

DATA BOOK

762 (30") OD SEPARATOR SN1667
QUADRUPLES SEPARATOR PACKAGE
CORDOVA D-55-A/94-P-10 FACILITY
PENN WEST EXPLORATION
P.O. # PEI-A13370663-01
C/O PIONEER ENGINEERING INC
CADO PROJECT # 2013-070 UNIT 1 OF 2

CADO INDUSTRIES INC.

7491 – 110 AVENUE SE CALGARY, AB T2C 3B8 TEL 403-279-6662 FAX 403-279-6687

FORM U-1A MANUFACTURERS DATA REPORT FOR PRESSURE VESSELS
 (Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
 As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

①636929.

1. Manufactured and certified by Cado Industries Inc. 7491, 110 Avenue S.E. Calgary, Alberta, Canada, T2C 3B8
(Name and Address of Manufacturer)
2. Manufactured for Penn West Exploration #200, 207 - 9th Avenue S.W. Calgary, Alberta T2P 1K3
(Name and address of purchaser)
3. Location of installation Penn West Exploration Cordova d-55-A/94-P-10 Facility
(Name and address)
4. Type Vertical 1667 W3539.213 2013-070-300 Rev. 2 N/A 2014
(Horiz. or vert., tank) (Mfg's serial No.) (CRN) (Drawing No.) (Mat'l Bd. No.) (Year built)
5. ASME Code, Section VIII, Division 1 2010 ED, 2011 ADD N/A N/A
[Edition & Addenda, if applicable (Date)] (Code Case No.'s.) [Special Service per UG-120(d)]
6. Shell SA-516-70N 1.25" 0.125" 2'-4" 10'-0"
Mat'l. (Spec. No., Grade) Norm. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

Body Flanges on Shells													
No.	Type	ID	OD	Flange Thickness	Min. Hub Thickness	Material	How Attached	Location	Bolting				
									Num & Size	Bolting Material	Washer (OD.ID. Thk)	Washer Material	

7. Seams Type 1 Full 100% 1100° F 1.25 HR Type 1 Full 100% 1
Long (Welded, Dbl., Singl., Lap, Butt) R. T. (Spot or Full) Eff. (%) H.T. Temp. (° F) Time (hr) Girth (Welded, Dbl., Singl., Lap, Butt) R. T. (Spot or Full) Eff (%) No. of Courses

8. Heads: (a) Mat'l. SA-516-70N (Spec. No., Grade) b) Mat'l. SA-516-70N (Spec. No., Grade)

	Location (Top Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	End	1.14"	0.125"			2:1				Concave
(b)	End	1.14"	0.125"			2:1				Concave

Body Flanges on Heads												
	Location	Type	ID	OD	Flange Thickness	Min. Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD.ID. Thk)	Washer Material
(a)												
(b)												

9. MAWP 1360 PSI at max. temp. 194° F
Internal External Internal External
 Min. design metal temp -20° F at 1360 PSI Hydro., pneu., or comb. test pressure 1768 PSI
 Proof Test N/A

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
				SEE	ATTACH	ED	FORM	U-4			

11. Supports: Skirt Yes Lugs Two Legs None Other N/A Attached Top & Bottom Head, Welded
(Yes or no) (Number) (Number) (Describe) (Where and how)


12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Vessel : 30" Separator; Construction Drawing : 2013-070-300 Rev. 2; Volume : 45.8 Cu. Ft. Impact test: Exempt as per FIG UCS-66, UCS 66(b)(1)(b) and UG-20(f). Three 4" Blind RF CL 600 SA-105-N c/w 36 1" Ø Studs 171 LG c/w 2 Nuts each SA-193-B7M/194-2HM UNC.

CERTIFICATE OF SHOP/ FIELD COMPLIANCE


We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U"Certificate of Authorization No. 39285 expires Feb.10, 2016

Date JAN 21 2014 Co. name Cado Industries Inc. Signed  (Manufacturer) (Representative)

CERTIFICATE OF SHOP / FIELD INSPECTION

Vessel constructed by Cado Industries Inc at 7491, 110 Avenue S.E. Calgary, Alberta, Canada, T2C 3B8
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by ABSA

have inspected the component described in this Manufacturer's Data Report on JAN 22 2014, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date JAN 22 2014 Signed  (Authorized Inspector) Commissions AB 11 NB 10270 A, B (National Board (incl. endorsements))

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Cado Industries Inc. 7491, 110 Avenue S.E. Calgary, Alberta, Canada, T2C 3B8
 (Name and address of Manufacturer)
2. Manufactured for Penn West Exploration #200, 207 - 9th Avenue S.W. Calgary, Alberta T2P 1K3
 (Name and address of Purchaser)
3. Location of installation Penn West Exploration Cordova d-55-A/94-P-10 Facility
 (Name and address)
4. Type: Vertical 30" Separator 1667
 (Horizontal, vertical, or sphere) (Tank, separator, heat exh., etc.) (Mfg's. serial No.)
- W3539.213 2013-070-300 Rev. 2 N/A 2014
 (CRN) (Drawing No.) (Nat'l Bd. No.) (Year Built)

Data Report
 Item Number 10
 Continued from Form U1a

Remarks

Purpose (Inlet, Outlet, Drain etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet	1	4" CL 600	RFWN	SA-106-B	SA-105-N	0.674"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
Gas Outlet	1	4" CL 600	RFWN	SA-106-B	SA-105-N	0.674"	0.125"	Inherent	UW16.1(c)	Type 1	Head
H2O Outlet	1	3" CL 600	RFWN	SA-106-B	SA-105-N	0.600"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
HC Outlet	1	3" CL 600	RFWN	SA-106-B	SA-105-N	0.600"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
Drain	1	2" CL 600	RFWN	SA-106-B	SA-105-N	0.436"	0.125"	Inherent	UW16.1(c)	Type 1	Head
PSV	1	2" CL 600	RFWN	SA-106-B	SA-105-N	0.436"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
LSHH	1	4" CL 600	RFWN	SA-106-B	SA-105-N	0.674"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
LSSL	1	4" CL 600	RFWN	SA-106-B	SA-105-N	0.674"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
LC (H2O)	1	3" CL 600	RFWN	SA-106-B	SA-105-N	0.600"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
LC (HC)	1	3" CL 600	RFWN	SA-106-B	SA-105-N	0.600"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
Inspection	2	4" CL 600	RFWN	SA-106-B	N/A	0.674"	0.125"	Inherent	UW16.1(c)	Type 1	Shell
LG (H2O)	2	¾" CL 6000	CPLG	SA-105-N	N/A	CL 6000	0.125"	Inherent	UW16.1(c)	Type 1	Shell
LG (HC)	2	¾" CL 6000	CPLG	SA-105-N	N/A	CL 6000	0.125"	Inherent	UW16.1(c)	Type 1	Shell
PG	1	¾" CL 6000	CPLG	SA-105-N	N/A	CL 6000	0.125"	Inherent	UW16.1(c)	Type 1	Shell
TG	1	1" CL 6000	CPLG	SA-105-N	N/A	CL 6000	0.125"	Inherent	UW16.1(c)	Type 1	Shell

Certificate of Authorization: Type "U" No. 39285 Expires Feb. 10, 2016

Date JAN 7 1 2014 Name Cado Industries Inc. Signed  AB 11 NB 10270 A, B
 (Manufacturer) (Representative)

Date JAN 2 2 2014 Name  Commission AB 11 NB 10270 A, B
 (Authorized Inspector) (Nat'l Board incl. Endorsement, State, Province and No.)

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EXHIBIT 9.5 TRAVEL SHEET (FRONT)

DO NOT START CONSTRUCTION WITHOUT AI REVIEW					TRAVEL SHEET REVISION NO.:				
AI REVIEW:			REVIEW DATE:		OCT 04 2013				
SERIAL NO.: 1667		JOB NO.: 2013-070		VESSEL TYPE: 762 Separator					
DRAWING NO.: 2013-070-300		DWG. REVISION NO.: Rev. 0		TRAVEL SHEET INITIATION BY: <i>CH</i>					
Seq.	Item	Comments	Q.C.I.	Date	A.I. Hold Points	A.I.	Date	Owner	Date
1.	Calculations in File			JAN 20 2014	x		JAN 22 2014		
2.	Release of App'd Dwg.			OCT 03 2013	y		OCT 04 2013		Nov 26
3.	Materials Examined			DEC 11 2013					
4.	Heat Numbers Recorded			DEC 11 2013	x		JAN 22 2014		Jan 22
5.	MTRs Checked			JAN 20 2014	s				Jan 23
6.	WPS(s) Checked			OCT 03 2013	x		OCT 04 2013		"
7.	Welder(s) Qualified			DEC 11 2013					"
8.	Thicknesses Verified & Recorded			DEC 11 2013					
9.	Shell(s) & Head(s) Fit-up Inspection			DEC 11 2013	y				Jan 22
10.	Nozzles & Fittings Fit-up Inspection			DEC 11 2013			JAN 22 2014		Nov 26
11.	Nozzle Orientation			DEC 11 2013					"
12.	Nozzle & Flange Rating Checked			DEC 11 2013					"
13.	Impact Tests			EXEMPT	UCS 66				-
14.	Internals Checked			NOV 20 2013					"
15.	Final Internal Inspection	Shell Side Tube Side		NOV 25 2013	x		NOV 26 2013		Nov 26
16.	Weld Sizes Checked			DEC 11 2013					Jan 22
17.	Welder I.D. Checked			DEC 11 2013					"
18.	Final External Inspection			JAN 20 2014	y		JAN 22 2014		"
19.	Radiography			DEC 11 2013	y		JAN 22 2014		Jan 23
20.	Other N.D.E. <i>Hardness</i>			JAN 20 2014					Jan 23
21.	Final Ext. Prior to P.W.H.T.			DEC 11 2013					-
22.	PWHT Chart Checked			JAN 20 2014	x		JAN 22 2014		Jan 23
23.	Hydrostatic Test	Shell Side Gauge # PG-08F/07 Tube Side Gauge #		JAN 22 2014	xx		JAN 22 2014		Jan 22
24.	CRN Drawing	CRN#		JAN 20 2014	xx		JAN 22 2014		Jan 23
25.	N.C.R. #								
26.	Nameplate Stamping			JAN 21 2014	xx		JAN 22 2014		Jan 23
27.	Manuf. Data Report Completed & Verified			JAN 21 2014	xx		"		Jan 23
28.	Nameplate Installation			"			"		

The Authorized Inspector shall be presented with the Travel Sheet prior to construction so that he can designate additional inspection points and/or Hold Points. Any revisions shall be marked with a delta symbol with revision number and described at the bottom of this page.

* Denotes an A.I. Inspection Point ** Denotes an A.I. Hold Point

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S/P/1667

EXHIBIT 9.6 TRAVEL SHEET (BACK)

MATERIAL THICKNESS VERIFICATION AND IDENTIFICATION				WELD I.D. / WELDER SYMBOLS / FIT-UP						
Description	Thickness	Material Spec. & Grade	Heat & Plate Identifier or I.D. Number	Weld I.D.	Welder Symbol	Fit-Up Exam.	Weld I.D.	Welder Symbol	Fit-Up Exam.	Verify Type Joint
Shell #1	1.328	SA-516-70N	3826492139002	L-1	R/D/M	✓	C-1	A/D/M	✓	✓
Shell #2				L-2			C-2	A/S	✓	✓
Shell #3				L-			C-			
Shell #4				L-			C-			
Shell #5				L-			C-			
Shell #6				L-			C-			
Head #1	1.343	SA-516-70N	G1133476540102				C-			
Head #2	1.346	SA-516-70N	G1133476840102				C-			
Head #3							C-			
Head #4							C-			
Boot #1 Shell				L-			C-			
Boot #1 Head							C-			
Boot #2 Shell				L-			C-			
Boot #2 Head							C-			
Re-Pad										

ATTACHMENT AND / OR NOZZLE MATERIAL THICKNESS VERIFICATION AND IDENTIFICATION						WPS # WELDER SYMBOLS/FIT-UP			
Mark	Mat. I.D.	Neck	Fitting	Flange	Repad or Attachment	Cat. B	Cat. C	Cat. D	Pad OD
N1	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	4" SCH XXH		4" CL 600 RFWN			S	R/S	
	Heat# or ID	C1561		T10004515					
N2	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	4" SCH XXH		4" CL 600 RFWN			S	S	
	Heat# or ID	C1561		T10004515					
N3	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	3" SCH XXH		3" CL 600 RFWN			S	R/S	
	Heat# or ID	C1281		T1235050					
N4	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	3" SCH XXH		3" CL 600 RFWN			S	R/S	
	Heat# or ID	C1281		T1235050					
N5	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	2" SCH XXH		2" CL 600 RFWN			S	R/S	
	Heat# or ID	C1602		T10005812					
N6	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	2" SCH XXH		2" CL 600 RFWN			C	R/S	
	Heat# or ID	C1602		T10005812					
N7	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	4" SCH XXH		4" CL 600 RFWN			S	R/S	
	Heat# or ID	C1561		T10004515					
N8	Spec.-Grd.	SA-106-B		SA-105-N					
	Thk./Rating	4" SCH XXH		4" CL 600 RFWN			S	R/S	
	Heat# or ID	C1561		T10004515					



Gamma-Tech Inspection Ltd.
3080 - 49th Avenue SE
Calgary, Alberta T2B 2X4
Phone: 403-235-2454
Fax: 403-207-4451

RADIOGRAPHIC REPORT

R- 60795

CLIENT: CARD MATERIAL TYPE: CS THICKNESS RANGE: 1.250"
 LOCATION: CHEART SOURCE OF RADIATION: IR192
 GTIL JOB No. 13-01-0068 CONTRACTOR: CARD FOCAL SPOT (F): 3.5MM
 CLIENT'S P.O. TECHNIQUE: SWE DWE D5 D6 D7 OTHER
 CLIENT JOB No. 2013-070 FILM TYPE: AGFA DWT

DATE: OCT 9/13
 PAGE: 1 OF 1
 PROCEDURE: A
 CODE: ASME UWS1

LEGEND
 WELDERS SYMBOL
 ACCEPTABLE
 BORDERLINE
 REJECT
 See back for other legends.

