QUALITY CONTROL DATA BOOK

Husky Oil Operations Limited
C/O Excelsior Engineering Ltd.
400, 110 Centre Street N.E
Calgary, AB
T2E 2R2

JOB#
2011-8169-50

Condensate Stabilizer Unit
LSD: 03-06-049-18 W5M
Location: Minehead
Compressor Stn.

Phase # : 2011-8169-50
Phase Title: Condensate Stabilizer Unit

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports	X	
2. CRN's		N/A
3. Nameplate Copy	X	
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports		N/A
8. MTR's	X	
9. NDE MPT		N/A
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)		N/A
12. Hydro Chart		N/A
13. PSV & Valve Cert.	X	

AB-83 2011-01

ABSA
the pressure equipment safety authority

PRESSURE PIPING CONSTRUCTION AND TEST DATA REPORT

In accordance with the provisions of the PESR Section 31(1)

Shop Construction ☒; **Field Construction** ☐;
Final Data Report ☒; **Partial Data Report** ☐ (from one ABSA- authorized Contractor to another ABSA- authorized Contractor).

Complete both sides of this Form

1. Constructed By: Alco Gas & Oil Production Equipment Ltd. Owner's Job No: 2011-8169-50
(Name of ABSA authorized primary contractor or subcontractor)
5203 - 75th Street, Edmonton, Alberta T6E 5S5
(Address)
Certificate of Authorization Permit No. AQP-1004 Expiry Date: Oct. 7th, 2013

2. Constructed For: Husky Oil Operations Ltd. C/O Excelsior Engineering Ltd.
(Name of primary contractor if different from above)
400, 1110 Centre Street NE Calgary, AB T2E 2R2
(Address)
Certificate of Authorization Permit No. AQP-N/A Expiry Date: N/A
(Required when the primary contractor undertakes some/all of the quality functions, e.g., NDE, PWHT, Tie-in, fabrication, hydro test, final assembly etc.)

3. Owner: Husky Oil Operations Limited 707 - 8th Ave. Calgary, AB T2P 1H5
(Name and address)
LSD: 03-06-049-18 W5M Minehead Compressor Stn.
(Location of installation)
Certificate of Authorization Permit No. AQP- N/A Expiry Date: N/A
(Required when the owner undertakes some/all of the quality functions, e.g., NDE, PWHT, Tie-in, fabrication, hydro test, final assembly etc.)

4. Piping Design Alberta Registration No.: PP-N/A
(Required if aggregate piping volume is over 0.5m³)

5. Design Responsibility: Owner ☐; Contractor ☒

6. WP No.: WP-340.2 ; Company: Alco Gas & Oil Prod. Equip. Ltd. Owner's WP No. (If used): WP-
(Alberta Registration No.) (Alberta Registration No.)
WPS No(s). used: CA-P1G1G2-AW-LT; AA-P1G1G2-AW-LT ; Owner's WPS No(s). (If used):

7. Code: ASME B31.1 Non Boiler External Piping ☐; ASME B31.1 Boiler External Piping ☐;
B31.5 ☐; B31.9 ☐; CSA Z662 Steam Pipelines ☐;
ASME B31.3 ☒ - Service Category: Normal ☒, D ☐, M ☐, High Pressure ☐; Severe Cyclic Condition ☐

Drawing No. Rev. No. Line No.	Fluid (Air/Stm. Etc.)	Des. Press. kPa	Des. Temp. °C (Max. & Min.)	Pressure Test kPa	Test Medium	Pipe Mat'l Spec. & Grade	C.A. mm	Pipe NPS & Schedule	Flange Material & Rating	PWHT/ Preheat Temp. °C	NDE
B-2011-8169-50S -001, -002 Rev. 0 Iso #1, Iso#2	Raw Condensate	2,758	-29/260	4,827	H_2O	SA-106-B	1.6	4" Std.	SA-105N 300#	None /10	10% R.T 100% V.T.
B-2011-8169-50S -003, -004, -005, -016, -017, -018 Rev. 0 Iso #3, Iso 4, Iso #5, Iso#16, Iso #17, Iso#18	Condensate	2,758	-29/260	4,827	H_2O	SA-106-B	1.6	6", 4", 3", 2" Std.	SA-105N 300#	None /10	10% R.T. 100% V.T

B-2011-8169-50S -006, -007, -008, -009, -010, -011, -012, -013, Rev. 0 Iso #6, Iso#7, Iso #8, Iso #9, Iso #10, Iso#11, Iso #12, Iso #13	(Product) Condensate	2,758	-29/260	4,827	H20	SA-106-B	1.6	2" Std.	SA-105N 300#	None / 10	10% R.T. 100% V.T
B-2011-8169-50S -014, -015, -021 Rev. 0 Iso #14, Iso#15, Iso #21	Gas	2,758	-29/260	4,827	H20	SA-106-B	1.6	2" Std.	SA-105N 300#	None / 10	10% R.T. 100% V.T
B-2011-8169-50S -019, -020 Rev. 0 Iso #19, Iso #20	Gas / Condensate	1,034	-29/93	1,724	H20	SA-106-B	1.6	3", 2" Std.	SA-105N 150#	None /10	10% R.T. 100% V.T
D-2011-8169-50F -001 Rev. 0 D-2011-8169-50A -001, -002, -003 -004 Rev. 0 PV-402 stn. from Iso #15	Gas (overheads)	2,758	-29/260	4,137	H20	SA-106-B	1.6	1" Sch 160	N/A	N/A	100% V.T
Complete unit air tested except H-405 and top section of T-400				586 or as regulated	Air/ Soap	SA-106-B	1.6	1" XH (1/2" Sch. 160 LG-401) 11/2", ¾" Sch 160 Nipples LG & level cage)	N/A	N/A	100% V.T
Function Test				586 or as regulated	Air						

Partial Data Reports certified by sub-contractors are listed below and attached to this Data Report ☐

No.	Line No.	Spool No.	Dwg. No. (with Rev. No.)	Sub-contractor (Name)	AQP No. (if from Alberta)	Expiry (if from Alberta)

Remarks: For partial data report provide information about the code work that was not completed by the subcontractor (e.g., hydrostatic test, PWHT etc.). For final data report provide information about the code work that was not completed by subcontractors and subsequently completed by the primary contractor (e.g., hydrostatic test of entire assembly, PWHT etc.)

Endorse certificate 'A' or 'B'

A. CERTIFICATE OF COMPLIANCE
Signed by the subcontractor when supplying this certificate as a
Partial Data Report

We certify that the statements in this Data Report are correct and that materials, construction and workmanship of the piping fabrication conform to the registered quality system and the applicable Piping code(s).

Date: _____ _____
Contractor

_____ _____
Print Authorized Representative's Name Signature

This certificate is not valid unless it forms part of a Final Data Report signed by Primary Contractor

B. CERTIFICATE OF COMPLIANCE
Signed by the primary contractor when supplying this certificate as a
Final Data Report

We certify that the statements in this Data Report are correct and that piping job no. 2011-8169-50 described in this Data Report was constructed in accordance with the Province of Alberta Safety Codes Act and Regulations, and applicable ASME Piping Code(s).

Date: April 29, 2011 Alco Gas & Oil
Contractor

David Glasgow _____
Print Authorized Representative's Name Signature

CERTIFICATE OF INSPECTION

I, the undersigned, employed by _____ have verified that all required examination and testing has been completed, and inspected the piping described in this construction data report to the extent necessary to be satisfied that it conforms to all applicable examination requirements of the Code and of the engineering design, and state that, to the best of my knowledge and belief, the contractor has constructed this piping in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the piping described in this construction data report. Furthermore, neither the inspector nor his or 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: APRIL 25/11 Date: _____

MIKE STEPHENSON C.E.T. _____
Owner's Inspector Name (please print) ABSA Safety Codes Officer (please print)
(BOILER EXTERNAL PIPING ONLY)

_____ _____
Owner's Inspector Signature: ABSA Safety Codes Officer's Signature

Current version of this Form may be obtained from www.absa.ca

8169-50

FORM U-1A MANUFACTURER'S 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

(A) 602897 05-18-11

1. Manufactured and certified by: Air Cooled Exchangers, LLC 1201 South 9th Broken Arrow, Oklahoma 74012 (Name and address of manufacturer)

2. Manufactured for: HUSKY OIL OPERATIONS LTD ALCO GAS AND OIL 5203 75 ST EDMONTON, ALBERTA T6E 5S5 (Name and address of purchaser)

3. Location of installation: MINEHEAD COMP. STN Unknown LSD: 03-06-049-18 W5M (Name and address)

4. Type	(Horiz. or vert., tank)	(Mfgr's serial No.)	(CRN)	(Drawing No.)	(Nat'l. Bd. No.)	(Year built)
	Horiz	1103501-1	T4527.231	11035-H1	8655	2011

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 — Addenda (Date): None — Code Case Nos: None — Special Service per UG-120(d)

6. Tube & Plug:	Matl. (Spec. No., Grade)	Nom. Thk. (in.)	Corr. Allow (in.)	Diam. I.D. (ft. & in.)	Length (overall) (ft. & in.)
	SA-516-GR-70	0.750	0.063	4.375 IN.	68 IN.

7. Seams:	Long.	RT(spot or Full)	Eff. (%)	H.T. Temp. (°F)	Time (hr)	Girth (Welded, Dbl. Sngl. Lap, Butt)	RT(spot or Full)	Eff. (%)	No. of Courses
	Single Bevel	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

8. Heads: (a) Matl SA-516-GR-70 (Spec. No., Grade) (b) Matl SA-516-GR-70 (Spec. No., Grade)

	Location Top, Bottom, End	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure
(a)	Top/Bottom	0.5 IN.	0.0625 IN.	N.A.	N.A.	N.A.	N.A.	N.A.	4 IN.	N.A.
(b)	Ends	0.5 IN.	0.0625 IN.	N.A.	N.A.	N.A.	N.A.	N.A.	4 IN.	N.A.

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

9. MAWP 400 (Internal) N.A. (External) at max. temp. 500 (Internal) N.A. (External)

Min. design metal temp. -20 °F at 400 psi at max temp psi Hydro test pressure 520 psi.

Proof Test

10. Nozzles, inspection and safety valve openings: Safety Relief Valves to be provided elsewhere by others

Purpose (Inlet, Outlet, Drain)	No	Diam. or Size	Type	Matl.	Nom. Thk	Reinforce Matl.	How Attached	Location
In/Outlet	2	2 in.	Pipe	SA-106-GR B	0.343 in.	Mat&Weld	UW16.1(a)	
	2	2 in.	RFWN	SA-105	300RF	Mat&Weld	Welded	

11. Supports: Skirt NO (Yes or no) Lugs 4 (No.) Legs 0 (No.) Other N.A. (Describe) Attached Tubesheet/Welded (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

Constructed in conformance w/ Appendix 28,IMPACT EXEMPT PER UG-20(F)(l)(b) Vessel volume 3 CuFt (Name of part, item number, Mfgr's. name and identifying stamp)

Tubes: (133) SA214(WLD) X 0.625" OD X 0.06" MW X 7ft long Straight Type

100% RT NOZZLE (266) SA-105 SHOULDER

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 Code for Pressure Vessels, Section VIII, Division 1. "U" Certicate of Authorization No. 7616 expires 4/30/2011

Date 4-4-11 Co. name Air Cooled Exchangers, LLC (Manufacturer) Signed (Representative)

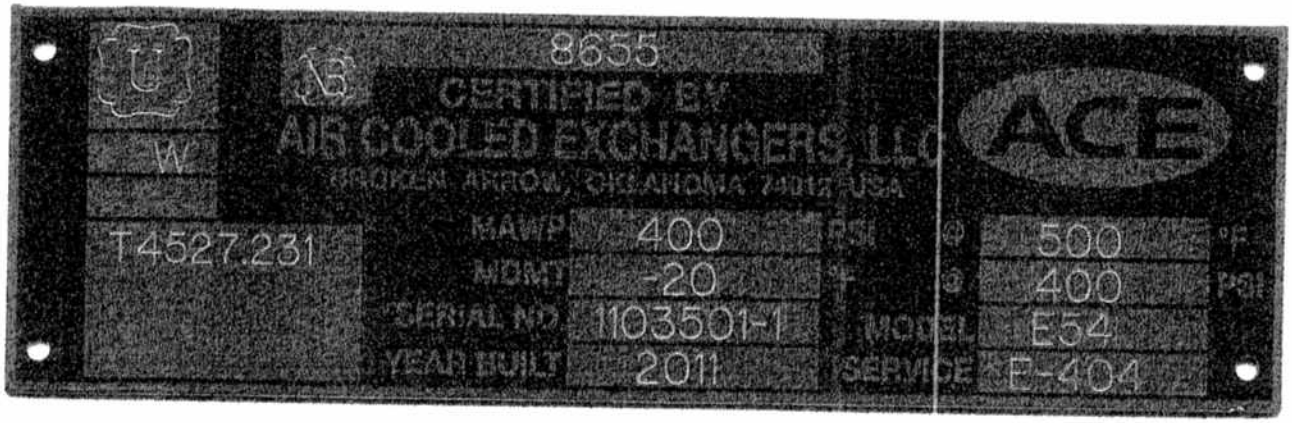
CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by Air Cooled Exchangers, LLC at 1201 S. 9th St Broken Arrow,Oklahoma 74012

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 Oklahoma and employed by OneBeacon America Insurance Co. Lynn, Mass have inspected the component described in this Manufacturer's Data Report on 4-5-11 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 4-5-11 Signed (Authorized Inspector) Commission NB 8432-M OK-266 (Nat'l Board(incl. endorsements), State, and No.)

SERVICE: E-404


8655
CERTIFIED BY
AIR COOLED EXCHANGERS, LLC
BROKEN ARROW, OKLAHOMA 74012 USA
ACE
W
T4527.231
MAWP 400 PSI @ 500 °F
MDMT -20 °F @ 400 PSI
SERIAL NO 1103501-1 MODEL E54
YEAR BUILT 2011 SERVICE F-404

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

_____ Year Built

_____ Serial Number

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

_____ Year Built

_____ Serial Number

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

400 psi at 300 °F
Max. Allowable Working Pressure

0 psi at 300 °F
Max. Allowable External Working Pressure

-20 °F at 400 psi
Minimum Design Metal Temperature

2011 — Year Built

2011-8169-02 — Serial Number

CRN V-3992.2

A No. A60279

NAME CONDENSATE CONDITIONER

TAG V-113

HEAD SA516-70MT 0.680/0.500 in

C.A. 0.062 in

SHELL SA516-70MT 0.62 in

HYDRO 520 psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

_____ Year Built

_____ Serial Number

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

_____ Year Built

_____ Serial Number

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

400 psi at 500 °F
Max. Allowable Working Pressure

0 psi at 300 °F
Max. Allowable External Working Pressure

-20 °F at 400 psi
Minimum Design Metal Temperature

2011
Year Built

2011-0169-01
Serial Number

CRN V-4002.2

A No. (A) 60286

NAME STABILIZER COLUMN

TAG E-400

HEAD SA516-70N 0.236 in

C.A. 0.0625 in

SHELL SA106B 0.375 in

HYDRO 520 psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

2011
Year Built

2011-8169-50
Serial Number

CRN

A No.

NAME

TAG

HEAD in

C.A. in

SHELL in

HYDRO psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

400 psi at 500 °F
Max. Allowable Working Pressure

0 psi at 500 °F
Max. Allowable External Working Pressure

-20 °F at 400 psi
Minimum Design Metal Temperature

2011
Year Built

2011-8169-06
Serial Number

CRN V-3991.2

A No. 60287

NAME PROCESS COIL

TAG E-402

HEAD SA234 WPB 0.280 in

C.A. 0.0625 in

SHELL SA106B 0.216 in

HYDRO 615 psi

2011 - 8169.50

PIPING TRAVEL SHEET

SERIAL NUMBER: 2011-8169-50 **DATE:** March 3, 2011

CUSTOMER: Husky Oil Operations Ltd.	COMMENTS:	DATE & INITIAL OF INSPECTOR FOR COMPLETION OF HOLD POINTS HOLD POINTS ARE IDENTIFIED WITH AN *	
CODE ITEM:		ALCO QC	CUSTOMER/AGENT
APPROVED DRAWINGS		DS	
MATERIALS CHECKED AGAINST DRAWING BILL OF MATERIALS		DS	
MILL TEST REPORTS CHECKED		DS	
IMPACT TESTS		N/A	
UNIT LAYOUT		DS	
WELD PROCEDURE APPPROVED		DS	
WELDER'S QUALIFICATIONS VERIFIED		DS	
FIT-UP		DS	
INTERNALS / EXTERNALS		DS	
WELD SIZE AND PROFILE		DS	
WELDER'S ID		DS	
P.W.H.T.			
POST WELD HEAT TREATMENT INSTRUCTIONS		N/A	
POST WELD HEAT TREATMENT REVIEWED		N/A	
NDT INSPECTIONS			
RADIOGRAPHS		DS	
BRINELL HARDNESS TESTING		N/A	
OTHER NDE		N/A	
COATING			
VISUAL PRIOR TO COATING		N/A	
VISUAL AFTER COATING		N/A	
STENCILING		N/A	
TESTING			
HYDROSTATIC TESTING		DS April 19/11	
PNEUMATIC TESTING USING SHOP AIR AT ~~100~~ 80 PSIG DS		DS April 19/11	
PNEUMATIC TESTING USING HIGH PRESSURE TEST PROCEDURE		N/A	
FUNCTION TEST		DS May 5/11	
P & ID FROM FLOWSHEET VARIFIED		DS June 17/11	

NOTES:

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

Summary of Heat Numbers on Spools

Job #: 2011-8169-50
Customer: Husky Oil Operations
Date: April 20, 2011

Bill of Materials

No.	Size	Rating	Description	Schedule	Material	Heat Numbers
Flanges						
1	6"	300#	RF WN Flange	Std	SA-105N	266F, RW1313
2	4"	300#	RF WN Flange	Std	SA-105N	0A5274
3	3"	300#	RF WN Flange	Std	SA-105N	295T0
4	2"	300#	RF WN Flange	Std	SA-105N	0A5274, 77873
5	11/2"	300#	RF WN Flange	XH	SA-105N	A010
6	3"	150#	RF WN Flange	Std	SA-105N	10/70226
7	2"	150#	RF WN Flange	Std	SA-105N	09/77926
Fittings						
8	6"		90^0 LR Ell BW	Std	SA-234-WPB	02565A
9	4"		90^0 LR Ell BW	Std	SA-234-WPB	0010
10	3"		90^0 LR Ell BW	Std	SA-234-WPB	0X063
11	2"		90^0 LR Ell BW	Std	SA-234-WPB	70515
12	3"x2"		Conc. Red. BW	Std	SA-234-WPB	9L123
13	2"x11/2"		Conc. Red. BW	Std x XH	SA-234-WPB	01423N
14	2"x1"		Conc. Red. BW	Std x XH	SA-234-WPB	AP917
15	4"		Tee BW	Std	SA-234-WPB	8L1729
16	3"x2"		Red. Tee BW	Std	SA-234-WPB	34961
17	2"		Tee BW	Std	SA-234-WPB	3042
18	2"x1"		Conc. Swage	Std x XH	SA-234-WPB	K1870
19	1"x3/4"		Conc. Swage	160	SA-234-WPB	71759
20	2"		Cross	Std	SA-234-WPB	1-31335
21	3"		Weld Cap	Std	SA-234-WPB	SA97310
Piping						
22	6"		Pipe Sml's	Std	SA-106-B	1030153V
23	4"		Pipe Sml's	Std	SA-106-B	24086
24	3"		Pipe Sml's	Std	SA-106-B	J0K8385
25	1"		Pipe Sml's	160	SA-106-B	WB02-4413
26	2"		Pipe Sml's	Std	SA-106-B	0924156
27	1"		Pipe Sml's	XH	SA-106-B	006-41
28	1/2"		Pipe Sml's	160	SA-106-B	007120298
Tubing						
29	1/2"		Tubing Sml's		SA-213 TP 316/316L	00910609
30	3/8"		Tubing Sml's		SA-213 TP 316/316L	11A070
31	1/4"		Tubing Sml's		SA-213 TP 316/316L	TG091059, 872-2810
O-Lets & Cplgs						
32	2"		WOL	Std	SA-105N	58180, 57384
33	1"	3000#	TOL		SA-105N	57867, 58104
34	3/4"	3000#	TOL		SA-105N	58010
35	1/2"	3000#	TOL		SA-105N	58120
36	1"	3000#	Full Cplg THR'D		SA-105N	58104, 2957
37	3/4"	3000#	Full Cplg THR'D		SA-105N	71759
38	1/2"	3000#	Full Cplg THR'D		SA-105N	4105

(2) 8169-50

33398

Po # 125 565

CONFORMS TO SA 105N
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 1
SIGNED BY [illegible] March 3/11

MUNISH FORGE PVT. LTD
VILL. GOBINDGARH ADJOINING PHASE –VII FOCAL POINT
LUDHIANA- 141 010 INDIA. TEL:- + 91 161 2673 307 2673 407 Fax: + 91 161 2676 046
AN ISO 9001 : 2000 CERTIFIED COMPANY
(CERTIFICATE No. 25446-2008-AQ-IND-RVA)
CERTIFICATE AS PER BS EN 10204 3.1 B)

INVOICE NO. & DATE		CERTIFICATE NO.	282/09
CUSTOMER'S NAME		DATE	
PART NO. / NAME	6"-300 WNRF STD	P.O. NO. & DATE	
MATERIAL SPECIFICATION	CSA Z245.12 CAT 1 GR. 248 -NACE MR 0175-2003		
STANDARD	ANSI B16.5-2003 (REVISON OF ASME B16.5-1996)	LAB REF. NO.	266F
QUANTITY	200 Pcs		

DESCRIPTION	QTY (PCs)	HEAT NO.	CHEMICAL COMPOSITION													
			C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	B	Co	Nb	CE%
SPECIFIED		-	0.35 MAX	1.35 MAX	0.05 MAX	0.06 MAX	0.35 MAX	0.40 MAX	0.40 MAX	0.30 MAX	0.12 MAX	0.10 MAX	0.02 MAX	0.02 MAX	0.05 MAX	0.48 MAX
MILL TEST REPORT	200	A 4034	0.20	0.89	0.019	0.009	0.18									
OBSERVED BY US	200	266F	0.198	0.88	0.026	0.0085	0.20	0.045	0.011	0.016	0.0037	0.0010	**0.0008**	0.0031	0.0064	0.351

MECHANICAL PROPERTIES

HEAT NO.	DESCRIPTION	TENSILE STRENGTH Kg / mm^2	YIELD STRENGTH Kg / mm^2	% ELONGATION	% REDUCTION	HARDNESS BHN
-	SPECIFIED	42.25 MIN	25.30 MIN	20 MIN	30 MIN	137-187
266F	OBSERVED	53.45	36.74	28.80	52.68	143-146

SPECIAL REMARKS: - WE CERTIFY THAT THE MATERIAL SUITS THE REQUIREMENT OF P.O. / RELEVANT SPECIFICATION.
CARBON STEEL FLANGES ARE FORGED, NORMALIZED & FULLY MACHINED WITH SERRATED FINISH.
FLANGES ARE PAINTED WITH BLACK PAINT & MARKED AS :

A/SA105N CL 2 B16.5 CAT 1 CSA 300 MUNISH 6 WNRF STD 248 SS H266F INDIA

MADE BY	CHECKED BY A.Q.C.M.	FLANGE SHOP (W.M)	MANAGER (Q.C) FOR MUNISH FORGE LTD.

