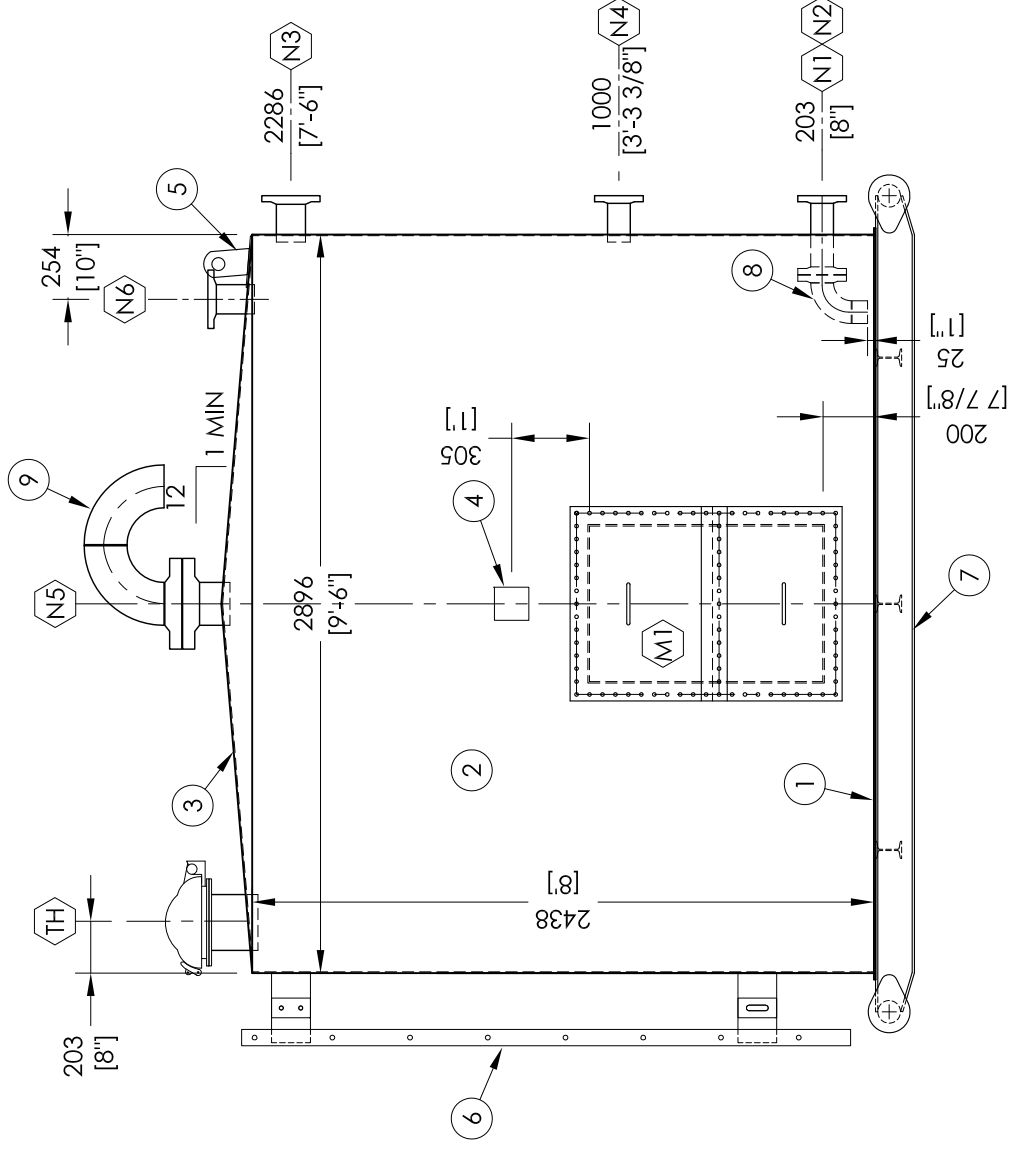
**NOZZLES SCHEDULE**

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

SEE SHEET  
 B-13663-65\_D1  
 FOR COMMON  
 REPAD DETAIL



**ORIENTATION**



**ELEVATION**

**TESTING NOTES:**  
 1) TANK TO BE AIR/LEAK TESTED TO 1.5 PSI

- 1. INTERNAL FINISH:**  
BLAST: NO INTERNAL FINISH
- 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

**THIRD PARTY INSPECTION:** YES

**REVISIONS**

REV.	DESCRIPTION	DATE	BY	CHK	APP
2	AS BUILT	03.24.15	CP		
1	REVISED GOOSENECK, ADDED N6 AND REORIENTED LI & TH	12.24.14	CGC		
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		

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  
 ORIENTATION DRAWING



DWG BY: CP	QUOTE #: TQ14-1168	SCALE: 1:50	CUSTOMER TAG #: T-100
PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG:	REV.
ARGO DRAWING NO.:	B	13663-65	OR
			1 of 7



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	-	-
			<b>NOZZLE COMPONENTS</b>	-	-
A	4	FLANGE	89 DIA. (3") - CL150, RFSO	-	A105
B	1	FLANGE	114 DIA. (4") - CL150, RFSO	-	A105
C	1	FLANGE	168 DIA. (6") - CL150, RFSO	-	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

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



655-30 Avenue  
Nisku AB  
Canada  
T9E  
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		MATERIAL	
ROOF	4.8mm (3/16")		A36
FLOOR	6.4mm (1/4")		A36
SHELL	4.8mm (3/16")		A36
INTERNAL FINISH			
	None		

REVISIONS

REV.	DESCRIPTION	DATE	BY	CHK	APP
2	AS BUILT	03.24.15	CP		
1	REVISED GOOSENECK AND ADDED N6	12.24.14	CGC		
0	ISSUED FOR FABRICATION	12.02.14	CP		
B	ISSUED FOR ISSUED FOR APPROVAL	11.12.14	MG		
A	ISSUED FOR REVIEW/MARKUP	10.23.14	CP	CGC	