IDENTIFICATION	PIPE SIZE	PIPE SCHEDULE	t	# OF EXP	CRK	LF	IP	P	S	UC	CR	EP	%	* IQI	DEFECT LOCATION AND REMARKS	ACCEPT	REJECT
1. SA11667																	
2. L1	1 1/4"	1250 8													Four P/M B		
3. O-15																	
4. 15-30																	
5. 30-45																	
6. 45-60																	
7. 60-75																	
8. 75-90																	
9. 90-105																	
10. 105-120END																	
11.																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	

FINAL FILM INTERPRETATION IS THE RESPONSIBILITY OF THE CLIENT.
 I AM IN FULL AGREEMENT WITH THE ABOVE DETAILS AND ACKNOWLEDGE RECEIPT OF FILM.

CLIENT REPRESENTATIVE: _____
 TECHNICIAN (SIGN): _____
 TECHNICIAN (PRINT): W. D. [Signature] CGSB LEVEL SA ASNT LEVEL SA
 ASSISTANT (PRINT): STEPHEN

FILM USED: 8 PCS. 5 1/2" X 17" FILM SIZE: 1" PCS.
 CGSB Reg # 805

SSOFD: Source of Object to Film Distance	Nominal Plus Maximum Reinforcement
SOD: Source to Object Distance	18.750
Curies	48

LEAD SCREENS: 1R192 .005 FRONT .010 BACK
 LEAD SCREENS: C060 .010 FRONT .010 BACK
 FILM DENSITY: MIN 2.0 MAX 4.0

Procedures: HT-2 Code: Client spec Acceptance / Rejection Criteria: Min. Hardness: _____ Max. Hardness: HB 200	Job / P.O. #: 2013-070 Client: Cado Industries Inc Location: CA-Calgary Alberta Item Inspected: Vessel S/N 1667 PWHT	IRISNDT #: 261900	Date: 15-Jan-14
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Material Type: CS	Surface Condition: buffed	Heat Treatment: YES
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Equipment: MIC 10	IRISNDT #: 45038	Calibration Date: 12-Jul-13
--------------------------	-------------------------	------------------------------------

Calibration Block(s): 176, 207

Hardness Scale Readings: Rockwell B Rockwell C Vickers Brinell

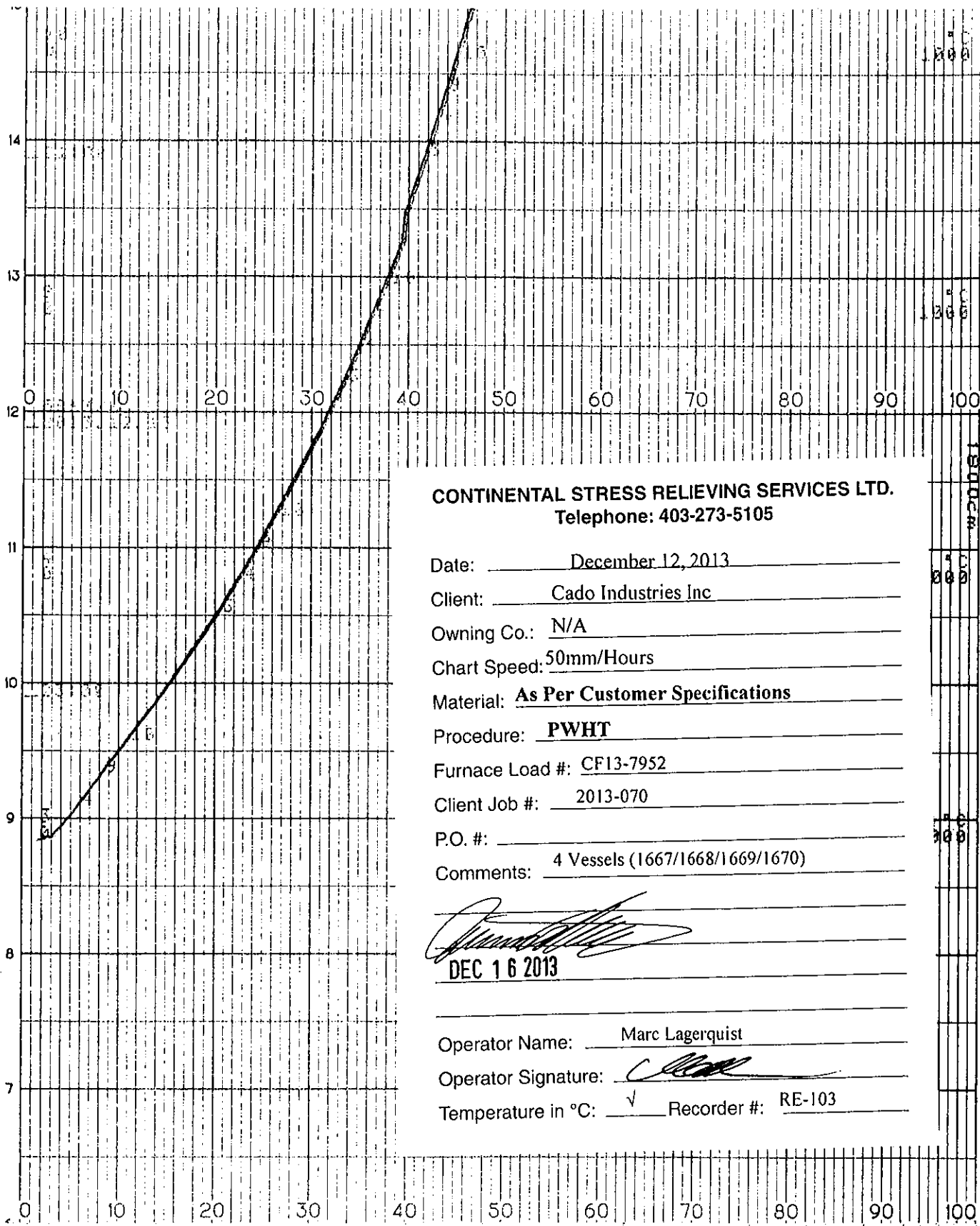
Item	Component Identification and Location of Reading		Brinell Impression		Brinell Bar Hardness	Hardness Value	(A)ccpt (R)eject
			Bar	Material			
WELD		PM	HAZ	WELD	HAZ	PM	
C1		148	167	170	147	142	A
L1		143	153	188	158	145	A
N2 cat D		148	154	175	159	158	A
Name plate	Attachment	154	152	185	146	135	A

Remarks:

NOTE: When testing weldments the precise location of the test must be clearly identified i.e. Parent Material or Heat Affected Zone or Weld.

Unit#: 389 Kilometers: _____ In: PG Out: _____ Hrs: .5 In: _____ Out: _____ Hrs: _____ Personnel: PG	Consumables: # of Hits: 20	Interpretation by: P. GERVAIS SNT-TC-1A _____ (Print) C.G.S.B. _____ (Level) _____ C.G.S.B. # _____ (Signature) Client Representative: (Print) I am in full agreement with report contents (Sign) _____
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GRAPHIC CONTROL 3 BUFFALO, NEW YORK



CONTINENTAL STRESS RELIEVING SERVICES LTD.
 Telephone: 403-273-5105

Date: December 12, 2013
 Client: Cado Industries Inc
 Owning Co.: N/A
 Chart Speed: 50mm/Hours
 Material: As Per Customer Specifications
 Procedure: PWHT
 Furnace Load #: CF13-7952
 Client Job #: 2013-070
 P.O. #: _____
 Comments: 4 Vessels (1667/1668/1669/1670)

[Signature]
 DEC 16 2013

Operator Name: Marc Lagerquist
 Operator Signature: *[Signature]*
 Temperature in °C: ✓ Recorder #: RE-103

125054

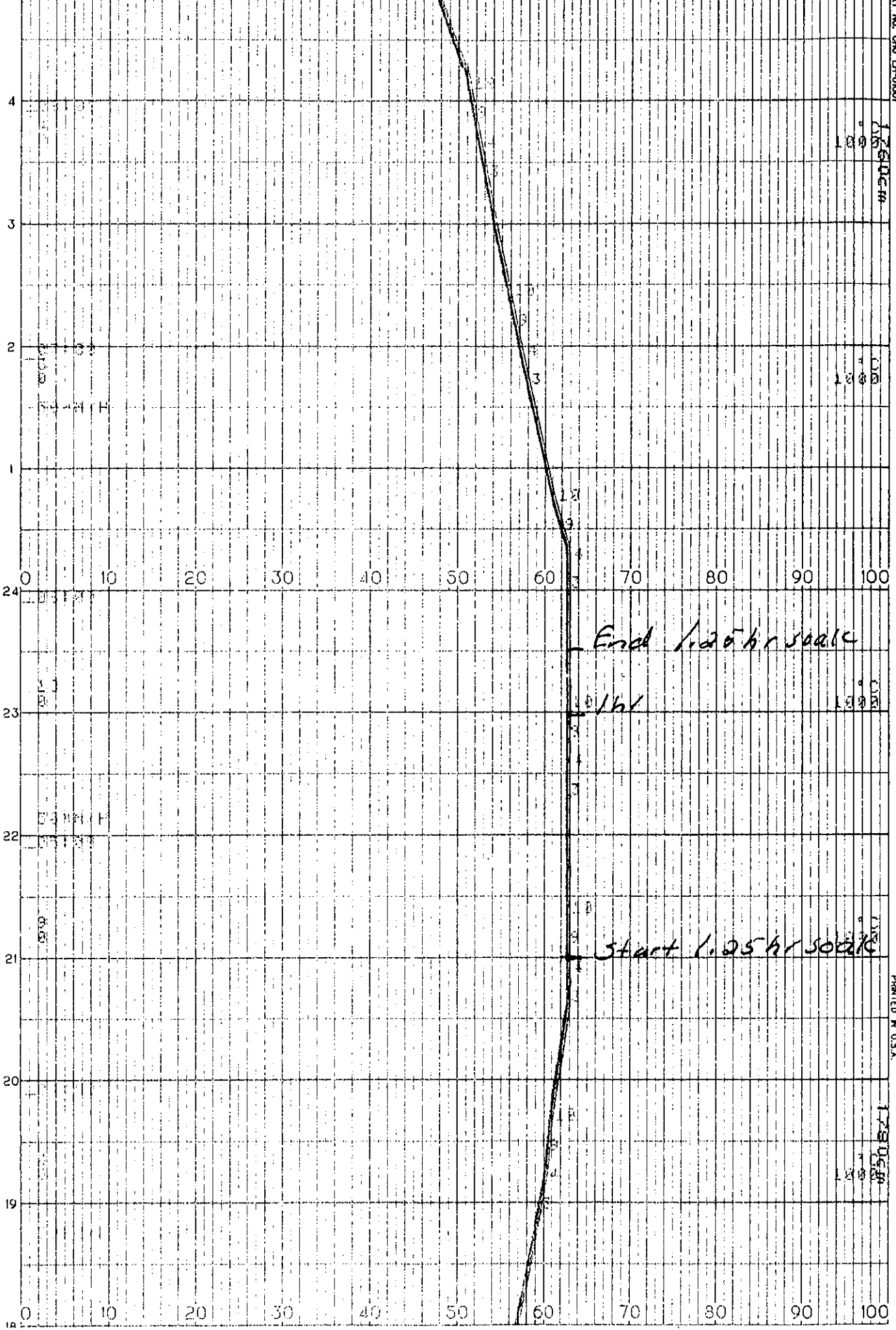
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EXHIBIT 14.1 HEAT TREATMENT INSTRUCTIONS

