MOSS FABRICATION LTD.
6619 86th Avenue SE
Calgary, Alberta, T2C 2S4
403-279-4950

QUALITY CONTROL DATA PACKAGE

EXCELSIOR ENGINEERING LTD
VENDOR DOCUMENT REVIEW

- ☐ V1 - CORRECT AND RESUBMIT; WORK MAY NOT PROCEED
- ☐ V2 - CORRECT AND RESUBMIT; WORK MAY PROCEED
- ☑ V3 - RECEIVED AS IS; FOR INFORMATION ONLY
- ☐ V4 - ACCEPTED FOR CONSTRUCTION/ FABRICATION; SUBJECT TO INCORPORATION OF ANY COMMENTS
- ☐ V5 - ACCEPTED AS FINAL SUBMISSION

NOTE: This review does not relieve the Vendor/ Contractor from their due diligence, nor their responsibility for errors in design/ installation or the execution/ detailing in conformance with the contract and regulatory requirements

DATE: APR 3/14 PRINT: MARC NUGARA SIGN:

CUSTOMER:
Gequip/Husky

Moss Job: 4761
6" x 12" Lube Oil Scrubber
Your P.O.: 13040

EXCELSIOR ENGINEERING LTD.

SQUAD CHECK # SQV-0138
EXC # 3829HLS-POP-0014-DAT-001
TAG # V-120
DESIGN LEAD TAMARA
RESPONSIBLE ENG JOSEPH
REVIEW DUE DATE 2014-03-28

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS (2010) (A) 636971

(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)

As Required by the Provisions of the ASME Boiler and Pressure Code Vessel Rules, Section VIII, Division 1

1. Manufactured and certified by: **Moss Fabrication Ltd., 6619 86th Avenue S.E. Calgary, AB Canada T2C 2S4** (Name and address of Manufacturer)
2. Manufactured for: **Husky Energy Inc 707 8 Ave SW Calgary AB T2P 1H5** (Name and address of Purchaser)
3. Location of installation: **LSD 02 – 20 – 050 – 18 W5M** (Name and address)
4. Type: **Horizontal** (Horiz. or vert., tank) | **4761-1** (Mfgrs serial No.) | **W4426.2** (CRN) | **R4761-1 Rev 1** (Drawing No.) | **n/a** (Natl. Bd. No.) | **2014** (Year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 **2010** (Year) to **2011** (Addenda (Date)) | **n/a** (Code Case Nos.) | **n/a** (Special Service per UG-120(d))
6. Shell: **SA333-6** (Matl.,Spec. No., Grade) | **0.688"** (Nom. Thk. (in.)) | **0.0625"** (Corr. Allow. (in.)) | **11.374"** (Inner Diameter (ft. & in.)) | **8'-7"** (Length (overall) (ft. & in.))
7. Seams: **Seamless** (Long. (Welded, Dbl., Sngl., Lap, Butt)) | **n/a** (R.T. (Spot or Full)) | **100%** (Eff. (%)) | **n/a** (H.T. Temp. (°F)) | **n/a** (Time (hr)) | **Type 1** (Girth (Welded, Dbl., Sngl., Lap, Butt)) | **Spot** (R.T.(Spot, or Full)) | **70** (Eff.(%)) | **2** (No. of Courses)
8. Heads: (a) Matl. **SA516-70N** (Spec. No., Grade) (b) Matl. **SA420WPL6** (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)	Heads *	0.7750"	0.0625"	n/a	n/a	2:1 SE	n/a	n/a	n/a	Concave
(b)	Boot Head	0.378"	0.0625"	n/a	n/a	Weld Cap	n/a	n/a	n/a	Concave

If removable, bolts used (describe other fastenings) (Mat'l., Spec. No., Gr., Size, No.)

9. MAWP **1440** (internal) | **n/a** (external) psi at max. temp. **130** (internal) | **n/a** (external) °F.
Min. design metal temp. **-49F** °F at **1440** psi. Hydro., ~~pneum.~~ test pressure **2160** psi.
Proof test **n/a**

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam.or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet	1	6" NPS	CI600RFWN	SA333-6	**	0.432"	.0625"	n/a	UW16.1c	Type1	Shell Head
Outlet	1	6" NPS	CI600RFWN	SA333-6	**	0.432"	.0625"	n/a	UW16.1c	Type1	Shell Head
LC	1	2" NPS	CI600RFLWN	**	n/a	0.660"	.0625"	n/a	UW16.1c	Type1	Boot
Drain	1	2" NPS	CI600RFWN	SA333-6	**	0.343"	.0625"	n/a	UW16.1c	Type1	Boot Head
LSH	1	2" NPS	CI600RFLWN	**	n/a	0.660"	.0625"	n/a	UW16.1c	Type1	Boot
LG.	2	2" NPS	CI600RFWN	SA333-6	**	0.343"	.0625"	n/a	UW16.1c	Type1	Boot
PI/PSV/Insp	1	2" NPS	CI600RFWN	SA333-6	**	0.343"	.0625"	n/a	UW16.1c	Type1	Shell
TI/ Insp.	1	2" NPS	CI600RFWN	SA333=6	**	0.343"	.0625"	n/a	UW16.1c	Type1	Shell
Boot	1	6" NPS	Pipe	SA333-6	n/a	0.432"	.0625"	***	UW16.1c	n/a	Shell

11. Supports: Skirt **no** (Yes or No) Lugs **0** (No.) Legs **0** (No.) Other **0** (Describe) Attached **n/a** (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: **n/a**
See U-4 *** Left and Right Hand Heads, **SA350LF2CI1, ***SA333-6**

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 Number 33,250 expires April 26, 20 14
Date MAR 10 2014 Co. name **Moss Fabrication Ltd.** (Manufacturer) Signed L Money (Representative)

CERTIFICATE OF SHOP / FIELD INSPECTION

Vessel constructed by **Moss Fabrication Ltd** at **6619 86th Ave SE Calgary, Alberta, Canada**.
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of **ALBERTA** and employed by **ABSA** have inspected the component described in this Manufacturer's Data Report on MAR 10 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 MAR 10 2014 Signed (Authorized Inspector) Commissions **AB 11 NB 10270 A, B** [Nat'l Board (incl. endorsements), State, Prov., and No.]

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: Moss Fabrication Ltd. 6619 86th Avenue Calgary AB Canada T2C 2S4 (Name and address of Manufacturer)
2. Manufactured for: Husky Energy Inc 707 8 Ave SW Calgary AB T2P 1H5 (Name and address of Purchaser)
3. Location of installation: LSD 02 - 20 - 050 - 18 W5M (Name and address)
4. Type: Horizontal (Horizontal, vertical, or sphere) | Lube Oil Scrubber (Tank, separator, heat exch., etc.) | 4761-1 (Manufacturer's serial number)

W4426.2	R4761-1 Rev 1	n/a	2014
(CRN)	(Drawing number)	(National Board number)	(Year built)

Data Report Item Number	Remarks
	Volume: 10 cu. ft.
	Weight: 1700 Lbs.
	Radiography: As per UW11(a)5(b)
	PSV installed on Piping as per UG-125
	Charpy Impact testing exempt as per UCS - 67a(3)
	Manufactured to Moss Fabrication drawing number V4761-1 Rev 4
	Description: 6" x 12" Lube Oil Scrubber

Certificate of Authorization: Type U No. 33,250 Expires 04/26/2014

Date MAR 10 2014 Name Moss Fabrication Ltd (Manufacturer) Signed L Money (Representative)

Date MAR 10 2014 Name (Authorized Inspector) Commissions AB 11 NB 10270 A, B (National Board (incl. endorsements), State, Province, and number)

(11/06)

TRAVEL SHEET (FRONT)

DO NOT START CONSTRUCTION WITHOUT AI REVIEW — TRAVEL SHEET REVISION NO.: 0

AI REVIEW: — REVIEW DATE: JAN 2 0 2014

SERIAL NO.:4761-1 — JOB NO.:4761 — VESSEL TYPE: 6" X 12" Lube Oil Scrubber

DRAWING NO.:V4761-1 — DWG. REVISION NO.: 4 — TRAVEL SHEET INITIATION BY: Charles Money

Seq.	Item	Comments	Q.C.I.	Date	A.I. Hold Points	A.I.	Date	Owner	Date
1.	Calculations in File		bm	JAN 2 0 2014	x		MAR 1 0 2014		
2.	Release of App'd Dwg.		bm	JAN 2 0 2014	x		"		
3.	Materials Examined		bm	JAN 2 3 2014					
4.	Heat Numbers Recorded		bm	JAN 2 3 2014	x	by J.H			
5.	MTRs Checked		bm	JAN 2 3 2014	x				
6.	WPS(s) Checked		bm	JAN 2 0 2014			JAN 2 0 2014		
7.	Welder(s) Qualified		bm	JAN 2 0 2014					
8.	Thicknesses Verified & Recorded		bm	JAN 2 3 2014					
9.	Shell(s) & Head(s) Fit-up Inspection		bm	FEB 0 7 2014	x	by J.H			
10.	Nozzles & Fittings Fit-up Inspection		bm	JAN 2 7 2014					
11.	Nozzle Orientation		bm	JAN 2 7 2014					
12.	Nozzle & Flange Rating Checked		bm	JAN 2 3 2014					
13.	Impact Tests	N/A	—	—					
14.	Internals Checked		bm	JAN 3 1 2014					
15.	Final Internal Inspection	Shell Side Tube Side N/A	bm	FEB 0 6 2014	x		FEB 0 6 2014		
16.	Weld Sizes Checked		bm	FEB 1 2 2014					
17.	Welder I.D. Checked		bm	FEB 1 2 2014					
18.	Final External Inspection		bm	FEB 1 2 2014	x	by J.H.			
19.	Radiography	RT 2	bm	FEB 1 3 2014	x		MAR 1 0 2014		
20.	Other N.D.E.		—	—					
21.	Final Ext. Prior to PWHT	N/A	—	—					
22.	PWHT Chart Checked	N/A	—	—					
23.	Hydrostatic Test	Shell Side Gauge # 2160 PSI 134 Tube Side N/A Gauge #	bm	FEB 1 8 2014	x	by J.H Feb 18,14 (see log book)			
24.	CRN Drawing	W4426.2	bm	MAR 0 6 2014	x		MAR 1 0 2014		
25.	N.C.R. #								
26.	Nameplate Stamping		bm	MAR 1 0 2014	x		MAR 1 0 2014		
27.	Manuf. Data Report Completed & Verified		bm	MAR 1 0 2014	x		"		
28.	Nameplate Installation		bm	MAR 1 0 2014					
	Low Temp Wire	V046400163	bm	FEB 1 2 2014					