34092

TEST CERTIFICATE

Test Report / Inspection Certificate No. : RFL/CFF/09-10/0436 Dated : 27-May-2009 As Per DIN EN 10204 - 3.1 B

Cast No. :

Invoice No. & Date : 1042 / 27-May-2009

Marking : As per P.O. Manufacturer's Mark : RWF

ROLLWELL FORGE LTD.
SURVEY NO.239/1, BEHIND G.E.B.SUB STATION, SHAPAR, DIST.: RAJKOT, GUJARAT, INDIA-360024
+91-2827-253671+91-2827-253571
info@rollwellforge.comwww.rollwellforge.com

Designation of Article	Material	Requirement	Delivery Condition	Melting Process	Steel Mill
CARBON STEEL FORGED FLANGES	ASTM A/SA 105N-05	ASTM A/SA 105N-05	FINISH	EAF	BHUSHAN

Item Sr. No.	Quantity	Description	Heat Code	P.O. No.
1	25	6"-300# WNRF-A105-Finish-STD	RW 1313	02102009

CONFORMS TO SA 105N
YEAR 2010 ED
JOB # 2011 - 8169-50
ITEM # 1
SIGNED BY DA March 3/11

CHEMICAL ANALYSIS AND CHEMICAL PROPERTIES

Elements	C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	Nb%	Al%	Cu%	V%			CE
Specified	0.000-0.350	0.100-0.350	0.600-1.050	0.000-0.035	0.000-0.040	0.000-0.300	0.000-0.120	0.000-0.400	0.000-0.020		0.000-0.400	0.000-0.080			0.47 Max.
RW 1313	0.221	0.214	0.932	0.019	0.020	0.087	0.009	0.074	0.002		0.101	0.006			0.408

Heat Treatment : NORMALIZED AT 910° C & AIR COOLED.

MECHANICAL TESTS

Test No.	Direction	DIN EN 10002 - 1 : Tensile Test (A 370 - 97a)				DIN EN 10045 : ISO - V - Notch Charpy / Impact Test					DIN EN 10003 - 1 : HBW 137-187 BHN
		Yield Strength Re		Tensile Strength Rm	Elongation A	Reduction of Area Z	Energie of Impact (Temperature °c) Joules					
		Rp 1% N/mm²	Reb/Rp 0.2% N/mm²	N/mm²	Lo = 4 do %	%	1	2	3	4	/n	Hardness BHN
			250Min	485Min	22Min	30Min						
RW 1313	T		338.20	540.15	32.00	63.03					0.80	146-149

ADDITIONAL TEST CONFORM TO NACE MR 01-75

Surface and Dimensional Inspection	As per ASME B 16.5
Testing of Material	As per ASTM standard
Testing for Material Discrepancies	NIL

For ROLLWELL FORGE LTD.

Q.A. Manager

Remarks : WE CERTIFY THAT THE MATERIAL HAS BEEN TESTED AND COMPLIES WITH THE GIVEN PURCHASE ORDER

(18) 8169-50

Po # 125565

MATERIAL TEST CERTIFICATES

M.GELDBACH(SHANXI) FLANGE & FITTINGS CO.,LTD.
LIJIAZHUANG VILLAGE DINGXIANG COUNTY
SHANXI PROVINCE CHINA

CUSTOMER

39411

PAGE 5 OF 6

CONFORMS TO SA 105N
2010 ED
2011 - 8169 - 50
2
CHECKED BY 29 March 3/11

CERTIFICATE: EN10204/3.1

CERTIFICATE #: F-10017 DATE: JAN. 9, 2011

CUSTOMER REFERENCE # F-10017

OUR REFERENCE # F-10017

SPECIFICATION: ASTM SA/A105N AND ASME B16.5-2003/NACE MR0175-05 latest edition

THE MATERIALS WILL SATISFY PAR 3.1.5 AND 4.3 OF THE P.E.D ESSENTIAL SAFETY REQUIREMENTS

PRODUCT CRN NUMBER: 0B11075.C

ITEM NO.	HEAT NO.	QTY	SIZE	DESCRIPTION
45	1-7803	25	24"	B16.5 150 RFWN STD
46	0A5273	10	10"	B16.5 150 RFWN XS
47	0A5273	10	12"	B16.5 150 RFWN XS
48	0A5274	25	2"	B16.5 150 FFWN STD
49	0A5274	100	4"	B16.5 150 FFWN STD
50	0A5274	50	6"	B16.5 150 FFWN STD
51	0A5274	125	2"	B16.5 300 RFWN XS
52	0A5274	100	2"	B16.5 300 RFWN STD
53	0A5274	100	4"	B16.5 300 RFWN STD
54	0A5274	25	8"	B16.5 300 RFWN STD
55	0A5274	10	12"	B16.5 300 RFWN STD

CHEMICAL ANALYSIS (%)

HEAT NO.	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cb	Cu	Ce1 *1)	Ce2 *2)
	0.35 max	0.60 to 1.05	0.10 to 0.35	0.04 max	0.035 max	0.40 max	0.30 max	0.12 max	0.05 max	0.02 max	0.40 max		
1-7803	0.18	0.90	0.22	0.004	0.020	0.015	0.030	0.003	0.005	0.010	0.020	0.330	0.340
0A5273	0.19	0.88	0.23	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
0A5273	0.19	0.88	0.23	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338

ITEM NO.	HEAT NO.	HEAT TREATMENT Normalized at temperature between 843 C and 927 C - Cooled in still air. TYPE OF TREATMENT	TEMPERATURE	FORGE TEMP. 945 - 1000 C	MECHANICAL PROPERTIES TENSILE 485 Mpa min	YIELD 250 Mpa min	R OF A 30% min	ELONG 22% min	HARDNESS 187 HB max
45	1-7803	Normalized	850 C		523 Mpa	320 Mpa	59 %	32 %	165 HB
46	0A5273	Normalized	850 C		511 Mpa	314 Mpa	59 %	32 %	166 HB
47	0A5273	Normalized	850 C		511 Mpa	314 Mpa	59 %	32 %	166 HB
48	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
49	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
50	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
51	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
52	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
53	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
54	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB
55	0A5274	Normalized	850 C		536 Mpa	320 Mpa	58 %	32 %	167 HB

*1) Ce1 - C + Mn/6 - 0.40max

*2) - (Ce1) + (Cr+Mo+V)/5 + (Cu+Ni)/15 - 0.43max

We hereby certify that the products listed have been inspected and tested in accordance with the conditions and requirements of the purchase order and unless otherwise stated conform in all respects to the specifications, drawings relevant thereto

Surface and dimensional check according to relevant standard

Quality Manager

Signature/Date:

MG THE TRADEMARK OF QUALITY

Order#: 86724 Seq: 8 PO#: 125021-8112-50 Heat#: 2950 Mill: ULMA
Part#: FL 3 3 R W STD 5 Part Desc: Flanges 3 (88.9mm O.D.) 300# RAISED FACE WELD NECK STD A/SA105N

CLIENTE / Customer / Client

COMCO PIPE & SUPPLY COMPANY
A DIVISION OF RUSSEL METALS
5910-17 ST. NW PO BOX 457
EDMONTON ALBERTA T5J 2K1 CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA: Date: 22/10/2010

N.º No. 133569

HOJA: Page: 2

SGI 1322164 SGI 8000236 SGI 8000587

ULMA FORJA, S.COOP.
B° Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781805
E-mail: ulma@ulmapiping.com

79248

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: E1-1235

DE / of. - de: 19/07/2010

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

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

(12) 8112-50
PS 4/1250 21

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASTMA105N-09 ASME SA105N-09

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

NACE MR0103/03 & MR0175/03
CAN/CSA-Z245.12
Gr.248 CAT 1

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.ºCoulée	RESISTENCIA / T.Strength / Resist 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	PROBETA - SPECIMEN MEDIA / Average / Moyenne	°C	DUREZA / Hardness / Dureté HB
43 FL 3 3 R W STD 5	210	WN 3 300LB S40 RF A105N	NE	295T0	517	303	28,70	51,80				150 156
47 FL 3 6 R W STD 5	105	WN 3 600LB S40 RF A105N	NE	385T0	518	305	28,60	52,80				150 157

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º / Heat No / N.ºCoulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
295T0	0,190	0,170	0,810	0,013	0,019	0,050	0,130	0,030	0,004	0,001	0,330	0,000	0,000	0,000	0,372
385T0	0,190	0,210	0,990	0,010	0,019	0,060	0,120	0,020	0,000	0,003	0,390	0,000	0,000	0,000	0,406

- Las dimensiones y la condición superficial se hallaron satisfactorias
- Dimension and surface condition were found acceptable
- Les dimensions et état 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 FORJAS COOP
Dpto. de Garantía de calidad
Quality Assurance Dept

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

CONFORMS TO SA 105N
YEAR 2010ED
JOB # 2011-8169-50
ITEM # 3
SIGNED BY 7 MAR 2011

(88) 8169-50

Po # 125565

MATERIAL TEST CERTIFICATES

M.GELDBACH(SHANXI) FLANGE & FITTINGS CO.,LTD.
LIJIAZHUANG VILLAGE DINGXIANG COUNTY
SHANXI PROVINCE CHINA

CUSTOMER

3940

CONFORMS TO SA 105N
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 4
SIGNED BY DA March 3/11

CERTIFICATE: EN10204/3.1

CERTIFICATE #: F-10017 DATE: JAN. 9, 2011

CUSTOMER REFERENCE # F-10017
OUR REFERENCE # F-10017

SPECIFICATION: ASTM SA/A105N AND ASME B16.5-2003/NACE MR0175-05 latest edition

THE MATERIALS WILL SATISFY PAR 3.1.5 AND 4.3 OF THE P.E.D ESSENTIAL SAFETY REQUIREMENTS

PRODUCT CRN NUMBER: 0B11075.C

ITEM NO.	HEAT NO.	QTY	SIZE	DESCRIPTION
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CHEMICAL ANALYSIS (%)

HEAT NO.	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cb	Cu	Ce1 *1)	Ce2 *2)
	0.35 max	0.60 to 1.05	0.10 to 0.35	0.04 max	0.035 max	0.40 max	0.30 max	0.12 max	0.05 max	0.02 max	0.40 max		
1-7803	0.18	0.90	0.22	0.004	0.020	0.015	0.030	0.003	0.005	0.010	0.020	0.330	0.340
0A5273	0.19	0.88	0.23	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
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0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
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0A5274	0.18	0.89	0.21	0.003	0.022	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338

ITEM NO.	HEAT NO.	HEAT TREATMENT Normalized at temperature between 843 C and 927 C - Cooled in still air. TYPE OF TREATMENT	TEMPERATURE	FORGE TEMP. 945 - 1000 C
45	1-7803	Normalized	850 C	
46	0A5273	Normalized	850 C	
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52	0A5274	Normalized	850 C	
53	0A5274	Normalized	850 C	
54	0A5274	Normalized	850 C	
55	0A5274	Normalized	850 C	

MECHANICAL PROPERTIES

HEAT NO.	TENSILE 485 Mpa min	YIELD 250 Mpa min	R OF A 30% min	ELONG 22% min	HARDNESS 187 HB max
1-7803	523 Mpa	320 Mpa	59 %	32 %	165 HB
0A5273	511 Mpa	314 Mpa	59 %	32 %	166 HB
0A5273	511 Mpa	314 Mpa	59 %	32 %	166 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB
0A5274	536 Mpa	320 Mpa	58 %	32 %	167 HB

*1) Ce1 - C + Mn/6 - 0.40max

*2) - (Ce1) + (Cr+Mo+V)/5 + (Cu+Ni)/15 - 0.43max

We hereby certify that the products listed have been inspected and tested in accordance with the conditions and requirements of the purchase order and unless otherwise stated conform in all respects to the specifications, drawings relevant thereto

Surface and dimensional check according to relevant standard

Quality Manager

Signature/Date:

MG THE TRADEMARK OF QUALITY

125-ca1

B4117005

HEAT NUMBER : 77873
TRANS AM PIPING PRODUCTS - REV'D BY:
Shipment/Seq #: S 7 - 1443 10

2" CL 300 W/N FLANGE RF STD
BORE A105N

METALFAR

PRODOTTI INDUSTRIALI S.P.A.
23861 CESANA BRIANZA (LC) ITALY
Tel. 031.655441 - Fax 031.655149
MATERIAL TEST DEPARTMENT
SALA PROVE ED ANALISI MATERIALI

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001 : 2000 =

TRANS AM PIPING PRODUCTS LTD
233061 ENDEAVOR DRIVE S.E.
CALGARY-ALBERTA

INSPECTION CERTIFICATE EN 10204/3.1

CERTIFICATO DI COLLAUDO

N.: 3245/ 14/09/2007
INVOICE / FATTURA: 2901/ 13/09/2007
S.: 51408
DEL. NOTE / BOLLA: 4790/ 13/09/2007

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	YOUR R.O. / VS. ORDINE	OUR REFERENCE / NS. ORDINE	QUANTITY / QUANTITÀ	DESCRIPTION / DESCRIZIONE	DIM. ACCORDANCE TO / DIM. IN ACCORDO A	VISUAL & DIMENSIONAL / VISIVO E DIMENSIONALE
	31552	0059	CI07-268	07001139 0068		W/N 600 RTJ 6" XS A105	ASME/ANSI B16.5	SATISFACTORY
	73286	0045	CI07-505	07002812 0052		W/N 600 RF 1.1/2" 160 A105	ASME/ANSI B16.5	SATISFACTORY
	661010	0013	CI07-438	07002483 0020		W/N 150 FF 6" STD A105	ASME/ANSI B16.5	SATISFACTORY
	38725	0094	CI07-505	07002812 0101		S/W 300 RF 1" 80 A105	ASME/ANSI B16.5	SATISFACTORY
→	77873	0022	CI07-505	07002812 0029		W/N 300 RF 2" STD A105	ASME/ANSI B16.5	SATISFACTORY
	73286	0034	CI07-369	07001942 0041		W/N 600 RF 1.1/2" XXS A105	ASME/ANSI B16.5	SATISFACTORY

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	MATERIAL / MATERIALE	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Nb %	N %	Al %	C.E. %	ORIGIN / ORIGINE
	31552	0059	ASTM A 105	0.180	0.240	1.060	0.013	0.016	0.100	0.110	0.020	0.003	0.180	0.001	0.001	0.000	0.029	0.400	EUROPE
	73286	0045	ASTM A 105	0.200	0.190	1.090	0.015	0.011	0.100	0.050	0.010	0.019	0.140	0.023	0.000	0.000	0.025	0.420	EUROPE
	661010	0013	ASTM A 105	0.192	0.240	1.129	0.019	0.015	0.071	0.033	0.012	0.000	0.039	0.003	0.001	0.000	0.031	0.402	EUROPE
	38725	0094	ASTM A 105	0.208	0.240	1.090	0.014	0.016	0.140	0.040	0.010	0.016	0.160	0.024	0.003	0.000	0.025	0.429	EUROPE
	77873	0022	ASTM A 105	0.185	0.220	0.900	0.019	0.020	0.130	0.060	0.010	0.006	0.190	0.001	0.001	0.000	0.025	0.379	EUROPE
	73286	0034	ASTM A 105	0.200	0.190	1.090	0.015	0.011	0.100	0.050	0.010	0.019	0.140	0.023	0.000	0.000	0.025	0.420	EUROPE

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	TEST SPECIMEN / PROVETTA		YIELD POINT / Snervamento N/mm² ≥ 0,2 %	TENSILE STRENGTH / Rottura N/mm² ≥	ELONGATION / Allungamento % ≥	REDUCTION OF AREA / Contrazione % ≥	HARDNESS / Durezza Hb	BEND TEST / Piega	FLATTENING TEST / Schiacciam.	IMPACT TEST - Resilienza Joule / cm²					SHAPE / FORMA 1 - ⊕ 2 - □	a	w	x	YIELD POINT / SNERVAMENTO N/mm² ≥ 0,5 %	OUR REF.
			LONGITUDINAL / Longitudinale	TRANSVERSE / Trasversale								W.M.	TYPE / TIPO KV KU KD	° C	1	2	3					
	31552	0059	126.60	50.80	331.0	529	31.0	58.0	159-163	0.0	0.0		KV	20	85	80	85	1				0.0
	73286	0045	126.60	50.80	341.0	550	31.0	57.0	166-170	0.0	0.0		KV	20	83	87	85	1				0.0
	661010	0013	126.60	50.80	329.0	521	31.0	58.0	156-159	0.0	0.0		KV	20	84	80	85	1				0.0
	38725	0094	126.60	50.80	374.0	530	31.0	59.0	163-165	0.0	0.0		KV	20	86	88	83	1				0.0
	77873	0022	126.60	50.80	322.0	520	32.0	59.0	159-163	0.0	0.0		KV	20	84	86	82	1				0.0
	73286	0034	126.60	50.80	341.0	550	31.0	57.0	166-170	0.0	0.0		KV	20	83	87	85	1				0.0

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	MATERIAL IN ACCORDANCE TO / MATERIALE IN ACCORDO A	HEAT TREATMENT / TRATTAMENTO TERMICO
	31552	0059	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	73286	0045	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	661010	0013	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	38725	0094	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	77873	0022	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	73286	0034	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE

CONFORMS TO SA 105 N
YEAR 2010ED
JOB # 2011-8169-50
ITEM # 4

NOTE
MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003

SIGNED BY 11-04-05

QUALITY CONTROL DEPARTMENT / UFFICIO CONTROLLO QUALITÀ	INSPECTION AUTHORITY / ENTE UFFICIALE COLLAUDO	MANUFACTURER'S SYMBOL / MARCHIO PRODUZIONE
BRACCHI FLAVIO		MFF

(1) 8169-50

PO#12505

信盛（姜堰）五金锻造有限公司

SHINSEI

SHINSEI (JIANGYAN) STEEL FLANGES CO., LTD.