HEAT TREATMENT INSTRUCTIONS

JOB NO.: <u>2013-070</u> CUSTOMER: <u>Penn West</u>		DATE: <u>DEC 12 2013</u>			
COMPONENT DESCRIPTION: <u>30" Separators (4 total)</u>					
DWG. NO. AND LINE NO.	DIAMETER	THICKNESS	MATERIAL	LENGTH	WEIGHT
<u>2013-070-300 Rev. 2</u>	<u>30"</u>	<u>1.25"</u>	<u>SA-516-70N</u>	<u>10' S/S</u>	<u>6240 LBS</u>
<u>1667, 1668, 1669, 1670</u>			<u>SA-105-N</u>		
			<u>SA-106-B</u>		
TYPE OF HEAT TREATMENT: <u>PRESSURE VESSEL STRESS RELIEF P-No. 1</u>					
HEATING					
Temperature to be raised from 800°F (425°C) to <u>1150°F</u> at a maximum rate of <u>320</u> °F (<u>160</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 400°F (222°C) PER HOUR.					
[Calculated rate = 400 degrees F/hr. (222 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]					
HOLDING					
Temperature to be held at a minimum of <u>1150</u> °F (<u>621</u> °C) for <u>75</u> minutes.					
[Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)]					
COOLING					
Temperature to be lowered from <u>1150°F</u> (<u>621</u> °C) to 800°F (425°C) at a maximum rate of <u>400</u> °F (<u>204</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 500°F (280°C) PER HOUR.					
[Calculated rate = 500 degrees F/hr. (280 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]					
From 800°F (425°C) items may be cooled in still air.					
Additional requirements:					
<ul style="list-style-type: none"> ◆ Job number and description required on heat treatment charts along with the operator's signature & date. ◆ Reporting of thermocouple attachment method and location, and verification of furnace thermocouple calibration is required. ◆ A sufficient number of thermocouples shall be located to control and maintain uniform distribution of temperature on all vessels and parts. Thermocouples shall be directly attached to the item or provision shall be made for thermocouple placement at bottom, centre and top of the furnace charge in accordance with the ASME Code. ◆ During the heating period, there shall not be a greater variation in temperature throughout the portion of the vessel being heated than 250°F (140°C) within any 15 ft. (4.6 m) interval of length. An adequate number of thermocouples must be used to ensure this Code requirement is met. This limitation is also applicable to the temperature variations between the different thicknesses of various vessel components. ◆ During the holding period, there shall not be a greater difference than 150°F (83°C) between the highest and lowest temperature throughout the portion of the vessel being heat treated, except where the range is further limited by these instructions. ◆ If Capacitor Discharge welding is used to attach thermocouples an ASME Code Section IX Welding Procedure Specification is required (WPS qualification is not required), and the energy output must be limited to 125 Watt-Seconds. No other welding is permitted on vessels or parts. [0.5 X Capacitance in farads X Voltage² = W-Sec.] ◆ The method of thermocouple removal shall not damage the heat treated item. 					
Quality Control Inspector Signature: <u>[Signature]</u>			Date: <u>DEC 12 2013</u>		
Thermocouple Attachment Method: <u>Capacitor Discharge</u>			Location(s): <u>TMB</u>		
Furnace Heat Number: <u>CF13-7952</u>					
Furnace Operator Signature: <u>[Signature]</u>			Date: <u>Dec 12/13</u>		



318 Monument Place SE
 Calgary, AB T2A 1X3
 Telephone: (403) 273-5105
 Fax: (403) 248-6497
 Email: calgary@continentalstress.com

Furnace Work Order

Client: CADO INDUSTRIES INC. Address: 7491 110 AVE SE. CALGARY, AB T3R 1R8 Attention: JEREMY KOSTER Phone: (403) 279-6662 Fax: Email:	Date: Thursday December 12, 2013 Owning Company: Date Required: Friday December 13, 2013 Client Reference: 2013-070 Purchase Order : Furnace Work Order Number: CF13-7952
--	--

Description	Quantity
VESSELS (1667/1668/1669/1670)	4

Total Overtime Hours = 0	@	\$.00	Per Hour =	\$.00
Furnace Number: 2	@		Furnace Charges:	\$865.00
			Other Charges(s):	\$.00
			COST:	\$865.00
			GST:	\$43.25
			TOTAL COST:	\$908.25

Heat Cycle (In Degrees Celsius)

Material:	Carbon Steel (P1) <= 1.25" W/T	Code:	Customer Spec.
Heat from Ambient to	425°	at a Moderate Rate.	
Heat from	425° to 621°	at 222°	per Hour Maximum.
Soak at	621° +/- 14°	for 1	Hours.
Cool to	425°	at 277°	per Hour Maximum.
Cool from		at	per Hour Maximum.
From	425°	Air Cool with furnace in place.	

Comments:

- NOTE:**
1. An extra charge will apply for any additional supporting or blocking if required.
 2. Customer will not hold Continental Stress Relieving Services Ltd. responsible for any damage of distortion caused by heat treatment process.

Thank you for the opportunity of quoting.
 Continental Stress Relieving Services Ltd.

Name: Marc Lagerquist Signed: 

Certificate of Conformance Multipoint Recorder

Make:	Chino	Customer:	Continental Stress Relieving Services
Model:	AH3745-N00	Address:	318 Monument Place SE
Serial Number:	AH093Q001		Calgary, Alberta, T2A 1X3
Description:	24 channel Type "K" temperature recorder		
Location:	Calgary, Alberta, Canada	Calibration Date:	October 11, 2013
Tag #:	RE-103	Calibration Due:	April 11, 2014
Report Number:	CSR-111013-03	Technician:	Austin Tarrant

Comments: All 24 channels checked at 0°C, 500°C and 1000°C. See also, recorder chart

Reding Instrument Services Ltd. certifies that the above listed instrument meets or exceeds all published specifications unless otherwise indicated. This instrument has been calibrated using equipment and standards traceable to the National Research Council of Canada (NRC), the National Institute of Standards and Technology (NIST), or derived from accepted values of natural physical constants. This calibration certificate applies only to the item described and shall not be reproduced, other than in full, without approval from Reding Instrument Services Ltd.

Calibration Standards

Make	Model	Serial Number	Recall Date
Fluke	741B	7751004	October 22, 2013


Technician

Oct. 11, 2013
Date

CADO INDUSTRIES INC
Quality Control Manual

Revision Number: 4.0

Revision Date: November 30, 2012

Section: 16 Page: 3 of 3

EXHIBIT 16.2 PRESSURE TEST REPORT

PRESSURE TEST REPORT			
TYPE OF TEST: Hydrostatic <input type="checkbox"/> Pneumatic <input type="checkbox"/> Other <input type="checkbox"/>			
EQUIPMENT DESCRIPTION: <u>30" separator+piping</u>		JOB NUMBER: <u>2013-070</u>	
SERIAL NO: <u>1667</u>	SHELL SIDE TEST PRESSURE <u>2040</u>	(PSI) KPA	
TUBE SIDE TEST PRESSURE _____		PSI / KPA	
LINE NO: _____	CONSTRUCTION DRAWING NUMBER _____	REV NO _____	
GAUGE IDENTIFICATION	CALIBRATION DATE	GAUGE RANGE	GAUGE PRESSURE
GAUGE #1 <u>Pg-08F</u>	<u>31 Oct 13</u>	<u>0-5000</u>	<u>2040</u>
GAUGE #2 <u>Pg-07</u>	<u>13 Aug 13</u>	<u>0-3000</u>	<u>2040</u>
CHART RECORDER #1			
MANUFACTURERS' REPRESENTATIVE: <u>[Signature]</u>		DATE: <u>JAN 22 2014</u>	
OWNERS INSPECTOR: <u>[Signature]</u>		DATE: <u>Jan 22, 2014</u>	
AUTHORIZED INSPECTOR: _____		DATE: _____	



19A, 3515 - 27th St. N.E., Calgary, Alberta T1Y 5E4
Ph: (403) 275-7090 • Fax: (403) 291-7001

CERTIFICATE OF CALIBRATION

Description: PRESSURE GAUGE
Make: WGI
Model: 4"
Serial #: NIL
Temp (°C): 20
Comments: NIL

ID #: PG-8F
Issue Date: 31OCT13
Expiry Date: 31OCT14
Work order #: 4486
RH: 25%

THE CALIBRATION CENTRE CERTIFIES THAT THE ABOVE LISTED INSTRUMENT
HEREIN MEETS OR EXCEEDS ALL PUBLISHED SPECIFICATIONS.

THE CALIBRATION HAS BEEN PERFORMED BY COMPARISON TO STANDARDS
THAT ARE TRACEABLE TO NATIONAL STANDARDS.

(1. NRC / 2. NIST)

EQUIPMENT USED:

MFG: SI MODEL PC-6 SERIAL NUMBER 2743

CALIBRATION DATA:

ACCURACY: 1.0 % FS

APPLIED	BEFORE	AFTER
1000	1020	1000
2000	2025	1995
3000	3025	3000
4000	4015	3990
5000	5005	4985

YVON HACHE - TECHNICIAN

Ⓐ 636929

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W
PT-I
HT

INDUSTRIES INC.

M.A.W.P. 1360 PSI @ 194

M.A.E.W.P. PSI @

M.D.M.T. 200 °F @ 1360

YEAR BUILT 2001

636929



the pressure equipment safety authority

9410 - 20 Ave N.W.
Edmonton, Alberta, Canada T6N 0A4
Tel: (780) 437-9100 / Fax: (780) 437-7787

December 02, 2013

Attention: Wilfred Cao
CADO INDUSTRIES INC
7491 110 AVENUE SE
CALGARY, AB

The design submission, tracking number 2013-08662, originally received on November 19, 2013 was surveyed and accepted for registration as follows:

CRN : W3539.2

Accepted on: December 02, 2013

Reg Type: New Design

Drawing No. : 2013-070-300 Rev 2

Description	MAWP	Design Temperature	MDMT
Internal Pressure	9377kPa	90 °C	-29 °C

An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.

Enclosed are stamped prints for your reference.

Sincerely,

DEDOVIC, BLAZO



505 - 6th Street, Suite 200
New Westminster, BC V3L 0E1

Toll Free: 1-866-566-SAFE
Fax: (778) 396 - 2064
www.safetyauthority.ca

CADO INDUSTRIES INC
7491 110 AVENUE SE
CALGARY AB T2C 3B8

Date: December 9, 2013
Account #: 46804
Journal #: 58602
Our File #: 5478899

Attn: WILFRED CAO

Re: Application for Design Registration

The design, as detailed in your, Ref: 2013-070, for a Pressure Vessel is accepted for registration as follows:

Registered To: CADO INDUSTRIES INC **CRN:** W3539.21

MDMT: -29 deg C

MAWT: 90 deg C

MAWP: 9376 kPa

Drawing #: 2013-070-300

Drawing Revision: 2

Conditions Of Registration:

Registration of a 30" Separator.

This design was registered based on a technical review performed by the province of initial registration in accordance with the Association of Chief Inspectors policy on reciprocal recognition of design review.

Contact me if you have any questions. The invoice for registration will be forwarded under separate cover.

SHARON PETERS
(778) 396-2027
Sharon.Peters@safetyauthority.ca
Design Administration

cc:

2202 2nd Avenue
 Regina, SK S4R 1K3
 Canada

306-787-1443
 info@tsask.ca
 www.tsask.ca

REGISTRATION APPROVAL

23-Dec-13

CADO Industries Inc.
 7491 - 110 Ave. SE
 Calgary, AB
 T2C 3B8

Our File 48044 [0V]

ATTENTION : Wilfred Cao

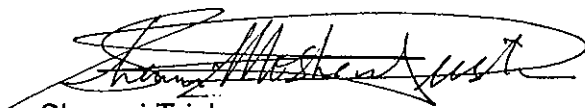
With reference to your submission respecting the registration of the item below, for legal use in the province, please note we have surveyed, approved and registered this design as noted.