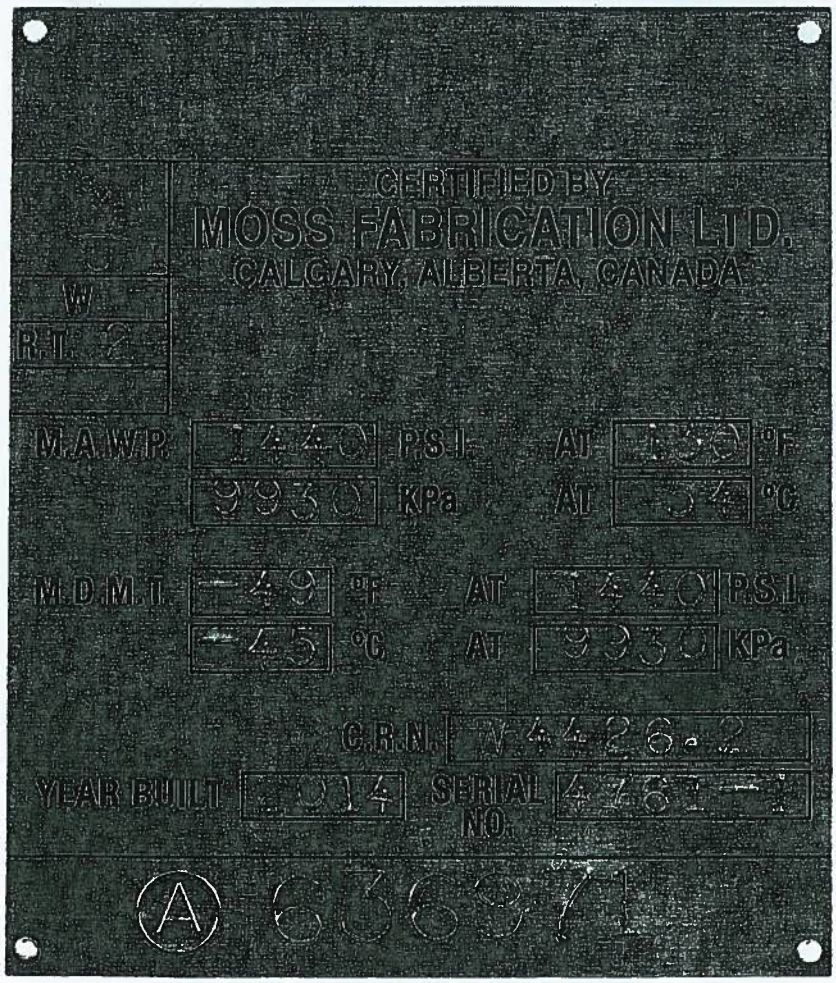
The Authorized Inspector shall be presented with the Travel Sheet prior to construction so that he can designate additional inspection points and/or Hold Points. Any revisions shall be marked with a delta symbol with revision number and described at the bottom of this page.

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

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 1 Joint
Shell	0.688"	SA333-6	3440	L-	n/a	n/a	C-1	✓	OK	KM
Boot	0.432"	SA333-6	3473	n/a	n/a	n/a	C-2	✓	OK	KM
Heads	0.7750"	SA516-70N	M8283	n/a	n/a	n/a	C-3	✓	OK	KM
Head	0.432"	SA420WPL6	06A33001	n/a	n/a	n/a	C-4	O	OK	KM
				n/a	n/a	n/a	C-5	O	OK	KM

ATTACHMENT AND / OR NOZZLE MATERIAL THICKNESS VERIFICATION AND IDENTIFICATION						WELDER SYMBOLS / FIT-UP			
Mark	Mat. I.D.	Neck	Fitting	Flange	Repad or Attachment	Cat. B	Cat. C	Cat. D	Pad OD
A	Spec.-Grd.	SA333-6	n/a	SA350LF2	n/a		n/a		n/a
	Thk./Rating	6" Sch 80	n/a	6" 600# RFWN	n/a	Δ	n/a	ΔO	n/a
	Heat# or ID	3421	n/a	4677188	n/a				
B	Spec.-Grd.	SA333-6	n/a	SA350LF2	n/a		n/a		n/a
	Thk./Rating	6" Sch 80	n/a	6" 600# RFWN	n/a	Δ	n/a	Δ	n/a
	Heat# or ID	3421	n/a	4677188	n/a				
C	Spec.-Grd.	n/a	n/a	SA350LF2	n/a	n/a	n/a		n/a
	Thk./Rating	n/a	n/a	2" 600# RFLWN	n/a	n/a	n/a	O	n/a
	Heat# or ID	n/a	n/a	E012BN	n/a				
D	Spec.-Grd.	SA333-6	n/a	SA350LF2	n/a		n/a		n/a
	Thk./Rating	2" Sch 160	n/a	2" 600# RFWN	n/a	Δ	n/a	O	n/a
	Heat# or ID	3422	n/a	4443573	n/a				
E	Spec.-Grd.	n/a	n/a	SA350LF2	n/a	n/a	n/a		n/a
	Thk./Rating	n/a	n/a	2" 600# RFLWN	n/a	n/a	n/a	O	n/a
	Heat# or ID	n/a	n/a	E012BN	n/a				
F1/2	Spec.-Grd.	SA333-6	n/a	SA350LF2	n/a		n/a		n/a
	Thk./Rating	2" Sch 160	n/a	2" 600# RFWN	n/a	Δ	n/a	O	n/a
	Heat# or ID	3422	n/a	4443573	n/a				
P	Spec.-Grd.	SA333-6	n/a	SA350LF2	n/a		n/a		n/a
	Thk./Rating	2" Sch 160	n/a	2" 600# RFWN	n/a	Δ	n/a	EV	n/a
	Heat# or ID	3422	n/a	4443573	n/a				
T	Spec.-Grd.	SA333-6	n/a	SA350LF2	n/a		n/a		n/a
	Thk./Rating	2" Sch 160	n/a	2" 600# RFWN	n/a	Δ	n/a	✓	n/a
	Heat# or ID	3422	n/a	4443573	n/a				
U	Spec.-Grd.	SA333-6	n/a	n/a	SA516-70N		n/a		
	Thk./Rating	6" Sch 80	n/a	n/a	½" x 10.5"	O	n/a	O	O
	Heat# or ID	3421	n/a	n/a	3391				
	Spec.-Grd.		n/a	n/a			n/a		
	Thk./Rating		n/a	n/a			n/a		
	Heat# or ID		n/a	n/a					
	Spec.-Grd.		n/a		n/a	n/a	n/a	n/a	n/a
	Thk./Rating		n/a		n/a	n/a	n/a	n/a	n/a
	Heat# or ID		n/a		n/a				
	Spec.-Grd.		n/a		n/a	n/a	n/a	n/a	n/a
	Thk./Rating		n/a		n/a	n/a	n/a	n/a	n/a
	Heat# or ID		n/a		n/a				
	Spec.-Grd.	n/a		n/a	n/a	n/a	n/a	n/a	n/a
	Thk./Rating	n/a		n/a	n/a	n/a	n/a	n/a	n/a
	Heat# or ID	n/a		n/a	n/a				


CERTIFIED BY
MOSS FABRICATION LTD.
CALGARY, ALBERTA, CANADA
W
R.T. 2
M.A.W.P. 1440 P.S.I. AT 350 °F
9930 KPa AT 176 °C
M.D.M.T. -49 °F AT 1440 P.S.I.
-45 °C AT 9930 KPa
C.R.N. W4426.2
YEAR BUILT 2014 SERIAL NO. 42637-1
A 636941


Gequip
2014
LS6128440
13040

WESTERN INSPECTION LTD.
3231 - 58th AVENUE, S.E., CALGARY
ALBERTA T2C 0B4
TEL: (403) 279-4540
FAX: (403) 236-3043

RADIOGRAPHIC EXAMINATION REPORT #CGY-448668

Moss Fabrication
6619 - 86 Avenue SE
Calgary, AB T2C 2S4
Tel: (403) 279-4950 Fax: (403) 236-4185

Job Number: 4761-1
PO Number:

Date of Exam: Thursday, Feb 13 2014
Job Location: Western's Shop
Technicians: Randy Knapp QC Reg #000019, SNT Lev. 1A

Acc Codes: ASME VIII DIV. I UW-52 APP 4
Inspected: Pre Heat Treat
Material: Carbon Steel
Isotope: IR 192
Focal Spot: 2x3 mm
Curies: 80
Degree: Spot
Processing: Automatic
Units: in

Legend:

* (Loading)	S = Single D = Double T = Triple
# (Result)	ACC = Accept REJ = Reject RETEST = Retest
@ (Degree)	1 = Acceptable 2 = Slight 3 = Reject

Note: SFD Does not include reinforcement

	Test Information										Film Information			Result Information		
	Tech	IQI	Weld	Dia	Thk	Len	Sob	SFD	SSOFD	*	From - To	Type	Size	#	@	Discontinuity From - To
1 Test: C3	RT4-C	1B	V	12	.688	6	80	6.0	1.063	S	0 - 6	D5-GEV-I	3.5x17	ACC		

RT 4 Circumferential: T.291 g) S.O.D., half of the inside diameter, less 1/2 of max. allowable reinforcement.T.291 h) S.S.O.F.D., nominal wall thickness plus reinforcement.

Units: Qty	Code
1	S6/1.063/00

Sign Here:
Donald Mitchell CGSB Lev. II Reg# 534, SNT Lev. II

Sign Here: FEB14/14
Customer Representative:

IMPORTANT: Please Sign And Return the Yellow Copy to Western Inspection Ltd. A.S.A.P.
This Report and all associated materials remain the sole property of Western Inspection Ltd. until such time as they are paid for in full!

WESTERN INSPECTION LTD.
3231 - 58th AVENUE, S.E., CALGARY
ALBERTA T2C 0B4
TEL: (403) 279-4540
FAX: (403) 236-3043

RADIOGRAPHIC EXAMINATION REPORT #CGY-447580

Moss Fabrication
6619 - 86 Avenue SE
Calgary, AB T2C 2S4
Tel: (403) 279-4950 Fax: (403) 236-4185

Job Number: 4761-1
PO Number:

Date of Exam: Monday, Feb 3 2014
Job Location: Western's Shop
Technicians: Clark Mitchell SNT Lev. II

Acc Codes: ASME B31.3 Normal
Inspected: Pre Heat Treat
Material: Carbon Steel
Isotope: IR 192
Focal Spot: 2x3 mm
Curies: 60
Degree: 100%
Processing: Automatic
Units: in

Legend:

* (Loading)	S = Single D = Double T = Triple
# (Result)	ACC = Accept REJ = Reject RETEST = Retest
@ (Degree)	1 = Acceptable 2 = Slight 3 = Reject

Note: SFD Does not include reinforcement

Test Information												Result Information		
Comp#	Test#	Tech	IQI	Wldr	Dia	Thk	Len	Sch	SFD	*	Films	Type	#	@ Discontinuity	From - To
1	X1	RT1	1B	0	6	0.864		XXH	6.625	S	4	D5-GEV- I	ACC		

RT 1: T.291 g) S.O.D., Nominal Wall Thickness Plus Inside Diameter of Pipe T.291 b) S.S.O.F.D., Wall Thickness Plus Allowable Weld Reinforcement (Both Sides).