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

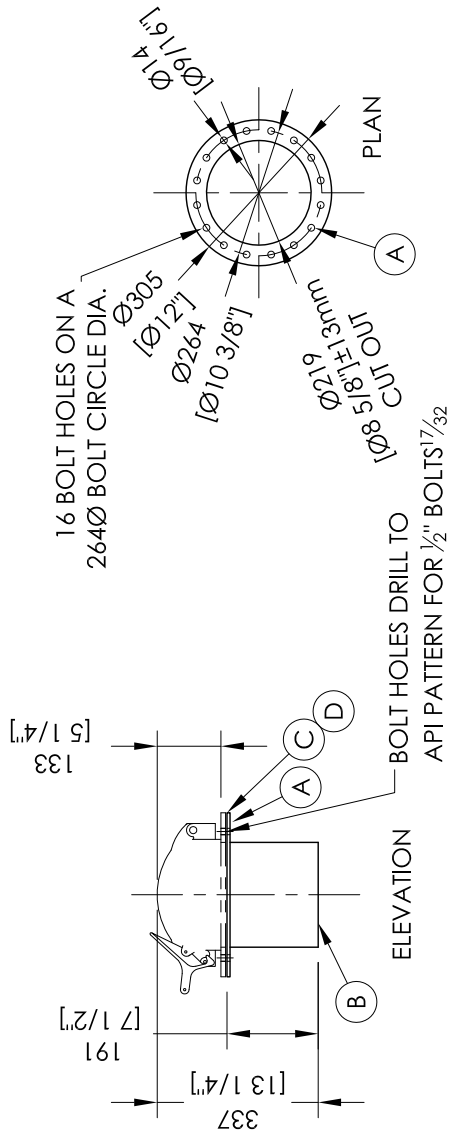
BILL OF MATERIAL



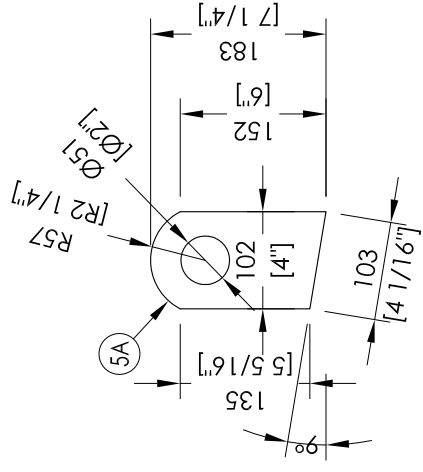
DWG BY: CP	QUOTE #: TQ14-116B	SCALE: NTS	CUSTOMER TAG #: T-100
PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG:	SHEET:
ARGO DRAWING NO.:	B	13663-65	BOM
REV.			2 of 7



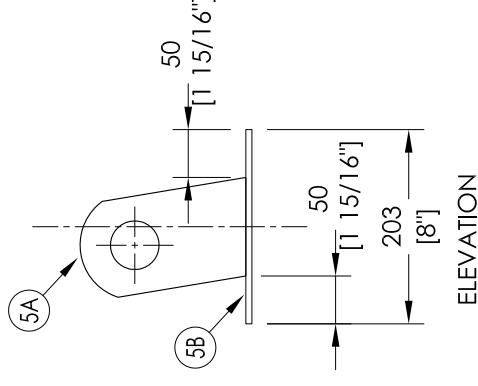




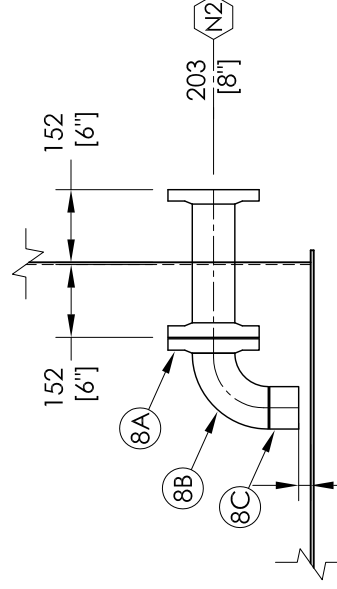
**TH - THIEF HATCH EXTENSION**



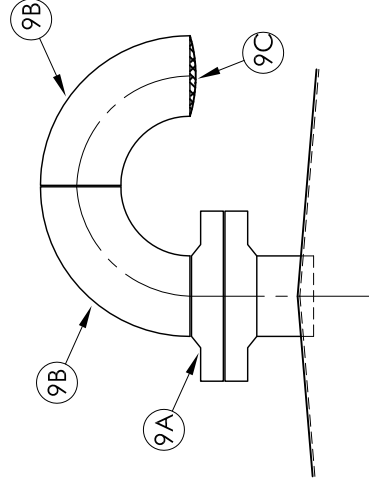
**LUG DETAIL**



**ITEM 11 - SMALL LIFT LUG**



**N2 - TRUCK OUT DETAIL**



**N5 - VENT**

BILL OF MATERIALS					
MARK	QTY	PART NAME	DESCRIPTION	LENGTH	MATERIAL
5A	2	SMALL LIFT LUG	PLATE, 12.7x 102x 183 (1/2"x 4"x 7 1/4")	-	A36
5B	2	REPAD	FLAT BAR, 6.4x 51x 203 LG (1/4"x 2"x 8")	-	A36
A	1	FAB. FLANGE	<b>TH- THIEF HATCH EXTENSION</b> PLATE, 6.4x 305x 219 LG (1/4"x 12"x 8")	-	A36
B	1	TH EXTENSION	PIPE, SMLS, 219 (8"), SCH 20 x 191 (7 1/2") LONG	-	A106
C	1	GASKET	219x 3mm THK (8"x 1/8")	-	NEOPRENE
D	16	BOLTS/NUTS	BOLTS w/ NUTS, 1/2" x 1 1/2" LG	-	GRADE 5 PLATED
E	2	CABLE ANCHOR	<b>LEVEL INDICATOR</b> ROUND BAR, 3/8" x 3 1/2" LG, BENT @ 1 7/8" RAD.	-	316SS
8A	1	FLANGE	<b>N2 - TRUCK OUT DETAIL</b> 89 DIA. (3") - CL150, RF50	-	A105
8B	2	ELBOW	89 DIA. (3") SCH. STD. 90° LRWE	-	A234
8C	1	PIPE	89 DIA. (3") SCH. 40 SMLS	61 (2 3/8")	A106
9A	1	FLANGE	<b>N5 - VENT C/W GOOSENECK</b> 168 DIA. (6") - CL150, RF50	-	A105
9B	1	ELBOW	168 DIA. (6") SCH. STD. 90° LRWE	-	A234
9C	1	-	EXPANDED METAL (SHOP TO FIT)	-	A36
RP1	1	REPAD	<b>COMMON REPAD COMPONENT</b> 6.4x265 (1/4"x10 3/8") COMMON REPAD	570 (22 7/16")	A36

**DESIGN NOTES:**  
1. REFER TO ORIENTATION DRAWING FOR PROPER LOCATION OF ALL NOZZLES, COUPLINGS, ETC.  
2. ALL DIMENSIONS ARE IN mm (INCHES).