MANUFACTURER :	CADO Industries Inc.	
ITEM :	DRAWING NUMBER :	CRN :
30" OD Vertical Separator	2013-070-300 Rev 2	W3539.23

We wish to point out that every vessel must be constructed strictly in accordance with the registered design.

In addition to stamping every vessel with the registration number given above and as required in CSA Code B51, a Manufacturer's Data Report must be forwarded to this office immediately at the time a vessel is shipped. Such forms may be obtained upon request.

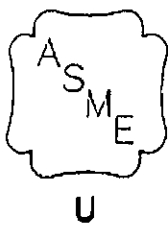
Sincerely,



Shamsi Trisha

Codes and Standards Compliance

REMARKS: CRN registered under reciprocal agreement.



CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

Cado Industries Inc.
7491 110th Avenue SE
Calgary, Alberta, T2C 3B8
Canada

SCOPE:

Manufacture of pressure vessels at the above location only

AUTHORIZED: December 12, 2012

EXPIRES: February 10, 2016

CERTIFICATE NUMBER: 39,285

Handwritten signature of Bryan A. Eiler.

Vice President, Conformity Assessment

Handwritten signature of Paul A. Wyle.

Director, Conformity Assessment



Certificate of Authorization Permit

Quality Management System

Expiry Date: **February 10, 2016**

Reg. No.: **AQP-1426(S)**

This is to certify that:

CADO INDUSTRIES INC.
7491 - 110 AVENUE S.E.
CALGARY, ALBERTA

having complied with the provisions of the SAFETY CODES ACT, is hereby authorized to:

Construct, Repair/Alter ASME Section VIII-1 Pressure Vessels
Construct, Repair/Alter ASME B31.3 Indirect Fired Heater Coils
Construct, Repair/Alter ASME B31.1 Power Piping and ASME B31.3 Process Piping
Manufacture Category 'A', 'E' & 'H' Fittings in accordance with CSA B51
at the above SHOP address.



As a condition of this permit, the holder is required to participate in interim audits by a safety codes officer to verify that the quality management system is being maintained in a manner acceptable to a safety codes officer.

Dated at Edmonton, this 17th day of December, 2012

WELDER "A"

SGS

LUDWIG

WELDING OPERATOR PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
Welder's Name Clifford Magno ABSA File No. MW-71559
WP Registration No. 2621.2 WPS No. CADO-14N
Welding Process(es) SAW Position 1G
Specification of Base Metal(s) SA 36 Thickness 19.1 mm (0.750 in.)
Base metal P-No. 1 to P-No. 1 Test coupon Production weld
 Plate Pipe N/A Filler metal (SFA) specification SFA 5.17
Filler metal or electrode classification F7A8-EM14K

Welding Variables (QW-361.2)

Type of welding (Machine)
Welding process(es) used
Backing
Filler metal F-Number(s)
Consumable Inserts (GTAW or PAW)
Deposit thickness
Welding Position
Vertical progression
Direct or remote visual control
Automatic arc voltage control (GTAW)
Automatic joint tracking
Single or multiple passes per side

Actual Values

Machine
SAW
Weld metal backing
F6
N/A
0.750 in.
1G
N/A
Direct
N/A
Manual
Multiple

Range Qualified

Machine
SAW
With backing
F6
N/A
Max to be welded
Flat
N/A
Direct
N/A
Manual or Automatic
Single or Multiple

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)
Side bend #S1 Pass Side bend #S2 Pass

PASS

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION SGS Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test January 13, 2014
Certified By [Signature] Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441
Test Certified for Compass Compression Services Ltd. by Representative Jeremy Koster

RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility Edmonton Calgary Field
Location of test: Cado Industries Inc. 7491 - 110 Avenue SE Calgary, AB T3R 1R8
Date test coupon is to be retained February 13, 2014 Test Coupon Heat No. W302107
Welder Performance Qualification Card No. 13223 Laboratory Test No. CW14-023.1

WELDER "C"



LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster
Welder's Name Robert Gray ABSA File No. W-12068
WP Registration No. 2621.2 WPS No. CADO-6
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual
Specification of base metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum Yes No

SMAW: 3 layers minimum Yes No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.100 in.

0.118 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.110 in. maximum

0.236 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)

Transverse face bend #F1 Pass Transverse root bend #R1 Pass

PASS

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test June 19, 2013

Certified By Darren McLean, T.T. Welding Examiner File No. E-00413

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field

Date test coupon is to be retained July 19, 2013 Test Coupon I.D. No. C2-45

Welder Performance Qualification Card No. 04965 Laboratory Test No. CW13-466.2

1027 - 14 Street, S.E., CALGARY, ALBERTA T2C 1K6 PHONE: (403) 262-7072 FAX: (403) 266-3169

7925 Davies Road, EDMONTON, ALBERTA T6E 4N1 PHONE: (780) 468-3030 FAX: (780) 468-3032

WELDER "C"



LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
Welder's Name Robert Gray ABSA File No. W-12068
WP Registration No. 2621.2 WPS No. CADO-1
Welding Process(es) SMAW Type Manual
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

SMAW: F3 3 layers minimum Yes No

SMAW: F4 3 layers minimum Yes No

Position qualified

Vertical progression

Actual Values

F3 None

F4 With

P1

2.50 in. O.D.

SFA 5.1

E6010 / E7018-1

F3 / F4

0.125 in.

0.500 in.

6G

Uphill

Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F3 / F4

0.250 in. maximum

Max. to be welded

All

Uphill

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)

Side bend #S1 Pass Side bend #S3 Pass

Side bend #S2 Pass Side bend #S4 Pass

PASS

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test June 26, 2013

Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field

Date test coupon is to be retained July 26, 2013 Test Coupon I.D. No. C2-54

Welder Performance Qualification Card No. 04991 Laboratory Test No. CW13-475.2

WELDER "D"



LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
Welder's Name Robert Sinnott ABSA File No. W-26006
WP Registration No. 2621.2 WPS No. CADO-1
Welding Process(es) SMAW Type Manual
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	F3 None F4 With P1	With or without With backing P1
Base metal P-No. 1 to P-No. 1 <input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.50 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	E6010 / E7018-1	WPS requirements
Filler metal F-Number(s)	F3 / F4	F3 / F4
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
Vertical progression	Uphill	Uphill

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)
Side bend #S1 Pass Side bend #S3 Pass
Side bend #S2 Pass Side bend #S4 Pass

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test September 4, 2013
Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field
Date test coupon is to be retained October 4, 2013 Test Coupon I.D. No. C2-57
Welder Performance Qualification Card No. 02445 Laboratory Test No. CW13-675.1

WELDER "D"



LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster
Welder's Name Robert Sinnott ABSA File No. W-26006
WP Registration No. 2621.2 WPS No. CADO-6
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual
Specification of base metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

Welding Variables (QW-350)

Backing

Actual Values

Range Qualified

Base metal P-No. 1 to P-No. 1

Plate Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum Yes No

SMAW: 3 layers minimum Yes No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.125 in.

0.093 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.138 in. maximum

0.186 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)

Transverse face bend #F1 Pass Transverse root bend #R1 Pass

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test September 4, 2013

Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field

Date test coupon is to be retained October 4, 2013 Test Coupon I.D. No. C2-45

Welder Performance Qualification Card No. 02448 Laboratory Test No. CW13-675.2

WELDER "M"



LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDING OPERATOR PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
Welder's Name Renante Morales ABSA File No. MW-69053
WP Registration No. 2621.2 WPS No. CADO-13N
Welding Process(es) SAW Position 1G
Specification of base metal(s) SA 36 Thickness 15.9 mm (0.625 in.)
Base metal P-No. 1 to P-No. 1 Test coupon Production weld
 Plate Pipe N/A Filler metal (SFA) specification SFA 5.17
Filler metal or electrode classification F7P8-EM14K

Welding Variables (QW-361.2)

	Actual Values	Range Qualified
Type of welding (Machine)	Machine	Machine
Welding process(es) used	SAW	SAW
Backing	Metal backing	With backing
Filler metal F-Number(s)	F6	F6
Consumable Inserts (GTAW or PAW)	N/A	N/A
Deposit thickness	0.625 in.	Max to be welded
Welding Position	1G	Flat
Vertical progression	N/A	N/A
Direct or remote visual control	Direct	Direct
Automatic arc voltage control (GTAW)	N/A	N/A
Automatic joint tracking	Manual	Manual or Automatic
Single or multiple passes per side	Multiple	Single or Multiple

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)
Side bend #S1 Pass Side bend #S2 Pass

PASS

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)
Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test July 2, 2013
Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field
Location of test: Cado Industries Inc. 7491 110 Ave. SE Calgary, AB T3R 1R8
Date test coupon is to be retained Aug 2, 2013 Test Coupon I.D. No. CPL-93
Welder Performance Qualification Card No. 02126 Laboratory Test No. CW13-487.2



LUDWIG ASSOCIATES LTD.

WELDER "R"

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
 Welder's Name Carlos Robertson ABSA File No. W-29988
 WP Registration No. 2621.2 WPS No. CADO-1
 Welding Process(es) SMAW Type Manual
 Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	F3 None	With or without
	F4 With	With backing
Base metal P-No. 1 to P-No. 1	P1	P1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.50 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	E6010 / E7018-1	WPS requirements
Filler metal F-Number(s)	F3 / F4	F3 / F4
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
Vertical progression	Uphill	Uphill

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)
 Side bend #S1 Pass Side bend #S3 Pass
 Side bend #S2 Pass Side bend #S4 Pass

PASS

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)
 Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test September 21, 2012
 Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413
 Test Certified for Cado Industries Inc. by Representative [Signature] Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field
 Date test coupon is to be retained October 21, 2012 Test Coupon I.D. No. C2-48
 Welder Performance Qualification Card No. 01893 Laboratory Test No. CW12-624.1



LUDWIG ASSOCIATES LTD.

WELDER "R"

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company	Cado Industries Inc.	Contact	Jeremy Koster
Welder's Name	Carlos Robertson	ABSA File No.	W-29988
WP Registration No.	2621.2	WPS No.	CADO-5
Welding Process(es)	GMAW / SMAW	Type	Semi-automatic / Manual
Specification of base metal(s)	SA 106 Gr.B	Thickness	8.74 mm (0.344 in.)

Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	GMAW None SMAW With	With or without With backing
Base metal P-No. 1 to P-No. 1	P1	P1, P6, 4130
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.375 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.18 / SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	ER70S-6 / E7018-1	WPS requirements
Filler metal F-Number(s)	F6 / F4	F6 / F4
Deposit thickness for each process		
GMAW: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.100 in.	0.110 in. maximum
SMAW: 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.244 in.	0.488 in. maximum
Position qualified	GMAW SP 30° SMAW 1G Rotated	SP 0 - 45°, Flat Flat
artical progression	GMAW Downhill SMAW N/A	Downhill N/A
Inert gas backing (GTAW, PAW, GMAW)	None	With or without
Transfer mode (spray/globular or pulse to short circuit-GMAW)	Short circuiting	Short circuiting

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d) **PASS**

Transverse face bend #F1 Pass Transverse root bend #R1 Pass

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test September 21, 2012

Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413

Test Certified for Cado Industries Inc. by Representative [Signature] Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field

ate test coupon is to be retained October 21, 2012 Test Coupon I.D. No. C2-39

Welder Performance Qualification Card No. 01894 Laboratory Test No. CW12-624.2



LUDWIG ASSOCIATES LTD.

WELDER "S"

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
 Welder's Name Donghao Shi ABSA File No. W-28478
 WP Registration No. 2621.2 WPS No. CADO-13N
 Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual
 Specification of base metal(s) SA 106 Gr.B Thickness 8.74 mm (0.344 in.)

Welding Variables (QW-350)	Actual Values	Range Qualified
Backing	GMAW: None SMAW: With	With or without With backing
Base metal P-No. 1 to P-No. 1 <input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	P1 2.375 in. O.D.	P1, 4130 1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.18 / SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	ER70S-6 / E7018-1	WPS requirements
Filler metal F-Number(s)	F6 / F4	F6 / F4
Deposit thickness for each process		
GMAW: F6 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.100 in.	0.110 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.244 in.	0.488 in. maximum
Position qualified	GMAW: SP 30° SMAW: 1G Rotated	SP 0 - 45°, Flat Flat
Vertical progression	GMAW: Downhill SMAW: N/A	Downhill N/A
Inert gas backing (GTAW, PAW, GMAW)	None	With or without
Transfer mode (spray/globular or pulse to short circuit-GMAW)	Short circuiting	Short circuiting

RESULTS

PASS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)
 Transverse face bend #F1 Pass Transverse root bend #R1 Pass

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)
 Test Conducted By Dan Nguyen, CSA W178.2 level II Insp. Date of Test June 5, 2012
 Certified By Dan Nguyen, C.E.T. Welding Examiner File No. E-00286
 Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field
 Date test coupon is to be retained July 5, 2012 Test Coupon I.D. No. C2-39
 Welder Performance Qualification Card No. 01474 Laboratory Test No. CW12-357.2



LUDWIG ASSOCIATES LTD.