Units: Qty	Code
1	6/XXH/00

Sign Here: _____
Donald Mitchell CGSB Lev. II Reg# 534, SNT Lev. II

Sign Here: _____
Customer Representative:

IMPORTANT: Please Sign And Return the Yellow Copy to Western Inspection Ltd. A.S.A.P.
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Order#: 249222 Seq: 4 PO#: 6031863 Heat#: 323462 Mill: TPCO
Part#: P 12 80 S3 S'BT Part Desc: Pipe 12 (323.8mm O.D.) SCH 80 SMLS A/SA333-6 SRL BEVELED (TPCO)

43.4 FT 21'7" -12" S/80 SA333 GR6. (3440)
(2) PCE's PIPE 0.664" HT. 323462 WO# 30514.

TPCO

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

TIANJIN PIPE (GROUP) CORPORATION
QUALITY CERTIFICATE

QR-11-8.2.4-19

Licence No.:

No.: 12072742

Contract No.	TPCO-12163E	L/C No.			
Order	BHD Tubular Limited	Product	SEAMLESS STEEL LINE PIPE	O.D.×W.T.	12IN SCH80(323.90*17.48)
P.O. No.	PO # 110732	Port of desti.		Steel grade	CAT II Gr.290 SS/Gr.6
Standard	CSA Z245.1-07 /ASTM/ASME A/SA 333-2011			Manu. Method	HOT ROLLING SEAMLESS
				Length range	20FT-22FT

Packing: IN LOOSE
Total pieces:
Total metres:
Total Tons:

Heat No.	Lot No.	Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	J*	Tem. ℃	T.S.	Type	Y.S.	Elong.%	Shrink %	2*	Tem. ℃	Size	AK1	Shear %	AK2	Shear %	AK3	Shear %	AVE	Shear %
323462	160					Q+T	160-001-1	A	28	500	Rt0.5	385	52.0		A	-45	10*10	284	100	288	100	292	100	288	100
Total																									

(Tensile test(MPa); Impact test(J))

A:strip,L,bo=38.1mm Lo=50mm A:V8/T

Heat No.	Lot No.	Sample No.	HV10	Hardness test (inside) 1	2	3	4	AVE	Hardness test (middle) 1	2	3	4	AVE	Hardness test (outside) 1	2	3	4	AVE	NDE	Fla. test(1)	Fla. test(2)
323462	160	160-001-1		167.0	165.0	168.0	167.0	167.0	159.0	160.0	159.0	158.0	159.0	151.0	150.0	152.0	151.0	151.0	EMI+UT/L3+L3	G	G

Chemical composition % (L: Ladle analysis P:Product analysis)

Heat No. / Steel speci.		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	CE(CSA)	CE(IIW)	Hydro. Test
323462	L	0.1400	0.26	1.06	0.010	0.003	0.04	0.05	0.01	0.05	0.028	0.030	<0.01	<0.01	<0.0005	0.0013				0.32	0.34	3010psi/8S
14MnSV	P	0.1300	0.25	1.05	0.010	0.004	0.03	0.05	0.01	0.04	0.033	0.030	<0.01	<0.01	<0.0005	0.0018				0.30	0.33	
	P	0.1400	0.24	1.06	0.009	0.004	0.03	0.05	0.01	0.04	0.030	0.030	<0.01	<0.01	<0.0005	0.001[illegible]				0.32	0.34	

NDE (100%)	Visual and dimension	Hydro. Test	Pipe end NDE	Pipe end bevelling	Residual mag. Test	SSCC	HIC
G	G	G	G	G	G		

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

Seal for certification:

Note: NACE MR 0175-2003/MR 0103-2007/ISO 15156-2A-2009;CE (CSA) =C+F×(Mn/6+Si/24+Cu/15+Ni/20+ (Cr+Mo+V+Nb) /5+5B);
CE (IW) =C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15;ALUMINUM KILLED STEEL, EAF-LF-CONTINUOUS CASTING
EN10204-3 1;Silicon and calcium treated for inclusion morphology control in Steel Melting.
Quenched and Tempered:900℃×10Minutes W.C & 720℃×20Minutes A.C.

Remark:desti.=destination;tem.=temperature;speci.=specification;Manu.=Manufacture;G=Good;Hydro.=hydraulic

No. 120703142 Page (1) Date 2012-7-31

(FOR EXPORT ONLY)

CHECKED TO ASME SECTION II PART A

Signed

Date AUG 27 2013

2010 Ed. 2011 Add.

(3421) 20' - 4693.4
0.441" SSF
AUG.5/2013

6" SCH A/SA-333GR6 HT 1134392V

Contract No_2210002596

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL CERTIFICATE

Add_10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax_+86 734 8873739 8872942
P.C. 421001

Name of Customer_
Description_Seamless Steel Line Pipe
TOTAL_98PIECES,33BUNDLES,53.052MT

Date_SEP 19 , 2011

SPEC_ASTM A333-2010/ASME SA333 -2010Gr.6/API 5L 44TH EDITION /CSA Z245.1-2007 Gr.290 CAT II,Sour Service,NACE MR-0175-2009/ISO15156-2-2009/NACE MR 0103-2010							CERTIFICATE NO_2010-01-0916-1			
NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)	ACTUAL WEIGHT(MT)	
2	A81L11160	1134392V	Gr6/Gr290	6"*0.432"*40FT	13	39	1561.04	20.254		
3	A83L31060	1134755V	Gr6/Gr290	8"*0.322"*40FT	6	18	720.48	9.342		
4	A94L01100	1134755V	Gr6/Gr290	8"*0.5"*40FT	11	21	840.53	16.559		
			TOTAL_		33	98	3922.57	53.052		

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST		CHEMICAL COMPOSITION %														
		PIPE BODY EMI	PIPE END MPI	TYPE	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	*1	CE
2	NORMAL IZED	OK	N/A	P	0.12	0.27	1.01	0.013	0.0016	0.10	0.03	0.04	0.01	0.0026	0.003	0.0001	0.02	8.4	0.27
				P	0.11	0.28	1.02	0.013	0.0016	0.10	0.03	0.04	0.01	0.0026	0.003	0.0001	0.02	9.3	0.25
				L	0.12	0.29	1.03	0.012	0.0015	0.10	0.03	0.04	0.01	0.0024	0.032	0.0001	0.02	8.6	0.28
3	NORMAL IZED	OK	N/A	P	0.10	0.26	1.06	0.012	0.0021	0.08	0.03	0.04	0.01	0.0025	0.024	0.0001	0.02	10.6	0.24
				P	0.10	0.25	1.05	0.012	0.0021	0.08	0.03	0.04	0.01	0.0025	0.024	0.0001	0.02	10.5	0.24
				L	0.10	0.25	1.08	0.012	0.0022	0.08	0.02	0.04	0.02	0.0030	0.036	0.0001	0.02	10.8	0.24
4	NORMAL IZED	OK	N/A	P	0.11	0.24	1.06	0.011	0.0025	0.07	0.02	0.04	0.01	0.0023	0.035	0.0001	0.02	9.6	0.26
				P	0.11	0.24	1.05	0.011	0.0025	0.07	0.02	0.04	0.01	0.0023	0.035	0.0001	0.02	9.5	0.25
				L	0.10	0.25	1.08	0.012	0.0022	0.08	0.02	0.04	0.02	0.0030	0.036	0.0001	0.02	10.8	0.24

NO	TENSILE STRENGTH _b (PSI)		YIELD STRENGTH _s(PSI)		_(%) ELONGATION	_s/_b	IMPACT TEST				HARDNESS HRC/S22	SHEAR FRACTURE			YDROSTATIC TEST (PSI)	FLATTEN TEST	BEND TEST	SSC TEST
	strip,L,bo=12.5mm,Lo=50mm						Tem(_)	Dime(mm)	AKV(J)	Ori								
2	70325	71050	54375	55100	45.0/42.0	0.77	0	10*7.5*55	V8/171.0/190.0/178.0	T	HRC 1.0	90	95	92	3000	OK	N/A	N/A
							-55		180.0/210.0/190.0	L								
3	82940	83810	68440	69020	36.5/36.0	0.83	0	10*5*55	V8/120.0/93.0/118.0	T	HRC 1.0	90	85	80	2400	OK	N/A	N/A
							-55		91.0/102.0/90.0	L								
4	65975	65250	52200	52200	38.0/37.0	0.79	0	10*10*55	V8/248.0/220.0/268.0	T	HRC 1.0	90	88	90	3000	OK	N/A	N/A
							-45		226.0/254.0/228.0	L								

REMARKS_1. We hereby certify that this certificate of quality is issued and signed by the manufacturer.
2. We hereby certify that the properties described herein meet the requirement of the above spec.
3. We hereby certify that this certificate is issued accordance with EN 10204.3.1B
4. TYPE:P-Product analysis L-Ladle analysis;
5. ORIGIN: MADE IN CHINA
6 *1 =Mn/C

CHECKED TO ASME SECTION II PART A

QUALITY MANAGER_

Signed_____

Date_____ AUG - 6 2013

2010 Ed. 204 Add.

edmonton exchanger
& manufacturing ltd.

CERTIFICATE OF COMPLIANCE

Pg 1-8

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 MOSS FABRICATION LTD. PO 4761-4 Work Order C102200 Date 2014/02/03 CofC# 46916 Page 1 of 1

Item#	Description	Qty	Heat#	Brinell Hardn.	Required Min Thk	Recorded Min Thk	Form. Proc.
H102200-1	HEAD(S) - Semi-Elliptical 2:1 - 0.8750" NOM (0.7750"_MIN) X 12.75" OD (Material Spec: SA 516-70 Normalized) *Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A*	2	386456-33951-02 (MB283)	MTR	0.7750"	0.8290"	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, 2013 Edition.

Supplementary Examination - Items

CHECKED TO ASME
SECTION II PART A

Signed

Date FEB - 7 2014

2013 Ed. Add.

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

CERTIFICATE OF COMPLIANCE

MTR List
2-8

Customer MOSS FABRICATION LTD. PO 4761-4 Work Order C102200 Date 2014/02/03 CofC# 46916

MTR ID	Pages	Heat#	Thickness	Material Grades
18093	5	386456-33951-02	.875"	SA 516-70 N

Heat#	Material Grades	MTR ID
386456-33951-02	SA 516-70 N	18093

Heat#	Thickness	Grade	HIC Report Filename

(MB283) 2-4761-4
EE
0.875" FEB. 5/2014

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: 461466-19.07.13

A08/ A03 Manufacturer's order/ Certificate No.: 385451-001 Sheet: 1/...