江苏省姜堰市经济开发区天目路688号（邮编：225500）

NO.688, TIANMU ROAD , JIANGYAN ECONOMIC DEVELOPMENT ZONE,
JIANGYAN CITY, JIANGSU ,CHINA (225500)

TEL:0523-88206028 FAX:0523-88206058

E-mail:shinsei@ssflanges.com.cn

SSWJ/QD8.2.4A-04

ACCORDING TO EN10204-3.1/2004

MILL TEST & INSPECTION CERTIFICATE

CUSTOMER: SEYBOLD INTERNATIONAL CORP

CERT NO: 08100001 ORDER NO:8163(185259S)

DATE:10/10/08

PAGE:6

ITEM	RAW MATERIAL HEAT NO.	SHINSEI HT.CD.	DESCRIPTION	QUANTITY	SPECIFICATION: ASTM /ASME SA105N - 2005
068	68020710119485	A037	SWRF STD 3/4" 150Lb	5 PCS	DIMENSION:
073	2201-06016	A076	SWRF STD 4" 150Lb	5 PCS	ASME/ANSI B16.5-2003
077	62020708080182	A038	WNRF STD 1-1/2" 300Lb	20 PCS	
078	2201-06020	A077	WNRF STD 3" 300Lb	100 PCS	SURFACE: BY VISUAL...GOOD
082	2201-04997	A060	WNRF XH 1" 300Lb	5 PCS	
083	62020708260788	A010	WNRF XH 1-1/2" 300Lb	20 PCS	
084	1203-17665	A054	WNRF XH 2" 300Lb	25 PCS	

CHEMICAL COMPOSITION (%)

ITEM	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)	CE
Min	-	0.100	0.600	-	-	-	-	-	-	-	-	-
Max	0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	0.430
068	0.190	0.220	0.930	0.007	0.015	0.060	0.030	0.030	0.013	0.007	0.001	0.361
073	0.190	0.230	0.990	0.019	0.011	0.020	0.030	0.010	0.007	0.003	0.0004	0.365
077	0.200	0.200	0.950	0.008	0.012	0.070	0.030	0.020	0.013	0.008	0.001	0.375
078	0.190	0.210	0.950	0.026	0.013	0.020	0.030	0.010	0.003	0.004	0.0004	0.358
082	0.210	0.250	0.990	0.021	0.003	0.020	0.040	0.010	0.005	0.002	0.0004	0.386
083	0.200	0.220	0.960	0.007	0.015	0.090	0.040	0.060	0.017	0.007	0.001	0.383
084	0.220	0.220	0.930	0.019	0.004	0.030	0.030	0.010	0.005	0.002	0.0004	0.385

MECHANICAL TEST

ITEM	Tensile Strength (KSI)	Yield Strength (KSI)	Elon-Gation (%)	R of A (%)	Hardness (HB)
Min	70.0	36.0	22.0	30.0	-
Max	-	-	-	-	187.0
068	77.3	48.0	34.0	65.0	147.0
073	72.7	41.6	34.0	63.4	137.0
077	74.5	45.1	31.8	65.9	147.0
078	72.6	44.6	36.0	67.9	137.0
082	74.6	50.2	35.8	66.4	137.0
083	71.1	41.9	34.0	67.1	143.0
084	74.6	52.7	34.4	67.5	137.0

Remark:
HEAT TREATMENT:NORMALIZE AT 860℃
MATERIAL IN ACC. WITH NACE MR.01.75/03(ONLY HARDNESS)
MERCURY FREE

WE CERTIFY THE ABOVE MENTIONED FLANGES HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN

刘安国 Q.C. MANAGER

沙小梅 INSPECTOR

CONFORMS TO SA 105N
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 5
SIGNED BY DA March 10/11

接下页

(11) 8085-52

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI LEGATI E INOSSIDABILI
SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

SEDE AMMINISTRATIVA E STABILIMENTO
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mf@tarmas.com

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

P04123420

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

FORGED FLANGES & FITTINGS LTD
CASTLE HOUSE - STATION ROAD
EN5 1PE NEW BARNET/HERTFORD... GB

Certif. N. 1716 Del/Dated 28.04.2010
Fattura / Invoice N. Del/Dated
DDT / Del Nota N. Del/Dated
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA / HEAT CODE HEAT: 10/70226 | POS. ITEM | VS.ORDINE / YOUR REFERENCE | Q.TA' Q.TY: 182,00 | DESCRIZIONE / DESCRIPTION: W/N 150 RF 3" STD A105

MATERIALE / MATERIAL: ASTM A105

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E %	B %
0,185	0,240	0,950	0,014	0,013	0,120	0,050	0,010	0,008	0,170	0,001	0,002	0,000	0,022	0,384	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	327,0	528,0	34,0	59,0	159,0 - 163,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	86	90	85	0,0

Ns. Rif. / OUR REF

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 09/79423 | POS. ITEM | VS ORDINE / YOUR REFERENCE | Q.TA' Q.TY: 28,00 | DESCRIZIONE / DESCRIPTION: W/N 150 RF 3" STD A105

MATERIALE / MATERIAL: ASTM A105

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E %	B %
0,185	0,240	0,960	0,013	0,010	0,090	0,050	0,010	0,009	0,170	0,001	0,001	0,000	0,023	0,380	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	328,0	528,0	34,0	59,0	159,0 - 163,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	86	80	89	0,0

Ns. Rif. / OUR REF

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 09/79423 | POS. ITEM | VS.ORDINE / YOUR REFERENCE | Q.TA' Q.TY: 210,00 | DESCRIZIONE / DESCRIPTION: W/N 150 RF 3" STD A105

MATERIALE / MATERIAL: ASTM A105

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E %	B %
0,185	0,240	0,960	0,013	0,010	0,090	0,050	0,010	0,009	0,170	0,001	0,001	0,000	0,023	0,380	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	328,0	528,0	34,0	59,0	159,0 - 163,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	86	80	89	0,0

Ns. Rif. / OUR REF

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

NOTE MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156 - SOUR SERVICE
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007 - SOUR SERVICE

CONFORMITY TO SA 105N
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 6
SIGNED BY 17 MAR 2011

VERIFIED TRUE COPY OF ORIGINAL FORGED FLANGES & FITTINGS LIMITED

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
S. Corti		MFF

2" CL 150 W/N FLANGE RF STD
BORE A105N

Revised by SB - 1502.S10 Products Ltd
Shipment/Seq # 7926>SU01 Item# 1
Trans Am Piping

125-001

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655148
quality.mf@fastmail.com

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001:2008 =

Rif#124592

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 3789 Del/Dated 21.09.2010
Fattura / Invoice N. 2606 Del/Dated 20.09.2010
DDT / Bol Note N. 4914 Del/Dated 20.09.2010
Ns.Ord. / Our ref. N. Del/Dated

COD COL. COLATA / HEAT CODE HEAT: → 09/77926 | POS. ITEM: 003 | VS.ORDINE / YOUR REFERENCE: 640/TRANS AM | Q.TA' / Q.TY | DESCRIZIONE / DESCRIPTION: W/N 150 RF 2" STD A105

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,185	0,250	1,010	0,015	0,012	0,120	0,060	0,010	0,010	0,150	0,001	0,001	0,000	0,025	0,394

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. min / LENGHT min	FORMA / SHAPE 1=○ 2=□	SNERVAMENTO / YIELD POINT N/mm2 >=0,2%	ROTTURA / TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO / ELONGATION %>=	CONTRAZIONE / REDUCTION OF AREA %>=	DUREZZA / HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO / YIELD POINT N/mm2 >=1,0%	Ns./Rif. OUR REF.
126,60	50,80	1	333,0	536,0	33,0	58,0	163,0 - 165,0	KV	20	86	86	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD COL. COLATA / HEAT CODE HEAT: 10/72697 | POS. ITEM: 005 | VS.ORDINE / YOUR REFERENCE: 640/TRANS AM | Q.TA' / Q.TY | DESCRIZIONE / DESCRIPTION: W/N 150 RF 3" STD A105

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,200	0,240	1,120	0,007	0,015	0,060	0,040	0,010	0,021	0,110	0,003	0,001	0,000	0,031	0,411

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. min / LENGHT min	FORMA / SHAPE 1=○ 2=□	SNERVAMENTO / YIELD POINT N/mm2 >=0,2%	ROTTURA / TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO / ELONGATION %>=	CONTRAZIONE / REDUCTION OF AREA %>=	DUREZZA / HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO / YIELD POINT N/mm2 >=1,0%	Ns./Rif. OUR REF.
126,60	50,80	1	343,0	571,0	32,0	57,0	174,0 - 178,0	KV	20	83	83	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD COL. COLATA / HEAT CODE HEAT: 74612 | POS. ITEM: 017 | VS.ORDINE / YOUR REFERENCE: 640/TRANS AM | Q.TA' / Q.TY | DESCRIZIONE / DESCRIPTION: W/N 150 RF 2" XS A105

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,190	0,210	0,980	0,011	0,011	0,110	0,050	0,010	0,006	0,170	0,001	0,000	0,000	0,022	0,392

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. min / LENGHT min	FORMA / SHAPE 1=○ 2=□	SNERVAMENTO / YIELD POINT N/mm2 >=0,2%	ROTTURA / TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO / ELONGATION %>=	CONTRAZIONE / REDUCTION OF AREA %>=	DUREZZA / HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO / YIELD POINT N/mm2 >=1,0%	Ns./Rif. OUR REF.
126,60	50,80	1	332,0	535,0	33,0	56,0	163,0 - 165,0	KV	20	88	80	86	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

NOTE MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

DESCRIPTION: 105N
YEAR: 2010ED
JOB: 2011-5169-10
ITEM #: 7
SIGNED BY: 7 MAR 2011

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT: S. Corti

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY

MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL: MFF

① 8169-50

Po #125565

INSPECTION CERTIFICATE

Purchaser:

Order No.: APF/2010/10

Invoice No.: ZXL10A0414C

ZIBO WEL-FIT PIPING SYSTEMS CO., LTD

NO 18, LUSHAN ROAD, LINZI, ZIBO, P.R.CHINA 255418

Date: 2010-12-25

Certificate No: ZXL10A0414C

Certificate to: EN10204-2004 3.1

Material Specification
ASTM A234-06/ASME SA234 WPB NACE MR0175-02

Specification for Inspection
ASME B16.9-07

Visual and Dimensional Inspection GOOD

Hardness
Max 197HB
<197HB

Cu+Ni+Cr+Mo
< or =1.00%
RT:(5)

Cr+Mo
< or =0.32%
IGC:(5)

MT:(5)
PMI(5):

Product Description		Heat I.D.	Quantity (Pcs)	Tension Test (1)			Chemical Composition %												Heat Treatment (3)	Raw Material	
				YS Mpa	TS Mpa	E %	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	CE(2)		Type (4)	Manufacturer (6)
				240	415	30		0.10	0.29												
					585		0.30		1.06	0.050	0.058	0.40	0.15	0.40	0.40	0.08		0.45			
LR 45 ELBOW SCH160 WPB	2	01452	200	315	515	32	0.2	0.22	0.51	0.008	0.009	0.03	0.003	0.01	0.03	-	-	0.29	HF	1	XSP
LR 45 ELBOW SCH160 WPB	3	02163	100	315	515	30	0.19	0.23	0.55	0.009	0.008	0.03	0.007	0.01	0.03	-	-	0.29	HF	1	XSP
LR 45 ELBOW SCH160 WPB	4	02140	100	320	495	32	0.2	0.22	0.53	0.01	0.006	0.06	0.002	0.02	0.005	-	-	0.30	HF	1	XSP
LR 45 ELBOW STD WPB	2-1/2	01360R	200	360	520	30	0.2	0.27	0.52	0.01	0.004	0.08	0.001	0.04	0.12	-	-	0.31	HF	1	XSP
LR 45 ELBOW STD WPB	3	01588R	500	315	515	30	0.2	0.21	0.49	0.009	0.006	0.03	0.003	0.01	0.03	-	-	0.29	HF	1	XSP
LR 45 ELBOW STD WPB	8	03417J	100	315	515	32	0.2	0.25	0.49	0.009	0.006	0.03	0.003	0.01	0.03	-	-	0.29	HF	1	XSP
LR 90 ELBOW STD WPB	2-1/2	01360J	200	315	495	31	0.19	0.22	0.52	0.01	0.008	0.05	0.020	0.01	0.06	-	-	0.30	HF	1	XSP
LR 90 ELBOW STD WPB	4	02185D	500	310	500	32	0.19	0.21	0.52	0.01	0.007	0.05	0.004	0.03	0.05	-	-	0.29	HF	1	XSP
LR 90 ELBOW XS WPB	3	01587	100	320	495	30	0.19	0.21	0.51	0.012	0.022	0.06	-	0.07	0.017	-	-	0.29	HF	1	XSP
LR 90 ELBOW XS WPB	4	02141J	100	315	515	30	0.2	0.23	0.53	0.011	0.007	0.03	0.007	0.01	0.03	-	-	0.30	HF	1	XSP
SR 90 ELBOW STD WPB	3	01586	300	305	495	31	0.2	0.22	0.53	0.011	0.005	0.025	0.004	0.04	0.1	-	-	0.30	HF	1	XSP
SR 90 ELBOW STD WPB	4	02185A	152	310	500	32	0.19	0.22	0.51	0.01	0.007	0.05	0.004	0.03	0.05	-	-	0.29	HF	1	XSP
SR 90 ELBOW STD WPB	4	02185R	98	315	510	31	0.21	0.21	0.5	0.007	0.005	0.04	0.006	0.02	0.03	-	-	0.31	HF	1	XSP
SR 90 ELBOW STD WPB	6	02565A	100	305	495	31	0.19	0.2	0.51	0.01	0.006	0.025	-	0.01	0.03	-	-	0.28	HF	1	XSP

Note (1) YS=Yield Strength TS=Tensile Strength E=Elongation (2) CE=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
Note (3) HF: Hot formed (620~980 °C) and cooled in still air. S: Cold formed and normalized (900 °Cx0.5HR), cooled in still air. SA: Cold formed and solution annealed at 1050 °C±10°C, water quenched.
(4) 1=Seamless Pipe 2=Welded Pipe 3=Steel Plate. Note: (5) IGC=Intergrannular Corrosion Test to ASTM A262 E PMI=Positive Material Inspection RT=Radiographical Test MT=Magnetic Particle Test
Note: (6) XSP=XISHAN PIPE CORP

General Note:The analysis for the elements with an amount of less than 0.02% is reported as "<0.02" represented by a"-" above.

We hereby certify that the products detailed herein have been manufactured and inspected in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct. This material was manufactured, tested, and inspected without mercurial contamination.

CONFORMS TO SA 234-WPB
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 8
SIGNED BY 09 March 3/11

P.O.# 125182 Item# 2
Heat Number: 0010
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1619 3

4" STD LR 90 BW ELBOW
A234-WPB

P5-a1

P5#125182

INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.
17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL:(07)831-9157
FAX:(07)831-2942, 821-7500

Customer: TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS
Spec : ASME SA/ASTM A234 WPB-05a
CSA Z245.11-96 Gr241 CAT.1, NACE MR 0175-03

Certificate No : O9900065-0101
Order No : CI-10-325
Date : 2010/11/25

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASTM A106 GR.B	ASME B16.9-2003	GOOD	GOOD

Item	Description	Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.
6	90 E L/R STD SEAMLESS	4	0010	310010	BAOSHAN	1008110001300
8	90 E L/R STD SEAMLESS	8	A266	310266	BAOSHAN	1008110001400
9	90 E L/R STD SEAMLESS	10	B320	004320	TIANJIN	10080911
15	45 E L/R STD SEAMLESS	3	9052	309052	BAOSHAN	1006280005600

Specification	Chemical Composition %											Tension Test			HARDNESS TEST	Heat Treatment	Magnetic Particle Exam	Remark
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	V ×1000	Nb ×1000	C.E ×100	Y.S P.S.I	T.S P.S.I	E %	HB			
MIN		10	29										35000	60000	30				
MAX	30		106	50	58	40	40	40	15	80	20	50		95000		197			
6	19	23	54	8	5	5	3	5	1	<1	<1	28	41499	66300	34	138	≤20°C TO 980°C HOT FORMED		[DIN 50049/3.1B] EN10204 3.1
8	18	22	56	9	10	4	3	5	1	<1	<1	28	48463	69400	40	136			
9	16	24	95	13	6	7	3	3	1	10	2	33	45707	73300	40	134			
15	18	24	55	7	1	11	5	7	1	<1	<1	29	43820	69213	33	138			

234 WPB
201060
2011-8169-50
9
7 MAR 2011

C.E.=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of above specifications and purchaser's order

L.S.Tsai

Chief of Quality Assurance Section

125-001

ASK Awaji

PO # 125377

INSPECTION CERTIFICATE

AWAJI MATERIA (THAILAND) CO.,LTD.
81,MOO4, PRAKASA ROAD, TAMBOL BANGMUANG, AMPHUR MUANG
SAMUTPRAKARN THAILAND 10270, Tel : (662)701-5226

MADE FROM SEAMLESS STEEL PIPE

Purchaser : ALLIED FITTING CANADA

Date : DECEMBER 8, 2010

Certificate No. T10-Z147

Order No.	Job No.	Product				Raw Material Pipe Maker
E1-1302/WPB/4	-	CARBON STEEL BUTT WELDING FITTINGS				SUMITOMO METAL INDUSTRIES, LTD.
Inspection Standard	Material Standard					
ASME B16.9-07 ASTM A960-08a NACE MR-0175-03, MR 0103-05	ASTM A234-07 WPB ASME SA234-07 WPB except nuclear usage CSA Z245.11-08, GR.241 CAT.I	Appearance	GOOD	Dimension	GOOD	*3 U.T, W.T. INSPECTED

Manufacturing No.	Product code	Material	Article & Size	Quantity	Note.
0X063		WPB	STD 90 LONG RADIUS ELBOW 3"	482 Pcs.	"ALL FITTING MANUFACTURED BY AWAJI MATERIA (THAILAND) CO.,LTD. ARE PRODUCED FROM A106 GR.B SEAMLESS PIPE"

	Chemical Composition (%)																	*1 Mechanical Test			Hardness
Specification	C	Si	*2Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	N	Al	C.E.	Y.S.	T.S.	E	
Min.	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X100	X100	X100	X10000	X10000	X1000	X1000	X100	MPa		%	HB
Max.	-	10	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Pipe Charge No.	30	-	106	50	58	40	40	40	15	8	2	2	5	65	8	-	-	-	655	-	197
J0L8137	18	21	69	19	7	2	2	4	1	0	0	0	1	11	9	10	32	318	488	57	140

$$C.E. = C + \frac{Mn}{5} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

Inspection Certificate : ACCORDING TO EN 10204, 3.1 : 2004

ISO 9001: 2008 Manufacturing Company
Certified by BV. Certificate No. TH10000101

*1 Y.S.= Yield Strength, T.S. = Tensile Strength, E = Elongation,

*3 UT = Ultrasonic thickness inspection,

*2 For each reduction of 0.01% below the specified carbon(C) Maximum, an increase of 0.06% manganese(Mn) above specified maximum will be permitted, up to a maximum of 1.35% as per foot note D of ASTM A234/A234M-07 Table 1.

CONFORMS TO SA 234-WPB
YEAR 2010ED
JOB # 2011-8169-50
ITEM # 10
SIGNED BY 7 MAR 2011

ELBOW / Forming temperature 760°C – 930°C and cooled in still air
TEE, REDUCER & CAP / Normalizing 900°C

"We hereby certify that the material described herein has been duly inspected and conforms to the standard as specified above.

AT-24(2)12

Surveyor to

Chief of Inspection Section S.MAEKAWA

Order#: 98356 Seq: 19 PO#: 125377-8154-50 Heat#: 0x063 Mill: Awaji
Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (88.9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB

33352

(54) 8169-50

PO# 125565

CONFORMS TO SA 234-WPB
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 11
SIGNED BY DA March 3/11

APCO

APCO PIPE FITTINGS CO., LTD.
No. 50, Shiji Road South, Gaoxin Area, Yingkou 115004, China
Tel: 86-431-88546619 Fax: 86-431-88546621
Email: apcopipe@mail.jl.cn - Web: www.apcopipe.com

MATERIALS TESTING CERTIFICATE
BUTT-WELDING PIPE FITTINGS

CERTIFICATE NO. 08005--1

CUSTOMER:
P.O. NO. B-08005/223988S
SHIPMENT NO S-09004

MATERIAL STANDARDS: ASTM SA/A234 WPB-2005A
DIMENSION STANDARD: ASME B16.9(2003) B16.28
SPECIAL CONDITIONS: Made of seamless pipes
CERTIFICATION STANDARD: EN 10204 3.1

$$C.E = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

MINIMUM STANDARD AS PER ABOVE SPECIFICATIONS					MECHANICAL PROPERTIES						CHEMICAL COMPOSITION											
ITEM	NPS	DESCRIPTION	QTY	HEAT #	415 Mpa MIN TENSILE	240 Mpa MIN YIELD	ELON-GATION 30%	197 HB max HARDNS	COLD FORM Y / N	HOT FORMED TEMP. C	0.3 max C	0.29 To 1.06 Mn	0.05 max P	0.058 max S	0.1 min Si	0.4 max Cr	0.15 max Mo	0.4 max Ni	0.4 max Cu	0.08 max V	0.02 max Nb	0.5 max C. E
1	1/2"	90 LR ELBOW STD	50	A	450	265	30	118	NO	870	0.20	0.53	0.014	0.011	0.25	0.02	0.01	0.01	0.02	0.008	0.008	0.30
2	3/4"	90 LR ELBOW STD	600	B	430	250	31	113	NO	870	0.18	0.52	0.014	0.015	0.26	0.08	0.02	0.08	0.08	0.008	0.007	0.30
3	1"	90 LR ELBOW STD	200	C	473	362	31.5	124	NO	870	0.12	0.98	0.007	0.009	0.23	0.02	0.01	0.13	0.11	0.008	0.008	0.30
4	1-1/4"	90 LR ELBOW STD	1500	D	424	289	47.5	112	NO	870	0.14	0.86	0.007	0.002	0.16	0.04	0.010	0.04	0.07	0.008	0.009	0.27
5	1-1/2"	90 LR ELBOW STD	2000	E	452	255	30	119	NO	870	0.18	0.62	0.011	0.006	0.26	0.01	0.01	0.01	0.02	0.006	0.009	0.29
6	2"	90 LR ELBOW STD	1000	70515	452	280	32	118	NO	870	0.19	0.52	0.015	0.011	0.25	0.09	0.02	0.02	0.03	0.008	0.007	0.30
7	3"	90 LR ELBOW STD	1000	40028	430	250	31	113	NO	870	0.18	0.52	0.014	0.015	0.26	0.08	0.02	0.08	0.08	0.008	0.007	0.30
8	4"	90 LR ELBOW STD	1000	56765	435	250	30	115	NO	870	0.22	0.50	0.011	0.005	0.24	0.06	0.02	0.01	0.07	0.005	0.009	0.33
9	5"	90 LR ELBOW STD	200	30101	425	245	31	112	NO	870	0.21	0.52	0.014	0.015	0.24	0.08	0.02	0.08	0.08	0.008	0.007	0.33
10	6"	90 LR ELBOW STD	500	32222	430	260	31	113	NO	870	0.18	0.52	0.01	0.005	0.21	0.02	0.01	0.01	0.01	0.009	0.008	0.28
11	8"	90 LR ELBOW STD	200	67865	457	329	30	120	NO	870	0.18	0.45	0.022	0.016	0.24	0.05	0.02	0.03	0.08	0.005	0.009	0.28
12	10"	90 LR ELBOW STD	75	30114	430	245	31	113	NO	870	0.21	0.54	0.016	0.014	0.23	0.08	0.02	0.08	0.08	0.008	0.009	0.33
13	12"	90 LR ELBOW STD	100	28312	430	245	30	113	NO	870	0.20	0.56	0.014	0.007	0.24	0.02	0.01	0.05	0.01	0.009	0.008	0.31
14	14"	90 LR ELBOW STD	15	56774	450	250	32	118	NO	870	0.17	0.58	0.014	0.012	0.23	0.08	0.01	0.02	0.03	0.008	0.009	0.28
15	16"	90 LR ELBOW STD	10	12390	445	260	32	117	NO	870	0.19	0.58	0.010	0.008	0.28	0.02	0.01	0.01	0.01	0.005	0.009	0.29
16	18"	90 LR ELBOW STD	5	30002	445	255	30	117	NO	870	0.20	0.52	0.015	0.013	0.28	0.08	0.02	0.09	0.05	0.008	0.007	0.32
17	2"	90 SR ELBOW STD	100	70515	452	280	32	118	NO	870	0.19	0.52	0.015	0.011	0.25	0.09	0.02	0.02	0.03	0.008	0.007	0.30
18	2-1/2"	90 SR ELBOW STD	100	15820	500	268	36	132	NO	870	0.19	0.56	0.01	0.001	0.23	0.02	0.01	0.11	0.12	0.008	0.007	0.31
19	3"	90 SR ELBOW STD	150	40028	430	250	31	113	NO	870	0.18	0.52	0.014	0.015	0.26	0.08	0.02	0.08	0.08	0.008	0.007	0.30
20	4"	90 SR ELBOW STD	100	56765	435	250	30	115	NO	870	0.22	0.50	0.011	0.005	0.24	0.06	0.02	0.01	0.07	0.005	0.009	0.33
21	6"	90 SR ELBOW STD	150	32222	430	260	31	113	NO	870	0.18	0.52	0.01	0.005	0.21	0.02	0.01	0.01	0.01	0.009	0.008	0.28
22	8"	90 SR ELBOW STD	300	67865	457	329	30	120	NO	870	0.18	0.45	0.022	0.016	0.24	0.05	0.02	0.03	0.08	0.005	0.009	0.28
23	10"	90 SR ELBOW STD	25	30114	430	245	31	113	NO	870	0.21	0.54	0.016	0.014	0.23	0.08	0.02	0.08	0.08	0.008	0.009	0.33
24	12"	90 SR ELBOW STD	25	28312	430	245	30	113	NO	870	0.20	0.56	0.014	0.007	0.24	0.02	0.01	0.05	0.01	0.009	0.008	0.31
25	1-1/4"	45 LR ELBOW STD	200	D	424	289	47.5	112	NO	870	0.14	0.86	0.007	0.002	0.16	0.04	0.010	0.04	0.07	0.008	0.009	0.27

We hereby certify that the material described herein has been inspected/tested satisfactorily in accordance with the standards specified above and purchase order requirments.