WELDER "S"

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster
 Welder's Name Donghao Shi ABSA File No. W-28478
 WP Registration No. 2621.2 WPS No. CADO-1
 Welding Process(es) SMAW Type Manual
 Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	F3 None	With or without
	F4 With	With backing
Base metal P-No. 1 to P-No. 1	P1	P1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.50 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	E6010 / E7018-1	WPS requirements
Filler metal F-Number(s)	F3 / F4	F3 / F4
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
artical progression	Uphill	Uphill

RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test QW-462.2; QW-462.3(a); QW-462.5(c); QW-462.5(d)
 Side bend #S1 Pass Side bend #S3 Pass
 Side bend #S2 Pass Side bend #S4 Pass

PASS

Alternative radiographic examination results (QW-191) N/A

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

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)
 Test Conducted By Dan Nguyen, CSA W178.2 level II Insp. Date of Test June 5, 2012
 Certified By Dan Nguyen, C.E.T. Welding Examiner File No. E-00286
 Test Certified for Cado Industries Inc. by Representative Jeremy Koster

RECORD INFORMATION

Ludwig Associates Ltd. testing facility Edmonton Calgary Field
 Date test coupon is to be retained July 5, 2012 Test Coupon I.D. No. C2-41
 Welder Performance Qualification Card No. 01473 Laboratory Test No. CW12-357.1

CERTIFICATE OF COMPLIANCE

5545-89 Street Edmonton, Alberta Canada T6E 5W9 www.edmontonexchanger.com tel 780.468.6722 • QC fax 780.466.4668 • sales fax 780.466.5155

Customer CADO INDUSTRIES INC. po 2013-070-7921 Work Order C99866 Date 2013/09/10 Co/C# 43584 Page 1 of 2

Item#	Description	Qty	Heat#	Brinell Hardn.	Weld Proc.	Form. Proc.
S99866-1-1	SHELL(S) - 1.2500" NOM X 30" OD X 120" (Material Spec: SA 516-70 Normalized) Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A	1.320"	1 382649-21390-02	MTR	WP600	4
S99866-1-2	SHELL(S) - 1.2500" NOM X 30" OD X 120" (Material Spec: SA 516-70 Normalized) Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A	1.327"	1 382648-21230-01	MTR	WP600	4
S99866-1-3	SHELL(S) - 1.2500" NOM X 30" OD X 120" (Material Spec: SA 516-70 Normalized) Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A	1.328"	1 382649-21390-02	MTR	WP600	4
S99866-1-4	SHELL(S) - 1.2500" NOM X 30" OD X 120" (Material Spec: SA 516-70 Normalized) Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A	1.328"	1 382649-21390-02	MTR	WP600	4
S99866-3	COUPON(S) - 1.2500" NOM X 12" X 6" (Material Spec: SA 516-70 Normalized)	2	382649-21390-02	-	-	-

Forming Procedure:
4. Cold Formed

Brinell Equipment: Newage Calibrated Pin
Brinell Hardness Tester

→ 1.337"
→ 1.340"

Supplementary Requirements

Normalized Material Identification Marking:

'MT' indicates normalized by the mill per ASME Code Section II, Part A, SA 20, Paragraph 13.1.1.

'GMT' indicates normalized by Edmonton Exchanger per ASME Code Section II, Part A, SA 20, Paragraph 13.1.2.

'GT' indicates normalized by Edmonton Exchanger per ASME Code Section VIII Division 1, UG-85 or ASME Code Section I, PG-77.4.

The item(s) listed above comply with the requirements of ASME Code Section I, PG-80 and ASME Code Section VIII, Division 1, UCS-79(d), UG-79 & UG-80. All welders and procedures are qualified to ASME Code Section IX. For tacking carbon steel items, roundbar used is 1018 Cold Rolled. Material being supplied conforms to the latest ASME Code Section II, Part A, 2010 Edition, Addenda July 1, 2011.

M.T.R. ACCEPTABLE

TO A.S.M.E. SECT. II

10 EDITION 11 ADD.

SEP 25 2013



QM-System: Certification as per ISO 9001

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate)



DILLINGER HÜTTE

A10 Advice of dispatch No./
Date of dispatch

447957-01.03.13

A09 Manufacturer's order/
Certificate No.

381826-001

Sheet

1/...

A05 Established inspecting body

A06 Purchaser
Final receiver

B01 Product

HEAVY PLATES

B02 Steel design: **SAS16-70**

B03 Any suppl. requirements: **ASME-11A:2010+ADDENDA-2011A
DIL-HUE-2:R33-2012-10-01**

A07.1 No. **SA20-SS**

EDMONTON STEEL, EDMON
EDMONTON STEEL, EDMON

ED10614-J1010-ER



B01-B99 Description of the product

B08 Item No.	B09 Number of places	B10 Thickness Width INCH	B11 Length	B12 Theoretical mass KG	B04 Product delivery condition	B07.2 Heat No.	B07.1 Rolled plate No./ Test No.	A08 Purchaser article number
01	1	0,8750 x	120,50000 x	480,00000	N	382647	20724-01	
01	1	0,8750 x	120,50000 x	480,00000	N	382647	20724-02	
01	1	0,8750 x	120,50000 x	480,00000	N	382647	20812-01	
01	1	0,8750 x	120,50000 x	480,00000	N	382647	20812-02	
***	4			26040				
03	1	1,0000 x	120,50000 x	480,00000	N	382648	21312-01	
03	1	1,0000 x	120,50000 x	480,00000	N	382648	21312-02	
03	1	1,0000 x	120,50000 x	480,00000	N	382648	21312-03	
03	1	1,0000 x	120,50000 x	480,00000	N	382648	21315-01	
03	1	1,0000 x	120,50000 x	480,00000	N	382648	21315-02	
***	5			37200				
04	1	1,2500 x	121,00000 x	480,00000	N	382649	21390-01	
04	1	1,2500 x	121,00000 x	480,00000	N	382649	21390-02	
***	2			18678				
***	11			81918				

B04 Product delivery condition

ITEM NO.: **01,03-04**

N: HT: **1670 GR.F +36 -27 GR.F**

SOAKING TIME TO ATTAIN THE TARGET TEMPERATURE OVER THE WHOLE SECTION: **1-1,75 MIN/MM (25-45 MIN/INCH)**
COOLING IN STILL AIR

A04 2011/2012/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.



Manufacturer's mark

B. BALDAUF



AG der Dillinger Hüttenwerke
Postfach 1580, D-66748 Dillingen/Saar
Inspection department

B. BALDAUF Test House Manager
Inspector's stamp Date 04.03.13 PP 1

A01

QM-System: Certification as per ISO 9001



DILLINGER HÜTTE

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate)

A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991 MATERIAL TEST REPORT (MTR)	A10 Advice of dispatch No./ Date of dispatch 447957-01.03.13	A08/ Manufacturer's order/ A03 Certificate No. 381826-001	Sheet 2/...
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A05 Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON Final receiver EDMONTON STEEL, EDMON	A07.1 No. ED10614-J1010-ER	A07.2 No.
---------------------------------------	---	-------------------------------	-----------

B02/ Steel design. SAS16-70	SA20-SS
B03 Any suppl. requirements	ASME-11A:2010+ADDENDA-2011A DIL-HUE-2:R33-2012-10-01

B06 Marking of the product

ITEM NO.: 01,03-04
STEEL DESIGNATION SAS16 70 MELTY SAS16 60 MELTY
HEAT NO. / TRADEMARK / ROLLED PLATE NO.-TEST NO. / INSPECTOR'S STAMP

B07-B99 Further information about the product

ITEM NO.: 01,03-04
THICKNESS REDUCTION RATIO >= 3,0 IS FULFILLED (CF. A/SA20 PAR. 5.3)

C10-C29 Tensile test

Item No.	Heat No.	Roll plate/ Test No.	B05 Reference (heat) treatment	C01 C02 C03 Temp. GR.F	C10 C11 KSI RP02	C12 RM	C13 A % LO=8IN	C14-C15 A % LO=2IN
01	382647	20724		RT	50,6	75,3	27	
01	382647	20812		RT	50,2	75,4	29	
03	382648	21312		RT	51,8	75,1	32	
03	382648	21315		RT	51,0	75,5	29	
04	382649	21390		K1 QV RT	48,0	75,4		34

C30-C39 Hardness test

Item No.	Heat No.	Roll plate/ Test No.	B05 Reference (heat) treatment	C01	C02/C01	C03 Temp. GR.F	C30 Method of test	C35 C31 Individual values	C32 Mean value
01	382647	20724		K1	O	RT	HBW 10/3000	143	143
01	382647	20812		K1	O	RT	HBW 10/3000	138	140
03	382648	21312		K1	O	RT	HBW 10/3000	142	142
03	382648	21315		K1	O	RT	HBW 10/3000	144	144
04	382649	21390		K1	O	RT	HBW 10/3000	142	142

Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

Manufacturer's mark
 B. BALDAUF
 Test House Manager

 Inspector's stamp
 Date 04.03.13
 PP 1
 AG der Dillinger Hüttenwerke
 Postfach 1580, D-66748 Dillingen/Saar
 Inspection department

QM-System: Certification as per ISO 9001



DILLINGER HÜTTE

Erhalten Sie hier die Rückseite/Explication von au verso/See reverse for explanations (www.dillinger.de/certifical)

A02 INSPECTION CERTIFICATE 3.1.1 AS PER EN 10204:2004	A10 Advice of dispatch No./ Date of dispatch	A09 Manufacturer's order/ Certificate No.	Sheet
INSPECTION CERTIFICATE 3.1.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991	447957-01.03.13	381826-001	3/...
MATERIAL TEST REPORT (MTR)			

A05 Established inspecting body	A05 Purchaser	A07.1 No.	A07.2 No.
EDMONTON STEEL, EDMON	EDMONTON STEEL, EDMON	ED10614-J1010-ER	
DH	Final receiver		
	EDMONTON STEEL, EDMON		

B02 Steel design	SA516-70	SA20-S5
B03 Any suppl. requirements	ASME- IIA: 2010+ADDENDA-2011A	
	DIL-HDE-2: R33-2012-10-01	

C40-C49 Impact test

B14 Item	B07.2 Heat No.	B07.1 Replate/ Test No.	B05 Reference (heat) treatment	C01	C02/ C01	C03 Temp. GRF	C41 Width of test piece	C40 Type of test piece	C44 Testing method	C46 Energy	C45 C42 Individual values	C43 Mean value
01	382647	20724		K1	LV	-51		CHP-V			AV 57	98
01	382647	20812		K1	LV	-51		CHP-V			AV 112	113
03	382648	21312		K1	LV	-51		CHP-V			AV 78	110
03	382648	21315		K1	LV	-51		CHP-V			AV 116	119
04	382649	21390		K1	LV	-51		CHP-V			AV 105	93

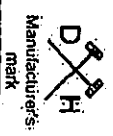
C70-C99 Chemical composition % - Heat analysis

B07.2 Heat	C70	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
382647	Y	0,182	0,360	1,17	0,010	0,0008	0,0084	0,023	0,011	0,037	0,037	0,001	0,001	0,001	0,002
382648	Y	0,188	0,364	1,19	0,011	0,0017	0,0068	0,030	0,009	0,031	0,047	0,001	0,001	0,002	0,002
382649	Y	0,179	0,384	1,19	0,012	0,0009	0,0064	0,029	0,011	0,037	0,042	0,001	0,001	0,001	0,003

C94 Heat analysis Carbon equivalent / Alloying restrictions

B07.2 Heat	FO-02=	FO-51=	FO-55=	FO-78=	FO-91=
382647	0,39	0,51	0,002	0,11	6,4
382648	0,40	0,51	0,002	0,12	6,3
382649	0,39	0,51	0,002	0,12	6,6

A04* Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.



B. BALDAUF
Test House Manager



Inspector's stamp Date 04.03.13

AG der Dillinger Hüttenwerke
Postfach 1580, D-66748 Dillingen/Saar
Inspection department

QM-System: Certification as per ISO 9001



DILLINGER HÜTTE

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate)

A10 Advice of dispatch No./
Date of dispatch

A08/ Manufacturer's order/
A03 Certificate No. Sheet

A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004
INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991
MATERIAL TEST REPORT (MTR)

447957-01.03.13

381826-001 4/...