REVISIONS

REV.	DESCRIPTION	DATE	BY	CHK	APP
2	AS BUILT	03.24.15	CP		
1	REVISED GOOSENECK AND ADDED N6	12.24.14	CGC		
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	

CUSTOMER: HUSKY

PO #: 8400899432

LSD. XX-XX-XXX-XX WXM

TITLE:

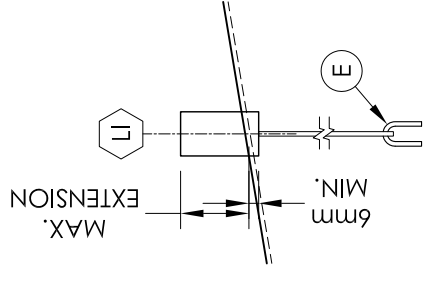
ONE (1) 16 CU.M. (100BBL)  
2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH  
100 BBL BASE SKIDDED STORAGE TANK  
TANK COMPONENT DETAILS



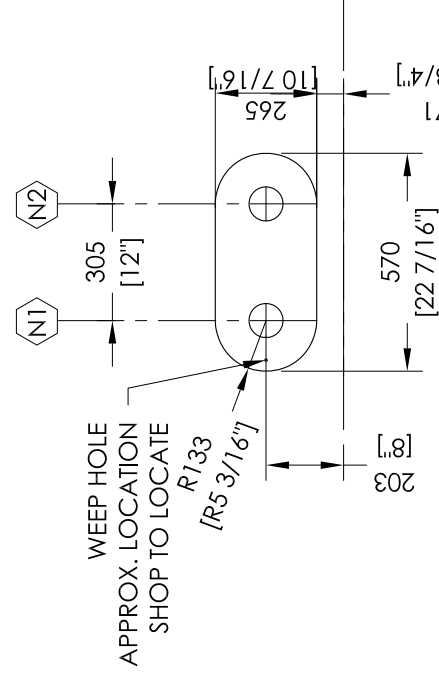
DWG BY: CP	QUOTE #: TQ14-116B	SCALE: -	CUSTOMER TAG #: T-100
PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG:	REV.
ARGO DRAWING NO.:	B	13663-65	D1
			3 of 7

**RP1 - COMMON REPAD**

ROLL TO TANK O.D. - INCLUDE WEEP HOLES

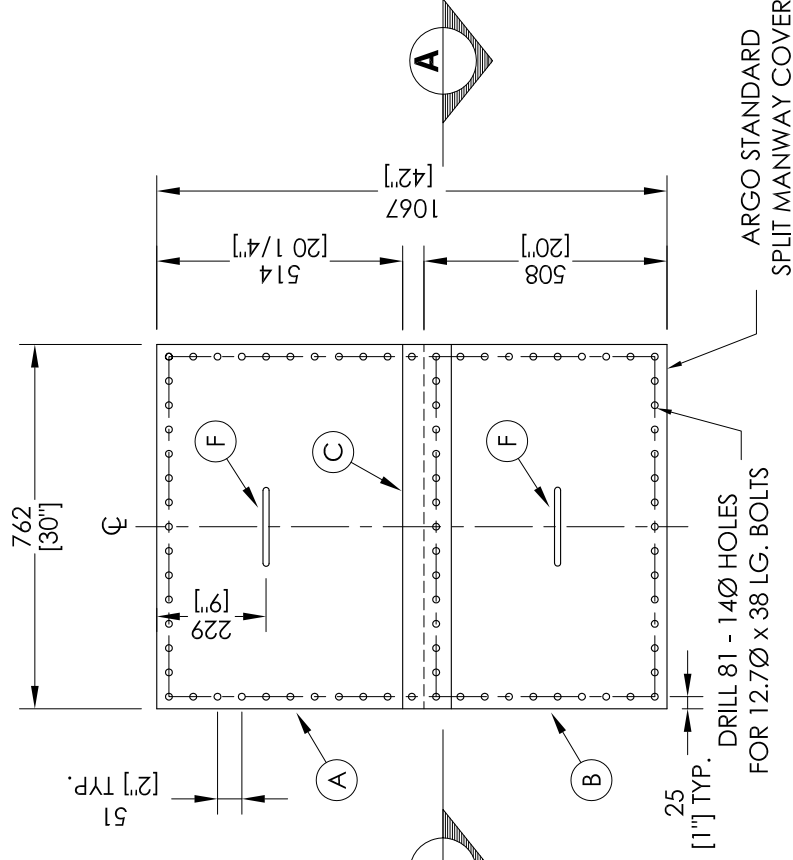
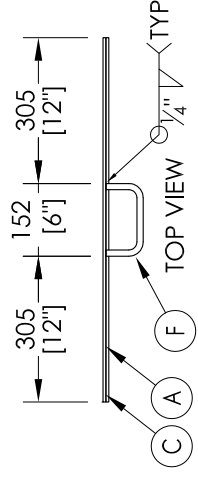