A05 Established Inspecting body: DH

A06 Purchaser: EDMONTON STEEL, EDMON A07.1 No. ED10620-J1010-ER

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

B01 Product: HEAVY PLATES

B02/ Steel design.: SA516-70 SA20-S5

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

18093

B01-B99 Description of the product

B14 Item No.	B08 Number of pieces	B09 Thickness	B10 Width	B11 Length	B12 Theoretical mass KG	B04 Product delivery condition	B07.2 Heat No.	B07.1 Rolled plate No./ Test No.	A09 Purchaser article number
			INCH						
01	1	0,6250 x	120,50000 x	480,00000	4650	N	386455	32440-02	
01	1	0,6250 x	120,50000 x	480,00000	4650	N	386455	32467-01	
01	1	0,6250 x	120,50000 x	480,00000	4650	N	386455	32807-01	
01	1	0,6250 x	120,50000 x	480,00000	4650	N	386455	32807-03	
**	4				18600				
02	1	0,8750 x	120,50000 x	480,00000	6510	N	386456	33947-01	
02	1	0,8750 x	120,50000 x	480,00000	6510	N	386456	33947-02	
02	1	0,8750 x	120,50000 x	480,00000	6510	N	386456	33947-03	
02	1	0,8750 x	120,50000 x	480,00000	6510	N	386456	33951-01	
02	1	0,8750 x	120,50000 x	480,00000	6510	N (MB283)	386456	33951-02 ✓	
02	1	0,8750 x	120,50000 x	480,00000	6510	N	386456	33951-03	
**	6				39060				
***	10				57660				

B04 Product delivery condition

ITEM NO.: 01-02
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

B06 Marking of the product

ITEM NO.: 01-02
STEEL DESIGNATION **SA516 70 MTL/TV SA516 60 MTL/TV**
HEAT NO. / TRADEMARK / ROLLED PLATE NO.-TEST NO. / INSPECTOR'S STAMP

A04 D H Manufacturer's mark

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

A H B Inspector's stamp

A01 AG der Dillinger Hüttenwerke
Postfach 1580, D-66748 Dillingen/Saar
Inspection department

Date 22.07.13 PP 1

QM-System: Certification as per ISO 9001

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

DILLINGER HÜTTE

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: 461466-19.07.13

A08/ A03 Manufacturer's order/ Certificate No.: 385451-001 Sheet: 2/...

A05 Established inspecting body: DH

A08 Purchaser: EDMONTON STEEL, EDMON A07.1 No. ED10620-J1010-ER

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

B01 Product: HEAVY PLATES

B02/ Steel design. SA516-70 SA20-S5

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

B07-B99 Further information about the product

ITEM NO.: 01-02
THICKNESS REDUCTION RATIO >= 3,0 IS FULFILLED (CF. A/SA20 PAR. 5.3)

C10-C29 Tensile test

B14 Item No.	B07.2 Heat No.	B07.1 Rol.plate/ Test No.	B05 Reference (heat) treatment	C01	C02/ C01	C03 Temp. GR.F	C10	C11 KSI RP02	C12 RM	C13	A % L0=8IN	C14-C15
01	386455	32440		K1	Q	RT		50,8	75,1		28	
01	386455	32467		K1	Q	RT		46,4	71,9		26	
01	386455	32807		K1	Q	RT		50,8	75,1		29	
02	386456	33947		K1	Q	RT		49,4	74,2		28	
02	386456	33951		K1	Q	RT		49,9	74,2		27	✓

C30-C39 Hardness test

B14 Item. No.	B07.2 Heat No.	B07.1 Rol.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	386455	32440		K1	O	RT	HBW 10/3000	HB	141	142	142	142
01	386455	32467		K1	O	RT	HBW 10/3000	HB	134	135	136	135
01	386455	32807		K1	O	RT	HBW 10/3000	HB	142	142	140	141
02	386456	33947		K1	O	RT	HBW 10/3000	HB	144	141	139	141
02	386456	33951		K1	O	RT	HBW 10/3000	HB	139	138	137	138 ✓

A04 Manufacturer's mark: D H

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: A H B

A01 AG der Dillinger Hüttenwerke
Postfach 1580, D-66748 Dillingen/Saar
Inspection department

Date 22.07.13 PP 1

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: 461466-19.07.13

A08/ A03 Manufacturer's order/ Certificate No.: 385451-001 Sheet: 3/...

A05 Established inspecting body: DH

A06 Purchaser: EDMONTON STEEL, EDMON A07.1 No. ED10620-J1010-ER

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

B01 Product: HEAVY PLATES

B02/ Steel design. SA516-70 SA20-S5

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

C40-C49 Impact test

B14 Item No.	B07.2 Heat No.	B07.1 Rol.plate/ Test No.	B05 Reference (heat) treatment	C01	C02/ C01	C03 Temp. GR.F	C41 Width of test piece	C40 Type of test piece	C44 Testing method	C46 Energy	C45 C42 Individual values AV=FT.LBF			C43 Mean value
01	386455	32440		K1	LV	-51		CHP-V			AV 149	197	201	182
01	386455	32467		K1	LV	-51		CHP-V			AV 174	219	120	171
01	386455	32807		K1	LV	-51		CHP-V			AV 166	178	206	183
02	386456	33947		K1	LV	-51		CHP-V			AV 104	193	150	149
02	386456	33951		K1	LV	-51		CHP-V			AV 125	147	141	138

C70-C99 Chemical composition % - Heat analysis

B07.2 Heat	C70	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
386455	Y	0,171	0,376	1,17	0,007	0,0006	0,0059	0,031	0,007	0,041	0,094	0,000	0,000	0,001	0,003
386456	Y	0,172	0,384	1,18	0,006	0,0005	0,0055	0,027	0,013	0,030	0,031	0,000	0,000	0,001	0,002

B07.2 Heat	C70	B	CA	AL-T
386455	Y	0,0000	0,0013	0,035
386456	Y	0,0000	0,0015	0,038

C94 Heat analysis Carbon equivalent / Alloying restrictions

B07.2 Heat										
386455	FO-02=	0,39	FO-51=	0,000	FO-55=	0,17	FO-78=	0,10	FO-91=	6,8
386456	FO-02=	0,38	FO-51=	0,000	FO-55=	0,10	FO-78=	0,04	FO-91=	6,9

C95 Ladle treatment

ITEM NO. : 01-02
HEAT OF THE INDICATED ITEM: VACUUM DEGASSED / SULPHIDE SHAPE CONTROL

A04 D H Manufacturer's mark

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

A H B Inspector's stamp

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

A01

Date 22.07.13 PP 1

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: 461466-19.07.13

A08/ A03 Manufacturer's order/ Certificate No.: 385451-001 Sheet: 4/...

A05 Established inspecting body: DH

A05 Purchaser: EDMONTON STEEL, EDMON A07.1 No.: ED10620-J1010-ER

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

B01 Product: HEAVY PLATES

B02/ Steel design.: SA516-70 SA20-S5

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

C95 Further information about ladle treatment

ITEM NO.: 01-02
CALCIUM TREATED

C70-C99 Chemical composition % - Product analysis

B07.2 Heat	B07.1 Test No.	C01	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
386455	32440	K1	0,173	0,366	1,17	0,008	0,0006	0,0056	0,036	0,007	0,050	0,026	0,000	0,000	0,000	0,003
386455	32467	K1	0,171	0,363	1,17	0,008	0,0004	0,0051	0,037	0,006	0,050	0,027	0,000	0,000	0,000	0,003
386455	33936	K1	0,172	0,372	1,17	0,007	0,0007	0,0054	0,029	0,007	0,038	0,108	0,000	0,000	0,000	0,002
386456	33951	K1	0,170	0,362	1,17	0,007	0,0006	0,0053	0,037	0,007	0,052	0,025	0,001	0,000	0,001	0,003

B07.2 Heat	B07.1 Test No.	C01	B	CA	AL-T
386455	32440	K1	0,0001	0,0011	0,033
386455	32467	K1	0,0000	0,0011	0,033
386455	33936	K1	0,0000	0,0012	0,036
386456	33951	K1	0,0000	0,0011	0,032

C94 Product analysis Carbon equivalent / Alloying restrictions

B07.2 Heat	B07.1 Test No.	C01						
386455	32440	K1	FO-02=	0,38	FO-51=	0,000	FO-55=	0,12
386455	32467	K1	FO-02=	0,38	FO-51=	0,000	FO-55=	0,12
386455	33936	K1	FO-02=	0,39	FO-51=	0,000	FO-55=	0,18
386456	33951	K1	FO-02=	0,38	FO-51=	0,001	FO-55=	0,12

A04 D H Manufacturer's mark

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

A H B Inspector's stamp

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

Date 22.07.13

A01

PP 1

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 461466-19.07.13	A08/ Manufacturer's order/ A03 Certificate No. 385451-001	Sheet 5

A05 Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10620-J1010-ER	B01 Product HEAVY PLATES
	Final receiver EDMONTON STEEL, EDMON	A07.2 No.	

B02/ Steel design.	SA516-70	SA20-S5
B03 Any suppl. requirements	ASME-IIA:2010+ADDENDA-2011A DIL-HUE-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.: 01-02

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

MTR APPROVED EDMONTON EXCHANGE

A04 D H Manufacturer's mark

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

AHB Inspector's stamp

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

A01

Date 22.07.13 PP 1

8.8

MOSS FABRICATION LTD.

HEAD MATERIAL RECEIVING REPORT DATE: FEB - 5 2014

Job #: 4761-4 Material: 516-70N

Diameter: 12.75 Thickness: .875 .775

Length: _____ Theoretical Strapping Dimension: 1017

Head #1: Heat Number M8283

a) Measured Strapping: 1022

b) Inside Diameter:
0 deg. _____
45 deg. _____
90 deg. _____
135 deg. _____

c) Thickness Check:
0 deg. .785
45 deg. .777
90 deg. .778
135 deg. .783

d) Bevel Edge/Special Machining as per Purchase Order? Yes

e) Accepted: Yes

Head #2: Heat Number M8283

a) Measured Strapping: 1023

b) Inside Diameter:
0 deg. _____
45 deg. _____
90 deg. _____
135 deg. _____

c) Thickness Check:
0 deg. .787
45 deg. .784
90 deg. .782
135 deg. .782

d) Bevel Edge/Special Machining as per Purchase Order? Yes

e) Accepted: Yes

6" XH BW CAP A420-WPL6

HEAT NUMBER : 06A33001
TRANS AM PIPING PRODUCTS - REV'D BY: 1
P.O. # /Seq #: L-06 - 12733

1-4761-3
Appd Jan. 17/2014

Purchaser : CCTF CORPORATION

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4875716 | Job No.