A05 Established inspecting body A06 Purchaser EDMONTON STEEL, EDMON A07.1 No. ED10614-J1010-ER

DH Final receiver EDMONTON STEEL, EDMON A07.2 No.

B01 Product
HEAVY PLATES

B02 Steel design SA516-70 SA20-S5

B03 Any suppl. ASME-ITA:2010+ADDENDA-2011A
requirements DIL-HUE-2:R33-2012-10-01

C95 Ladle treatment

ITEM NO.: 01,03-04
HEAT OF THE INDICATED ITEM: VACUUM DEGASSED / SULPHIDE SHAPE CONTROL

C95 Further information about ladle treatment

ITEM NO.: 01,03-04
CALCIUM TREATED

C70-C99 Chemical composition % - Product analysis

Heat	Test No.	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
B07.2	B07.1	C01													
Heat	Test No.														
382647	20724	K1	0,173	0,353	1,15	0,009	0,0005	0,0077	0,021	0,010	0,037	0,036	0,001	0,000	0,002
382648	21315	K1	0,177	0,355	1,14	0,009	0,0009	0,0070	0,022	0,009	0,036	0,036	0,001	0,000	0,002
382649	21390	K1	0,174	0,379	1,17	0,011	0,0009	0,0060	0,028	0,009	0,033	0,046	0,001	0,000	0,002

Heat	Test No.	C01 <th>B</th> <th>CA</th> <th>AL-T</th>	B	CA	AL-T
B07.2	B07.1	C01			
Heat	Test No.				
382647	20724	K1	0,0000	0,0023	0,029
382648	21315	K1	0,0001	0,0019	0,032
382649	21390	K1	0,0000	0,0021	0,030

C94 Product analysis Carbon equivalent / Alloying restrictions

Heat	Test No.	C01 <th>FO-02=</th> <th>FO-51=</th> <th>FO-55=</th>	FO-02=	FO-51=	FO-55=
B07.2	B07.1	C01			
Heat	Test No.				
382647	20724	K1	0,38	0,001	0,10
382648	21315	K1	0,38	0,001	0,10
382649	21390	K1	0,38	0,001	0,12

A04 Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.



Manufacturer's mark

B. Baldauf



AG der Dillinger Hüttenwerke
Postfach 1580, D-66748 Dillingen/Saar
Inspection department

B. BALDAUF
Test House Manager

Inspector's stamp

Date 04.03.13

pp 1

A01

QM-System: Certification as per ISO 9001



DILLINGER HÜTTE

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations (www.dillinger.de/certificate)

A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10 Advice of dispatch No./ Date of dispatch	A08/ Manufacturer's order/ A03 Certificate No.	Sheet
INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991	447957-01.03.13	381826-001	5

A05 Established inspecting body DH	A06 Purchaser Final receiver	EDMONTON STEEL, EDMON EDMONTON STEEL, EDMON	A07.1 No. A07.2 No.	ED10614-J1010-ER
---------------------------------------	---------------------------------	--	------------------------	------------------

B02/ Steel design.	SA516-70	SA20-SS
B03 Any suppl. requirements	ASME-III:2010+ADDENDA-2011A DIL-HÜE-2:R33-2012-10-01	

C94 Carbon equivalent formula / Alloying restrictions

FO-02 = C+ (MN/6) + (CR+MO+V) /5+ (NI+CU) /15
 FO-51 = V +NB
 FO-55 = CU+MO+NI+CR
 FO-78 = CR+MO
 FO-91 = MN/C

D01 Marking and identification, surface appearance, shape and dimensional properties

ITEM NO.: 01,03-04
 EXAMINATION OF MARKING, SURFACE, SHAPE AND DIMENSIONS: THE RESULTS MEET THE REQUIREMENTS.
 SURFACE AS PER ASME-SA20
 THICKNESS AS PER ASME-SA20
 LENGTH AND WIDTH AS PER ASME-SA20
 FLATNESS AS PER 1/2-ASME-SA20



A04 2011/2012/2013 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.



B BALDAUF
 B BALDAUF
 Test House Manager

AHB
 AHB
 Inspector's stamp

AG der Dillinger Hüttenwerke
 Postfach 1580, D-66748 Dillingen/Saar
 Inspection department



edmonton exchanger
& manufacturing ltd.

CERTIFICATE OF COMPLIANCE

5545-89 Street Edmonton, Alberta Canada T6E 5W9 www.edmontonexchanger.com tel 780.468.6722 • QC fax 780.466.4668 • sales fax 780.466.5155

Customer CADO INDUSTRIES INC. Po 2013-070-7921 Work Order C99866 Date 2013/09/13 ColC# 43661 Page 1 of 1

Item#	Description	Qty	Heat#	Brinell Hardn.	Required Min Thk	Recorded Min Thk	Form. Proc.
H99866-2	HEAD(S) - Semi-Elliptical 2:1 - 1.2500" NOM (1.1400" MIN) X 30" OD (Material Spec: SA 516-70 Normalized) Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A	4	G1133-476540102	MTR	1.1400"	1.2100"	1
		4	G1129-476540101	MTR	1.1400"	1.2110"	1

Forming Procedure:
1. Hot Formed @ 1650F/899C and Air Cooled

Brinell Equipment: Newage Calibrated Pin
Brinell Hardness Tester

Supplementary Requirements

Normalized Material Identification Marking:

'MT' indicates normalized by the mill per ASME Code Section II, Part A, SA 20, Paragraph 13.1.1.
'GMT' indicates normalized by Edmonton Exchanger per ASME Code Section II, Part A, SA 20, Paragraph 13.1.2.
'GT' indicates normalized by Edmonton Exchanger per ASME Code Section VIII Division 1, UG-85 or ASME Code Section I, PG-77.4.

The item(s) listed above comply with the requirements of ASME Code Section I, PG-29, PG-81 and ASME Code Section VIII, Division 1, UCS-79(d), UG-79 & UG-81. All welders and procedures are qualified to ASME Code Section IX. Material being supplied conforms to the latest ASME Code Section II, Part A, 2010 Edition, Addenda July 1, 2011.

Supplementary Examination - Items

10 1.355"
 10 1.346"
 10 1.343"
 10 1.348"
 10 1.357"
 10 1.352"
 10 1.340"
 10 1.339"

M.T.R. ACCEPTABLE
 TO A.S.M.E. SECT. II
 10 EDITION 11 ADD.
 CH SEP 25 2013





CERTIFICATE OF COMPLIANCE

MTR List

edmonton exchanger
& manufacturing ltd.

5545-89 Street Edmonton, Alberta Canada T6E 5W9 www.edmontonexchanger.com tel 780.468.6722 • QC fax 780.466.4668 • sales fax 780.466.5155

Customer CADO INDUSTRIES INC. po 2013-070-7921 Work Order C99866 Date 2013/09/13 Co/C# 43661 Page 1 of 1

Email to wilfred.cao@cadoindustries.com

Email to jreimer@edmontonexchanger.com

MTR ID	Pages	Heat#	Thickness	Material Grades
17934	6	G1129-476540101	1.25"	SA 516-70 N
		G1133-476540102	1.25"	SA 516-70 N

Heat#	Material Grades	MTR ID
G1129-476540101	SA 516-70 N	17934
G1133-476540102	SA 516-70 N	17934

新日鐵住金株式会社
NIPPON STEEL & SUMITOMO METAL CORPORATION

鋼材検査証明書
INSPECTION CERTIFICATE

社 号: 〒100-8071 東京都千代田区丸の内二丁目6番1号
 HEAD OFFICE: 〒2-6-1, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
 営業所: 〒299-1141 千葉県君津市君津1番地
 KIMITSUWORKS: 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF, 299-1141, JAPAN

文 者: HANWA CO., LTD.
 SHIPPER: 22803J-685310100
 REFERENCE No.: 3-811L-H1-5-6-AI02
 CONTRACT No.: HOT ROLLED STEEL PLATES
 COMMODITY: ASME SA-516 GRADE 70-E10-A11
 SPECIFICATION: EDMONTON EXCHANGER GROUP OF C-TESTS 3.1
 DOCUMENT No.: 需要家管理番号

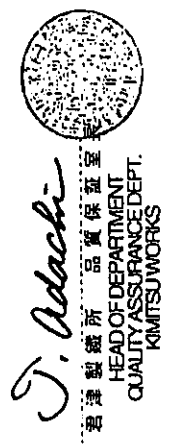
証明番号: P-23076
 CERTIFICATE No.: P-23076
 発行年月日: 2013-06-20
 DATE OF ISSUE: 2013-06-20
 頁: 2
 PAGE: 2

 *****CEW*****

寸法 DIMENSION mm, inch, feet	数量 QUANTITY	質量 MASS KG	製鋼番号 CAST No.	製品番号 PLATE No.	引張試験 TENSILE TEST 0.2% K.S.I.	引張試験 TENSILE TEST % EL.	衝撃試験 IMPACT TEST 2V-50F FT. LB.	硬度試験 HBW	化学成分 CHEMICAL COMPOSITION %														
									C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Nb	V	Ti	Al		
1.250' X 121' X 480'	01	9338	G1133 22774	TESTED-PL 476540201C1	51	75	32	257 256 262	AVG 147	16	38	143	9	3	1	1	2	0	13	0	2840	0	40
1.500' X 97' X 480'	02	8985	G1134 22786	TESTED-PL 476540204C1	50	74	32	205 210 113	AVG 149	15	37	143	5	3	2	2	2	0	12	0	2640	0	40
1.500' X 97' X 480'	02	8985	G1134 22787	TESTED-PL 476540201C1	51	75	37	233 261 1242	AVG 146	15	37	143	5	3	2	2	2	0	12	0	2640	0	40

主 要 注 意 事 項 (NOTES):
 1. 位置: Top, B: 底面, Bottom, L: 縦方向, Longitudinal, C: 横方向, Transverse, Z: 板厚方向 Through Thickness, R: 45° 方向 45Deg. to the Longitudinal Axis
 2. 試験方法: G1: 板厚方向 Rectangular, B: 50mm 厚板試験片 Rectangular, C: 70mm 厚板試験片 Rectangular, D: 70mm 厚板試験片 Round, E: 80mm 厚板試験片 Rectangular, F: 80mm 厚板試験片 Round, G: 200mm, H: 2', I: 8', J: 5.65/S₀, K: 4/S₀
 3. 試験片寸法: R.A.: 破り Reduction of Area, Y.R.: 降伏比 Yield Ratio, A.: 合格 Acceptable, ※5: F: 試験片寸法 FULL SIZE, 2: 2.5mm, 3: 3.3mm, 4: 3.3mm, 5: 5.0mm, 6: 6.7mm, 7: 7.5mm, 8: 6.7mm, 9: 試験片厚 Plate Thickness, ※6: P: 製品分析 Product Analysis
 4. 試験条件: N: 正常 Normalized, Q: 焼入れ Quenched, T: 焼戻し Tempered, C.R.: Contacted Rolled, N.I.C.: NIC Process/TMC Process, C.I.C.: CLC Process/TMC Process, A.R.: As Rolled, T.M.R.: TMR Process/TMC Process, N.R.: Normalizing Rolled
 5. 試験項目: 1.E: 縦方向 Shear Fracture, 1.F: 縦方向 Shear Fracture, C.F: 脆性破壊 Fracture, 1.H: 脆性破壊 Fracture, 1.I: 脆性破壊 Fracture, S.R.: Stress Relieved/Post Weld Heat Treatment

上記注文品は御指定の規格または仕様に従って製造され、その要求事項を満足していることを証明します。
 WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN
 MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.