**LEVEL INDICATOR**



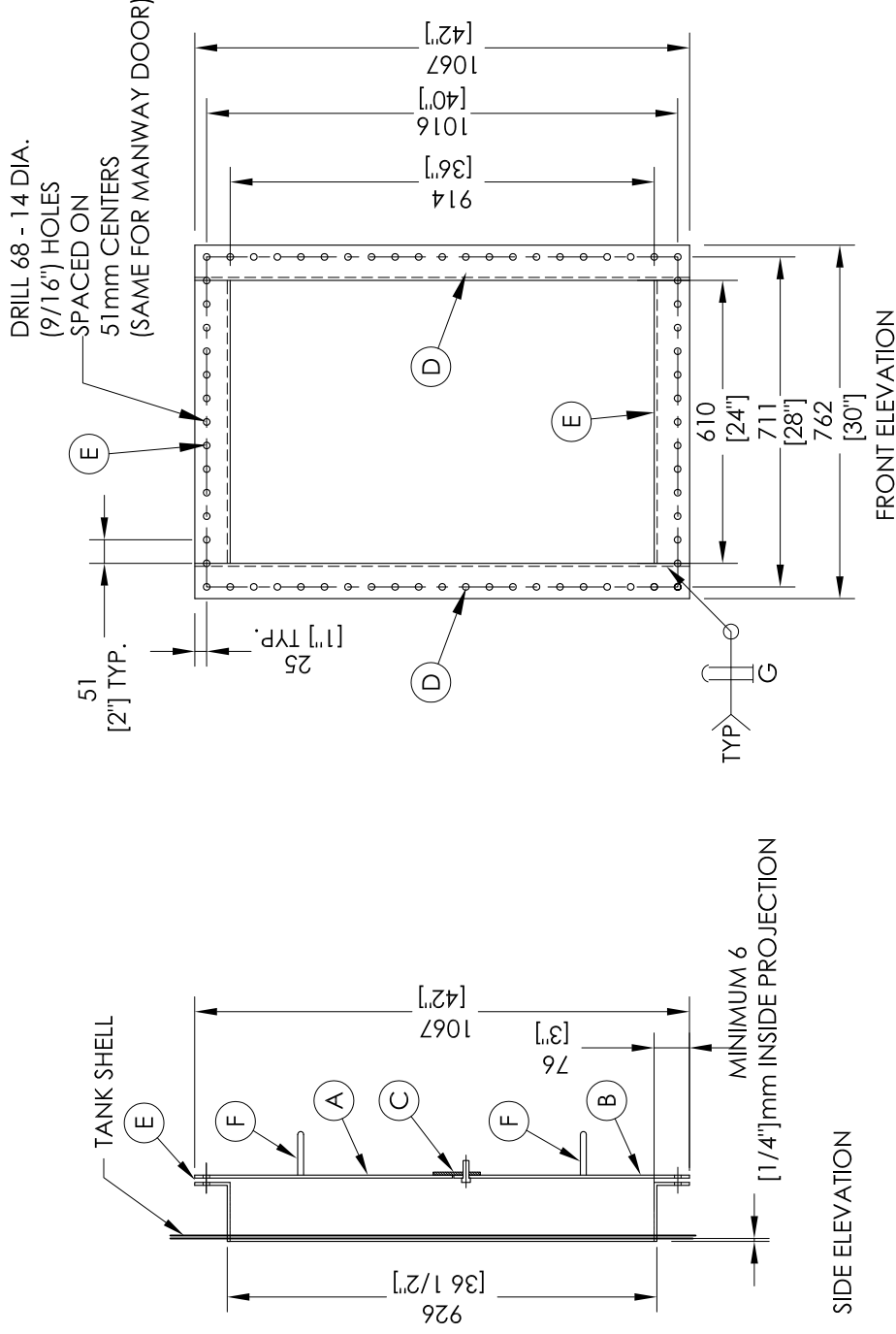
WEEP HOLE  
APPROX. LOCATION  
SHOP TO LOCATE





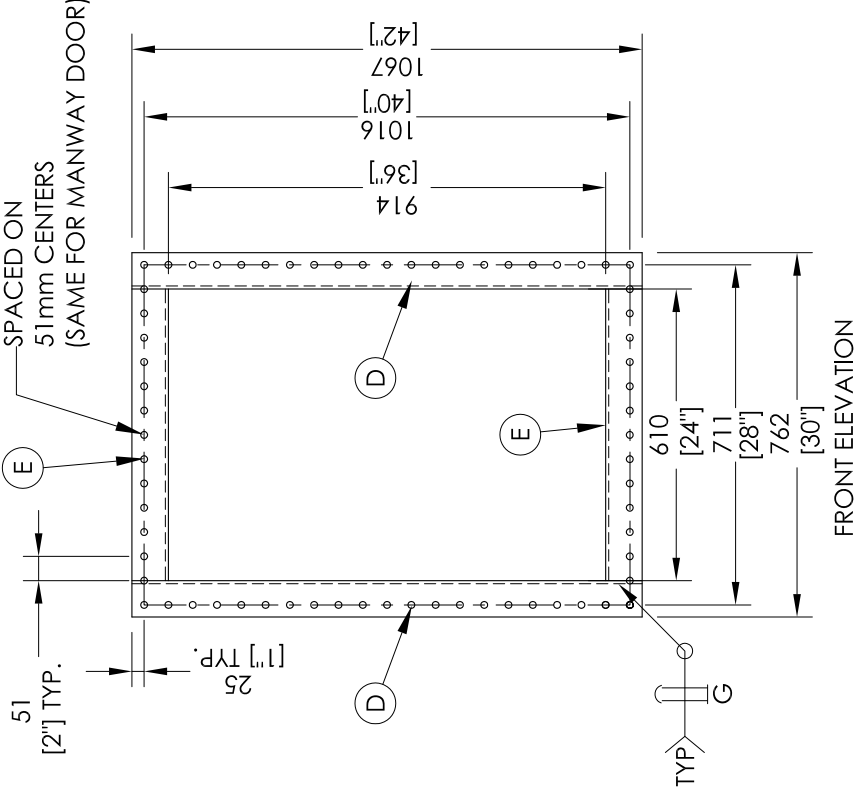
**SPLIT MANWAY COVER DETAIL**

ITEM - M1

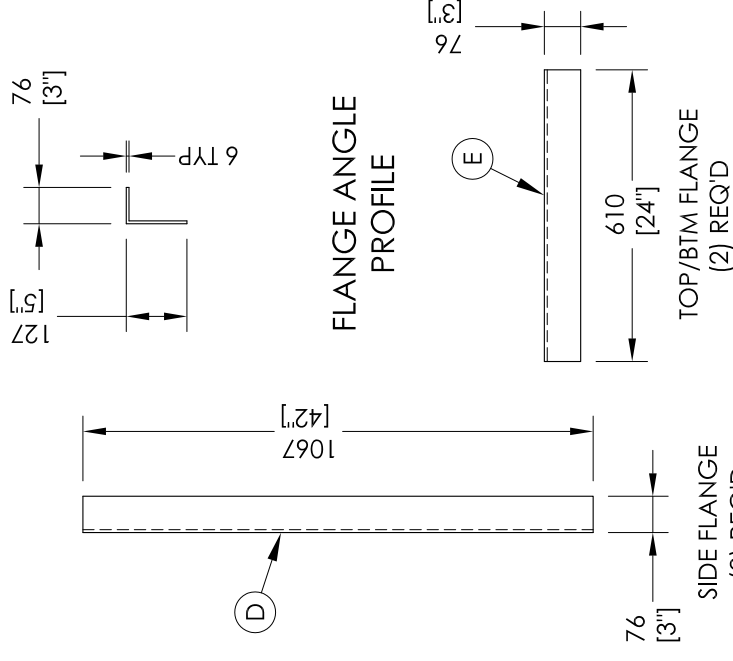


SIDE ELEVATION

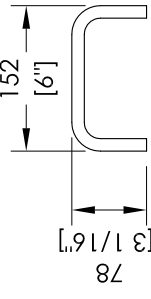
DRILL 68 - 14 DIA. (9/16") HOLES SPACED ON 51mm CENTERS (SAME FOR MANWAY DOOR)



FRONT ELEVATION

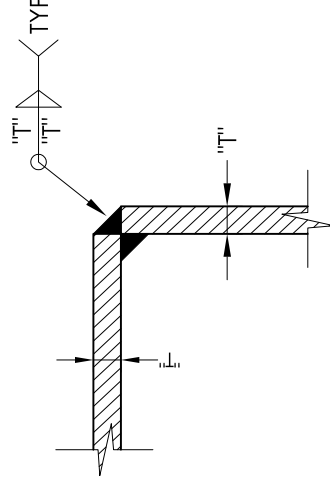


FLANGE ANGLE PROFILE



**HANDLE DETAIL**

SCALE: 1:8



FOR REFERENCE ONLY

**BILL OF MATERIALS**

MARK	QTY	PART NAME	DESCRIPTION	LENGTH	MATERIAL
A	1	TOP MW COVER	PLATE, 6.4x 762x 559 LG (1/4"x 30"x 22" LG)	-	A36
B	1	BOTTOM MW COVER	PLATE, 6.4x 762x 508 LG (1/4"x 30"x 20" LG)	-	A36
C	1	LAP COVER	PLATE, 6.4x 762x 102 LG (1/4"x 30"x 4" LG)	-	A36
D	2	SIDE FLANGE	ANGLE, L127x76x6.4 (L5x3x 1/4")	1067 (42")	A36
E	2	TOP/BTM FLANGE	ANGLE, L127x 76x 6.4 (L5x 3x 1/4")	610 (24")	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)	CUT TO FLG LENGTH	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:**

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

**DESIGN NOTES:**

- ALL DIMENSIONS ARE IN mm/INCH.
- REFER TO ORIENTATION DRAWING FOR PROPER LOCATION.
- 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.
- HOLES ARE TO BE DRILLED THROUGH COVER AND FLANGE AT THE SAME TIME, TO ENSURE HOLES MATCH UP PERFECTLY.