REMARKS: 1 OUR ISO-9001 CERTIFICATE NO. 00108Q11791R2M/2200
2. VISUAL EXAMINATION: GOOD
3. DIMENSIONAL EXAMINATION: GOOD
4 MELTING PROCEDURE : E
5 MATERIAL IN ACCORDANCE WITH NACE MR-01-75
6 HEAT TREATMENT: HOT FORMED FITTINGS HAVE BEEN FORMED AT TEMP. 870 C AND COOLED IN STILL AIR

HEAT#DETAIL

A	12378	D	32297
B	40004	E	16705
C	30042		

DATE: Jan.12 ,2009

APCO PIPE FITTINGS CO., LTD.

CHIEF INSPECTOR: F. Hesong

125-821

PO#4644199

PURCHASER: PO#123615

STANDARD: ASTM A234/ASME SA234-07 WPB
MATERIALS: ASTM A106 Gr.B
INSP.SPEC.: ASME B16.9-07

INSPECTION CERTIFICATE

SHANGHAI GATEWAY FITTINGS CO.,LTD
951,Kesheng Road Beiguan, Malu town, Jia-ding District,
Shanghai, China
TEL: 86-21-69155661 FAX: 86-21-69155662

CONFORMS TO SA 234 WPB
YEAR 2010ED
JOB NO. 2011-8169-59
ITEM NO. 12
SIGNED BY 17 MAR 2011

DATE: 2010-5-17
ORDER NO.: 7001844
P.I NO.:
CERTIFI.NO.: 10E7-7/9

OK

ITEM NO.	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL& DIMENTIONAL	HARDNESS MAX.197 HB	HEAT TREATMENT	MAGNETIC PARTICLE EXAMINATION	
61	Tee-6X3" STD	10	9L236	GOOD	98-99	N	OK	6862899
62	Tee-10X8" STD	12	10D228	GOOD	96-101	N	OK	1264
63	Tee-10X6" STD	2	10C94	GOOD	86-97	N	OK	0968
64	Conc Reducer-21/2X2" STD	50	9F52	GOOD	92-98	N	OK	3062
65	Conc Reducer-3X2" STD	50	→ 9L123	GOOD	96-99	N	OK	3178
66	Conc Reducer-3X11/2" STD	10	10D101	GOOD	87-97	N	OK	3194
67	Conc Reducer-4X3" STD	30	9L264	GOOD	86-99	N	OK	3330
68	Conc Reducer-5X4" STD	10	10D117	GOOD	92-98	N	OK	3420
69	Conc Reducer-6X3" STD	10	10D119	GOOD	78-91	N	OK	3585
70	Conc Reducer-8X6" STD	30	10D125	GOOD	76-94	N	OK	3640

ITEM NO.	MATERIAL CHARGE NO.		C *100	Si *100	Mn *100	P *1000	S *1000	Cu *100	Ni *100	Cr *100	Mo *100	V *100		PHYSICAL TEST YS KSI	TS KSI	E %	C.E x100
	STANDARD	MIN.		10	29												
		MAX.	30		106	50	58	40	40	40	15	8		35.5	60		
61	WB91-2432		22	24	45	20	8	2.2	0.6	2	0.1	0			85.0		50
62	1092074		21	23	53	11	8	3	1	1	0.2	0.1		39.90	78.36	32.0	32.16
63	1092074		21	23	53	11	8	3	1	1	0.2	0.1		39.18	65.30	32.5	33.16
64	06-4434		21	23	53	14	9	5	8	2	1.7	0		39.18	65.30	32.5	33.16
65	09603154		21	23	49	13	17	1	2.5	6.7	1.0	0		43.53	65.30	31.0	36.11
66	08610063		22	29	47	22	3	1.2	1.2	2.4	0.7	0		46.43	70.37	30.0	31.87
67	2G14576		19	25	54	15	16	1.5	1.6	1.5	1.6	0		39.90	65.30	32.0	31.73
68	HR094334		18	19	51	14	15	3	2	2	0.1	0		38.45	65.15	30.0	30.23
69	093029738		20	26	49	17	12	1.2	1.1	2	0.1	0		44.98	71.10	38.0	30.05
70	08008463		20	24	50	19	9	1.3	1.1	3.3	0.1	0		38.45	65.30	31.0	29.86
														40.63	61.67	30.0	30.39

(NOTE):A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620℃ - 980℃ , AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880℃*0.5 HR , AIR COOLING.
NACE MR-01-75 : SATISFACTORY

MILL TEST CERTIFICATE ACCORDING TO EN10204/3.1

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.

K C GUAN
MANAGER OF Q. A. DEPT

① 8169-50

Po # 125565

31772

ORIGINAL

INSPECTION CERTIFICATE

ZIBO WEL-FIT METAL PRODUCTS CO., LTD

NO 18, LUSHAN ROAD, LINZI, ZIBO, P.R.CHINA 255418

Machined to be STD x XH

Purchaser:
Order No.: #100431S
Invoice No.: ZWF08103C-1

Date: Apr 30, 2008
Certificate No: ZWF08103C-1
Certificate to: EN10204-2004 3.1

Material Specification
ASTM A234-06/ASME SA234
WPB NACE MR0175-02

Specification for Inspection
ASME B16.9-03

Visual and Dimensional Inspection GOOD

Hardness
Max 197HB
<197HB

Cu+Ni+Cr+Mo
< or =1.00%
RT:(5)

Cr+Mo
< or =0.32%
IGC:(5) GOOD

MT:(5)
PMI(5): GOOD

Product Description	Heat I.D.	Quantity (Pcs)	Tension Test (1) YS Mpa	TS Mpa	E %	Chemical Composition % C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	CE(2)	Heat Treatment (3)	Raw Material Type (4)	Raw Material Manufacturer (6)
			240	415	30		0.10	0.29												
				585		0.30		1.06	0.050	0.058	0.40	0.15	0.40	0.40	0.08		0.45			
CON REDUCER STD WPB 12 X 10	03748H	10	245	515	31	0.19	0.21	0.56	0.0090	0.0070	0.02	0.01	0.0030	0.10	-	-	0.30	S	1	TJP
CON REDUCER STD WPB 14 X 12	03909H	5	245	480	30	0.22	0.25	0.53	0.01	0.0060	0.02	0.01	0.0030	0.13	-	-	0.32	S	1	TJP
CON REDUCER STD WPB 16 X 12	04533H	5	250	495	30	0.20	0.23	0.55	0.0090	0.0070	0.02	0.01	0.0030	0.14	-	-	0.31	S	1	TJP
CON REDUCER STD WPB 16 X 14	04533H	3	250	495	30	0.20	0.23	0.55	0.0090	0.0070	0.02	0.01	0.0030	0.14	-	-	0.31	S	1	TJP
CON REDUCER XS WPB 2 X 1-1/2	01423N	25	305	480	30	0.22	0.23	0.44	0.0130	0.0050	0.02	0.0040	0.01	0.02	-	-	0.30	S	1	XSP
CON REDUCER XS WPB 3 X 2	02059N	25	320	495	30	0.21	0.23	0.57	0.0160	0.0130	0.03	-	0.01	0.03	-	-	0.31	S	1	XSP
CON REDUCER XS WPB 6 X 4	03121H	10	255	495	32	0.20	0.22	0.49	0.0090	0.0070	0.02	0.01	0.0030	0.11	-	-	0.30	S	1	TJP
CON REDUCER XS WPB 8 X 6	03309H	10	245	505	33	0.22	0.25	0.54	0.0090	0.0070	0.02	0.01	0.0030	0.15	-	-	0.33	S	1	TJP
ECC REDUCER STD WPB 2 X 3/4	01429	25	310	490	30	0.18	0.22	0.50	0.0140	0.0060	0.0490	-	0.0280	0.0680	-	-	0.28	S	1	XSP
ECC REDUCER STD WPB 2-1/2 X 1-1/4	01712N	25	310	500	30	0.19	0.20	0.54	0.0090	0.0070	0.06	-	0.04	0.09	-	-	0.30	S	1	XSP
ECC REDUCER STD WPB 2-1/2 X 2	01712N	25	310	500	30	0.19	0.20	0.54	0.0090	0.0070	0.06	-	0.04	0.09	-	-	0.30	S	1	XSP
ECC REDUCER STD WPB 3 X 1-1/2	02059N	25	320	495	30	0.21	0.23	0.57	0.0160	0.0130	0.03	-	0.01	0.03	-	-	0.31	S	1	XSP
ECC REDUCER STD WPB 3 X 2	02059N	50	320	495	30	0.21	0.23	0.57	0.0160	0.0130	0.03	-	0.01	0.03	-	-	0.31	S	1	XSP
ECC REDUCER STD WPB 3 X 2-1/2	02059N	25	320	495	30	0.21	0.23	0.57	0.0160	0.0130	0.03	-	0.01	0.03	-	-	0.31	S	1	XSP
ECC REDUCER STD WPB 4 X 2	02346N	25	250	495	30	0.20	0.24	0.49	0.0060	0.0080	0.04	0.01	0.0040	0.15	-	-	0.30	S	1	TJP
ECC REDUCER STD WPB 4 X 2-1/2	02346N	10	250	495	30	0.20	0.24	0.49	0.0060	0.0080	0.04	0.01	0.0040	0.15	-	-	0.30	S	1	TJP
ECC REDUCER STD WPB 4 X 3	02346N	50	250	495	30	0.20	0.24	0.49	0.0060	0.0080	0.04	0.01	0.0040	0.15	-	-	0.30	S	1	TJP
ECC REDUCER STD WPB 6 X 3	03118N	10	240	475	30	0.22	0.23	0.55	0.0060	0.0070	0.03	0.01	0.0030	0.15	-	-	0.33	S	1	TJP
ECC REDUCER STD WPB 6 X 4	03118N	25	240	475	30	0.22	0.23	0.55	0.0060	0.0070	0.03	0.01	0.0030	0.15	-	-	0.33	S	1	TJP
ECC REDUCER STD WPB 6 X 5	03118N	10	240	475	30	0.22	0.23	0.55	0.0060	0.0070	0.03	0.01	0.0030	0.15	-	-	0.33	S	1	TJP

Note: (1) YS=Yield Strength TS=Tensile Strength E=Elongation (2) CE=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
Note. (3) HF: Hot formed (620~980 °C) and cooled in still air. S: Cold formed and normalized (900 °Cx0.5HR), cooled in still air.
SA: Cold formed and solution annealed at 1050 °C±10°C, water quenched. (4) 1=Seamless Pipe 2=Welded Pipe 3=Steel Plate
Note. (5) IGC=Intergrannular Corrosion Test to ASTM A262 E PMI=Positive Material Inspection RT=Radiographical Test MT=Magnetic Particle Test
Note. (6) TJP=TPCO XSP=XISHAN PIPE CORP

We hereby certify that the products detailed herein have been manufactured and inspected in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct. This material was manufactured, tested, and inspected without mercurial contamination

CONFORMS TO SA 234-WPB
YEAR above. 2010 ED
JOB # 2011-8169-50
ITEM # 13
SIGNED BY 22 March 10/11

淄博鑫利金属制品有限公司
ZIBO WEL-FIT METAL PRODUCTS CO., LTD.

QUALITY ASSURANCE MANAGER

General Note: The analysis for the elements with an amount of less than 0.02% is reported as "<0.02" represented by "-".

(2) 8169-50

PO #125[illegible]9

Order#: 106804 - A Seq: 4 PO#: 125799 Heat#: ap917 Mill: TK Corporation
Part#: WF 2X1 STD/XS CO PB Part Desc: Weld Fittings 2 (60.3mm O.D.)X1 (33.4mm O.D.) STD/XS CONCENTRIC REDUCER A/SA234-WPB

EDTK Corporation

1489-1,SONG JUNG-DONG,
GANGSEO-GU BUSAN,KOREA
Tel : 82-51-831-6550
Fax : 82-51-831-6885

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

Customer	SEYBOLD	Certificate No.	20071203497	Date	2007/12/20
P.O No.	7089	Project Name			
Job No.		POR/Req'n No.			
Specification for Material	ASTM/ASME A/SA234 WPB(04 Ed. & 06 Add.)NACE MR0175	Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B16.9-2003	Dimension and Visual Inspection	GOOD		

Heat Code No [HCN]	No.	Descriptions				Q'ty (Pcs)	Heat Treatment
AP917	009	CON REDUCER	STD / X-S	B.W	2" x 1"	25	SR: 670°C
AP917	010	CON REDUCER	X-S / SCH160	B.W	2" x 1"	25	SR: 670°C

CHEMICAL COMPOSITION(%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	C.E	Raw Heat No/Raw Maker
	Max.	0.30	-	1.06	0.050	0.058	0.40	0.40	0.15	0.40	0.080	0.45	
	Min.	-	0.10	0.29	-	-	-	-	-	-	-	-	
AP917	L	0.18	0.20	0.64	0.012	0.001	0.02	0.03	0.02	0.05	0.001	0.302	21160/TENARIS
AP917	L	0.18	0.20	0.64	0.012	0.001	0.02	0.03	0.02	0.05	0.001	0.302	21160/TENARIS

CONFORMS TO SA 234-WPB
YEAR 2010ED
JOB # 2011-8169-50
ITEM # 14
SIGNED BY 24 MAR 2011

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S Ksi	T.S Ksi	E.L (%)		Hardness Test HB				
	Max.	-	85	-		197				
	Min.	35	60	30		-				
AP917	P	46.3	71.5	33.0		146	149			
AP917	P	46.3	71.5	33.0		146	149			

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

Remark : •Z245.11-05 GR241 CAT.I

Legend:
HB:Brinell
ST:Solution Treatment
SR:Stress Relieving
N:Normalized
T:Tempered
A:Annealed
Q:Quenched
(G): Hot-Dip Galvanized Coating
AC:Air Cool
OC:Oil Cool
WQ:Water Quenched
WC:Water Cool
L:Ladle
P:Product

☐Reviewed by :

☐Witnessed by :

Approved by : D. G. Lee

Director of Quality Assurance Dep't

Heat Number : 8L1729
Trans Am piping products Ltd. - Rev'd By: SB
Shipment / Seq #: S10 - 1532 15

4" STD BW TEES A234-WPB

PURCHASER : SEYBOLD

STANDARD : ASTM A234 WPB-07
ASME SA234 WPB-04

MATERIALS : ASTM A106 Gr.B (SEAMLESS PIPE)

INSP. SPEC. : ASME B16.9 - 03

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8, MEI-CHUNG RD, NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

DATE: 2010 - 10 - 14

ORDER NO: 7002875/CI10320

P I NO: 0G01-1

CERTIFI. NO: 424

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE			QUANTITY PCS	MFG NO.	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
1	TEE	2"	STD		0A5108	GOOD	146 - 151	N	GOOD	
2	TEE	4"	STD		8L1729	GOOD	146 - 163	N	GOOD	
3	TEE	4"	STD		8J4704	GOOD	151 - 155	N	GOOD	
4	TEE	10"	STD		0B3785	GOOD	150 - 154	N	GOOD	
5	RED-TEE	2X1 1/2"	STD		8E1579	GOOD	145 - 146	N	GOOD	
6	RED-TEE	4X2"	STD		0C3961	GOOD	149 - 153	N	GOOD	
7	RED-TEE	10X8"	STD		8G1003	GOOD	156 - 173	N	GOOD	
8	ECC-RED	10X4"	STD		0D5892	GOOD	153 - 156	N	GOOD	
9	ELL LR RED	4x3"	STD		9K5246	GOOD	136 - 143	N		
10	TEE	3/4"	XH		8K3978 (8K)	GOOD	050 - 151	N	GOOD	

ITEM NO	MATERIAL CHARGE NO.		CHEMICAL COMPOSITION %										PHYSICAL TEST			
			C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y S KSI	T S KSI	E %	C E X100
	STANDARD	MIN.		10	29									35.0	60.0		
		MAX.	30		135	50	58	40	40	40	15	8	20		95.0		50
1	0813308		14	22	67	10	6	12	4	4	2	1	<1	50.0	71.7	35.5	27
2	J8LA129		10	24	127	10	4	4	3	12	1	<1	<1	44.5	66.0	42.1	34
3	P08603504		21	26	52	12	10	3	4	2	1	1	10	55.9	76.2	40.0	30
4	0881285		21	27	62	10	4	10	4	5	2	1	1	39.9	73.3	37.0	33
5	J1K8479		23	22	57	15	13	1	2	6	1	<1	<1	47.6	72.4	60.0	34
6	191261		19	24	102	14	8	10	4	5	3	<1	<1	55.9	81.3	33.0	38
7	0633803		18	28	72	13	7	9	3	7	2	<1	<1	46.4	69.6	42.0	32
8	J5L1292		12	25	127	15	3	2	3	11	2	<1	<1	44.8	66.9	46.2	36
9	585246		19	24	49	8	4	10	3	6	3	<1	<1	47.9	72.6	36.0	29
10	8108778		21	24	41	16	25	1	1	2	<1	<1	<1	43.5	68.2	32.0	28

(NOTE) A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620℃-980℃,AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880℃X0.5HR,AIR COOLING.
NACE MR-01-75-03/ISO15156-2 & NACE MR 0103-03 SATISFACTORY

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.

Qu C Lan

MANAGER OF Q.A. DEPT.

CONFORMING TO SA 234 WPB

YEAR 2010 FD

JOB # 2011 - 8169-50

ITEM # 15

SIGNED BY 22 April 1/11

OK

(1)6093-50

Purchaser : CCTF DIVISION OF EMCO LIMITED.

Order No. UM929006/006740

Invoice No. PB#123879

Job No. D149

INSPECTION CERTIFICATE

BENKAN

Date : Sept. 6 , 1993

Specification for Material: ASTM A234 GR. WPB MADE FROM SEAMLESS PIPE

Specification for Inspection : ANSI B16.9, B16.28, DIN 50049 3.1B CSA Z245-10 NACE MR0175-92

Certificate No. T-320459

No.	BENKAN No.	MFG No.	Product & Size (T:*1)	Quantity	Visual & Dimensional Inspection	HEAT TREATMENT (NOTE 1)	HARDNESS ACTUAL DATA
1		34961	T WPB 3 X 2 STD	48/300	GOOD	S	HB : 115 - 145
2		34916	T WPB 3 X 2 STD	60/300	GOOD	S	HB : 115 - 145
3		36910	T WPB 3 X 2 STD	42/300	GOOD	S	HB : 115 - 145
4		37909	T WPB 3 X 2 STD	150/300	GOOD	S	HB : 115 - 145
5		34917	T WPB 3 X 11/2 STD	10	GOOD	S	HB : 125 - 140

Specification		Chemical Composition %											Tension Test *2			
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb XXX	YS	TS	E	
		X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 100	X 1000	P.S.I XXXXX^2		%	
Min.																HARDNESS MAX
Max.			10	29									35,000	60,000	30	197 HB : GOOD
Heat No.		30		106	50	58								85,000		Material Manufacturer
1	30650	20	22	66	11	6	3	2	3	TR	TR	TR	43,700	62,800	59	NKK CORPORATION
2	36723	18	23	66	17	9	2	2	3	1	TR		40,900	65,100	64	NKK CORPORATION
3	33243	19	20	65	10	4	2	2	2	TR	TR		38,300	61,900	68	NKK CORPORATION
4	33243	19	20	65	10	4	2	2	2	TR	TR	TR	40,500	68,000	70	NKK CORPORATION
5	30650	20	22	66	11	6	3	2	3	TR	TR		43,700	62,800	59	NKK CORPORATION

NOTE 1) S : STRESS RELIEVING 675 C X 0.5 HR. AIR COOLING
: NORMALIZING 910 C X 0.5 HR. AIR COOLING
AGNETIC PARTICLE EXAMINATION : GOOD

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.