D M Y Certificate No.
24/03/2006 T - 2006030273

E-No.	Specification for Material Made from ~~Seamless Pipe~~ PLATE	Specification for Inspection	Visual Examination	Dimensional Inspection
MA-490	ASTM A420M - 02 / ASME SA420 Gr.WPL6 CSA Z245.11 Gr.241 CAT II NACE MR0175-2003	ASME B16.9-2003	Good	Good

MFG. No. (Heat Identification No.)	Product & Size (T:*1)	Quantity	Item No.
06A33001	C WPL6 6 S80	24/30	7561729

Material Manufacturer	Material Heat No.			
	429			

Specification	Chemical Composition %													*2 Tension Test			Hardness Max 197 HB : GOOD
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	YS	TS	E	Impact Test (J) 10 X 10 X 2V AT -45 °C
	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 1000	X 100	MPa		%	
Min.		15	50											240	415	30	123
Max.	23	40	135	35	40	40	40	30	12		80	20			585		141
	13	17	70	17	7	3	2	3	6		2	0	25	296	417	50	155

AVE. 140

NORMALIZING 910 C X 0.5 HR. AIR COOLING

CHECKED TO ASME
SECTION II PART A

Signed _____
JAN 21 2014
Date _____
Quality Assurance Manager
Thai Benkan Co., Ltd.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY : 2013 Ed. Add

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

2" S/160 ASTM/ASME A/SA-333 GR6 HT 563540
(3422) 44'-4693-4
0.539" SSP Aug. 5/2013 2"/160

Benteler Steel/Tube GmbH
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BENTELER Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1
EN 10204:2005-01

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Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

SEAMLESS STEEL PIPE LTD.
6771 - 84 STREET S.E.
CALGARY, AB T2C 4T6
KANADA

Kunden-Bestell-Nr.: Purchase Order No.: No. de commande du client: BST 11-5294 / SSP I-11097

Hersteller: Manufacturer: Producteur: Warmrohrwerk Dinslaken
ISO/TS 16949 ISO 9001 TÜV CERT 44111090381-003
PED 97/23/EC TÜV CERT 07-202-1411-Z-1193/8/0

Benteler Auftrags-Nr.: Benteler Order No.: No. de commande Benteler: 1561136

Herstellerzeichen: Manufacturer's brand: Marque du producteur:

Versandanzeigen-Nr.: Dispatch Note No.: No. d'avis d'expédition: 6514418

Stempel des Abnahmebeauftragten: Stamp of the inspection representative: Poinçon du contrôleur: WA

Produkt: NAHTLOSE STAHLROHRE
Product: SEAMLESS STEEL TUBES
Produit: TUBES D' ACIER SANS SOUDURE

Stahlerschmelzungsverfahren: Steelmaking process: Procédé d'élaboration de l'acier: ELEKTROSTAHL / ELECTRIC FURNACE / FOUR ELECTRIQUE

Lieferbedingungen: Terms of delivery: Conditions de livraison: ASTM-A 333-2005-HF, ASME SA-333-HF, ASME Section II Part A Edition 2010, CSA Standard Z245.1-07 Category II, Sour Service, NACE MR0175/ISO 15156-1:2001, NACE MR0175/ISO 15156-2:2003

Maße - Toleranzen: Dimensions-tolerances: Dimensions-tolérances: ASME B36.10M-2004, ASME SA-999 ASME Section II Part A Edition 2010, ASTM-A 999-2004a

CHECKED TO ASME
SECTION II PART A
Signed
Date AUG - 6 2013
2010 Ed. 2011 Addt.

Stahlsorte: Steel grade: Nuance d'acier: GRADE 1, GRADE 290, GRADE 6

Lieferzustand: Delivery condition: État de livraison: Normalized

Produktkennzeichnung: Product marking: Marquage du produit: see attachment product marking

Pos. Item Poste	Stück Number Nombre	Maße Dimensions Dimensions	Länge Length Longueur feet	Gewicht Weight Poids lbs	Schmelzen-Nr. Heat No. No. de coulée.	Prüfdruck Test pressure Pression d'épreuve bar	s	Rohr-Nr.-Gruppe Tube number group Série de no. des tubes	Vielfachlängen Multiple lengths Longueurs multiples
0003	69	2" NPS * Sched. 160 20 FT - 22 FT	1510,43	11380	563540 (3422)	207	5		
0005	52	3" NPS * Sched. 80 20 FT - 22 FT	1132,35	11766	563566	207	5		

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Pos. Item Poste	Stück Number Nombre	Maße Dimensions Dimensions	Länge Length Longueur feet	Gewicht Weight Poids lbs	Schmelzen-Nr. Heat No. No. de coulée	Prüfdruck Test pressure Pression d'épreuve bar	s	Rohr-Nr.-Gruppe Tube number group Série de no. des tubes	Vielfachlängen Multiple lengths Longueurs multiples
0010	19	4" NPS * Sched. 80 38 FT - 42 FT	759,42	11537	563785	207	5		

Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

Pos. Item Poste	Schmelzen-Nr. Heat No. No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0003	563540	0,130	0,180	0,80	0,011	0,003	0,18	0,03	0,09	0,16	0,002	0,001	0,002	0,0001
0005	563566	0,130	0,180	0,79	0,009	0,004	0,10	0,04	0,08	0,12	0,002	0,010	0,002	0,0001
0010	563785	0,100	0,370	1,24	0,008	0,001	0,18	0,08	0,17	0,08	0,065	0,032	0,003	0,0003

1. Formel: CE IIW=C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)<=0,42 %
2. Formel: CEV=C+F*((Mn/6)+(Si/24)+(Cu/15)+(Ni/20)+((Cr+Mo+V+Nb)/5) +(5*B)) <=0,40
3. Formel: Mn/C>=3/1
4. Formel: Cr+Cu+Mo+Ni+V<=1,00 %

Formelergebnisse / Formula results / Résultats des formules

Pos. Item Poste	Schmelzen-Nr Heat No. No. de coulée	1. Formel 1. Formula 1. Formule	2. Formel 2. Formula 2. Formule	3. Formel 3. Formula 3. Formule	4. Formel 4. Formula 4. Formule
0003	563540	0,322	0,289	6,154	0,462
0005	563566	0,303	0,276	6,077	0,342
0010	563785	0,388	0,304	12,400	0,575

Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos. Item Poste	Schmelzen-Nr. Heat No. No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0003	563540	0,130	0,170	0,80	0,010	0,003	0,18	0,03	0,08	0,16	0,002	0,001	0,002	0,0001

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Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos. Item Poste	Schmelzen-Nr. Heat No. No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0005	563566	0,140	0,190	0,78	0,009	0,005	0,10	0,05	0,08	0,12	0,002	0,010	0,002	0,0001
0010	563785	0,110	0,350	1,25	0,008	0,001	0,17	0,09	0,17	0,08	0,066	0,032	0,003	0,0003

1. Formel: CE IIW=C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)<=0,42 %
2. Formel: CEV=C+F*((Mn/6)+(Si/24)+(Cu/15)+(Ni/20)+((Cr+Mo+V+Nb)/5) +(5*B)) <=0,40
3. Formel: Mn/C>=3/1
4. Formel: Cr+Cu+Mo+Ni+V<=1,00 %

Formelergebnisse / Formula results / Résultats des formules

Pos. Item Poste	Schmelzen-Nr Heat No. No. de coulée	1. Formel 1. Formula 1. Formule	2. Formel 2. Formula 2. Formule	3. Formel 3. Formula 3. Formule	4. Formel 4. Formula 4. Formule
0003	563540	0,321	0,289	6,153	0,452
0005	563566	0,313	0,295	5,571	0,352
0010	563785	0,400	0,327	11,363	0,576

Prüfergebnisse / Test results / Résultats des essais

Die Rohre sind auf Dichtheit geprüft durch:
The tubes have been submitted to a leak tightness test by:
Les tubes ont passé un contrôle d'étanchéité par:
Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test pressure/Time-record — PASSED

Die Rohre wurden zerstörungsfrei geprüft:
The tubes are non destructive tested:
Les tubes ont passé un essai non destructif:
ET-test: acc. to CSA Z245.1; for imperfections; drilled hole: 3,20 mm — PASSED

Augensichtkontrolle: PASSED
Visual inspection:
Examen visuel:

Biegeversuch: PASSED
Bending test:
Essai de cintrage:
Pos. / Item / Poste: 0003

Maßkontrolle: PASSED
Dimensions examination:
Vérification des dimensions:

Ringfaltversuch: PASSED
Flattening test:
Essai d'aplatissement:

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Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques

Die Probennahme erfolgte an Vielfachlängen.
The sampling was carried out on multiple lengths.
L'echantillonage etait realise aux longueurs multiples.

Zugversuch Streifenprobe / Tensile test Strip test specimen / Essai de traction Bande decoupee sur tube

Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouvette	Schmelzen-Nr. / Heat No. / No. de coulée	Probenabmessung / Specimen dimensions / Dimensions de l'éprouv.	Streckgrenze / Yield strength / Limite élastique	Zugfestigkeit / Tensile strength / Résistance à la traction	Dehnung / Elongation / Allongement		Einschnürung / Area reduction / Coefficient de striction	Re/Rm / Re/Rm / Re/Rm
Anforderungen / Requirements / Exigences			mm	ReH MPa 290-495	Rm MPa 415-625	A2" % MIN 35	1. Formel / 1. Formula / 1. Formule		
0003	000001	563540	19,00 X 9,20	329	458	42		✓	
0003	000002	563540	19,00 X 8,80	328	466	40			
0003	000003	563540	19,00 X 8,80	330	473	40			
0003	000004	563540	19,00 X 8,70	330	468	38			
0003	000005	563540	19,00 X 8,60	335	475	40			
0005	000001	563566	25,40 X 8,00	311	445	42			
0005	000002	563566	25,40 X 7,50	320	454	42			
0005	000003	563566	25,40 X 7,90	310	450	42			
0005	000004	563566	25,40 X 8,20	345	435	40			
0010	000001	563785	25,40 X 9,00	412	520	40			
0010	000002	563785	25,40 X 8,70	410	525	40			

Härteprüfung / Hardness test / Essai de dureté

Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouv.	Schmelzen-Nr. / Heat No. / No. de coulée	Härte / Hardness / Dureté					
Anforderungen / Requirements / Exigences			HRC	HB MAX 200	HV	HRB	HBW	
0003	000001	563540		137				✓

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Härteprüfung / Hardness test / Essai de dureté

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Härte Hardness Dureté HRC	HB	HV	HRB	HBW
Anforderungen Requirements Exigences				MAX 200			
0003	000002	563540		138			
0003	000003	563540		136			
0003	000004	563540		138			
0003	000005	563540		136			
0005	000001	563566		132			
0005	000002	563566		129			
0005	000003	563566		128			
0005	000004	563566		131			
0010	000001	563785		154			
0010	000002	563785		151			

Kerbschlagbiegeversuch Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY_V]

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	Probenlage Specimen position Position de l'éprouvette längs (L) longitudinal (L) longitudinal (L) quer (Q) transversal (Q) transversal (Q)	Prüftemperatur Test temperature Température d'essai °C	Kerbschlagarbeit Absorbed energy Energie absorbée einzel single individuelle J	mittel average moyenne J	Kerbschlagzähigkeit Impact strength Résistance au choc einzel single individuelle J/cm²	mittel average moyenne J/cm²	Verf.-Bruchanteil Shear fracture Rupture ductile single %	average %
Anforderungen Requirements Exigences			mm 55	mm 5,00	mm 10,00		GRAD -56	MIN 014					
0010	000001	563785	55	5,00	10,00	Q	-56	70				70	
				5,00	10,00			77					
				5,00	10,00			64	70			70	70
												70	