**BOLTING:**

- ALL BOLTING TO BE 16mm (5/8") GRADE 5 OR EQUIVALENT.

**REVISIONS**

REV.	DESCRIPTION	DATE	BY	CHK	APP
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	

CUSTOMER:

HUSKY

PO #: 8400899432

LSD. XX-XX-XXX-XX WXM

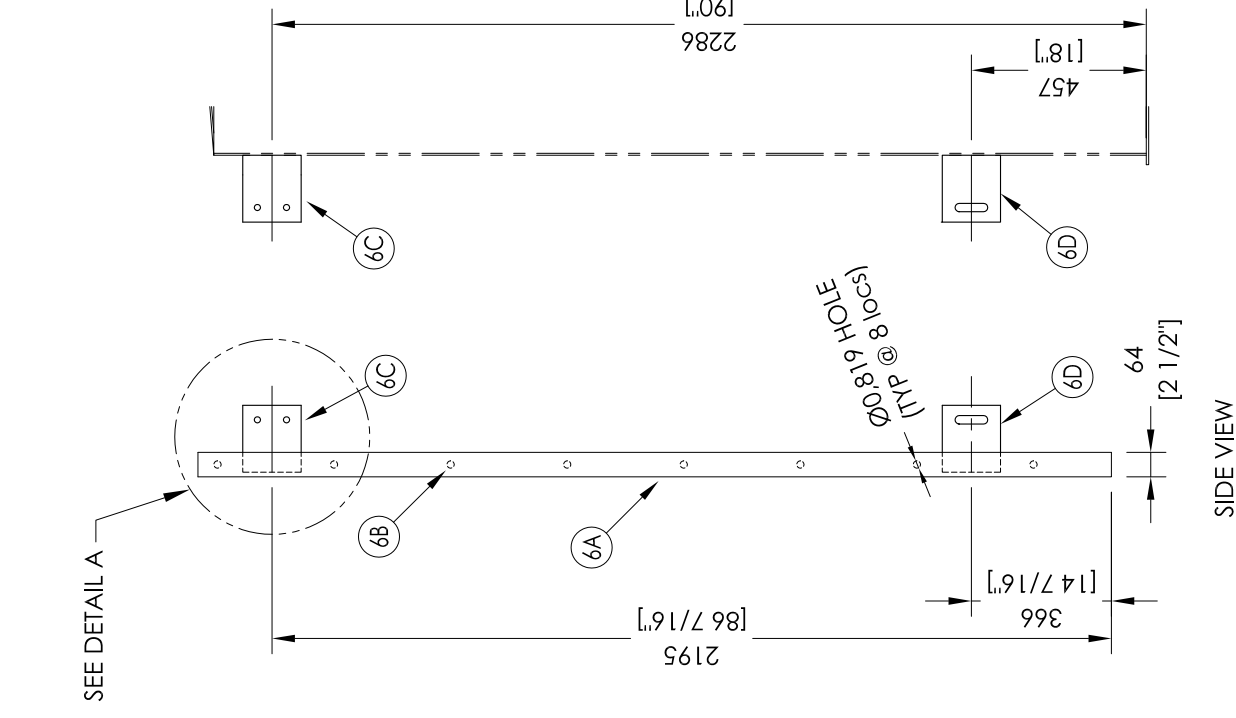
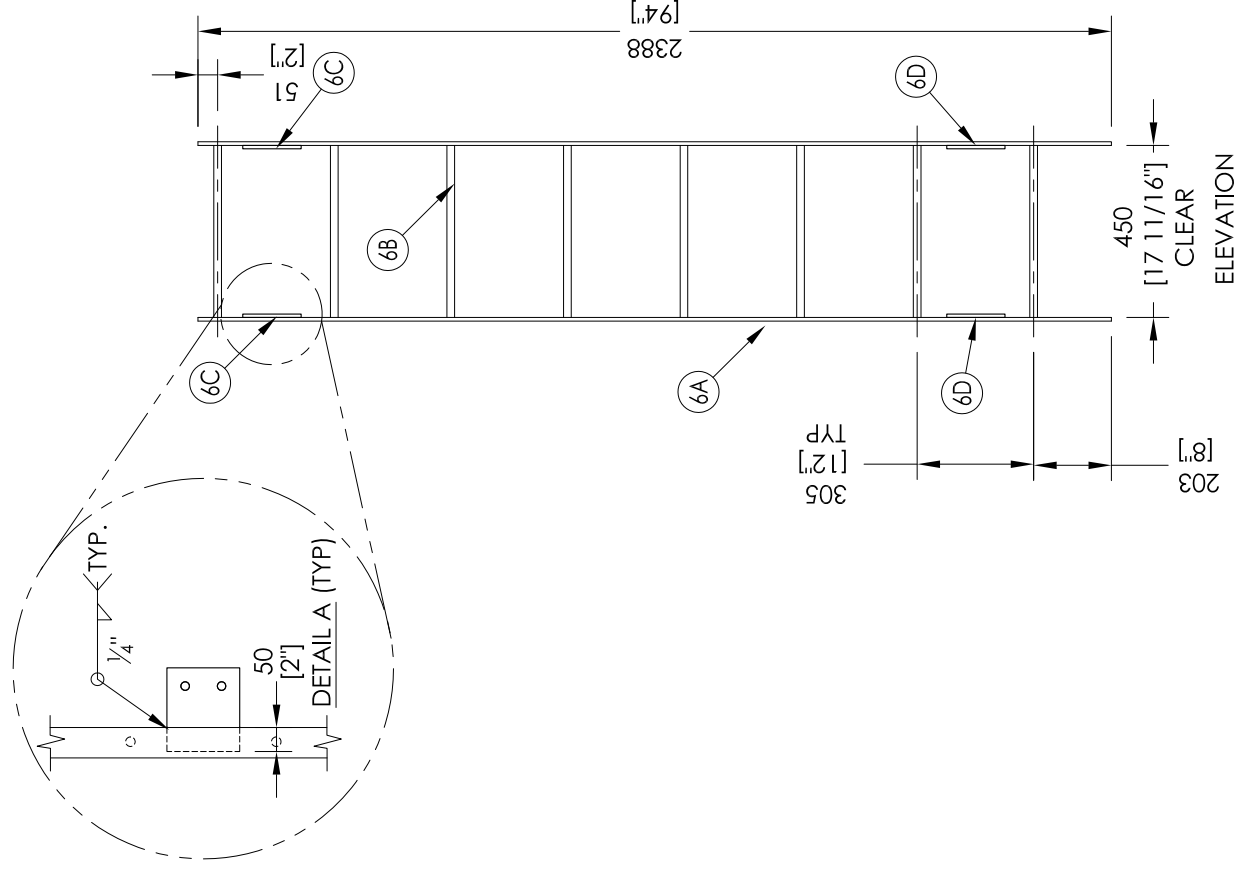
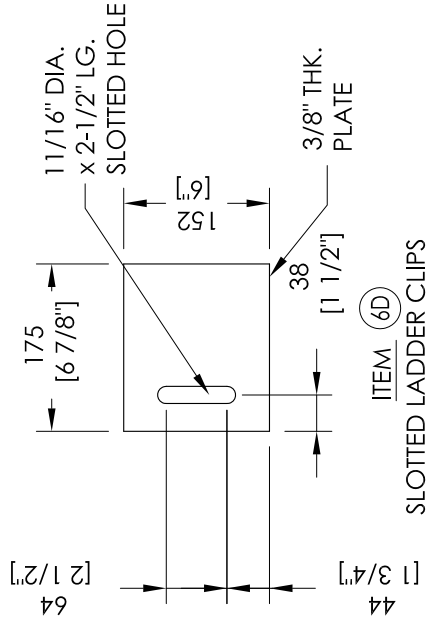
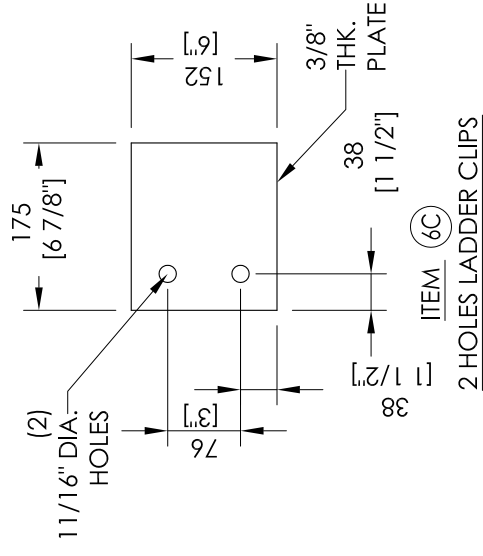
TITLE:

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



DWG BY: CP	QUOTE #: TQ14-1168	SCALE: -	CUSTOMER TAG #: T-100
PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG: MW	SHEET: 4 of 7
ARGO DRAWING NO.:	B	13663-65	





BILL OF MATERIALS				RUNG TO RUNNER LADDER	
MARK	QTY	PART NAME	DESCRIPTION	LENGTH	MATERIAL
6A	2	LADDER RUNNER	FLAT BAR, 9.5x 64 (3/8" x 2 1/2")	2388 (94")	A36/44W
6B	8	LADDER RUNG	ROUND BAR, 19mm (3/4") DIA	462 (18 3/16")	A36/44W
6C	2	LADDER CLIP	PLATE 9.5x 152x 175 LG (3/8" x 6" x 6 7/8"), 2 HOLE	-	A36/44W
6D	8	LADDER CLIP	PLATE 9.5x 152x 175 LG (3/8" x 6" x 6 7/8"), SLOTTED	-	A36/44W
6E	12	BOLTS/NUTS	BOLTS c/w NUTS, 5/8"x 1 1/2" LG	-	GRADE 5 PLATED

**FIXED LADDER**

**DESIGN NOTES:**  
 1. ALL DIMENSIONS ARE IN mm/INCH.  
 2. ESTIMATED SHIPPING WEIGHT IS 112 LBS. (51 KGS).

**BOLTING:**  
 1. ALL BOLTING TO BE 16mm (5/8") GRADE 5 OR EQUIVALENT.

**CAGE LADDER 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)

**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.

REV.	DESCRIPTION	DATE	BY	CHK	APP
1	AS BUILT	03.24.15	CP		
0	ISSUED FOR FABRICATION	12.02.14	CP		
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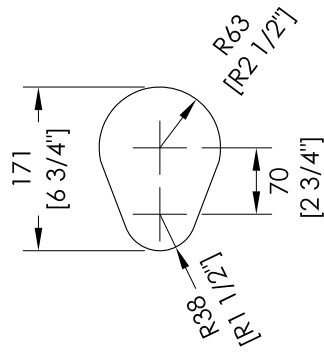
**CUSTOMER:** HUSKY  
 PO #: 8400899432  
 TITLE: ONE (1) 16 CU.M. (100BBL) 2896mm (9'-6") DIA. X 2438mm (8'-0") HIGH 100 BBL BASE SKIDDED STORAGE TANK CAGE LADDER DETAIL

LSD. XX-XX-XXX-XX WXXM

**ARGO FABRICATION**

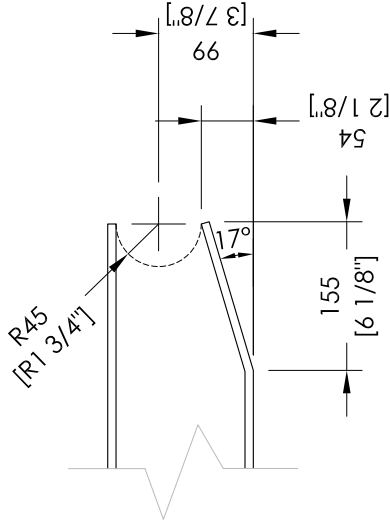
DWG BY: CP QUOTE #: TQ14-1168 SCALE: - CUSTOMER TAG #: T-100  
 PROJ. MANAGER: RR SHEET: SERIAL #: B 13663-65 CL 5 of 7