CONFORMS TO SA 234 WPB
YEAR 2010-E0
JOB # 2011-8169-50
ITEM # 16
SIGNED BY 7 MAR 2011

S Masuda
Manager of Quality Assurance Section
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn 10130 Thailand

Q-001

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

T-287 P.008/018 F-064
+7804630528
FROM-CCTF Edmonton Br #482
08:10
DEC-02-03

(T4) 8169-50

Po# 125565

3223

HEBEI HAITIAN PIPE FITTINGS CO.,LTD

ADDRESS: Niujinzhuang Industrial Area of Mengcun.Hebei.China

MILL TEST CERTIFICATE

Certificate EN 10204/3.1

PURCHASER

EXPORTER: HEBEI HAITIAN PIPEFITTINGS CO., LTD

PO NO.: 850.041 F

COMMODITY: S FITTINGS

DATE: MAY 10,2008

MFG.NO:

CERTIFICATE NO:20080510-0001

ITEM NO	HEAT NO.	SPECIFICATION FOR MATERIAL ASTM A234 WPB(A 234/A 234M – 03) DESCRIPTION OF GOODS	SPECIFICATION FOR INSPECTION ANSI/ASME B16.9 QUANTITY	HEAT TREATMENT	Visual Examination	Dimensional Inspection	100% X-Radiography Inspection
1	3042	2" STD TEE	50	S	GOOD	GOOD	
2	3104	2-1/2" STD TEE	50	S	GOOD	GOOD	
3	3140	3" STD TEE	100	S	GOOD	GOOD	
4	3014	4" STD TEE	150	S	GOOD	GOOD	
5	3041	5" STD TEE	15	S	GOOD	GOOD	

SPEC.	Chemical composition%												Tension Test			HARDNESS HB
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
	x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x100	x100	x100	Mpa			
Min.		10	29										240	415	%	MIN 197
Max.	30		106	50	58	40	40	40	15	8	2			585		
ITEM																
1	18	26	51	17	7	19	20	18	—	—	—	—	288	465	31	197
2	20	29	53	13	3	21	19	20	—	—	—	—	287	464	32	143
3	17	26	54	15	5	16	20	18	—	—	—	—	288	465	35	148
4	21	28	54	18	8	18	17	19	—	—	—	—	289	467	33	146
5	18	27	50	16	7	17	18	18	—	—	—	—	289	466	31	149

NOTE:

A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620-980.AIR COOLING

S:STRESS RELIEVEING 675*0.5 H.R. AIR COOLING

YS: (YIELD POINT) TS: (TENSILE STRENGTH) E : (ELONGATION)

We hereby certify that the product described has been manufactured in accordance with ANSI B16.9-2003 which was approv as an American National Standard on October 15,2003 and December 31,2003.
and also with the purchaser's requirements and that the test result shown here are in accordance with A234 WPB. All made from Seamless steel pipe manufactured acc to ASTM A106.

CONFORMS TO SA 234-WPB

YEAR 2010 ED

JOB # 2011 - 8169-50

ITEM # 17

SIGNED BY 29 March 3/11

Material Test Report

Current Date: Fri, 27 Aug 2010 15:16:45 -0600

Report Number: 20534

Description: 2" SWAGES & BULL PLUGS

Specification: A234-WPB/SA234-WPB

Year of Revision:

Comment:

Additional NACE MR0103-07
Comment: MR0175/ISO 15156-2-03

Date: Wed, Apr 14th 2010

Heat Treatment: COLD FORM

Material: C1018

CRN: OA7470.5C

2" x 1" x 14 CONC SW SCH

Chemical Analysis

Heat Code: K1870

Heat Number: 751225

C	0.150	Cu	0.090	Al	0.025
Mn	0.700	Ni	0.040	Ti	
P	0.015	Cr	0.070	Sn	0.009
S	0.007	Mo	0.010		
Si	0.100	V	0.000		
N		Cb/Nb			

125-001

PO # 1340S2

Carbon Equivalency Formula Used:
C+(Mn/6)+(Cr+Mo+V)/5+(Ni+Cu)/15
CE= 0.29

Mechanical Tests

Yield PSI: 39100

Tensile PSI: 60400

Elongation: 37 % @ 2"

Reduction of Area %

Size: 2-1/2" BAR

Brinell Hardness: 128

Charpy Impact Test

Individual Values: (V1) ft/lbs (V2) ft/lbs (V3) ft/lbs

This Material Test Report meets DIN 50 049/EN 10 204 3.1.B Standard 1995

We hereby Certify that the material described has been tested in accordance with the specifications, and the results are correct as contained in the records of the Company

Ian Shields
Q.A. Manager and Customer Service

CONFORMS TO SA 234-WPB
YEAR 2010 ED
JOB 2011-8169-50
ITEM 18
SIGNED BY 17 MAR 2011

KEDDCO

Sarnia
Toll Free 1-866-511-1381
By regular telephone at 519-336-2960
By fax at 519-344-3181

Mailing Address
PO Box 999,
645 Keddco St.
Sarnia, ON
N7T 7K6

Edmonton
Toll Free 1-800-661-3809
By regular telephone at 780-438-4944
By fax at 780-435-3917

Mailing Address
4120 - 78 Av
Edmonton, AB
T6B 3M8

HEAT NUMBER : 71759
TRANS AM PIPING PRODUCTS - REV'D BY:
Shipment/Seq #: S 8 - 1175 151

1X3/4 SCH 160 CONC SWAGE NIPPLE
A234-WPB TBE

OK

I.M.L

INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

16030 CASARZA LIGURE - Genova - Italy - Via Giancarlo Farina 28 - Tel.0185.467851 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT

This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204 Page 15 - 19

TRANS AM PIPING PRODUCTS LTD.
9335 Endeavor Drive S.E.
Calgary, Alberta T3S 0A1 CA

Certificate Nr 18663 Dated 24.04.2008
Invoice Nr Dated
Del. Note Nr 706 Dated 24.04.2008

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
	71759	008	CI-08 - 187	2008-2E201-0000206-008		CONC.SWAGE TBE NPT S-80 1"x3/4" MSS SP 95 WPB	SEE NOTE	SATISFACTORY
	72475	001	CI-08 - 118	2008-2E201-0000041-001		CONC.SWAGE TBE NPT S-80 1/2"x1/8" MSS SP 95 WPB	SEE NOTE	SATISFACTORY
→	71759	020	CI-08 - 118	2008-2E201-0000041-020		CONC.SWAGE TBE NPT S-160 1"x3/4" MSS SP 95 WPB	SEE NOTE	SATISFACTORY
HMC	38997	067	CI-08 - 114	2008-2E201-0000032-067		FITTING TEE THRD NPT 3/6M 4" A105N	SEE NOTE	SATISFACTORY
	4117758	13	CI-07 - 691	2007-2E201-0001160-013		P.NIPPLE TBE NPT S-80 1/2" L125mm(5") A106B/API 5LB	SEE NOTE	SATISFACTORY
	748674	32	CI-07 - 691	2007-2E201-0001160-032		P.NIPPLE TBE NPT S-80 1.1/2" CLOSED L.44mm A106B/API 5LB	SEE NOTE	SATISFACTORY
	748674	38	CI-07 - 691	2007-2E201-0001160-038		P.NIPPLE TBE NPT S-80 1.1/2" L150mm(6") A106B/API 5LB	SEE NOTE	SATISFACTORY
	71759	005	CI-08 - 118	2008-2E201-0000041-005		CONC.SWAGE TBE NPT S-80 1"x1/4" MSS SP 95 WPB	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
	71759	008	ASTM A234 WPB	0,200	0,250	0,960	0,019	0,010	0,070	0,050	0,010	0,006	0,140	0,001	0,001	0,000	0,026	0,389	
	72475	001	ASTM A234 WPB	0,210	0,220	0,890	0,026	0,015	0,100	0,050	0,010	0,000	0,170	0,001	0,001	0,000	0,012	0,395	
	71759	020	ASTM A234 WPB	0,200	0,250	0,960	0,019	0,010	0,070	0,050	0,010	0,006	0,140	0,001	0,001	0,000	0,026	0,389	
HMC	38997	067	ASTM A105	0,195	0,230	0,980	0,020	0,014	0,160	0,060	0,010	0,010	0,160	0,003	0,002	0,000	0,005	0,408	
	4117758	13	ASTM A106/B API 5LB	0,220	0,290	0,510	0,007	0,021	0,030	0,010	0,010	0,000	0,050	0,010	0,000	0,000	0,000	0,319	
	748674	32	ASTM A106/B API 5LB	0,130	0,180	0,790	0,005	0,008	0,110	0,080	0,030	0,000	0,140	0,001	0,000	0,000	0,000	0,305	
	748674	38	ASTM A106/B API 5LB	0,130	0,180	0,790	0,005	0,008	0,110	0,080	0,030	0,000	0,140	0,001	0,000	0,000	0,000	0,305	
	71759	005	ASTM A234 WPB	0,200	0,250	0,960	0,019	0,010	0,070	0,050	0,010	0,006	0,140	0,001	0,001	0,000	0,026	0,389	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST TYPE 10x10mm	°C	JOULE/cm2 1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
	71759	008	122,65	50,00	351,0	533,0	33,0	57,5	162 - 169	0,0	0,0	KV	20	58	55	50	1	0,0
	72475	001	0,00	0,00	306,0	542,0	45,0	0,0	160 - 164	0,0	0,0	KV	20	53	58	62	0	0,0
	71759	020	122,65	50,00	351,0	533,0	33,0	57,5	162 - 169	0,0	0,0	KV	20	58	55	50	1	0,0
HMC	38997	067	122,65	50,00	341,0	517,0	31,0	59,0	159 - 165	0,0	0,0	KV	20	99	104	102	1	0,0
	4117758	13	0,00	0,00	348,0	495,0	48,0	0,0	148 - 153	0,0	0,0	KV	20	48	47	51	0	0,0
	748674	32	0,00	0,00	366,0	490,0	38,0	0,0	161 - 163	0,0	0,0	KV	20	48	53	56	0	0,0
	748674	38	0,00	0,00	366,0	490,0	38,0	0,0	161 - 163	0,0	0,0	KV	20	48	53	56	0	0,0
	71759	005	122,65	50,00	351,0	533,0	33,0	57,5	162 - 169	0,0	0,0	KV	20	58	55	50	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	Our Ref.
	71759	008	ASME SA ASTM A234/A234M-07 Gr. WPB	Normalized at 880°C / Air Cool	ELECTRIC FURNACE	081080
	72475	001	ASME SA ASTM A234/A234M-07 Gr. WPB	Normalized at 880°C / Air Cool	ELECTRIC FURNACE	
	71759	020	ASME SA ASTM A234/A234M-07 Gr. WPB	Normalized at 880°C / Air Cool	ELECTRIC FURNACE	081080
HMC	38997	067	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	082042
	4117758	13	ASME SA ASTM A106/A106M-06a Gr. B	Normalized at 880°C-920°C / Air Cool	ELECTRIC FURNACE	083014
	748674	32	ASME SA ASTM A106/A106M-06a Gr. B	Normalized at 880°C-920°C / Air Cool	ELECTRIC FURNACE	073041
	748674	38	ASME SA ASTM A106/A106M-06a Gr. B	Normalized at 880°C-920°C / Air Cool	ELECTRIC FURNACE	073041
	71759	005	ASME SA ASTM A234/A234M-07 Gr. WPB	Normalized at 880°C / Air Cool	ELECTRIC FURNACE	081080

NOTES ASME B16.11/05 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - NACE MR103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY

CONFORMS TO SA 234 WPB
YEAR 2010
JOB 2011-8169580
ITEM # 19
SIGNED BY 11-04-05

QUALITY CONTROL DEPARTMENT
BORIS FIZZOTTI

MANUFACTURER'S SYMBOL
FITTINGS IML

MANUFACTURER'S SYMBOL
STUDBOLTS

D8169-50

PO 4125882

F 10

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKWANG BEND CO., LTD.
#1720, SONGJEONG-DONG, GANGSEO-KU, BUSAN, KOREA
http://www.skbend.com
TEL. 82-051-3306-450
FAX. 82-051-3300-335

Customer ALLIED FITTINGS

According to
DIN 50049 3. 1. B / EN 10204 3. 1. B / ISO 10474 3. 1. B

Date of issue: 2004/02/26

Job No.	Spec. for Material	Spec. for Inspection	Visual & Dimension	P.O. No.	Certificate No.
	ASTM A234WPB-S ASME SA234WPB-S	ASME B16 9	SATISFACTORY	121703ASB	QCL-200402Y1831

Manufacture No.	Description	Size	Quantity	Heat Treatment
12-19-6	MADE FROM SEAMLESS PIPE → CROSS-TEE STD B.W	2"	50EA	NORMALIZED.

Raw Material Maker	Raw Material Heat No.	Mfg. Heat ID No.	Test Piece size	N.D.E.	Heat.
KAWASAKI STEEL	→ 1-31335.	1-31335	ASTM A370 TEST PIECE	M.T : GOOD	900 °C Hol.(30MIN.) "AIR"

STD		Chemical Composition(%)												Tensile Test				Bending Test ( )	Flattening Test	Hardness (HB)	Impact Test	Hydrostatic Test
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Cb	C.E	Y.S ~~N/mm²~~ ksi	T.S ~~N/mm²~~ ksi	EL. %	R.A. %					
SIZE	Min		0.10	0.29										35.0	60.0	22.4						
	Max	0.25		1.06	0.050	0.058	0.40	0.40	0.15	0.40	0.08	0.02			85.0					237		
		0.21	0.22	0.54	0.024	0.011	0.01	0.02	<0.01	<0.01	<0.01	<0.01		47.5	77.2	42.0				142		
		--- B L A N K ---																				

WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE SPECIFICATION AND THE RESULTS OF ALL EXAMINATION ARE ACCEPTABLE

** MANUFACTURED IN ACCOR. TO DIN 50049-3.1.B & MEET NACE MR-01-75/97 STANDARD SPEC.

QEALITY MANAGEMENT DIVISION

K.H SUH

MANAGING DIRECTOR

[ ] Reviewed By
[ ] Witnessed By

CONFORMS TO SA 234 WTB
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 20
SIGNED BY DJ April 5/11

SKE-8903

SUNGKWANG BEND CO., LTD.

Heat Number : SA97310
Trans Am Piping Products Ltd. - Rev'd By: CJ
P.O./Seq #: EL-10 - 13770 10

3" STD BW CAPS A234-WPB

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKWANG BEND CO., LTD.(SKB)
1720, Songjeong-Dong, Gangseo-Ku,Busan,Korea
TEL : 82-051-3300-450
FAX : 82-051-3300-335
http://www.skbend.com

CUSTOMER: ALLIED FITTINGS
PROJECT NAME: N/A

According to
DIN 50049 3.1 / EN 10204 3.1 / ISO 10474 3.1

PURCHASE ORDER NO.	82610ASB	SPEC. FOR MATERIAL	ASTM A234WPB-S 07, ASME SA234WPB-S 07E0	CERTIFICATE NO.	QCLP2010110399
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2010.10.22
STARTING MATERIAL	STEEL PLATE	SKB NO.	2010083006	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION	QTY	HEAT NO.	MFG ID NO.	MILL MAKER	POR/CODE/TAG NO
18		CAP STD 3" B.W SML'S Black	200	SA97310	SA97310	POSCO	

CHEMICAL COMPOSITION(%) (L : LADLE, P : PRODUCT)

STD. / HEAT NO	SPEC.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	B	W	Sn	Ti	C.E
	MIN		0.10	0.29															
	MAX	0.25		1.06	0.050	0.058	0.40	0.40	0.15	0.40	0.08								
SA97310	L	0.14	0.27	0.62	0.020	0.005	0.01	0.03	0.01	0.02	0.003								
	P																		
	L																		
	P																		

TENSILE TEST

SPEC.	Y.S 0.2% offset KSI	T.S KSI	EL. %	R.A %
MIN	35.0	60.0	28.2	
MAX		85.0		
	44.8	69.5	39.0	

IMPACT TEST

HEAT NO.	TEST TEMP.	SIZE OF SPECIMEN(mm)		ABSORBED ENERGY STD./ VALUE			AVE.	LATERAL EXPANSION STD./ VALUE			AVE.	PERCENT SHEAR STD./ VALUE			AVE.
SA97310			B/M												
			H.A.Z												
			W/M												
			B/M												
			H.A.Z												
			W/M												

HARDNESS HB

MIN	
MAX	197
HB	143

HEAT TREATMENT	NORMALIZED. 900°C. 30Min., "Air"		
N.D.E	N/A	PMI	N/A
FLATTENING TEST	N/A	**MEMO	
BENDING TEST	N/A		
HYDROSTATIC TEST	N/A		
CORROSION TEST	N/A		
GRAIN SIZE TEST	N/A		
HIC TEST	N/A		

MANUFACTURED IN ACCOR. TO DIN 50049-3.1 & MEET NACE MR0175-2003 STANDARD SPEC

WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE SPECIFICATION AND THE RESULTS OF ALL EXAMINATION ARE ACCEPTABLE.

☐ REVIEWED BY :
☐ WITNESSED BY : _____

QM DIV. SENIOR MANAGING DIRECTOR

SKE-8903

CONFORMS TO SA 234-WPB
YEAR 2007ED-2009ADD
JOB # 2010-8169-50
ITEM # 21
SIGNED BY 8 MAR 2011

OK

Contract No:12210001532
Name of Customer :IMEX CANADA INC.
PO.NO.: PO749-09 9115254-00
Description:SEAMLESS STEEL LINE PIPE
TOTAL:296 PIECES, 50 BUNDLES, 98.981 MT

HENGYANG VALIN STEEL TUBE CO., LTD
MILL CERTIFICATE

Date:FEB 12,2010
Page:1/1

Add:10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax:+86 734 8873739 8872942
Cable: 6993
P.C. 421001

SPEC:ASTM A53-2007/A106-2006/ASME SA53-2007/SA106-2007/API 5L-2007,NACE MR-0175/ISO 15156-2:2003,NACE MR-0103:2005;CSA Z245.1 Gr 290 Cat.I Sour Service

CERTIFICATE NO:10-02-0210

NO	BATCH NO	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)	SKU#
1.1	K14L21041	1030153V	B/290	6"*0.28"*40FT	7	49	1960	16.884	2860019
1.2	K14L21042	1030153V	B/290	6"*0.28"*40FT	7	49	1960	16.884	2860019
1.3	K14L21051	1030153V	B/290	6"*0.28"*40FT	10	70	2800	24.12	2860019
1.4	K14L21052	1030153V	B/290	6"*0.28"*40FT	6	36	1440	12.405	2860019
2	K14L21060	1030153V	B/290	6"*0.28"*20FT	8	40	800	6.891	2860019
3	K13L21050	1030152V	B/290	6"*0.432"*20FT	3	20	400	5.169	2860018
4	K13L21040	1030152V	B/290	6"*0.432"*40FT	11	32	1280	18.608	2860034
				TOTAL:	50	296	10640	98.981	2860035

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST EMI	NONDESTRUCTIVE TEST MPI	TYPE	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Ti	Nb	CE
1.1	HOT-ROLLED	OK	N/A	P	0.13	0.24	1.03	0.006	0.001	0.03	0.03	0.03	0.01	0.023	0.01	0.023	0.029	0.32
				P	0.14	0.24	1.04	0.006	0.001	0.03	0.03	0.03	0.01	0.023	0.01	0.023	0.029	0.33
				L	0.13	0.24	1.06	0.006	0.002	0.03	0.02	0.03	0.01	0.023	0.01	0.024	0.027	0.32
1.2	HOT-ROLLED	OK	N/A	P	0.12	0.24	1.04	0.006	0.001	0.04	0.03	0.03	0.01	0.026	0.01	0.023	0.029	0.31
				P	0.13 -	0.24	1.04 -	0.006	0.001	0.04	0.03	0.03	0.01	0.026	0.01	0.023	0.029	0.32 -
				L	0.13	0.24	1.06	0.006	0.002	0.03	0.02	0.03	0.01	0.026	0.01	0.023	0.029	0.31
1.3	HOT-ROLLED	OK	N/A	P	0.12	0.22	1.02	0.005	0.001	0.04	0.03	0.03	0.01	0.023	0.01	0.024	0.027	0.32
				P	0.12	0.23	1.02	0.005	0.001	0.04	0.03	0.03	0.01	0.026	0.01	0.021	0.027	0.30
				L	0.13	0.24	1.06	0.006	0.002	0.03	0.02	0.03	0.01	0.026	0.01	0.021	0.027	0.30
1.4	HOT-ROLLED	OK	N/A	P	0.13	0.24	1.04	0.006	0.001	0.04	0.03	0.03	0.01	0.023	0.01	0.024	0.027	0.32
				P	0.12	0.24	1.04	0.006	0.001	0.04	0.03	0.03	0.01	0.026	0.01	0.023	0.028	0.32
				L	0.13	0.24	1.06	0.006	0.002	0.03	0.02	0.03	0.01	0.026	0.01	0.023	0.028	0.31
2	HOT-ROLLED	OK	N/A	P	0.12	0.22	1.01	0.005	0.001	0.03	0.03	0.03	0.01	0.023	0.01	0.024	0.027	0.32
				P	0.12	0.23	1.02	0.005	0.001	0.03	0.03	0.03	0.01	0.027	0.01	0.023	0.027	0.30
				L	0.13	0.24	1.06	0.006	0.002	0.03	0.02	0.03	0.01	0.023	0.01	0.023	0.027	0.30
3	HOT-ROLLED	OK	N/A	P	0.14	0.22	1.04	0.006	0.0014	0.04	0.02	0.03	0.01	0.023	0.01	0.024	0.027	0.32
				P	0.14	0.23	1.04	0.006	0.0014	0.04	0.02	0.03	0.01	0.020	0.01	0.020	0.028	0.33
				L	0.11	0.26	1.07	0.009	0.002	0.04	0.02	0.03	0.01	0.020	0.01	0.020	0.028	0.33
4	HOT-ROLLED	OK	N/A	P	0.13	0.22	1.06	0.006	0.002	0.04	0.02	0.02	0.01	0.029	0.01	0.029	0.028	0.33
				P	0.13	0.23	1.05	0.006	0.002	0.04	0.02	0.02	0.01	0.020	0.01	0.020	0.028	0.32
				L	0.11	0.26	1.07	0.009	0.002	0.04	0.02	0.03	0.01	0.029	0.01	0.029	0.028	0.33

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σb (PSI)	ELONGATION δ (%)	IMPACT Ak (J) SIZE	AK	Ori/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST		BEND TEST
	strip , L,bo=25mm,Lo=50mm										
1.1	73950	57275	46	N/A			OK	2670	OK		N/A
1.2	73950	57275	41	N/A			OK	2670	OK		N/A
1.3	73950	58000	44	N/A			OK	2670	OK		N/A
1.4	73225	56550	44	N/A			OK	2670	OK		N/A
2	73950	58725	43	N/A			OK	2670	OK		N/A
3	70325	54375	40.5	N/A			OK	3000	OK		N/A
4	70325	53650	45	N/A			OK	3000	OK		N/A

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 EN10204 3.1
4. Hardness certified to NACE MR 0175(Latest Edition)_ISO15156-1:2003
5.TYPE:P-Product analysis L-Ladle analysis.