BENTELER QUALITÄTSWESEN 46537 DINSLAKEN

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Kerbschlagbiegeversuch Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY_V]

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	Probenlage Specimen position Position de l'éprouvette längs (L) longitudinal (L) longitudinal (L) quer (Q) transversal (Q) transversal (Q)	Prüftemperatur Test temperature Température d'essai GRAD °C	Kerbschlagarbeit Absorbed energy Energie absorbée einzel single individuelle	mittel average moyenne	Kerbschlagzähigkeit Impact strength Résistance au choc einzel single individuelle	mittel average moyenne	Verf.-Bruchanteil Shear fracture Rupture ductile single	average
Anforderungen Requirements Exigences			mm 55	mm 5,00	mm 10,00		°C -56	J MIN 014	J	J/cm²	J/cm²	%	%
0010	000004	563785	55	7,50	10,00	L	-45	180				80	
				7,50	10,00			184				80	
				7,50	10,00			183	182			80	80

Kerbschlagbiegeversuch Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY_V]

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	Probenlage Specimen position Position de l'éprouvette längs (L) longitudinal (L) longitudinal (L) quer (Q) transversal (Q) transversal (Q)	Prüftemperatur Test temperature Température d'essai GRAD °C	Kerbschlagarbeit Absorbed energy Energie absorbée einzel single individuelle	mittel average moyenne	Kerbschlagzähigkeit Impact strength Résistance au choc einzel single individuelle	mittel average moyenne	Verf.-Bruchanteil Shear fracture Rupture ductile single	average
Anforderungen Requirements Exigences			mm 55	mm 6,67	mm 10,00		°C -45	J MIN 018	J	J/cm²	J/cm²	%	%
0005	000001	563566	55	6,67	10,00	L	-45	79				50	
				6,67	10,00			77				50	
				6,67	10,00			94	83			60	53

BENTELER QUALITÄTSWESEN 46584 DINSLAKEN

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Kerbschlagbiegeversuch Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY_V]

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	Probenlage Specimen position Position de l'éprouvette längs (L) longitudinal (L) longitudinal (L) quer (Q) transversal (Q) transversal (Q)	Prüftemperatur Test temperature Température d'essai GRAD °C	Kerbschlagarbeit Absorbed energy Energie absorbée einzel single individuelle J	mittel average moyenne J	Kerbschlagzähigkeit Impact strength Résistance au choc einzel single individuelle J/cm²	mittel average moyenne J/cm²	Verf.-Bruchanteil Shear fracture Rupture ductile single %	average %
Anforderungen Requirements Exigences			mm 55	mm 7,50	mm 10,00		-45	MIN 020					
0003	000001	563540	55	7,50	10,00	L	-45	136				70	
				7,50	10,00			121				60	63
				7,50	10,00			123	127			60	

BENTELER QUALITÄTSWESEN 48537 DINSLAKEN

Wärmebehandlung / Heat treatment / Traitement thermique

Normalized: 890 °C; Holding time: 5 min.; Cooling: air

Restmagnetismus / Demagnetize / Démagnétiser

demagnetized tubes; 1 measurement per 4 hours on both tube ends Two readings 180° apart around the circumference. Average value max 3.0 Millitesla (24 A/cm), individual value max 3.5 Millitesla (28 A/cm)

Vermerk / Remark / Remarque

Pos. / Item / Poste: 0003
NACE Standard: Hardness acc. to NACE MR0175/ISO 15156: HRC max 22., The material meets the requirements of NACE MR0103; Certificate remarks: The Material also meets the requirements of ASTM A / ASME SA-106-B, Sour Service, The Material is Aluminium deoxydized and inclusion shape controlled with Calcium-Silicon treatment, This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-07 meets the requirement for micro hardness of max. 248 HV 500 gf., No weld repair has been carried out; Bend test: mandrel diameter 12D; Bending angle: 90 °

Pos. / Item / Poste: 0005, 0010
NACE Standard: Hardness acc. to NACE MR0175/ISO 15156: HRC max 22., The material meets the requirements of NACE MR0103; Certificate remarks: The Material also meets the requirements of ASTM A / ASME SA-106-B, Sour Service, The Material is Aluminium deoxydized and inclusion shape controlled with Calcium-Silicon treatment, This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-07 meets the requirement for micro hardness of max. 248 HV 500 gf.. No weld repair has been carried out

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Beiblatt Produktkennzeichnung / Attachment product marking / Supplément marquage du produit

Pos. / Item / Poste	Produktkennzeichnung / Produktkennzeichnung / Marquage du produit
0003, 0005, 0010	FS: BENTELER Z.245.1-A/SA333 1/6/290 CAT II CATEGORIE 2 SS HEAT-NO. M45C SMLS HN DIMENSIONS SCHEDULE WA GERMANY I-11097

AEZ = Ätztintenbeschriftung, Etching ink marking, Gravure à l'encre |FK = Farbkennzeichnung, colour marking, marquage par couleur |FS = Farbschablonierung, paint stencilling, marquage par peintureFSD = Farbstrahldrucker, Colour jet printer, imprimante à jet d'encre de c |LK = Laserkennzeichnung, Laser marking, Marquage laser |PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette |PS = Prägestempel, die stamp, marquage par poinçonnage |TS = Tintenstrahlkennzeichnung, Ink jet spray marking, imprimante à jet d'encre

Verkäufer(in) / Salesman/ woman in charge / Personne chargée : Mr Pottmeier, Tel.: 05254/81-4265, Fax: 4289

Dinslaken, 09.03.2011, TEL.: 02064.623-537 FAX: 02064.623-539

BENTELER QUALITÄTSWESEN DINSLAKEN

Abnahmebeauftragter
Inspection representative
Contrôleur
DR. BASEL KEITA / Thei

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen.Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
We certify that the supplied products comply with the order specification.This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande.Ce document a été établi par traitement électronique de l'information et est valide sans signature.

(3391) 27'-4610-2
0.610" APPL
OCT. 10/2012

Železárny Veselí, a.s.

divize Válcovny trub Chomutov
Libušina 4778, Chomutov 430 01, Czech Republic www.vtchomutov.cz

Inspekční certifikát
Abnahmeprüfzeugnis
Inspection Certificate

Atest č. - Attest Nr.
Certificate No - Certificat No :

Certificat de Reception EN 10204:2004/3.1 3978/11/A

Objednávka č. - Bestell Nr.
Order No - No de la commande :
1010137700-BHD
Code : 1142366

Zakázka č. - Bestell Nr. - Order No - Commande No:
846700

Zákazník - Besteller - Customer - Client:
14" / 60

Znak výrobce - Herstellerzeichen
Brand of the manufacture-Marque du fabricant:

Razítko znalce - Stempel des Sachverständigen
Inspector's stamp - Poincon de l'expert TK7

Ocelové bezešvé trubky - Nahtlose Stahlrohre - Seamless steel tubes - Tubes en aciers sans soudure
laquered

Pressure test

Úkosy - Beveled ends
beveled for welding 30° (-0/+5°)

Technické požadavky - Prüfgrundlagen/Anforderungen - Technical requirements/Demand - Exigences techniques:
ASTM A333/A333M - 11 ASME SA-333/SA-333M - 10 ANSI/NACE MR0175/ISO 15156:2009(E) appr. Dec.02, 2010 NACE MR 0103-2010

Materiál - Werkstoff - Material - Matière:	Dle - Entsprechend - According to - Selon:	Vydání - Ausgabe - Edition - Edition:
Gr.1	ASTM A 333	2011
GR.6	ASTM A 333	2011

Stav dodávky - Lieferzustand - State of delivery - Etat de livraison:
Hot finished - fine grain practice - normalized 915 +/- 15 °C - cooled in air

Způsob zpracování tavby - Erschmelzungsart - Melting process - Procédé d'élaboration:
Electric furnace - Fully killed

Značení - Kennzeichnung - Marking - Marquage:
Stencilled : VT ASTM/ASME A/SA 53-B 333 1/6 14" x 0,594 SEAMLESS HOT FINISHED (heat no.) 2030 PSI (length) ... ft (weight) ... lb LT-50F PO 109778 CFI PO 1010137700 Made in Czech Republic Stencilled (heat no.)

Specifikace - Specification:

Rozsah dodávky - Umfang der Lieferung - Extent of material delivery - Liste descriptive

Kusy Stücke Pieces Pièces	Celková délka Gesamtlänge Total length Longueur totale [ft]	Celková hmotnost Gesamtmasse Total mass Masse totale [l]	Rozměry Dimensionen Dimensions Dimensions [mm]	Tavba číslo Schmelze Nr. Heat No. No Coulée	Vodní tlak Druckprobe Hydr. Test Essai hydraulique [psi]	Avízo: Aviso: Advice: Avis:	Datum: Datum: Date: Date:
7	200,131	7,805	14" x 0,594 (355,6 x 15,09) 19,7 - 32,8 ft	11230	2030.0 5 sec.	15569011	29.09.2011

(3391)

Doplňující údaje - Zusätzliche - Additional remarks - Autres remarques:
Mercury Free and No Weld Repair.
Visual inspection and dimensional check without objection.

CHECKED TO ASME SECTION II PART A

Signed

Date OCT 1 1 2012

2010 Ed. 2011 Add.

Country of melt - Czech republic.
The Manufacturer declares that it is certified by the notified body TÜV NORD reg. No 0045 according to Article 4.3 Annex I of Directive 97/23 EC and AD-2000 Merkblatt W0 and EN 10210-1:2006 appendix to ZA CPD 88/106/EEC.
Uvedené výrobky jsou ve shodě s předpisy, které jsou specifikovány kupní smlouvou. -Angegebene Produkte sind in einklang mit den vorschriften, die im kaufvertrag spezifiziert werden.We thereby declare that the above mentioned products were manufactured in accordance with specifications and contract requirements. - Des produits indiqués sont dans un accord avec les disposition contrait de vente on spécifie.
Raw material by used for pipe production is without radioactive contamination.