鋼材検査証明書
INSPECTION CERTIFICATE

社 100-8071 東京都千代田区丸の内二丁目6番1号
HEAD OFFICE 2-6-1, MARUOUCHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
名 299-1141 千葉県君津市本津1番地
KIMITSU WORKS 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF. 299-1141, JAPAN

文 者 HANWA CO., LTD.
文者照合番号 228031-685310100
約番号 3-81.1-H.1-5-6-AT02
品名 H01 ROLLED STEEL PLATES
規格 ASME SA-516 GRADE 70-E10-A11
仕様書番号 需要家 需要家管理番号 E10924-J1010ER E3001A0200 E05
DOCUMENT No. 1001

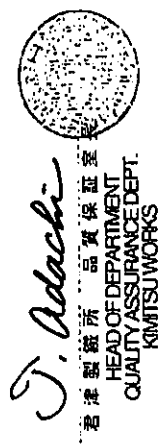
証明書番号 P-23076 PAGE 3
CERTIFICATE No. 発行年月日 2013-06-20
DATE OF ISSUE *****CEW***

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)
EDMONTON EXCHANGER GROUP OF COMPANIES

寸法 DIMENSION mm, inch, feet	数量 QUANTITY	質量 MASS KG	製鋼番号 CAST No. 試験番号 TEST No.	製品番号 PLATE No.	引張試験 TENSILE TEST 引張強さ T.S. 伸び E.L. 0.2% K.S.I.	衝撃試験 IMPACT TEST 2V-50F F.L.LB 平均値 AVG EACH	HBW	化学成分 CHEMICAL COMPOSITION %														
								C	Si	Mn	P	S	Cr	Ni	Mo	NO	V	Al	Ca	B	TI	AS
500' X 97' X 480'	02	8985	G1134 22789	TESTED-PL 476540203TC1	50	74	33	ILLF223 227	AVG 1.48	15	37	143	5	3	2	2	2	0	12	0	26	40
500' X 97' X 480'	02	8985	G1134 22794	TESTED-PL 476540203TC1	52	75	34	ILLF200 212	AVG 1.47	15	37	143	5	3	2	2	2	0	12	0	26	40
500' X 121' X 480'	03	11207	G1129 22739	TESTED-PL 476540302TC1	51	75	36	ILLF200 144	AVG 1.48	15	37	145	8	3	1	1	2	0	13	0	29	40

主 観 NOTES 1 Location Orientation 縦横・方向, T: 明部 Top, B: 底面 Bottom, L: 長さ方向 Longitudinal, C: 幅方向 Transverse, Z: 厚み方向 Through Thickness, R: 45° 方向 45Deg. to the Longitudinal Axis
2 G.L. 位置測定 Gauge Length, A: 50mm 半径状鋼材 Rectangular, B: 50mm 半径状鋼材 Rectangular, C: 70mm 半径状鋼材 Rectangular, D: 70mm 半径状鋼材 Rectangular, E: 80mm 半径状鋼材 Rectangular, F: 80mm 半径状鋼材 Rectangular, G: 200mm 半径状鋼材 Round, H: 2", I: 8", J: 5.65"/So, K: 4, So
3 R.A.: 絞り Reduction of Area, Y.R.: 降伏比 Yield Ratio
4 4 A: 合格 Acceptable
5 5 F: 標準寸法 FULL SIZE, 2: 2.5mm, 3: 3.3mm, 4: 3.3mm, 5: 5.0mm, 6: 6.7mm, 7: 7.5mm, 8: 6.7mm, 9: 鋼材厚 Plate Thickness, P: 鋼材分析 Product Analysis
6 6 N: 焼鈍 Normalized, Q: 焼入れ Quenched, T: 焼戻し Tempered, C.R.: 制御出 Labral Expansion, A.G.S.: オーステナイト粒度 Austenite Grain Size, F.G.S.: フェライト粒度 Ferrite Grain Size, S.R.: Stress Relieved/Post Weld Heat Treatment
7 7 鋼材製造所品質保証室 KIMITSU WORKS

上記注文品は御指定の規格または仕様に従って製造され、その要求事項を満足していることを証明します。
WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.



C1561
682

M.T.R. ACCEPTABLE
TO A.S.M.E. SECT. II

10 EDITION 11 ADD

DATE: JUN 16 2013



ADD: JINTANG ROAD DONGLI
DISTRICT, TANJUN, CHINA
TEL: 86-22-24801139
FAX: 86-22-24801291

TIANJUN PIPE(GROUP) CORPORATION LTD.
TEST CERTIFICATE
(EN10204 3.1)

L/C No.:
No.: C12838265842

Contract No.		2012SSG-CI-12-330		Product		DIMENSION STANDARD		PIPE		O.D.*W.T.		6"X30S(14.3x17.12mm)		Packing		IN LOOSE																									
P.O.No.		Trams Am Piping Products Ltd, CI-12-330		ASME B36.10 <td colspan="2">MANU METHOD</td> <td colspan="2">HOT ROLLING SEAMLESS</td> <td colspan="2">Length range</td> <td colspan="2">SRL</td> <th colspan="2">Total Pieces</th> <td colspan="2">44</td>		MANU METHOD		HOT ROLLING SEAMLESS		Length range		SRL		Total Pieces		44																									
Material Standard		ASTM A 106-B-08, ASME SA 106-B-08, API 5L X42 PSL 1 07, CSA Z245.1-07 G, 290 Cat 1, NACE MR0175-09/ISO 15156		Tensile Test(Mpa)		Elong. %		Shrink %		2"		Temp. C		Size		AK1 share %		AK2 share %		AK3 share %		AVE share %																			
Heat No.		Lot No.		Pieces		Meters		Bundles		Tons		Delivery condition		Sample No.		1"		T.S.		Type		Y.S.		Elong. %		Shrink %		2"		Temp. C		Size		AK1 share %		AK2 share %		AK3 share %		AVE share %	
127030		130		44						11.985		Hot rolling		130-A-2187		A		583		166		426		37																	
Total		44								11.985		Note:																													
Heat No.		Lot No.		Sample No.		Hardness Brinell		Hardness Brinell(1/8")		Hardness Brinell(1/4")		Hardness Brinell(3/8")		Hardness Brinell(1/2")		Hardness Brinell(3/4")		Hardness Brinell(1")		NDE test(1)		F.A. test(1)		Hydro Test (Psi)		F.A. test(2)		F.A. test(3)		F.A. test(4)		F.A. test(5)		F.A. test(6)		F.A. test(7)					
127030		130		130-A-2187		166		167		165		166		166		164		165		166		EMIL4		G		27555		G		G		G		G		G		G			
Steel Spec.		C		SI		Mn		P		S		Ni		Cr		Mo		Cu		V		B		Ti		Nb		CE		CE(CSA)		Hydro Test (Psi)		F.A. test(1)		F.A. test(2)					
127030		L		0.16		0.38		1.26		0.020		0.01		0.03		0.02		0.01		0.01		0		0		0.001		0.38		0.38		27555		G		G		G			
20		P		0.16		0.39		1.27		0.020		0.01		0.03		0.01		0.01		0		0		0		0.001		0.38		0.38		27555		G		G		G			
4		L		0.16		0.39		1.27		0.020		0.01		0.03		0.01		0.01		0		0		0		0.001		0.38		0.38		27555		G		G		G			
5		P																																							
NDE(100%)		Visual and dimension		Hydro Test		Pipe end NDE		Pipe end beveling		Residual mag Test		SSCC		HIC																											

Remark: destl.=destination; tem.=temperature; steel spec.=steel specification; destl.=destination; Manu.=Manufacture; G=Good

We hereby state that all pipes are manufactured and inspected according to above standards and order.

Seal from

No. (1) Date: 2012-6-21

天津钢管集团股份有限公司
产品质量证明书专用章

TPCCO

Rev. 5

Rev. 4

Rev. 3

Rev. 2

Rev. 1

Rev. 0

Rev. -1

Rev. -2

Rev. -3

Rev. -4

Rev. -5

Rev. -6

Rev. -7

Rev. -8

Rev. -9

Rev. -10

Rev. -11

Rev. -12

Rev. -13

Rev. -14

Rev. -15

Rev. -16

Rev. -17

Rev. -18

Rev. -19

Rev. -20

Rev. -21

Rev. -22

Rev. -23

Rev. -24

Rev. -25

Rev. -26

Rev. -27

Rev. -28

Rev. -29

Rev. -30

Rev. -31

Rev. -32

Rev. -33

Rev. -34

Rev. -35

Rev. -36

Rev. -37

Rev. -38

Rev. -39

Rev. -40

Rev. -41

Rev. -42

Rev. -43

Rev. -44

Rev. -45

Rev. -46

Rev. -47

Rev. -48

Rev. -49

Rev. -50

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Rev. -81

Rev. -82

Rev. -83

Rev. -84

Rev. -85

Rev. -86

Rev. -87

Rev. -88

Rev. -89

Rev. -90

Rev. -91

Rev. -92

Rev. -93

Rev. -94

Rev. -95

Rev. -96

Rev. -97

Rev. -98

Rev. -99

Rev. -100

1281

HENGYANG VALIN STEEL
TUBE CO., LTD

MILL TEST REPORT

(ACCORDING TO EN10204 3.1)

Addr: 10 Dalixinqun, Hengyang
City, Hunan, P. R. China P. C.: 421001
Tel and Fax: +86 734 8873739
E-mail: hsteche@steel.tube.com

CUSTOMER	CE FRANKLIN	CERTIFICATE NO.	
CONTRACT NO.	2110002306-1	P.O. NO.	PO2895833-OR-2100-B (LOT A)
PRODUCT	SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE	L/C NO.:	ZFAHD-00037
SPECIFICATION	SEE SPECIFICATION NOTE	DELIVERY CONDITION	
GRADE		HEAT TREATMENT	
TOTAL BUNDLES:	4	3"x42 GRADE 290	
HIC TEST	SEE THE ORIGINAL INSPECTION REPORTS	REMARK:	
SSC TEST		TOTAL PIECES:	26
		TOTAL LENGTH:	520.340
		3" x 0.800" x 20FT	
		FT	TOTAL WEIGHT:
			4.390 MT

SPECIFICATION: ASTM A53B/A106B-2010, ASME SA53B/A106B-2010, API 5L B X42, PSL 2-2008, NACE MR-0175-2009/ISO 15156-2-2005/REGION 3/MR-0103/SS (CSA Z245.1)
NOTE: GRADE 290 CATEGORY (2009)

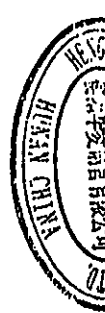
We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark JOINTIME light-green coloured at the bottom of the page is stamped. 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: hsteche@steel.tube.com

CUSTOMER THIRD PARTY

Quality Manager: 朝双开



Certificate number: 唐双开



2013-10-8473



ISO 9001:2008

TRILAD Flanges and Fittings, Inc.

30 WOODSLEE AVE.
 PARIS, ON, CANADA N3L 3V1
 (PHONE) 519-442-6520
 (FAX) 519-442-7658
 www.tri-lad.com

CERTIFIED MATERIAL TEST REPORT

Certificate No. **13170743**

EN 10204 3.1

Date of Report **7/11/2013**

Customer
ALLIED EDMONTON - CADS
172 TURBO DRIVE
SHERWOOD PARK AB T8H 2J6

Customer Order No.
405991

Quantity
6

Tri-Lad Order No. **581920**
 Line No. **1**

Specification SA105N SECT II 2010 EDITION 2011A ADDENDA	Heat Treatment NORMALISED
Item Description 4 600 WN XXS RF A105N (802152)	Temperature Init 1634 F 890 C
Shop Order/Trace No.	Time N=1.30HRS
Lot No.	Lot Definition
Heat Code TL10004515	
C.E. .42	Melt Practice

Heat Product	Chemical Composition									
	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V
	.22	.96	.029	.014	.24	.05	.05	.15	.02	.004
Heat Product										
Heat Product										

Mechanical Properties									
Yield		Tensile		Elongation	Reduction of Area	Hardness	Impact Test	Impact Values	Shear Fracture
Ksi 53	Ksi 81			33 %	56 %	HBW 159	Temperature		
Mpa 365	Mpa 559					HBW 159			
Tensile Specimen STD RD				Impact Type		Impact Orientation		Starting Material	Impact Specimen
Lateral Expansion									

Notes

M.T.R. ACCEPTABLE
TO A.S.M.E. SECT. II
10 EDITION 11 ADD.
CA OCT 21 2013

NACE MRO103 LATEST ED.
 NACE MRO175/ISO15156-09

Material is in accordance with the applicable Standard to which it is ordered including:
 ASME Sect II, ASME B16.5, B16.9, B16.36, B16.47, CSA, MSS, AWWA C-207.
NO WELD REPAIR
 Material conforms to both ASTM (A) and ASME (SA) applicable specifications.
 We hereby certify that all information presented on this CMTR conforms to the above specification.
 We hereby certify the results to be a true copy of the records of the company.

Les Mansfield
 Les Mansfield, CET
 Quality Assurance Manager



METALFAR
 PRODOTTI INDUSTRIALI S.P.A.