6" std.

VERIFIED BY
QUALITY MANAGER
WESTLUND

CONFORMS TO SA 106 - B
YEAR Latest 2010 ED
JOB 2011 - 8169.50
ITEM # 22
SIGNED BY 28 March 7/11

Order#: 101454 Seq: 2 PO#: 125562-125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD S6 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELLED END (.237W)

Tenaris

MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Number / Número:	Page / Página:
00030718	1 / 7

Date / Dia: February 01, 2011

Algoma Tubes Inc
947 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 945-8130 tel
(705) 945-8131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.	Customer's Order Item / Orden Cliente - Item: PO # E1-1745	Customer's Reference / Ref. del Cliente: E1-1745	Manufacturer's Works Order N° / Confirmación de Venta: 007468/01
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED / LAMINADO EN CALIENTE SIN COSTURA	Product Type / Tipo de Producto: LINE PIPE SEAMLESS / CONDUCCION SIN COSTURA		Surface / Superficie: VARNISHED / BARNIZADO
Standard or Specification / Normas o Especificaciones: ASTM/ASME/CSA,106/CSA Z245		Steel Grade / Grado de acero: B/290 SS	Ends / Extremos: NORMAL BEVEL / BISELADO NORMAL
Dimensions / Dimensiones: 4.5 X 0.237 INCH / 114.3 X 6.02 MM	Schedule / Cédula: 040	Length / Longitud: 38.02 / 44.00 FT / 11.59 / 13.41 MTS	Quantity / Cantidad: 76 Pcs/Pz — 3267.976 FT — 35247.535 LB / 996.079 MTS — 15988.000 KG	Nominal Weight / Peso Nominal: 10.80 LB/FT / 16.07 KG/M

TENSILE TEST / ENSAYO DE TENSION

Heat N° / Colada N°	Sample N° / Muestra N°	Zone / Zona	Pipe N° / Tubo N°	Specimen condition / Condición de la probeta: Ls	Sc	Type / Tipo	Ori	Specimen dimensions / Dimensiones de la probeta: Size / Tamaño	Area / Sección	Test temp. / ensayo	Y.S. Eul 0.5% Min: 42 000 Max: --	U.T.S. Req. Min: 60 000 Max: 90 499	Y.S./U.T.S. Req. Max. --	Elongation / Alargamiento: Lo	Min.	Obt
								mm	mm2	°C	psi	psi		in	%	%
24086	21778	E1	00019	S	AM	Ss	L	25.40 x 5.80	150.00	RT	55 726	73 931	0.75	2	23.4	33.0
24086	21779	E1	00020	S	AM	Ss	L	25.40 x 5.70	148.60	RT	58 272	75 112	0.78	2	23.3	34.0

AM: As manufactured / Según proceso de fabricación
B: Body / Cuerpo
E1 / E2: Ends of Sampling / Extremos de Muestra
L: Longitudinal / Longitudinal
Lo: Initial length / Longitud inicial
Ls: Location of sample / Ubicación de la muestra
Max: Maximum / Máximo
Min: Minimum / Mínimo
Obt: Obtained / Obtenido
Ori: Orientation / Orientación
Req. Max: Required maximum / Máximo requerido
Req: Required / Requerido
RT: Room temperature / Temperatura ambiente
Sc: Specimen condition / Condición de la probeta
Ss: Strip specimen / Muestra rectangular
U.T.S: Ultimate tensile strength / Resistencia
Y.S: Yield strength / Fluencia

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 23
SIGNED BY DJ March 7/11

4" Std

OK

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original 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 subjected to the law

Este certificado se emite mediante sistema computarizado y es validado con firma electrónica. El certificado original posee impreso el logo Tenaris color verde. En caso de que el poseedor del certificado entregue una copia, deberá garantizar la conformidad con el original haciéndose responsable por cualquier uso ilegal o indebido. Cualquier alteración y/o falsificación estará sujeta a la ley

Order# 101454 Seq: 2 PO#: 125562-125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD S6 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELLED END (237W)

Tenaris

MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Number / Número: 00030718 | Page / Pagina: 2 / 7

Date / Día: February 01, 2011

Algoma Tubes Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 946-8130 tel
(705) 948-8131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.	Customer's Order Item / Orden Cliente - Item: PO # E1-1745	Customer's Reference / Ref. del Cliente: E1-1745	Manufacturer's Works Order N° / Confirmación de Venta: 007468/01
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED / LAMINADO EN CALIENTE SIN COSTURA	Product Type / Tipo de Producto: LINE PIPE SEAMLESS / CONDUCCION SIN COSTURA		Surface / Superficie: VARNISHED / BARNIZADO
Standard or Specification / Normas o Especificaciones: ASTM/ASME/CSA,106/CSA Z245		Steel Grade / Grado de acero: B/290 SS	Ends / Extremos: NORMAL BEVEL / BISELADO NORMAL
Dimensions / Dimensiones: 4.5 X 0.237 INCH / 114.3 X 6.02 MM	Schedule / Cedula: 040	Length / Longitud: 38.02 / 44.00 FT / 11.59 / 13.41 MTS	Quantity / Cantidad: 76 Pcs/Pz; 3267.976 FT 35247.535 LB; 996.079 MTS 15988.000 KG	Nominal Weight / Peso Nominal: 10.80 LB/FT / 16.07 KG/M

CHEMICAL COMPOSITION / COMPOSICION QUIMICA

Heat N° / Colada N°	Sample N° / Muestra N°		Composition % / Composición %																		
			X 100					X 1000										X 10000			X 100
			C	Mn	Si	Cr	Mo	S	P	Ni	V	Cu	Al	Sn	As	Nb	Ti	Ca	B	N	Ce. 2
		H Max	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		H Min	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		P Max	25	135	50	40	15	35	30	400	80	400	--	--	--	110	110	--	10	--	40
		P Min	--	29	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24086	00001	H	15	105	24	4	3	1	11	21	20	39	26	4	2	1	3	15	1	80	34.8
24086	21778	P	14	104	21	4	3	2	10	19	19	44	21	4	2	1	3	9	2	63	33.5
24086	21779	P	14	105	22	3	3	2	10	18	18	49	27	4	2	1	2	11	2	57	33.5

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 23
SIGNED BY DG March 7/11

Ce. 2: Carbon equivalent/Carbono equivalente
H: Heat / Colada
Max: Maximum / Máximo
Min: Minimum / Mínimo
P: Product / Producto

SUPERFICIAL HARDNESS / DUREZA SUPERFICIAL

Heat N° / Colada N°	Sample N° / Muestra N°	Zone / Zona	Ls	External / Externa Scale / Escala: HBW Req. Min: -- Req. Max: 237
24086	21778	E1	B	143

Heat N° / Colada N°	Sample N° / Muestra N°	Zone / Zona	Ls	External / Externa Scale / Escala: HBW Req. Min: -- Req. Max: 237
24086	21779	E1	B	137

B: Body / Cuerpo
E1 / E2: Ends of Sampling / Extremos de Muestra
Ls: Location of sample / Ubicación de la muestra

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original 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 subjected to the law.

Este certificado se emite mediante sistema computarizado y es validado con firma electrónica. El certificado original posee impreso el logo Tenaris color verde. En caso de que el poseedor del certificado entregue una copia, deberá garantizar la conformidad con el original haciéndose responsable por cualquier uso ilegal o indebido. Cualquier alteración y/o falsificación estará sujeto a la ley.

Tenaris

MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Number / Número: 00030718 | Page / Página: 3 / 7

Date / Dia: February 01, 2011

Algoma Tubes Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L3
(705) 949-8120 tel
(705) 945-5131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.	Customer's Order Item / Orden Cliente - Item: PO # E1-1745	Customer's Reference / Ref. del Cliente: E1-1745	Manufacturer's Works Order N° / Confirmación de Venta: 007468/01
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED / LAMINADO EN CALIENTE SIN COSTURA	Product Type / Tipo de Producto: LINE PIPE SEAMLESS / CONDUCCION SIN COSTURA		Surface / Superficie: VARNISHED / BARNIZADO
Standard or Specification / Normas o Especificaciones: ASTM/ASME/CSA,106/CSA Z245		Steel Grade / Grado de acero: B/290 SS	Ends / Extremos: NORMAL BEVEL / BISELADO NORMAL
Dimensions / Dimensiones: 4.5 X 0.237 INCH / 114.3 X 6.02 MM	Schedule / Cédula: 040	Length / Longitud: 38.02 / 44.00 FT / 11.59 / 13.41 MTS	Quantity / Cantidad: 76 Pcs/Pz — 3267.976 FT — 35247.535 LB / 996.079 MTS — 15988.000 KG	Nominal Weight / Peso Nominal: 10.80 LB/FT / 16.07 KG/M

THROUGH WALL HARDNESS / DUREZA EN EL ESPESOR

	Required values / Valores requeridos		Individuals / Individuales Min: – Max: 22.0 Var: –			Average / Promedio Min: – Max: – Var: –		Hardness type HRC / Tipo de dureza				
Heat N° / Colada N°	Sample N° / Muestra N°	Zone / Zona	Pipe N° / Tubo N°	Specimen condition Ls	Specimen condition Sc	Quad.	Scale / Escala	MW 1	MW 2	MW 3	MW Avg.	Var.
24086	21778	E1	00019	B	AM	1	HRBW	77.1	76.0	77.9	77.0	0.0
24086	21779	E1	00020	B	AM	1	HRBW	78.2	78.5	78.2	78.3	0.0

AM: As manufactured / Según proceso de fabricación
Avg: Average / Promedio
B: Body / Cuerpo
E1 / E2: Ends of Sampling / Extremos de Muestra
Ls: Location of sample / Ubicación de la muestra
Max: Maximum / Máximo
Min: Minimum / Mínimo
MW: Middle wall / Centro
Quad: Quadrant / Cuadrante
Sc: Specimen condition / Condición de la probeta
Var: Variation / Variacion

FLATTENING TEST / ENSAYO DE APLASTAMIENTO

Standard / Norma:

Heat N° / Colada N°	Sample N° / Muestra N°	Pipe N° / Tubo N°	Zone / Zona	Result / Resultado
24086	21778	00019	E1	Good / Bueno

Standard / Norma:

Heat N° / Colada N°	Sample N° / Muestra N°	Pipe N° / Tubo N°	Zone / Zona	Result / Resultado
24086	21779	00020	E1	Good / Bueno

E1 / E2: Ends of Sampling / Extremos de Muestra

CONFORMS TO SA 106 - B
YEAR 2010 ED
JOB # 2011 - 8169 - 50
ITEM # 23
SIGNED BY DS March 7/11

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original 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 subjected to the law.

Este certificado se emite mediante sistema computarizado y es validado con firma electrónica. El certificado original posee impreso en rojo Tenaris color verde. En caso de que el poseedor del certificado entregue una copia, deberá garantizar la conformidad con el original haciéndose responsable por cualquier uso ilegal o indebido. Cualquier alteración y/o falsificación estará sujeto a la ley.

FOR03171

Order#: 101454 Seq: 2 PO#: 125562-125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD 56 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELLED END (237W)

Order#: 101454 Seq: 2 PO#: 125562-125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD S6 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELLED END (23/W)

Tenaris

MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Number / Número:	Page / Página:
00030718	4 / 7

Date / Día: February 01, 2011

Algoma Tubes Inc
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 949-8130 tel
(705) 943-8131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.	Customer's Order Item / Orden Cliente - Item: PO # E1-1745	Customer's Reference / Ref. del Cliente: E1-1745	Manufacturer's Works Order N° / Confirmación de Venta: 007468/01
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED LAMINADO EN CALIENTE SIN COSTURA	Product Type / Tipo de Producto: LINE PIPE SEAMLESS CONDUCCION SIN COSTURA		Surface / Superficie: VARNISHED BARNIZADO
Standard or Specification / Normas o Especificaciones: ASTM/ASME/CSA,106/CSA Z245		Steel Grade / Grado de acero: B/290 SS	Ends / Extremos: NORMAL BEVEL BISELADO NORMAL

Dimensions / Dimensiones:	Schedule / Cédula:	Length / Longitud:	Quantity / Cantidad: 76 Pcs/Pz		Nominal Weight / Peso Nominal:
4.5 X 0.237 INCH 114.3 X 6.02 MM	040	36.02 / 44.00 FT 11.59 / 13.41 MTS	3267.976 FT 996.079 MTS	36247.535 LB 15988.000 KG	10.80 LB/FT 16.07 KG/M

HYDROSTATIC TEST / PRUEBA HIDRAULICA

Pressure / Presión		Time / Tiempo	Results / Resultado
Unit / Unidad.	Value / Valor	Seconds / Segundos	
psi	2,655	5	Satisfactory / Satisfactorio

HEAT TREATMENT / TRATAMIENTO TERMICO

Heat treatment / Tratamiento térmico: Pipe / Tubo
Quench media of heat treatment process / Medio de enfriamiento del tratamiento térmico: n/a
Temperature Scale / Escala de Temperatura: celcius

Type Tipo
as rolled

SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

Supplementary Information Información Suplementaria	
Manufactured by ALGOMA TUBES Steel making process: Electric Arc Furnace-Ladle Furnace-Continuous Casting Machine Fully Killed Steel	Fabricado por ALGOMA TUBES Fabricación del acero: Horno de Arco Eléctrico-Horno de Afinacion-Maquina de Colada Continua. Acero calmado con aluminio

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Order#: 101454 Seq: 2 PO#: 125562-125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD S6 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA 106-B DRL BEVELLED END (.23/.W)

Tenaris

MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

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00030718	5 / 7

Date / Día: February 01, 2011

Algoma Tubes Inc
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 945-8130 tel
(705) 946-8131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.	Customer's Order Item / Orden Cliente - Item: PO # E1-1745	Customer's Reference / Ref. del Cliente: E1-1745	Manufacturer's Works Order N° / Confirmación de Venta: 007468/01
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED LAMINADO EN CALIENTE SIN COSTURA	Product Type / Tipo de Producto: LINE PIPE SEAMLESS CONDUCCION SIN COSTURA		Surface / Superficie: VARNISHED BARNIZADO
Standard or Specification / Normas o Especificaciones: ASTM/ASME/CSA,106/CSA Z245		Steel Grade / Grado de acero: B/290 SS	Ends / Extremos: NORMAL BEVEL BISELADO NORMAL
Dimensions / Dimensiones: 4.5 X 0.237 INCH 114.3 X 6.02 MM	Schedule / Cédula: 040	Length / Longitud: 38.02 / 44.00 FT 11.59 / 13.41 MTS	Quantity / Cantidad: 76 Pcs/Pz 3267.976 FT 35247.535 LB 996.079 MTS 15988.000 KG	Nominal Weight / Peso Nominal: 10.80 LB/FT 16.07 KG/M

SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

Supplementary Information Información Suplementaria	
Material free from Mercury contamination Not repaired by welding Non destructive test. Satisfactory Inspection method NDE - UT - WALL - FLVI - MPI Inspection Description EMI & UT NOTCH 5% OD L&T, 10% ID L&TUT LAMINATION CONTROLWALL THICKNESS VERIFICATION EMI & UT Material meets requirements of NACE MR0103-2007, MR0175 / ISO 15156, CAT 1SS, EN10204 2.1, 2.2, 3.1 OCT/2004, CSA Z245.1 APRIL/2007 ASTM A106-10, ASME SA106-2007. RAILCAR NKCR3712 ALGOMA Ref: 040452	Material libre de contaminación de Mercurio No reparado por soldadura Control no destructivo. Satisfactorio Método de inspección NDE - UT - WALL - FLVI - MPI Descripción de inspección EMI & UT NOTCH 5% OD L&T, 10% ID L&TUT LAMINATION CONTROLWALL THICKNESS VERIFICAT ON EMI & UT Material meets requirements of NACE MR0103-2007, MR0175 / ISO 15156, CAT 1SS, EN10204 2.1, 2.2, 3.1 OCT/2004, CSA Z245.1 APRIL/2007 ASTM A106-10, ASME SA106-2007. RAILCAR NKCR3712 ALGOMA Ref: 040452

MARKING / MARCACION

Marking Marcacion	
PIPE STENCIL: TENARIS AT #FE3 ASTM A106 ASME SA106 CSA Z245.1-07 GR B/290CAT 1 SS 114.3 6.02 S 15.3 /NDE HEAT #C**** #M**** #N***** #K**** 16.08 KG/M MADE IN CANADA WHERE : Heat number #C****; Net weigth of pipe in Kgs #K****;	MASCARILLA DE TUBO ESTARCIDO: TENARIS AT #FE3 ASTM A106 ASME SA106 CSA Z245.1-07 GR B/290CAT 1 SS 114.3 6.02 S 18.3 /NDE HEAT #C**** #M**** #N***** #K**** 16.08 KG/M MADE IN CANADA DONDE : Numero de colada #C****; Peso real de tubo en Kgs #K****;

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Date / Dia: February 01, 2011

Algoma Tubes Inc
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 946-8120 tel
(705) 540-3131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.	Customer's Order Item / Orden Cliente - Item: PO # E1-1745	Customer's Reference / Ref. del Cliente: E1-1745	Manufacturer's Works Order N° / Confirmación de Venta: 007468/01
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MARKING / MARCACION

Marking Marcacion	
length Mts #M****:	Longitud del tubo en Mts #M****:
Pipe number #N*****:	Número de secuencia #N*****:

SUMMARY REPORT / REPORTE RESUMEN

Heat N° Colada N°	Quantity Cantidad	Length Longitud		Weight Peso
	(Pieces)	(ft)	(m)	(Tons)
24086	76	3,267.98	996.079	15.988

Average length per pipe Longitud promedio por tubo		Nominal weight per pipe Peso nominal por tubo	
(ft)	(m)	(lb/ft)	(kg/m)
43	13.106	16.786	16.051

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Order#: 101454 Seq: 2 PO#: 125562 125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD S6 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELLED END (23/W)

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Date / Dia: February 01, 2011

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P6C 1L9
(705) 945-8130 tel
(705) 945-8131 fax

Customer / Cliente: COMCO PIPE AND SUPPLY CO.

Customer's Order Item / Orden Cliente - Item: PO # E1-1745

Customer's Reference / Ref. del Cliente: E1-1745

Manufacturer's Works Order N° / Confirmación de Venta: 007468/01

Manufacturing Process / Proceso de Manufactura:
SEAMLESS HOT ROLLED
LAMINADO EN CALIENTE SIN COSTURA

Product Type / Tipo de Producto:
LINE PIPE SEAMLESS
CONDUCCION SIN COSTURA

Surface / Superficie:
VARNISHED
BARNIZADO

Standard or Specification / Normas o Especificaciones:
ASTM/ASME/CSA,106/CSA Z245

Steel Grade / Grado de acero:
B/290 SS

Ends / Extremos:
NORMAL BEVEL
BISELADO NORMAL

Dimensions / Dimensiones:	Schedule / Cédula:	Length / Longitud:	Quantity / Cantidad: 76 Pcs/Pz		Nominal Weight / Peso Nominal:
4.5 X 0.237 INCH	040	38.02 / 44.00 FT	3267.976 FT	35247.535 LB	10.80 LB/FT
114.3 X 6.02 MM		11.59 / 13.41 MTS	996.079 MTS	15988.000 KG	16.07 KG/M

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance with purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Por el presente certificamos que el material aquí descrito ha sido fabricado, muestreado, ensayado e inspeccionado de acuerdo a los requisitos de su orden de compra. Este certificado no es, ni puede ser usado, como una declaración de origen.