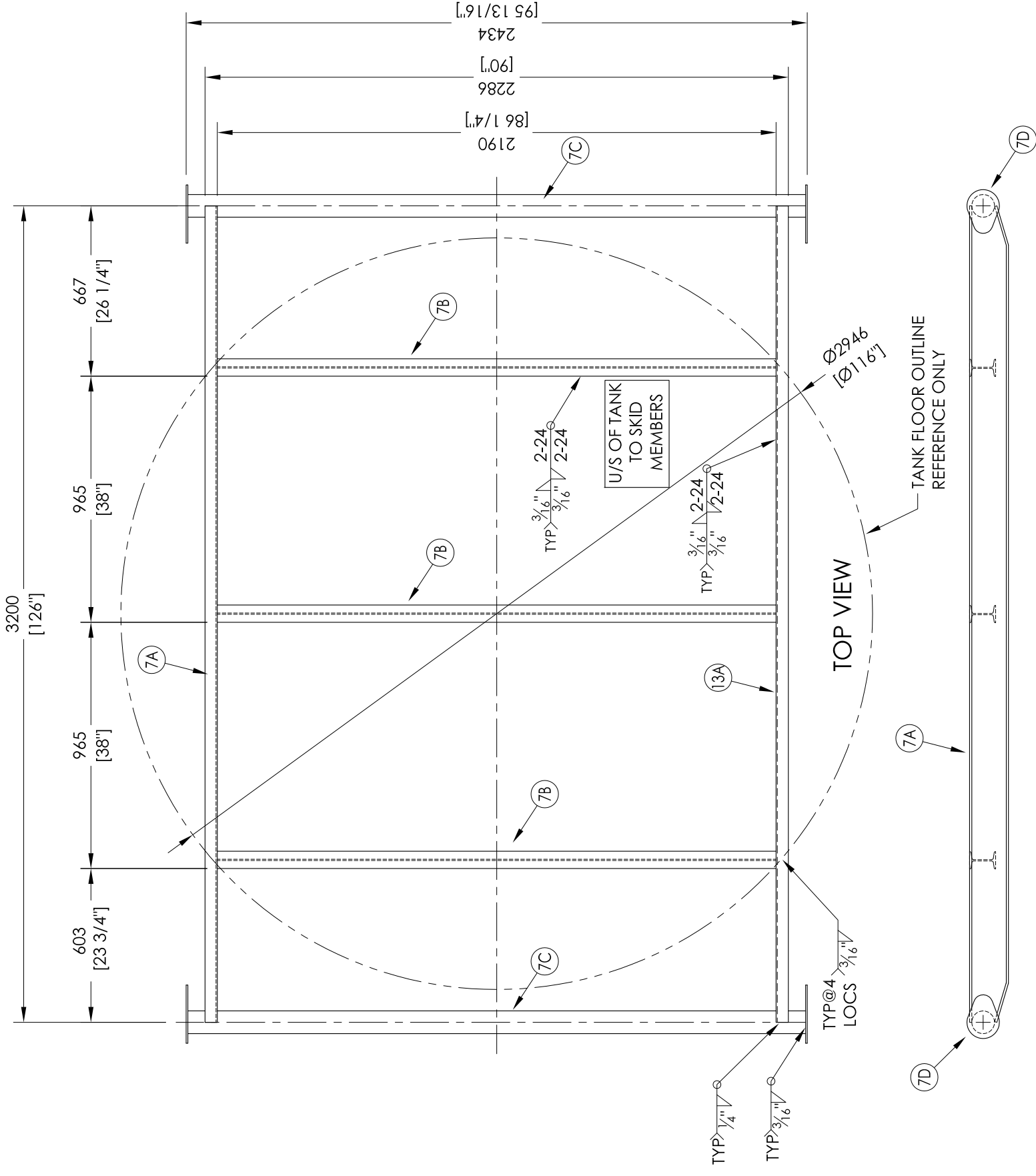
**3" TEAR DROP DETAIL**

SCALE: 1 TO 8

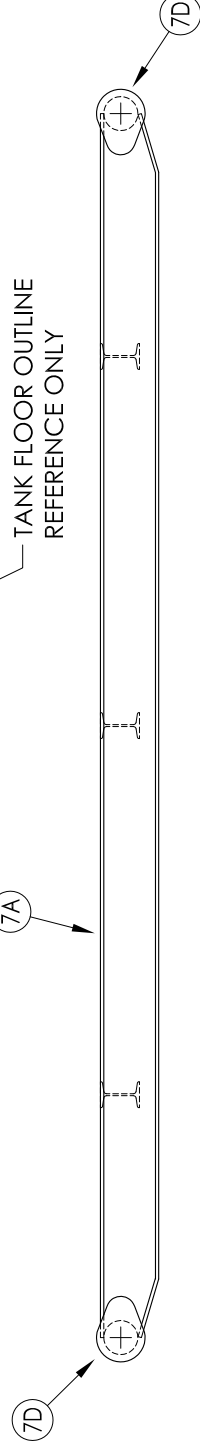


**PULL BAR DETAIL**

SCALE: 1:8



**TOP VIEW**



**ELEVATION VIEW**

**BILL OF MATERIALS**

MARK	QTY	PART NAME	DESCRIPTION	LENGTH	MATERIAL
7A	2	MAIN MEMBERS	CHANNEL, C150x12 (C6x8.2)	3200 [126"]	A36
7B	3	CROSS MEMBERS	WIDE FLANGE, S100x11 (S4x7.7)	2190 [86 1/4"]	A36
7C	2	PULL BAR	PIPE, ERW, 89 DIA [3"] SCH.40	2421 [95 5/16"]	A53B
7D	4	3" TEARDROP	PLATE, 6.4x 228x 165 [1/4"x 9"x 8 3/8"]	-	A36

**DESIGN/WELDING NOTES:**

- ALL DIMENSIONS ARE IN mm/INCHES.
- APPROXIMATE WEIGHT: 338 LBS (153 KG)
- WIDE FLANGES ARE TO BE COPE FITTED WHERE APPLICABLE.
- ALL WELDS ON THE TOP OF SKID TO BE GROUND SMOOTH.
- ALL WELDING TO BE DONE TO LATEST REVISION OF CWB WPDS.
- CWB SHOP SUPERVISOR TO SPECIFY WELDING PROCESS
- 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**

REV.	DESCRIPTION	DATE	BY	CHK	APP
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	