SEDE AMMINISTRATIVA E STABILIMENTO:
 20861 CESANA BRIANZA (LC) - Italy
 Via G. Perini, 28
 Tel. +39 031 855441
 Fax +39 031 655149
 quality.metalfar.com

COMPANY WITH
 QUALITY SYSTEM
 CERTIFIED BY DNV
 = ISO 9001 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE	
Certif. N. 2032	Validated 09.04.2013
DDT / Det. N. 1600	Delivered 08.04.2013
TRANS AM PIPING PRODUCTS LTD	Det. / Invoice N. 1393
8335 ENDEAVOR DRIVE S.E.	Ms. Ord. / Our ref. N.
T3S 0A1 CALGARY, ALBERTA	Det. / Warehouse
CA	1711 - 68 Avenue
	TBP 119 Edmonon, ALBERTA
CA	

COD. COL.	COLATA	POS.	VS. ORDINE	Q.T.A.	DESCRIZIONE	DIM. ACC. A	VS. NO. E DIMENS.											
HEAT CODE	HEAT	ITEM	YOUR REFERENCE	Q.T.Y	DESCRIPTION	DIM. ACCORDANCE TO	VIS. & DIMENS.											
123A110	036	CI-12-284	175,00	WIN 300 RF 4" STD	A105N	ASME/ANSI B16.5-2009	SATISFACTORY											
MATERIALE / MATERIAL			C% 0,205	SI% 0,230	Mn% 0,013	S% 0,013	P% 0,014	C% 0,110	NI% 0,080	Mo% 0,010	TK% 0,009	CU% 0,140	VB% 0,002	ND% 0,002	N% 0,009	AV% 0,010	C.E.% 0,401	
ASTM A106 (LADLE)																		
PROVETA / TEST SPECIMEN	FORMA	SINGOLAMENTO	TORTURA	ALLUNGAMENTO	CONTRAZIONE	DUZZAZZA	RESISTENZA / IMPACT TEST	COLLIERE	SINGOLAMENTO									
SECT. mm	LIBRO mm	1-0 20	YIELD POINT	STRENGTH	ELONGATION	REDUCTION OF AREA	NEW		YIELD POINT									
126,80	60,80	1	347,0	526,0	31,0	59,0	189,0 - 189,0		0,0									
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO																		
ASTM/ASME A 106/SA 106 M - 11a																		
ADD. 2011a																		
CSA Z245.12																		
GRADE 248																		
CAT.1																		
SOUR SERVICE																		

COD. COL.	COLATA	POS.	VS. ORDINE	Q.T.A.	DESCRIZIONE	DIM. ACC. A	VS. NO. E DIMENS.											
HEAT CODE	HEAT	ITEM	YOUR REFERENCE	Q.T.Y	DESCRIPTION	DIM. ACCORDANCE TO	VIS. & DIMENS.											
123B050	072	CI-12-294	212,00	WIN 600 RF 3" XXS	A105N	ASME/ANSI B16.5-2009	SATISFACTORY											
MATERIALE / MATERIAL			C% 0,195	SI% 0,240	Mn% 0,060	S% 0,008	P% 0,009	C% 0,090	NI% 0,060	Mo% 0,010	TK% 0,016	CU% 0,130	VB% 0,001	ND% 0,002	N% 0,009	AV% 0,027	C.E.% 0,386	
ASTM A106 (LADLE)																		
PROVETA / TEST SPECIMEN	FORMA	SINGOLAMENTO	TORTURA	ALLUNGAMENTO	CONTRAZIONE	DUZZAZZA	RESISTENZA / IMPACT TEST	COLLIERE	SINGOLAMENTO									
SECT. mm	LIBRO mm	1-0 20	YIELD POINT	STRENGTH	ELONGATION	REDUCTION OF AREA	NEW		YIELD POINT									
126,80	60,80	1	341,0	513,0	30,0	59,0	186,0 - 189,0		0,0									
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO																		
ASTM/ASME A 106/SA 106 M - 11a																		
ADD. 2011a																		
CSA Z245.12																		
GRADE 248																		
CAT.1																		
SOUR SERVICE																		

M.I.T.R. ACCEPTABLE
 TO A.S.I.M.E. SECT. II
 10 EDITION / ADD.
 NOV 17 2013

NOTE 100% MANUFACTURED IN ITALY	UFFICIO CONTROLLO QUALITA'	ENTE UFFICIALE DI COLLAUDO	MARCHIO PRODUZIONE
NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION	QUALITY CONTROL DEPARTMENT	INSPECTION AUTHORITY	MANUFACTURER'S SYMBOL
MATERIAL IN ACCORDANCE WITH NACE MR-017/2008 ISO 15185-2009 - SOUR SERVICE	<i>Asst. Eng. P. S.</i>		
MATERIAL IN ACCORDANCE WITH NACE MR-010/2012 - SOUR SERVICE			

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2013-070-8473



ISO 9001:2008

TRILAD Flanges and Fittings, Inc.

30 WOODSLEE AVE.
PARIS, ON, CANADA N3L 3V1
(PHONE) 519-442-6520
(FAX) 519-442-7658
www.tri-lad.com

CERTIFIED MATERIAL TEST REPORT

Certificate No. **13174335**

EN 10204 3.1

Date of Report **9/13/2013**

Customer
ALLIED EDMONTON - CAD\$
172 TURBO DRIVE
SHERWOOD PARK **AB T8H 2J6**

Customer Order No.
414181

Quantity
1

Tri-Lad Order No. Line No.
591330 **1**

Specification SA105N SECT II 2010 EDITION 2011A ADDENDA	Heat Treatment NORMALISED
Item Description 3 600 WN XXS RF A105N (802127)	Temperature Init 1634 F 890 C
Shop Order/Trace No.	Time N=1.20HRS
Lot No.	Lot Definition
Heat Code TL10004630	
C.E. .45	Melt Practice

Heat Product	Chemical Composition									
	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V
	.23	1.02	.027	.014	.29	.12	.11	.15	.02	.001
Heat Product										
Heat Product										

Mechanical Properties								
Yield	Tensile		Elongation	Reduction of Area	Hardness	Impact Test	Impact Values	Shear Fracture
Ksi 53 Mpa 367	Ksi 78 Mpa 538		29 %	58 %	HBW 149 HBW 149	Temperature		
Tensile Specimen STD RD								
Lateral Expansion		Impact Type		Impact Orientation		Starting Material		Impact Specimen

M.T.R. ACCEPTABLE
TO A.S.M.E. SECT. II
10 EDITION, 11 ADD.
CA **OCT 26 2013**

Notes
NACE MR0103 LATEST ED.
NACE MR0175/ISO15156-09

Material is in accordance with the applicable Standard to which it is ordered including: ASME Sect II, ASME B16.5, B16.9, B16.36, B16.47, CSA, MSS, AWWA C-207. NO WELD REPAIR. Material conforms to both ASTM (A) and ASME (SA) applicable specifications. We hereby certify that all information presented on this CMTR conforms to the above specification. We hereby certify the results to be a true copy of the records of the company.

Les Mansfield
Les Mansfield, CET
Quality Assurance Manager

2013-070-8975



ISO 9001:2008

TRILAD Flanges and Fittings, Inc.

30 WOODSLEE AVE.
PARIS, ON, CANADA N3L 3V1
(PHONE) 519-442-6520
(FAX) 519-442-7658
www.tri-lad.com

CERTIFIED MATERIAL TEST REPORT

Certificate No. **13167320**

EN 10204 3.1

Date of Report **5/13/2013**

Customer
ALLIED EDMONTON - CADS
172 TURBO DRIVE
SHERWOOD PARK AB T8H 2J6

Customer Order No.
399436

Quantity
2

Tri-Lad Order No. **573464**
Line No. **1**

Specification SA105N SECT II 2010 EDITION 2011A ADDENDA	Heat Treatment NORMALISED
Item Description 2 600 WN XXS RF A105N (802093)	Temperature Init 1634 F 890 C
Shop Order/Trace No.	Time N=1.15HRS
Lot No.	Lot Definition
Heat Code TL10005612	
C.E. .42	Melt Practice

	Chemical Composition									
	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V
Heat Product	.22	.92	.029	.010	.21	.07	.06	.13	.06	.008
Heat Product										
Heat Product										

Mechanical Properties								
Yield	Tensile	Elongation	Reduction of Area	Hardness	Impact Test	Impact Values		Shear Fracture
Ksi 55 Mpa 382	Ksi 84 Mpa 576	30 %	58 %	BHN 163 BHN 167	Temperature			
Tensile Specimen STD RD		Impact Type	Impact Orientation	Starting Material	Impact Specimen			
Lateral Expansion								

Notes **MACHINED TO .436 WT**

M.T.R. ACCEPTABLE
TO A.S.M.E. SECT. II
10 EDITION 11 ADD.
OK OCT 24 2013

NACE MRO103 LATEST ED.
NACE MRO175/ISO15156-09

Material is in accordance with the applicable Standard to which it is ordered including:
ASME Sect II, ASME B16.5, B16.9, B16.36, B16.47, CSA, MSS, AWWA C-207.
NO WELD REPAIR
Material conforms to both ASTM (A) and ASME (SA) applicable specifications.
We hereby certify that all information presented on this CMTR conforms to the above specification.
We hereby certify the results to be a true copy of the records of the company.

Les Mansfield
Les Mansfield, CET
Quality Assurance Manager



2013-07-0-8473

M.T.R. ACCEPTABLE
TO A.S.M.E. SECT. II

12 EDITION
OCT 24 2013
ADD

博緯鋼鐵工業股份有限公司
BOTHWELL STEEL FITTINGS CO., LTD.

795 號 下 仁 武 區 烏 林 聖 仁 心 路 303 號
NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAHSIUNG CITY, TAINAN R.O.C.(81450)
TEL: +886-7-3711536, 3710497, 3720260 FAX: +886-7-3713864, 3713882
Web site: <http://www.bothwell.com.tw> e-mail: box@bothwell.com.tw

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.
CERT. NO : 132175 L/C NO :
ORDER NO : 7006966 DATE : 07/24/2013
INVOICE NO : BMD1310205043 PAGE : 10 ORIGIN : TAIWAN

ITEM	BW HT. CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION FOR		INSPECTION SURFACE	DIM.
					MATERIAL	FITTING		
077	4145	0093863	FULL CTRG 2" 3000# S/W	100 PC	ASTM A105N -12	ASME B16.11 - 2011	GOOD	GOOD
079	3930	330613	FULL CTRG 2-1/2" 3000# NPT	25 PC				
080	3913	330758	FULL CTRG 3/4" 6000# NPT	5 PC	ASME SA105N -A08			
080	3982	330757	FULL CTRG 3/4" 6000# NPT	245 PC				
081	3860	329902	FULL CTRG 1" 6000# NPT	100 PC				

ITEM	BW HT. CD.	CHEMICAL COMPOSITION (%)															
		C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)	N	Al	Ti	Zr	CE
077	4145	0.18	0.19	0.94	0.011	0.012	0.21	0.08	0.06	0.01	0.001	0.000	-	-	-	-	0.43
079	3930	0.20	0.21	0.84	0.017	0.013	0.15	0.07	0.06	0.02	0.002	0.001	-	-	-	-	0.373
080	3913	0.19	0.21	0.85	0.013	0.009	0.13	0.05	0.05	0.01	0.002	0.002	-	-	-	-	0.372
080	3982	0.19	0.20	0.82	0.013	0.011	0.12	0.05	0.04	0.01	0.002	0.002	-	-	-	-	0.356
081	3860	0.200	0.200	0.830	0.014	0.008	0.100	0.050	0.040	0.010	0.002	0.002	-	-	-	-	0.350

ITEM	BW HT. CD.	MECHANICAL PROPERTIES										HEAT TREATMENT			ADDITIONAL TEST/REMARKS		
		T. S. (KSI)	Y. S. (KSI)	EL. (%)	R of A (%)	Hardness (HRB)(AVG)	Charpy Impact T _p / 0°C			NORMALIZED			CONFORMS TO NACE MR0175-09 / MR0103-10 STEEL MAKING PROCESS : ELECTRIC FURNACE CONFORMS TO NACE ISO15156-3 2009				
		70	36	22	30	187	1	2	3	AVG.	900°C A.C.						
077	4145	76.9	51.3	34.2	66.4	141	143										
079	3930	74.8	48.3	35.6	64.1	142	144										
080	3913	74.4	47.6	37.2	63.5	141	143										
080	3982	74.2	49.7	36.2	65.3	140	142										
081	3860	76.2	53.8	35.4	63.3	141	144										

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

BW-D0839 REV: 2

O.C. Manager: C.C. Huang
Inspector: Y.Y. Chang
Chen Chi Huang
Yuan Yao Chang