Quality System Certified N° 11095/0/37
The certification covers the Tenaris Quality Management System exclusively

CUSTOMER , THIRD PARTY

INSPECTION COMPANY
COMPAÑIA DE INSPECCIÓN

NOT APPLY
Employee Name: N/A

TENARIS QUALITY DEPARTMENT SIGNATURE

QUALITY CERTIFICATION DEPT.
DEPTO. DE CERTIFICACIÓN DE CALIDAD
VAN BOERDONK Dave

CHIEF OF QUALITY CERTIFICATION DEPT
RESPONSABLE DEL DEPTO. DE CERTIFICACIÓN DE CALIDAD
PEI Dunguo

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FOR03171

Order#: 101454 Seq: 2 PO#: 125562-125-01 Heat#: 24086 Mill: Tenaris - Algoma
Part#: P 4 STD S6 D B Part Desc: Pipe 4 (114.3mm O.D.) STANDARD SMLS A/SA106-B DRL BE-VE LLHD END (237W)

Order#: 101454 Seq: 1 PO#: 125562-125-01 Heat#: J0K8385 Mill: Sumitomo
Part#: P 3 STD S6 D B Part Desc: Pipe 3 (88.9mm O.D.) STANDARD SMLS A/SA106 B DRL BEVELLED END (216W)

住友金属 SUMITOMO METALS
SUMITOMO METAL INDUSTRIES, LTD.
WAKAYAMA STEEL WORKS (KAINAN)
260-100, FUKOO, KAINAN, JAPAN

INSPECTION CERTIFICATE

CERTIFICATE NO. :BYYF0717-02 PAGE : 1/2 DATE :2010-10-27

CUSTOMER :COMCO PIPE AND SUPPLY COMPANY
ORDER NO. :981 ITEM NO. 9
SHIPPER :SUMITOMO CORPORATION 057 KEF 2066/1 OP15S091708
COMMODITY :SEAMLESS STEEL PIPE WITH BEVELLED ENDS 30 DEG.
STANDARD :CSA Z245.1-C1 GR.290 ASTM A106-08 / ASME 2007(A09) SA-106 GR.B NDE
SPECIFICATION :COMCO 09.20.99 REV.2
MILL WORK NO. :BYYF0717 O.D. :88.9mm W.T. :5.5mm LENGTH:12.2m QUANTITY:35pcs. MASS:4823kg

HEAT NO. :J0K8385 ←
PRODUCTS PCS. :35

MELTING :BASIC OXYGEN
DEOXIDATION :KILLED

CHEMICAL COMPOSITION(%)

		*1	C	Si	Mn	P *2	S *2	Cu	Cr	Ni	Mo	Ti	V	Nb	B *2	*U4	*CEQ	*CEL	*MC *3
SPEC. MIN.		R	-	10	29	-	-	-	-	-	-	-	-	-	-	-	-	-	3
MAX.		R	26	50	106	30	35	40	40	40	15	11	8	11	1	100	40	-	-
HEAT NO.																			
→ J0K8385		L	18	24	91	14	6	2	5	2	1	0	0	1	0	10	35	35	5
		P	18	25	92	14	5	2	5	2	1	0	0	1	0	10	35	35	5
		P	18	25	91	14	5	2	5	2	1	0	0	1	0	10	35	35	5

*1 R:LADLE & PRODUCT ANALYSIS L:LADLE ANALYSIS P:PRODUCT ANALYSIS *2:X1000 *3:X1 OTHER:X100
*U4:Cu+Ni+Cr+Mo+V *CEQ:C+F[Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B]F=COEFFICIENT BY CSA STANDARD
*CEL:C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15 *MC:Mn/C

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 24
SIGNED BY [signature] March 7/11

3" Std

OK

TENSILE TEST

		*1 *2	YS *3		TS *3		EL %
SPEC. MIN.		L B	M	290	M	415	23
MAX.		L B	M	-	M	-	-
HEAT NO. J0K8385		L B	M	362	M	519	36

TYPE OF SPECIMEN:STRIP 25mm WIDTH *1 SAMPLING DIRECTION L:LONGITUDINAL *2 SAMPLING POSITION B:BASE METAL
*3 UNIT M:MPa GAUGE LENGTH:50.0mm KIND OF YS:0.5% EXTENSION UNDER LOAD

HARDNESS TEST(HV 10)

		*1 *2	*3		
SPEC. MIN.		B C	-		
MAX.		B C	210		
HEAT NO.			(1)	(2)	(3)
J0K8385		B C	146	144	143

*1 SAMPLING POSITION B:BASE METAL *2 LOCATION C:CROSS SECTION *3 EACH

FLATTENING TEST: ACCEPTABLE
VISUAL & DIMENSIONS: ACCEPTABLE
HYDROSTATIC TEST 20.7MPaX5sec. : ACCEPTABLE
ULTRASONIC EXAMINATION: ACCEPTABLE

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH ABOVE STANDARD AND SPECIFICATION AND SATISFIES THE REQUIREMENTS.

T. Kondo
MANAGER, QUALITY ASSURANCE SECTION

<An Important Message To Our Customers>
This certification is intended only for products listed. Modification to or unauthorized use of this certification is strictly prohibited. Offences may be regarded as forgery of documents and be subject to criminal prosecution.
If you have any questions on this certification, you can contact us by facsimile or e-mail as shown below:
Fax. No. : +81-3-4416-6789 E-mail:pipe-ipp@sumitomometals.co.jp

NO. 072325K10

Order#: 101454 Seq: 1 PO#: 125562-125-01 Heat#: j0k8385 Mill: Sumitomo
Part#: P 3 STD S6 D B Part Desc: Pipe 3 (88.9mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELLED END (215W)

住友金属 SUMITOMO METALS

SUMITOMO METAL INDUSTRIES, LTD
WAKAYAMA STEEL WORKS (KAINAN)
380-100, FUNOO, KAINAN, JAPAN

INSPECTION CERTIFICATE

CERTIFICATE NO. BYYF0717-02 PAGE : 2/2 DATE : 2010-10-27

NACE MR0103-2007/MR0175/ISO15156-2/2003: SATISFACTORY
EN 10204 3.1

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 24
SIGNED BY March 7/11

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH ABOVE STANDARD AND SPECIFICATION AND SATISFIES THE REQUIREMENTS.

T. Kondo
MANAGER, QUALITY ASSURANCE SECTION

<An Important Message to Our Customers>
This certification is intended only for products listed. Modification to or unauthorized use of this certification is strictly prohibited. Offences may be regarded as forgery of documents and be subject to criminal prosecution.
If you have any questions on this certification, you can contact us by facsimile or e-mail as shown below.
Fax. No. : +81-3-4416-6789 E-mail:pipe-ipp@sumitomometals.co.jp

NO. 072325K10

1" S-160 SEAMLESS STEEL PIPE
A106 GR B P.E. (S.R.L.)

ReX#N2[illegible] WB02-4413 01 Item# 1
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment Seq # S10-1369

PO/PO# 1068
2010 ED
2011-8169-50 1" Sch 160
25
SIGNED BY 28 April 7/11

Contract No CI-10-181
PO.NO. CI-10-181
Name of Customer TRANS AM PIPING PRODUCTS LTD.,
L/C NO. DPCHCV012667
Description PIPE
TOTAL

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL INSPECTION CERTIFICATE

Date JUN 21,2010
Page 1/1

Add 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax +86 734 8873739 8872942
Cable 6993
P.C 421001

SPEC:ASTM A106-B-2006 ,ASME SA106-B-2007 ,API 5L B-2007,CSA Z245.1-2007 Gr.241 Cat I,NACE MR0175-2003/ISO 15156

CERTIFICATE NO 10-1-06-98

NO	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEETS	QUANTITY (MT)	ACTUAL WEIGHT(MT)
1	10-A5703	WB02-4413	B	33.4 X 6.35 A106 GR B P.E 160	[redacted]				
2	10-A5704	10105849	B	48.3 1/2 X 7.14 A106 GR B P.E 160					

NO	DELIVERY CONDITION(≥650℃)	NONDESTRUCTIVE TEST ET	NONDESTRUCTIVE TEST UT	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	NB	CE
1	NORMALIZED	OK		0.20	0.24	0.57	0.020	0.006	0.01	0.01	0.01	0.01	0	0	0	0	0.30
2	NORMALIZED	OK		0.19	0.24	0.48	0.023	0.012	0.02	0.03	0.05	0.01	0.01	0	0	0	0.29

NO	T.S. (MPA)	Y.S (MPA)	E L. (%)	Ak (J) IMPACT SIZE	AK	Ori/Te	HARDNESS BRINNEL (HB)	HYDROSTATIC TEST (MPA)	FLATTEN TEST	BEND TEST
		Full, L, Lo=50mm								
1	480/495	300/305	30.0/28.5				163/166	17.0	OK	OK
2	525/525	380/360	29.5/29.5				164/164	17.0	OK	OK

REMARKS 1 We hereby certify that this certificate of quality is issued and signed by the manufacture
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 SPECIMEN SIZE (Pipe end, Longitudinal, Gauge Length=2")
A For pipes ≤ 1" full length specimen were used,
B For pipes > 1" longitudinal strip specimen were used, the width of the gauge length portion is 3/4"
5 NORMALIZED:900°C
6 DIMENSION STANDARD:ASME B36.10
7 MANUFACTURE METHOD:COLD DRAWN

QUALITY MANAGER [redacted]

HENGYANG VALIN STEEL TUBE CO.,LTD. HUNAN CHINA

OK

Customer: COMMERCIAL METALS COMPANY DBA CMC DALLAS TRADING
6565 N MACARTHUR BLVD.,SUITE 800,IRVING,TX 75039,USA

HENGYANG STEEL TUBE GROUP INTERNATIONAL TRADING INC.

MILL TEST CERTIFICATE

Add: 10 Daitxincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993

Description:
PRIME NEWLY PRODUCED CARBON STEEL SEAMLESS LINE PIPE
L/C NO 118572/290836 P.O.NO:62430 LOT NO:1
TOTAL: 4387 PIECES, 130 BUNDLES, 257.754MT

Date: SEP 07,2009
Page: 2/3

P.C. 421001

SPEC: ASTM/ASME SA53/A53/A106/SA106/API 5L,PSL-1 GRADE B,CSA Z245.1 GRADE 290

CERTIFICATE NO: 09-02-0905

ITEM NO	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)
8	997302502	0911799	X42	2" x 0.344" x SRL	5	145	3045	10.313
9	997202608	0924156	X42	2" x 0.154" x SRL	14	840	17640	29.249
10	997302607	0911794	X42	2" X 0.154" x DRL	2	69	2760	4.576
10	998300129	0923934	X42	2" X 0.154" x DRL	1	20	800	1.326
11	997302609	0814695	X42	2" X 0.218" x DRL	2	50	2000	4.56
12	997102615	0911796	X42	2" X 0.218" x SRL	4	176	3696	8.428
12	997102616	0924155V	X42	2" X 0.218" x SRL	8	352	7392	16.856
12	997102617	0911794	X42	2" X 0.218" x SRL	7	276	5796	13.217
12	997102618	0911795	X42	2" X 0.218" x SRL	6	264	5544	12.642
13	997302613	0924157	X42	3" X 0.216" x DRL	8	124	4960	17.066
		TOTAL:			57	2316	53643	118.233

2" Std
CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 26
SIGNED BY [illegible] March 7/11

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST ET	NONDESTRUCTIVE TEST MPI	TYPE	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Ti	Nb	CE
8	HOT-ROLLED	OK	N/A	P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
9	HOT-ROLLED	OK	N/A	L	0.15	0.31	1.10	0.012	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.35
				P	0.15	0.32	1.11	0.015	0.002	0.07	0.03	0.05	0.02	0.023	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	P	0.15	0.31	1.12	0.015	0.002	0.07	0.03	0.05	0.02	0.023	0.01	0.003	0.001	0.36
				L	0.14	0.31	1.16	0.016	0.003	0.08	0.04	0.06	0.02	0.027	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.15	0.009	0.005	0.05	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.35
				P	0.15	0.30	1.15	0.009	0.005	0.05	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
11	HOT-ROLLED	OK	N/A	L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
				P	0.15	0.35	1.09	0.015	0.006	0.07	0.02	0.04	0.01	0.029	0.01	0.003	0.001	0.37
12	HOT-ROLLED	OK	N/A	P	0.15	0.36	1.10	0.015	0.006	0.07	0.02	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				L	0.14	0.37	1.14	0.014	0.004	0.06	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.16	0.35	1.12	0.013	0.005	0.08	0.03	0.03	0.01	0.042	0.01	0.005	0.001	0.36
				P	0.16	0.35	1.12	0.013	0.005	0.08	0.03	0.03	0.01	0.042	0.01	0.005	0.001	0.36
12	HOT-ROLLED	OK	N/A	L	0.17	0.39	1.15	0.015	0.002	0.06	0.03	0.03	0.04	0.040	0.01	0.006	0.001	0.38
				P	0.15	0.28	1.09	0.010	0.004	0.05	0.02	0.04	0.01	0.029	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.10	0.010	0.004	0.05	0.02	0.04	0.01	0.029	0.01	0.002	0.001	0.35
				L	0.16	0.31	1.20	0.012	0.003	0.06	0.03	0.05	0.01	0.023	0.01	0.003	0.001	0.37
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.08	0.010	0.003	0.05	0.02	0.04	0.01	0.029	0.01	0.002	0.001	0.35
				P	0.15	0.28	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.029	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	L	0.13	0.32	1.19	0.012	0.005	0.06	0.03	0.05	0.02	0.026	0.01	0.003	0.001	0.36
				P	0.16	0.29	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.05	0.01	0.029	0.01	0.003	0.001	0.37
13	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.11	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				P	0.16	0.28	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
13	HOT-ROLLED	OK	N/A	L	0.13	0.31	1.14	0.010	0.003	0.06	0.03	0.05	0.01	0.027	0.01	0.003	0.001	0.34
				P	0.13	0.31	1.16	0.009	0.003	0.05	0.02	0.03	0.02	0.023	0.01	0.005	0.001	0.34
				P	0.13	0.31	1.15	0.009	0.003	0.05	0.02	0.03	0.02	0.024	0.01	0.005	0.001	0.34
				L	0.13	0.30	1.16	0.015	0.003	0.07	0.03	0.05	0.02	0.031	0.01	0.002	0.001	0.35

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (Mpa) strip L,bo=19mm,Lo=50mm	ELONGATION δ (%)	IMPACT Ak (J) SIZE	IMPACT Ak (J) AK	IMPACT Ak (J) On/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
8	68875	49300	41		N/A		OK	3000	N/A	OK
9	68975	45675	39		N/A		OK	3000	N/A	OK
10	69600	50750	37		N/A		OK	3000	N/A	OK
10	70325	53650	37		N/A		OK	3000	N/A	OK
11	68150	47850	33.5		N/A		OK	3000	N/A	OK
12	69600	52200	34.5		N/A		OK	3000	N/A	OK
12	68875	50025	33		N/A		OK	3000	N/A	OK
12	71050	50750	32.5		N/A		OK	3000	N/A	OK
12	69600	52200	33.5		N/A		OK	3000	N/A	OK
13	68875	49300	37		N/A		OK	3000	N/A	OK

REMARKS: 1 We hereby certify that the material has been manufactured, sampled, tested and inspected in accordance with the required standards.
2 Properties compliance to EN10204 3.1.B
3 BRINELL /Rockwell hardness certified to NACE MR 0175-03 and MR 0103-03.
4. TYPE: P-Product analysis L-Ladle analysis.
5.CHEMICAL,MECHANICAL AND PHYSICAL PROPERTIES ARE IN COMPLIANCE WITH CONTRACTED QUALITY AND TOLERANCES AS PER OMMERCIAL METALS COMPANY-DBA CMC DALLAS TRADING DT PURCHASE ORDER NUMBER 62430
6 MTR AND STENCILING PER CSA 245.1 GRADE 290 LATEST EDITION,PSI PER API 5L SPECIFICATION LATEST EDITION ON MTR AND PIPE.

QUALITY MANAGER:

108914

MTR View

12/16/2009

https://gpts.nov.com/MTR/gifviewer.aspx?docIDs=189622

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 27
SIGNED BY DQ April 7/11

OK

1" x H

YANGZHOU LONTRIN STEEL TUBE CO., LTD
INSPECTION CERTIFICATE (EN10204-3.1B)

CUSTOMER : MARUBENI-ITOCHU TUBULARS CANADA LTD （COMCO)

PRODUCT: SEAMLESS CARBON STEEL PIPE

ISO. REGISTRATION NO: 44 100 072544

CONTRACT NO: TC8224A/B

PO:852

SPEC: ASTM / ASME A / SA106 GR.B （2010）/ API 5L (44th edition) PSL-1 GR.B MR0175/ISO15156-2003 & NACE MR0103-2007

CERTIFICATE NUMBER: 05067A-04

TOTAL: 21 BUNDLES 1874 PIECES 35972 KG PACKING IN BUNDLES

NO.	HEAT NO.	LOT NO.	STEEL GRADE	SIZE (MM)	PCS	WEIGHT Kg	CHEMICAL COMPOSITION (Ladle Analysis)%											
							C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V.	Al	Ti
1	006-42	W60	A106B	33.4X3.38X6400	364	5828	0.19	0.27	0.54	0.009	0.007	0.04	0.02	0.10	0.001	0.007	0.006	0.02
2	006-42	W61	A106B	33.4X3.38X6400	238	3795	0.19	0.27	0.54	0.009	0.007	0.04	0.02	0.10	0.001	0.007	0.006	0.02
3	006-41	728	A106B	33.4X4.55X6400	364	7540	0.23	0.25	0.52	0.006	0.010	0.01	0.01	0.02	0.002	0.003	0.005	0.04
4	006-41	1C282	A106B	33.4X4.55X6400	180	3729	0.23	0.25	0.52	0.006	0.010	0.01	0.01	0.02	0.002	0.003	0.005	0.04
5	006-41	W12	A106B	33.4X4.55X6400	364	7540	0.23	0.25	0.52	0.006	0.010	0.01	0.01	0.02	0.002	0.003	0.005	0.04
6	006-41	W13	A106B	33.4X4.55X6400	364	7540	0.23	0.25	0.52	0.006	0.010	0.01	0.01	0.02	0.002	0.003	0.005	0.04

NO.	MECHANICAL PROPERTIES				TECHNOLOGICAL PROPERTIES			NONDESTRUCTIVE TEST			SURFACE QUALITY		DIMENSION TOLERANCE	
	ReL (MPa) YIELD STRENGTH	Rm (MPa) TENSILE STRENGTH	ELONGATION A%	HARDNESS HRB	FLATTENING TEST	FLARING TEST	BENDING	H.T Hold Time (5 Sec.)	ET	UT	IN	OUT	O.D.	W.T.
1	350/335	480/475	42.5/43	72/73	—	—	Satisfactory	5MPA	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
2	335/325	480/470	40/43	73/72	—	—	Satisfactory	5MPA	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
3	295/300	460/465	49.5/50.5	72/72.5	—	—	Satisfactory	6MPA	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
4	275/275	430/440	53/52	71/72	—	—	Satisfactory	6MPA	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
5	290/285	445/450	44/43	73.5/72.5	—	—	Satisfactory	6MPA	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
6	280/290	440/450	45/43	72.5/73.5	—	—	Satisfactory	6MPA	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory

REMARKS: 1.Steel making process : Cold drawn. 2 . Steel fully killed. 3.Heat treatment : Normalizing 900-930℃, Hold time 30Min.