Železárny Veselí, a.s.
IČ: 00011380
DIVIZE Válcovny trub Chomutov
Libušina 4778, 430 01 Chomutov

Chomutov S....03.10.2011.....
Dne - Datum - Date - Date

Příloha-Anlage-Annex-Annexe: 1

.....Jana SOCHROVÁ.....
Zodpovědná osoba - Der Werksachverständige - Inspector-le responsable

Železárny Veselí, a.s.

divize Válcovny trub Chomutov
Libušina 4778, Chomutov 430 01, Czech Republic www.vichomutov.cz

Příloha - Anlage - Annex - Annexe 2

Výsledky zkoušek - Ergebnis der Prüfungen - Test results - Résultats des tests

Atest č. - Attest Nr. - Certificate No - Certificat No : **3978/11/A** **03.10.2011**

Mechanické zkoušky-Mechanische Prüfungen-Mechanical tests-Tests mécheniques

		Rozměry vzorku Probenabmessung Dim. of. Specimen Dim. de l'echantillon		Odběr vzorku Probenentnahme Specimen Prélevement	Zkuš. teplota Prüftemperatur Test temperature Temperature du test	Mez kluzu Streck/Dehngrenze Yield point/ Proof stress Limite d'elasticité	Pevnost v tahu Zugfestigkeit Tensile strength Résistance é la traction	Tažnost Bruchdehnung Elongation Allongement	Kontrakce Brucheinschnürung Reduction of area Contraction	ASTM A 370 Nárazové práce Schlagarbeit Energy of impact Energie de rupture	ASTM A 370 Vrub.Houževnatost Kerbschlagzähigkeit Impact strength Résilience
Č. zkoušky Probe Nr. Test No No du test	Číslo lavby Schmelze Nr. Heat No No coulée	Tloušťka Dicke Thickness Epaisseur	Šíře Breite Width Largeur	Směr Richtung Direction Direction		Re	Rm	2"	Z	Kv	
					C°	psi	psi	%	%	J	J/cm2
17999	11230	0,63	0,79	L	20	47995	72210	45,80			
	11230		10 mm	L	-45					18	
	11230				-45					36	
	11230				-45					39	
	11230									A 31	
18000	11230	0,64	0,80	L	20	47705	72645	46,40			
	11230		10 mm	T	0					58	
	11230				0					50	
	11230				0					65	
	11230									A 58	
	11230		HV=155								

L = Podél - Länge - Along - En longueur: T = Příčně = Quer = Transverse = En travers, A = Average

Technologické zkoušky - Technologische Prüfungen - Technological test - Test technologiques:
Hardness test < 22 HRC. Flattening test satisfied acc to ASTM A999.

Chemické složení - Chemische Zusammensetzung - Chemical composition - Composition chimique (%)

Tavba číslo Schmelze Nr. Heat No No Coulée	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	Nb	Ti	Al	N	B	CEV	Co
11230	0,18	0,87	0,42	0,009	0,008	0,12	0,11	0,16	0,03	0,003						0,370	

Chomutov S....03.10.2011.....
Dne - Datum - Date - Date

.....Jana SOCHROVÁ.....
Zodpovědná osoba - Der Werksachverständige - Inspecteur responsable

Železárny Veselí, a.s.
IČ: 00011380
DIVIZE Válcovny trub Chomutov
Libušina 4778, 430 01 Chomutov

24569

2-4761
VAN L
JAN. 17/2014

SAN ENG STEEL FORGING CO LTD
311, Jen Hsin Road, Jen Wu District
Kaohsiung, Taiwan, R.O.C.
TEL:07-3724249 ; FAX:07-3712923
URL: www.saneng.com.tw
e-mail: saneng@ms.seed.net.tw

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049-3.1.B)

Customer: ——

Order No.: D000488

Certificate No.: SE103373
Date: 08/07/2013
Page: 1 OF 1

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A-350 LF2-11 CL.1/ASME SA-350 LF2-11 CL.1	ASME B16.5-09 CSA Z245.12

Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)														
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
			Min Max	- 0.300	0.150 0.300	0.600 1.350	- 0.035	- 0.046	- 0.400	- 0.300	- 0.400	- 0.120	- 0.080	- 0.020	- -			
1		150 WNRF STD 4" LF2	175 PCE	0.210	0.250	1.220	0.015	0.003	0.007	0.010	0.010	0.003	0.006	0.001	0.008			0.418
2		150 WNRF XS 4" LF2	62 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007			0.424
3		150 WNRF XS 6" LF2	58 PCE	0.210	0.200	1.150	0.017	0.005	0.006	0.010	0.010	0.001	0.005	0.001	0.006			0.406
4		150 WNRF STD 8" LF2	25 PCE	0.220	0.200	1.170	0.022	0.005	0.006	0.020	0.010	0.003	0.005	0.001	0.008			0.422
5		600 WNRF STD 4" LF2	125 PCE	0.200	0.190	1.110	0.014	0.005	0.160	0.100	0.070	0.025	0.009	0.001	0.010			0.427
6		600 WNRF XS 4" LF2	58 PCE	0.200	0.190	1.110	0.014	0.005	0.160	0.100	0.070	0.025	0.009	0.001	0.010			0.427
7		600 WNRF XS 6" LF2	45 PCE	0.200	0.220	1.180	0.016	0.003	0.007	0.010	0.010	0.002	0.004	0.001	0.008			0.401

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: -46°C Minimum: 20.0 Joule			Material Supplier
							1	2	3	
	Min Max	485.0 655.0	250.0 -	22.0 -	- 197	30.0 -				
1	4677167	535.0	383.0	35.8	154/152	71.3	137.0	91.0	132.0	ACOMINAS
2	4603012	529.0	356.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS
3	4554034	520.0	362.0	34.0	153/151	69.6	72.0	39.0	45.0	ACOMINAS
4	4499559	519.8	373.6	34.0	153/150	70.4	49.0	42.0	91.0	ACOMINAS
5	93712	541.0	383.0	35.8	154/152	70.4	107.0	100.0	115.0	WEI CHIH STEEL
6	93712	541.0	383.0	35.8	154/152	70.4	107.0	100.0	115.0	WEI CHIH STEEL
7	4577188	524.0	366.0	34.8	153/151	70.4	128.0	110.0	127.0	ACOMINAS

HEAT TREATMENT(*2)
N

REMARKS
890°C/3HRS
CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15156.2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A.
CONFORMS WITH Z245.12 CAT II GR248 SOUR SERVICE-09 (FOR USE AS WELDING NECK AND BLIND FLANGES ONLY)
TEST SPECIMEN SIZE: 10X10
TEST SPECIMEN ORIENTATION: TRANSVERSE
IMPACT TEST TEMP.: -46°C
MIN TO G RATIO IS GREATER THAN 3.0"

*1: T.S. = Tensile Strength, Y.S.=Yield Strength, E.L.=Elongation, R.A.=Reduction of Area.

*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S.T=Solution Treated, S.R=Stress Relieved, A.C=Air Cooled, F.C=Furnace Cooled, W.C=Water Cooled, O.C=Oil Cooled.

*3: C.E. Value = C + (Mn /6) + (Cr + Mo +V) / 5 + (Ni + Cu) / 15

CHECKED TO ASME
SECTION II PART A

We hereby certify that the material has been tested in accordance with the above specification and also with the requirements called for by the above order.

SAN ENG STEEL FORGING CO., LTD. R.O.C. QUALITY ASSURANCE DEPT.

Signed ——— Manager of Quality Assurance Dept

Date JAN 2 1 2014

2013 Ed. ——— Add.

2-4761-5 FVC 1/24/14 Pg 1-2

FVC an AFGlobal Company

Material Test Report

FVC Heat Nbr: E012BN

ISO 9001:2008 Certified

FVC Canada Ltd.
An AFGlobal Company
7410A-5 Street S.E. Calgary, Alberta T2H-2L9
Sales: (403) 255-9011 Fax: (403) 255-7239

MOSS FABRICATION 00011642	PO: 4761-5	Sales Order: C13431	Line: 1
6619 - 86TH AVE SE	Item Code: LWN020600070A004A1	Qty: 2	
T2C 2S4 CALGARY, AB	Item Desc: LWN,SA350LF2,600#,2"x7",RF		
CA	Mill Heat: 114806		
Spec: ASME SA350-LF2-CL1: 2013 Edition			

Element	(%wt)	Ladle	Product	EPCRA	CAS#
C	Carbon	0.20			
Mn	Manganese	1.19		✓	7439-96-5
P	Phosphorous	0.011			
S	Sulphur	0.001			
Si	Silicon	0.24			
Cu	Copper	0.13		✓	7440-50-8
Ni	Nickel	0.07		✓	7440-02-0
Cr	Chromium	0.15		✓	7440-47-3
Mo	Molybdenum	0.03			
V	Vanadium	0.018			

Element	(%wt)	Ladle	Product	EPCRA	CAS#
Cb	Columbium (N	0.001			
Sn	Tin	0.008			
Al	Aluminum	0.025			
Ca	Calcium	0.0002			
As	Arsenic	0.0077		✓	7440-38-2
Sb	Antimony	0.001		✓	7440-36-0
CE	C+Mn/6+(Cr+M	0.45			
Cu+Ni+Cr+Mo+V		0.40			
Cr+Mo		0.18			

CHECKED TO ASME SECTION II PART A

Signed _____

Date JAN 2 1 2014

2013 Ed. _____ Add.

Mechanical Testing

Test Lab	AMF 52723
BHN (QTC)	149 - 149
Elg (%)	34.00
RA (%)	71.00
Tensile (ksi)	76.806
Yield (ksi)	43.283
Specimen Orientation	Longitudinal
Charpy (ft-lbs)	100 - 67 - 70
Charpy Temp (F)	-50
Avg Energy 3 Specimens (ft-lbs)	79
Min Energy 1 Specimens (ft-lbs)	67
Shear (%)	50-40-40
LatExp(Mils)	71-53-56

Heat Treat

Heat Treatment	Normalized

Other

Country of Origin	Turkey
Manufactured In	USA
Production Method	EAF/VD
Reduction Ratio (Mill) x:1	48.1:1
Gr.Sz.	7

EPCRA Supplier Notification: This product may contain one or more toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986) and 40 C.F.R. Part 372. Potentially reportable chemicals are indicated with a checkmark in the "EPCRA" column and a Chemical Abstract Services (CAS) registry number is provided for each such chemical in addition to the percent by weight of the chemical present in this product. It is your responsibility alone to determine whether your facility is required to submit a Toxic Release Inventory Report under EPCRA Section 313.

Certification No.: 1093466

Certification Date: 1/16/2014

Issued By: Bryun Jantzen

This report is issued in compliance with the requirements of EN10204 3.1 / ISO 10474 3.1.b

2.2

Material Test Report

FVC Heat Nbr: E012BN

FVC Canada Ltd.
An AFGlobal Company
7410A-5 Street S.E. Calgary, Alberta T2H-2L9
ISO 9001:2008 Certified
Sales: (403) 255-9011 Fax: (403) 255-7239

MOSS FABRICATION 00011642	PO: 4761-5	Sales Order: C13431	Line: 1
6619 - 86TH AVE SE	Item Code: LWN020600070A004A1	Qty: 2	
T2C 2S4 CALGARY, AB	Item Desc: LWN,SA350LF2,600#,2"x7",RF		
CA	Mill Heat: 114806		
Spec: ASME SA350-LF2-CL1: 2013 Edition			

MATERIAL MEETS NACE MR0175 & MR0103 LATEST EDITIONS. CE=C+(Mn/6)+({Cr+Mo+V}/5)+({Ni+Cu}/15),
Elongation in 2" round specimen.
YIELD STRENGTH MEASURED AT 0.2% OFFSET.
FVC STANDARD MANUFACTURING PRACTICES:
1) FLANGE DIMENSIONS & BOLTING COMPLY - ASME B16.5.
2) SELF-REINFORCING NOZZLES COMPLY WITH SPECIFICATION OF SECTION VIII DIV. 1 OR DIV. 2 PER CUSTOMER DESIGN/FVC DESIGN.
3) MATERIAL SPECIFICATION COMPLIES WITH ASME SECT. II PART A.
4) ALL FVC MATERIAL MANUFACTURED PER FINE GRAIN PRACTICE.
5) ALL FVC MATERIAL CERTIFIED PER EN 10204 Type 3.1 UNLESS OTHERWISE SPECIFIED.
6) CERTIFICATE OF INSURANCE AVAILABLE UPON REQUEST.
7) PRODUCT FREE OF MERCURY CONTAMINATION.