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

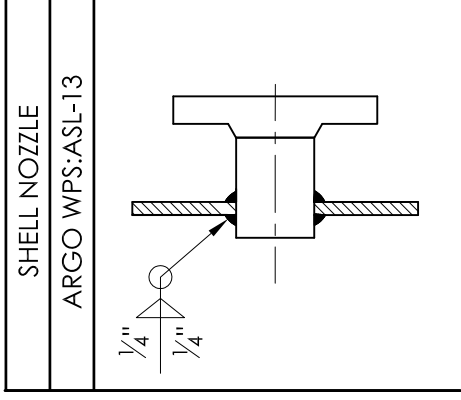
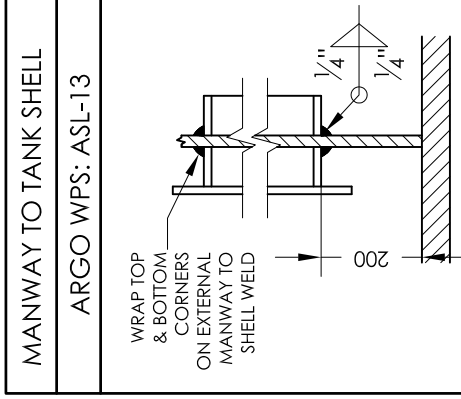
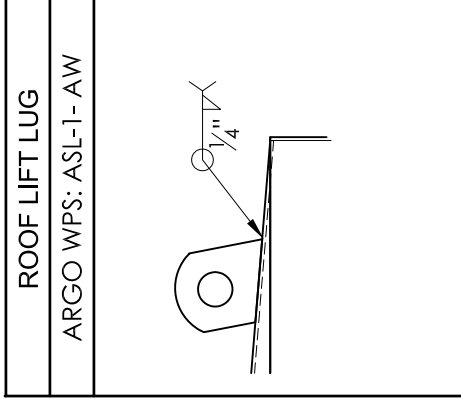
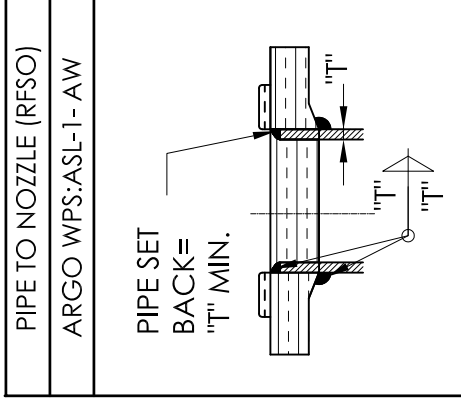
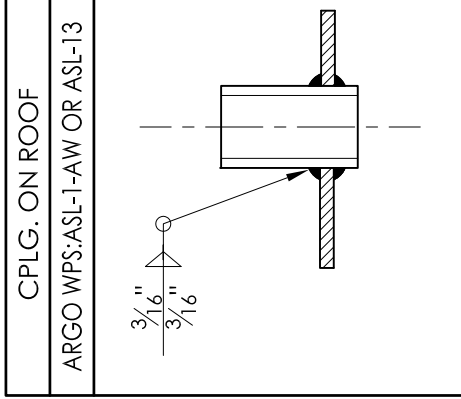
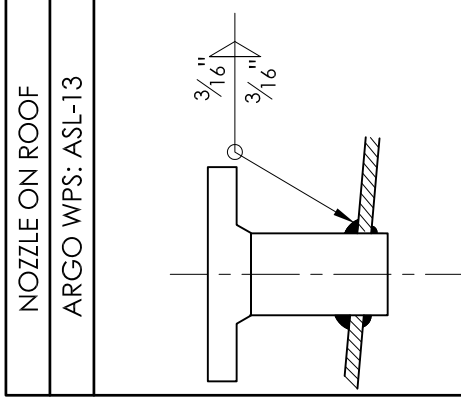
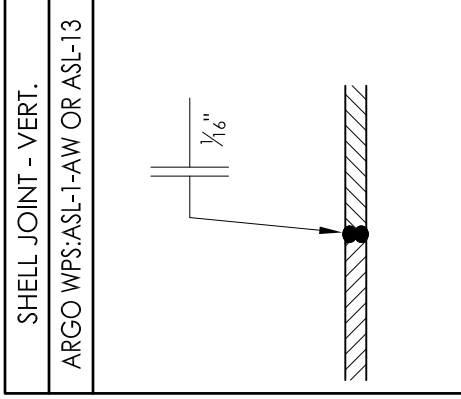
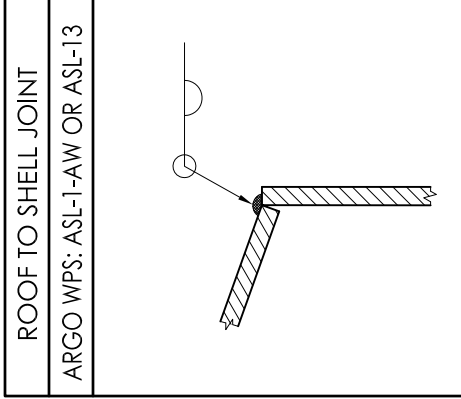
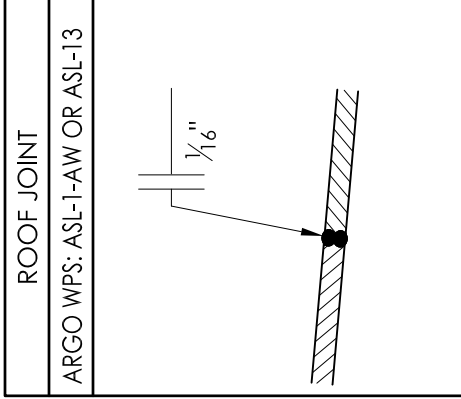
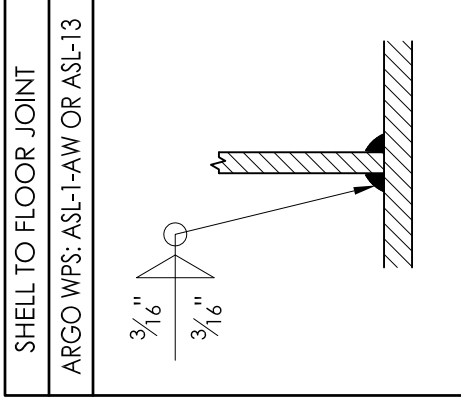
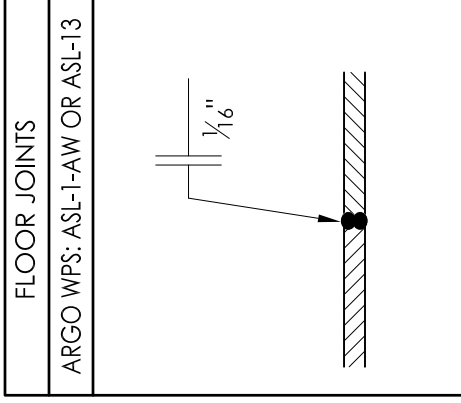
SKID DETAIL DRAWING



DWG BY: CP	QUOTE #: TQ14-1168	SCALE: -	CUSTOMER TAG #: T-100
PROJ. MANAGER: RR	SHEET: SERIAL #:	DWG TAG:	SHEET: 6 of 7
ARGO DRAWING NO.:	B	13663-65	SK







**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 ATTACHMENTS 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

REV.	DESCRIPTION	DATE	BY	CHK	APP
1	AS BUILT	03.24.15	CP		
0	ISSUED FOR FABRICATION	12.02.14	CP		
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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  
 WELD DETAILS

ARGO FABR LTD.

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