EPCRA Supplier Notification: This product may contain one or more toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986) and 40 C.F.R. Part 372. Potentially reportable chemicals are indicated with a checkmark in the "EPCRA" column and a Chemical Abstract Services (CAS) registry number is provided for each such chemical in addition to the percent by weight of the chemical present in this product. It is your responsibility alone to determine whether your facility is required to submit a Toxic Release Inventory Report under EPCRA Section 313.

Certification No.: 1093466
Certification Date: 1/16/2014
Issued By: Bryun Jantzen

Bryun Jantzen

This report is issued in compliance with the requirements of EN10204 3.1 / ISO 10474 3.1.b

50-4691-51
MRL
Aug. 2/2013
CHECK CHEM.

SO# 233243 HEAT# 4443573 2 600 RF WN SCH 160 'LF2'

SAN ENG STEEL FORGING CO LTD
311, Jen Hsin Road, Jen Wu District
Kaohsiung, Taiwan, R.O.C.
TEL:07-3724249 ; FAX:07-3712923
URL: www.saneng.com.tw
e-mail: saneng@ksts.seed.net.tw

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)

Customer: SEYBOLD INTERNATIONAL CORP.
Order No.

Certificate No.: SE4501FA
Date: 01/16/2012
Page: 1 OF 1

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A350 LF2-11 CL.1/ASME SA350 LF2-11 CL.1	ASME B16.5-09 CSA Z245.12

Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)													
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N		CE(*3)
			Min	-	0.150	0.600	-	-	-	-	-	-	-	-	-		
			Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.080	-		
1	7582600	600 WNRF S160 2" LF2	900 PCE	0.220	0.250	1.160	0.015	0.004	0.007	0.010	0.010	0.003	0.004	0.001	0.005		0.416

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	EL.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: -46°C Minimum: 20.0 Joule			Material Supplier	HEAT TREATMENT(*2)
	Min	485.0	250.0	22.0	-	30.0	1	2	3		☒ N
	Max	655.0	-	-	197	-					REMARKS
1	4443573	517.8	383.6	34.8	162/150	71.3	87.0	97.0	44.0	ACOMINAS	890°C X3HRS CONFORMS WITH NACE MR0103-10 AND NACE MR0175/ISO15156.2-09 CONFORMS WITH Z245.12 CAT II GR.248 SOUR SERVICE5-09 TEST SPECIMEN SIZE: 10X10 TEST SPECIMEN ORIENTATION: TRANSVERSE IMPACT TEST TEMP.: -46°C

*1: T.S. = Tensile Strength, Y.S.=Yield Strength, E.L.=Elongation, R.A.=Reduction of Area.

*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S.T=Solution Treated, S.R=Stress Relieved, A.C=Air Cooled, F.C=Furnace Cooled, W.C=Water Cooled, O.C=Oil Cooled.

*3: C.E. Value = C + (Mn /6) + (Cr + Mo +V) / 5 + (Ni + Cu) / 15

We hereby certify that the material has been tested in accordance with the above specification and also with the requirements called for by the above order.

SAN ENG STEEL FORGING CO., LTD. K.C.Z QUALITY ASSURANCE DEPT.

Manager of Quality Assurance Dept

CHECKED TO ASME
SECTION II PART A

Signed [signature]

Date Aug 01/13

2010 Ed. 2011 Add.

CLIENTE / Customer / Client

CCTF CORPORATION (EDMONTON)
5407 - 53 AVENUE NW
EDMONTON, AB T6B 3G2
CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA: Date: **23/10/2012**

N.º No. **152023**

HOJA: Page: **1**

SGI 1922164 SGI 6000238 SGI 6009987

ULMA FORJA, S.COOP.
B° Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

Packing List: 96998

PRODUCTO / Article - Produit: **FLANGES**

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: **4890828-00**

DE / of. - de: **22/12/2011**

2-4761-3
APEX
JAN. 17/2014

NORMAS APLICABLES / Requirements - Normes Applicables: **ASME B16.5-09**

Certified acc. PED 97/23/EC+AD2000-W0 by TÜV Rheinland N.º 01 202 E/Q 02 7443

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: **ASTM/ASME A/SA350LF2CL1-11 A/SA105N-11**

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier
E = Elec. Y = Oxigeno básico

NACE MR0175/ISO15156-2-09 & MR0103-10
Clause 7.2.1.4, Annex A.2 and SSC Region 3.
CSA-Z245.12-09 GR248 CAT II - SS (WN & BLIND FLANGES ONLY)

DEPARTAMENTO / Section / Département: **QUALITY ASSURANCE**

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No N.º Coulée	RESISTENCIA T.Strength Rasist Rupt N/mm2	LIMITE ELAST. Y.Strength 0.2 % N/mm2	ALARGAM. Elongation Allongement Lo: 4 d %	ESTRICCION Red. Area Striction %	RESILIENCIA Impact test Résilience Joules			CHARPY V 10x10mm PROBETA - SPECIMEN MEDIA Average Moyenne	°C	DUREZA Hardness Dureté HBW	
7 7587752	24	WN 6 600LB XXS RF A350LF2	2562	NE	445V2	533	328	25,00	51,00	71	45	45	53	-50	156	158
8 7580037	12	WN 6 600LB S160 RF A350LF2	2912	NE	482M2	530	376	25,20	53,50	92	99	74	88	-50	153	156

COLADA N.º Heat No N.º Coulée	COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE														
	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
445V2	0,197	0,222	0,970	0,013	0,004	0,090	0,130	0,034	0,000	0,004	0,280	0,027	0,000	0,000	0,412
482M2	0,170	0,276	1,230	0,013	0,004	0,070	0,110	0,023	0,000	0,067	0,232	0,021	0,008	0,000	0,430

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur

ULMA FORJA S. COOP.
Dpto. de Garantía de calidad
Quality Assurance Dept.

CHECKED TO ASME
SECTION II PART A

Signed

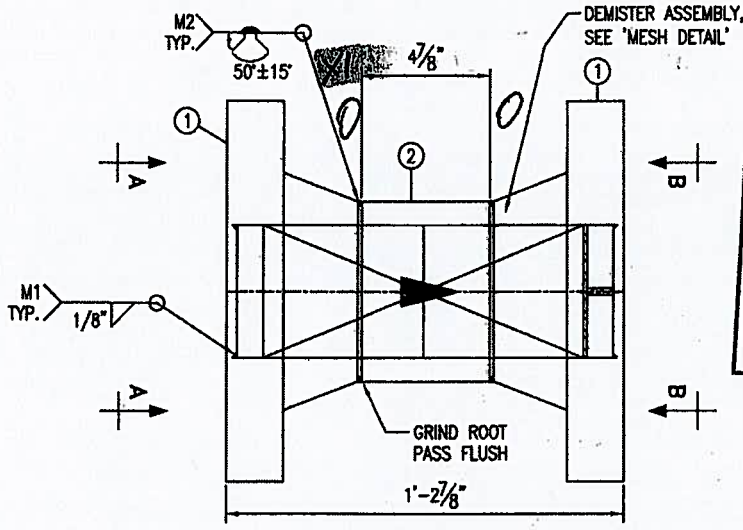
Date JAN 21 2014

2013 Ed. Aug.

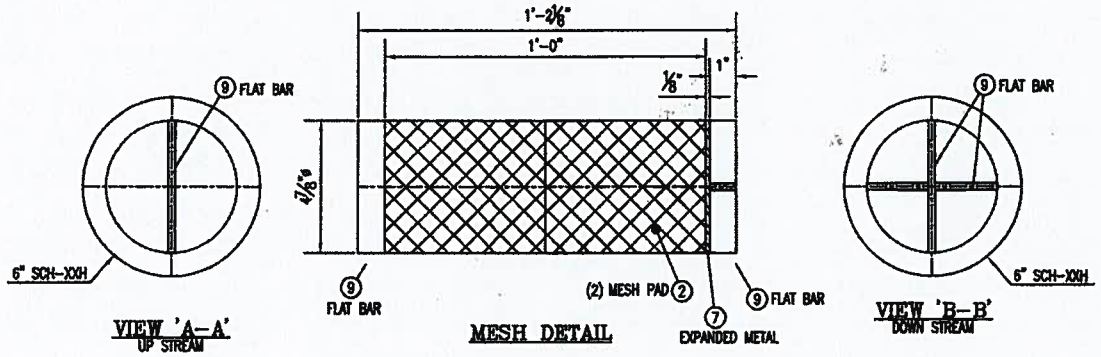
(*) OBSERVACIONES: Remarks Observations: N_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR

LIST OF MATERIALS

ITEM	QTY	DESCRIPTION	MATERIAL
1	2	6"-600# RFWN FLANGE, SCH-XXH BORE	SA-350-LF2 CL1
2	1	6" PIPE SMLS, SCH-XXH x 4 7/8" LG. BBE	SA-333-6
3	2	MESH PAD: 9# DENSITY x 6" THK. x 4 7/8" OD	SS-304
4	3	RETAINING BAR: 1" FB x 1/4" THK. (AS REQUIRED)	G-44W
5	1	EXPANDED METAL: 4 5/8" OD (3/4"-9)	CS



RELEASED FOR FABRICATION
FEB 03 2014

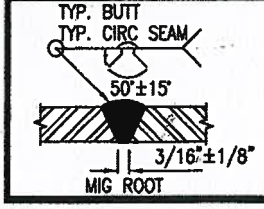


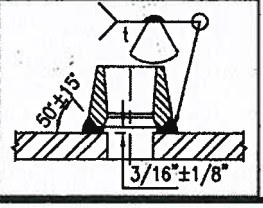
GEQUIP PO# 13040

No	DESCRIPTION	DATE	DRAWN	APP'D	DATE
0	ISSUED FOR FABRICATION	JAN.16'14	CL	KM	JAN.16'14

REVISIONS

1	WPS # M2	2	WPS # M1





MOSS FABRICATION LTD.

DESIGN PRESS:	1415 PSIG	HYDRO:	2125 PSIG
DESIGN TEMP:	-49/150 °F	X-RAY:	10 %
CODE ANSI B31.3:	2012 EDITION	C.A.:	1/16 "
STRESS RELIEF:	N/R	CAPACITY:	- cu.ft.
SERVICE:	SWEET, LT	No. REQ'D:	ONE (1)
TITLE:	6"-600# SCH-XXH - SCRUBBER INLET SPOOL		
JOB No.: 4761	DRAWING No.: PS4632-12-XXH		REV: 0