MANAGING REPRESENTATIVE: Xiao Dong Yuan

STAMPER: TEST CERTIFICATE

DATE: October 15, 2010

Order# 101454 Seq. 4 PO# 125562-125-01 Heat# 006-41 Mill: Yangzhou Lontin Steel Tube Co.,Ltd
Part#: P 1 XS S6 S PL Part Desc: Pipe 1 (33.4mm O.D.) EX1RA HEAVY SMLS A/SA106-B SRL PLAIN END (L)

WUXI DINGYUAN PRECISION STEEL PIPE CO., LTD

OK

[illegible] pieces [illegible] bundles [illegible]
25-May-08

SPECIFICATION: API 5L B PSL 1/ ASTM/ASME A106B/SA106B -2004 NACE MRO-175-2003

CERTIFICATE NO:080525DYWF080001-2

NO	HEAT NO	HEAT NO	STEEL GRADE	SIZE	QUANTITY BUNDLES	QUANTITY PIECES	QUANTITY FEET	QUANTITY WEIGHT (M
1	05805038	W881-1295	GR.B	6 S160 SRL	43	126	2 650	12 347
2	05805009	W881-1286		6 XXH SRL	28	83	1 743	42 080
3	51080405-1	→ 007120208		1/2 S160 SRL	2	142	2 982	1 770
4	51080417-7	008030059		1 S160 SRL	4	244	5 124	6 615
5								
6								
7								
8								
9								
10								

NO	DELIVERY CONDITION	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Cr	Ni	Mo	Ti	Nb	V	NONDESTRUCTIVE TEST EDDY CURRENT TEST	ULTRASONIC TEST
1	COLD DRAWN	0.19	0.19	0.51	0.014	0.003	0.08	0.06	0.04	0.012	/	/	0.002	OK	/
2	COLD-DRAWN	0.19	0.19	0.51	0.006	0.006	0.09	0.04	0.03	0.013	/	/	0.002	OK	/
3	COLD-DRAWN	0.18	0.20	0.61	0.009	0.004	0.13	0.06	0.05	0.013	/	/	0.001	OK	/
4	COLD-DRAWN	0.20	0.22	0.52	0.011	0.004	0.11	0.04	0.04	0.013	/	/	0.002	OK	/
5															
6															
7															
8															
9															
10															

NO	YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	ELONGATION GL=50mm in %	FLATTEN TEST	CHARPY IMPACT TEST Temp	Dime(mm)	J	HARDNESS HRB	HYDROSTATIC TEST (PSI)	HEAT TREATM
1	44365 / 45095	66180 / 69090	37.0/36.0	OK	/	/	/	78	2800	Normalized and
2	43645 / 45820	66915 / 69825	36.0/33.5	OK	/	/	/	77	2800	
3	42915 / 45825	69090 / 70545	32.0/30.0	OK	/	/	/	76	900	
4	46540 / 48000	66915 / 69090	33.5/33.0	OK	/	/	/	78	950	
5										
6										
7										
8										
9										
10										

We hereby certify that this certificate of [illegible] issued and signed by the manufacturer
We hereby certify that the properties described herein meet the requirement of the above spec
We hereby certify that this certificate is issued accordance with EN10204 3.1.B
Origin: Made in China

Issued By: [illegible]

QUALITY MANAGER

1/2" 160

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB. 2011-8169-50
ITEM # 28
SIGNED BY April 7/11

125-001

72175210/93231767,
93232517

PO#123791

T# 10-0333

検 査 成 績 表
(MILL CERTIFICATE)

需要家：
(CUSTOMER) RYERSON CANADA INC.
注 文 者： 三京物産株式会社殿
(SUPPLIER) (SANKYO&CO., LTD.)
品 名：
(COMMODITY) SEAMLESS STAINLESS STEEL COLD DRAWN TUBE
ASTM A269 ASTM/ASME A213/SA213 (A.W.),TP316/316L

三京不銹鋼管(沈陽)有限公司
SANKYO STAINLESS TUBE(SHEN YANG) CO., LTD.
中国・瀋陽市経済技術開発区玫瑰街115号
(NO.115 MEIGUI STREET, SUJIATUN DISTRICT, SHENYANG, P.R. CHINA)

発 行 日： 2010,05,04
(DATE OF ISSUE)
証 明 書 番 号： 10-0333
(CERTIFICATE NO.)
需要家管理番号： P.O.#674256
(CUSTOMER ORDER NO.)

契 約 番 号： TU4CA04-A
(CONTRACT NO.)

寸法: 1/2 " OD × 0.035 " WT × 20' LG
(SIZE)

CASE NO. : 02,03,04

製作番号 (Mfg. No.) (三京) (SANKYO)	ロット番号 (Lot No.)	製造番号 (Mfg. No.)	鋼種番号 (Heat No.)	数量(Quantity) 本数 (No.of Pcs.)	重量 (Mass)	延長 (Total Length)	引張試験(Tension Test) 0.2%耐力 (0.2% Y.S)	引張り強さ (T.S)	伸び (E)	硬さ試験 (Hardness Test)	結晶粒度 (Grain Size)		
	指定単重/Z(Unit Designated)			本(Pcs)	kg	m	MPa	MPa	(%)	HRB			
	規 格 (Specification)		最小(Min)				170	485	35				
			最大(Max)										
10-04-039		72175210	00910609 ←	139	224		295	600	61.1	75.0		一ん平試験 (Flattening)	GOOD
							300	605	59.4	75.3		押し広げ試験 (Flaring)	GOOD
10-04-039		72175210	00910652	13	21		290	600	59.4	74.2		外観寸法試験 (Measurement&surface)	GOOD
10-04-053		72175210	00910740	108	174		290	595	61.1	73.9		渦流探傷試験 (Eddy Current)	GOOD
							290	595	62.0	74.1		組織試験 (Microscopic)	—
			TOTAL	260	419			1/2" 20 BWG Tubing				粒界腐食試験 (Intergranular Corrosion Test) ASTM A262 PRACTICE B	GOOD

化学成分表 (Chemical Composition) %

鋼種番号 (Heat No.)	C × 100	Si × 100	Mn × 100	P × 1000	S × 1000	Ni × 100	Cr × 100	Mo × 100
最小(Min)						1000	1600	200
最大(Max)	3.5	100	200	45	30	1400	1800	300
00910609	2.5	33	130	29	3	1001	1604	202
00910662	3.0	36	118	27	2	1013	1626	205
00910740	2.4	32	120	26	2	1012	1617	206

CONFORMS TO SA 213 TP 316/316L
YEAR 2010 ED
JOB. 2011-8169-50
ITEM # 29
SIGNED BY 89 April 14/11

備考(Remarks)
SOLUTION HEAT TREATMENT
1100℃ × 2.32Min/W.Q
EN-10204-3.1
NACE MR 01-75
FREE FROM MERCUR CONTAMINATION

上記注文品は、御指定の規格又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。
(IT IS HEREWITH CERTIFIED THAT THE ABOVE MATERIALS ARE SATISFACTORY IN COMPLIANCE WITH THE REQUIREMENTS SPECIFIED IN THE CONTRACT.)

総工場長
(MANAGER OF QUALITY SYSTEM SECTION)

Ryerson 7/26/2010 5:18 PAGE 001/002 Fax Server
ALCO GAS OIL PRODUCTION EQUIPMENT LTD P.O. 123791 125-01 S.O. 486736

125-001 72175150/93234242, 56, 39, 61

T# 10-0692

PO # 127628

検 査 成 績 表
(MILL CERTIFICATE)

発 行 日： 2010,07,29
(DATE OF ISSUE)

証 明 書 番 号： 10-0692
(CERTIFICATE NO.)

需要家管理番号： P.O.#681253
(CUSTOMER ORDER NO.)

需 要 家：
(CUSTOMER) RYERSON CANADA INC.

注 文 者： 三京物産株式会社殿
(SUPPLIER) (SANKYO&CO., LTD.)

品 名：
(COMMODITY) SEAMLESS STAINLESS STEEL COLD DRAWN TUBE
ASTM A269 ASTM/ASME A213/SA213 (A.W.), TP316/316L

三京不銹鋼管(沈陽)有限公司
SANKYO STAINLESS TUBE(SHEN YANG) CO., LTD.
中国・瀋陽市蘇家屯区玖瑰街115号
(NO.115 MEIGUI STREET, SUJIATUN DISTRICT, SHENYANG, P.R. CHINA)

契 約 番 号：T07CA20-A
(CONTRACT NO.)

寸法: 3/8 " OD × 0.035 " WT × 20' LG
(SIZE)

製作番号 (Mfg. No.) (三京) (SANKYO)	ロット番号 (Lot No.)	製造番号 (Mfg. No.)	製鋼番号 (Heat No.)	数量(Quantity) 本数 (No. of Pcs.)	重量 (Mass)	延長 (Total Length)	引張試験(Tension Test) 0.2%耐力 (0.2% Y. S.)	引張り強さ (T. S.)	伸び (E)	硬さ試験 (Hardness Test) HRB	結晶粒度 (Grain Size)		
	指定単位(Unit Designated)			本(Pcs.)	kg	m	MPa	MPa	(%)				
	規 格 (Specification)		最小(Min)				170	485	35				
			最大(Max)										
10-07-022		72175150	11A070 ←	331	392		285	585	62.3	71.8		へん平試験 (Flattening)	GOOD
10-07-022		72175150	01010085	182	216		285	580	62.9	71.5		押し広げ試験 (Flaring)	GOOD
							285	580	61.8	72.9		外観寸法試験 (Measurement&surface)	GOOD
							285	590	63.3	71.5		渦流探傷試験 (Eddy Current)	GOOD
												検鏡試験 (Microscopic)	—
			TOTAL	513	608							粒間腐食試験 (Intergranular Corrosion Test) ASTM A262 PRACTICE E	GOOD

3/8" x 20 BWG Tubing

化学成分表 (Chemical Composition) %

製鋼番号 (Heat No.)	C × 100	Si × 100	Mn × 100	P × 1000	S × 1000	Ni × 100	Cr × 100	Mo × 100
最小(Min)								
最大(Max)	3.5	100	200	45	30	1000	1600	200
11A070	2.4	31	123	34	1	1400	1800	300
01010085	1.7	33	120	30	1	1014	1611	207
						1023	1640	208

ASTM A 213 TP 316/316L

YEAR 2010 ED

PO# 2011-8169-50

ITEM # 30

SIGNED BY DA April 14/11

備考(Remarks)

SOLUTION HEAT TREATMENT
1100°C × 2.15Min/W.Q
EN-10204-3.1
NACE MR 01-75
FREE FROM MERCUR CONTAMINATION

上記注文品は、御指定の規格又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。
(IT IS HEREWITH CERTIFIED THAT THE ABOVE MATERIALS ARE SATISFACTORY IN COMPLIANCE WITH THE REQUIREMENTS SPECIFIED IN THE CONTRACT.)

総工場長
(MANAGER OF QUALITY SYSTEM SECTION)

10/28/2010 5:10 PAGE 001/001 Fax Server
GAS OIL PRODUCTION EQUIPMENT LTD P.O. 12-4628 125 01 S.O. 491248
Ryerson

125-001

P#123 79

1/4" x 20 Ga. tubing

CONFORMS TO SA 213/316L
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 31
SIGNED BY AA April 14/11

CRYSTAL-PALACE

SHANGHAI CRYSTAL PALACE PIPE CO.,LTD

ZHONG GANG, NAN HUI, SHANGHAI CHINA ZIP CODE:201302

MILL TEST CERTIFICATE

ISO9001:2000 ;PED Material CERTIFICATE (No.:QAC0021058/A) DATE OF ISSUE: 2010/4/26

CUSTOMER:MARMON/KEYSTONE CANADA INC	CERTIFICATE NO. :2010-2-5-A-8
P.O.NO.:MN6609	ORDER NO. :2010-02-005-A
COMMODITY: STAINLESS STEEL SEAMLESS TUBING	GRADE : ASTM A213-07/ASME SA213-07 TP316/TP316L
CONDITION: COLD FINISH / SOLUTION TREATED / PICKLED / PLAIN END / OD POLISHED 320 GRIT.	HEAT NO. :TG091059

CHEMICAL CONTENTS (WT%)

ELEMENTS	C	Mn	P	S	Si	Ni	Cr	Mo
SPECIFICATION	≤0.035	≤2.00	≤0.040	≤0.030	≤0.75	10.0~14.0	16.0~18.0	2.00~3.00
RESULTS (LADLE)	0.022	0.74	0.039	0.005	0.44	11.09	16.68	2.09

PHYSICAL PROPERTIES

Dimensions			Bundle No.	Pieces	Weight (kg)	0.2%YS (Mpa) ≥205	T S (Mpa) ≥515	EL (%) ≥35	FLARING TEST	FLATTENING TEST	HARDNESS HRB ≤80	EDDY CURRENT TEST (100%)
O.D (inch)	W.T (inch)	Length (feet)										
0.250	0.035	20	P10-3-130	250	185	390	595	47.0	OK	OK	73	OK

REMARKS:
AS PER ASTM A213/ASME SA213-07
WALL THICKNESS TOLERANCE AS PER ASTM A269-07
IN COMPLIANCE TO NACE MR0175-2003
IC TEST TO ASTM A262 PRACTICE E
SOLUTION HEAT TREATMENT :1050°C X 1.5m/min
NO WELD REPAIR WAS PERFORMED
FREE FROM MERCURY CONTAMINATION
COUNTRY OF ORIGIN: CHINA
MILL TEST CERTIFICATE TO EN 10204/3.1
INVOICE NO: YK-10-04-55

1.WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN TESTED AND THE TEST RESULTS ARE IN COMPLIANCE WITH THE TERMS OF THE PURCHASE ORDER OR CONTRACT
2.THE CERTIFICATE SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE COMPANY.

SHANGHAI CRYSTAL PALACE PIPE CO.,LTD

Q.C. Reviewed AB 04/16/10

MANAGER OF QUALITY ASSURANCE DEPARTMENT

Ryerson
4/16/2010 8:25 PAGE 001/001 Fax Server
S.S. - 250 - 035 - 3/16 x 0.049 x 0.250 x 20' - 480 lb

125-01

ROCKWELL ALLOY CO., LTD

Huangtang Town, Danyang City, Jiangsu Province 212327, China

MATERIAL TEST CERTIFICATE

ISO9001 CERTIFICATE (Certificate No.: 0106Q1541R1M/3200)

DATE OF ISSUE:DEC.03,2008

CUSTOMER: NORCA INDUSTRIAL CO.,LLC
P.O.#43551

CERTIFICATE NO. :2008-12-09
ORDER NO. : 530/001530(3)

DESCRIPTION : STAINLESS STEEL SEAMLESS TUBING
CONDITION : COLD DRAWN /A & P / PLAIN END/O.D. POLISHED 220GRIT.

GRADE : TP316/TP316L
HEAT NO. : 872-2810

CHEMICAL CONTENTS (WT%)

ELEMENTS	C	Mn	P	S	Si	Ni	Cr	Mo	Ti		
SPECIFICATION	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	10.00-14.00	16.00-18.00	2.00-3.00			
RESULTS (LADLE)	0.020	1.53	0.027	0.005	0.46	10.21	16.48	2.40			

PHYSICAL PROPERTIES

Dimensions				Bundle No.	Pieces	Weight (kg)	0.2%Y.S. (Psi)	T.S. (Psi)	EL. (%)	FLARING TEST	FLATTENING TEST	HARDNESS (HRB)	EDDY CURRENT TEST
Item	O.D. (inch)	W.T (inch)	Length (feet)				≥30000	≥75000	≥35			≤90	
1	1/4	0.035	20	0812-22	2540	1828	42050	84100	60	GOOD	GOOD	71	GOOD
TOTAL					2540	1828							

REMARKS:
AS PER ASTM A269-07 A213-07/SA213-07
WALL THICKNESS TOLERANCE AS PER AVERAGE WALL
IN COMPLIANCE TO NACE MR0175-2002 & EN10204-3.1.B
SOLUTION TREATMENT CONDITIONS:1050℃x1.5m/min
MATERIAL FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR WAS PERFORMED
COUNTRY OF ORIGIN: CHINA
COUNTRY OF MELT: CHINA

1.WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN TESTED AND THE TEST RESULTS ARE IN COMPLIANCE WITH THE TERMS OF THE PURCHASE ORDER OR CONTRACT.
2.THE CERTIFICATE SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE COMPANY.

CONFORMS TO SA 213 / 316L
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 31
SIGNED BY 09 April 14/11

TUBING.

MANAGER:

4 "Aug. 20

P.O.# 125578 Item# 2
Heat Number: 58180
Trans Am Piping Products L[illegible] - Rev'd By: SED 2X8-[illegible]D FS B/W PIPET A105N
Shipment/Seq #: S 10 - 1724 61

(25) 125201

PO# 125578

INTERNATIONAL
NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone: 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

MTR #: 200410

PO #: CI-10-588

Sales Order #: C001014440 Date: 12/28/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58180

Material: A/SA105N 09

Item	Quantity	Description
66		36 - 8 X 2 STD BWP A/SA105N
82		6 - 3 1/2 X 2 XS BWP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.200	0.03	0.100	1.04	0.010	0.01	0.04	0.008
	S	SI	V					
	0.019	0.17	0.02					

Carbon Equivalency: Ladle 0.39

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	72,500	48,750	34.20	62.30	132 BHN	135 BHN

Normalized

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

CONFORMS TO SA 105N
YEAR 2010
JOB # 2011-8169-50
ITEM # 32
SIGNED BY MAR 2011

Marie Dehmer
Quality Assurance Representative

EAT NUMBER : 57384
RANS AM PIPING PRODUCTS - REV'D BY:
hipment/Seq #: S 8 - 1159 14

2X8-36 STD FS B/W PIPET A105N

INTERNATIONAL WFI NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone: 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

125-001

Mtr #: 147,279
PO #: CI-08-247
Sales Order #: C000804438 Date: 04/15/2008

PS4117550

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 57384

Material: A/SA105N 01

Item	Quantity	Description
31		36 - 3 X 1 9M SWP A/SA105N
33		36 - 8 X 2 STD BWP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.190	0.07	0.120	1.04	0.010	0.014	0.04	0.008
	S	SI	V					
	0.020	0.21	0.000					

Carbon Equivalency: Ladle 0.39

Product	C	CR	CU	MN	MO	NI	P	S
	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.000
	SI	V						
	0.00	0.000						

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	71,301	47,066	32.55	64.90	127 BHN	0 BHN

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

Normalized

CONFORMING TO SA 105N
YEAR 2010EP
JOB # 2011-8169-50
ITEM # 32
SIGNED BY 11-04-05

Marie Dehmer
Quality Assurance Representative

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000003509 Page 1 of 3 (2)

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-03
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER:

CUSTOMER ORDER NO.:

SHIP TO:

DATE 06/23/2010

BONNEY ORDER NO. B000077054

DEC96-52

PO-133719

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
1	150	58010	5 -3 X 3/4 3000 LF2 THRD T — SA/A350 LF2 CL1
7692060			Al 0.022 C 0.210 Cb 0.013 Co 0.002 Cr 0.030 Cu 0.040 Mn 1.020 Mo 0.000 Ni 0.020 P 0.007 S 0.024 Si 0.220 V 0.003
			CE(Long Formula) = 0.39
			T/S 75,500 Y/S 51,000 EL 29.00 RA 66.00
			Brinell 149 BHN 149 BHN
			Charpy -50 F 88/26/29 (Ft/Lbs) Average 47.70
2	101	57867	10 -6 X 1 3000 LF2 THRD T — SA/A350 LF2 CL1
7693037			Al 0.026 C 0.200 Co 0.005 Cr 0.050 Cu 0.160 Mn 1.000 Mo 0.010 Nb 0.015 Ni 0.050 P 0.008 S 0.018 Si 0.220 V 0.004
			CE(Long Formula) = 0.39
			T/S 73,125 Y/S 47,000 EL 35.95 RA 63.00
			Brinell 130 BHN 130 BHN
			Charpy -50 F 24/32/44 (Ft/Lbs) Average 33.30
3	25	57659	6 X 2 3000 LF2 THRD T — SA/A350 LF2 CL1
7690202			Al 0.022 C 0.190 Co 0.003 Cr 0.030 Cu 0.090 Mn 1.040 Mo 0.010 Nb 0.016 Ni 0.030 P 0.009 S 0.022 Si 0.200 V 0.003
			CE(Long Formula) = 0.38
			T/S 72,375 Y/S 50,000 EL 33.05 RA 67.90
			Brinell 127 BHN 127 BHN
			Charpy -50 F 81/37/53 (Ft/Lbs) Average 57.00

CONFORMS TO SA 352-LF2 CL1
YEAR 2010 ED
JOB # 2011-8169.50
ITEM # 33
SIGNED BY 7 MAR 201

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks

by Trudy Smith

TRUDY SMITH
QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000003509

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-033
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER:

CUSTOMER ORDER NO.:

SHIP TO:

DATE 06/23/2010

BONNEY ORDER NO. B000077054

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF BOTH NACE MR0103-2007 AND NACE MR0175/ISO 15156.
4. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
5. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

CONFORMS TO SA 350 LF2 CL1
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 33
SIGNED BY DS March 7, 2011

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks

by Trudy Smith

TRUDY SMITH
QUALITY PROCESS MANAGER

CMTR: REV2

INTERNATIONAL
NUCLEAR PRODUCTS
Manufacturers of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9335 ENDEAVOR DRIVE S E
CALGARY AB T3S 0A1

Mtr #: 196,836

PO #: CI-10-469

Sales Order #: C001011456 Date: 10/14/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed

We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58104 ←

105N
2010 ED
2011-8169-50
33
SIGNED BY 29 March 21/11

125-001

PO H12-E34

Material: A/SA105N 09

Item	Quantity	Description
14		36 - 3 X 1 3M THP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.110	1.01	0.010	0.012	0.03	0.007
	S	SI	V					
	0.019	0.19	0.00					

Carbon Equivalency: Ladle 0.40

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	72,500	51,250	33.20	63.75	153 BHN	153 BHN

Normalized

1 IN ACCORDANCE WITH NACE SPEC MR0175-2002

Marie Dehmer
Quality Assurance Representative

INTERNATIONAL WFI NUCLEAR PRODUCTS
Manufacturer of Pipes and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9535 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

Mtr #: 192,876
PO #: CI-10-355
Sales Order #: C001008457 Date: 08/03/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58010 ←

Material: A/SA105N 09

Item	Quantity	Description
17		36 - 1 1/2 X 3/4 3M THP A/SA105N ←
36		36 - 1 1/2 X 3/4 3M SWP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.040	1.02	0.000	0.013	0.02	0.007
	S	SI	V					
	0.024	0.22	0.003					

Carbon Equivalency: Ladle 0.39

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	75,500	51,000	29.00	66.00	149 BHN	149 BHN

Normalized

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

ACCEPTANCE - 105 N
YEAR 2010
JOB # 2011-8169-50
QTY # 34
SIGNED BY 7 MAR 2011

Marie Dehmer
Quality Assurance Representative

INTERNATIONAL WFI NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone: 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

MTR #: 198,409
PO #: CI-10-505
Sales Order #: c001012701 Date: 11/12/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58120 ←

CONFORMS TO: 105N
YEAR: 2010 ED
JOB: 2011-8169-50
QTY: 35
ACCEPTED BY: 7 MAR 2011

125-001

PO #134934

Material: A/SA105N 09

Item	Description
17	36 - 3/4 X 1/2 3M THP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.06	0.130	1.02	0.010	0.01	0.04	0.010
	S	SI	V					
	0.017	0.19	0.00					

Carbon Equivalency: Ladle 0.41

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	74,375	50,875	31.05	61.80	132 BHN	132 BHN

Normalized

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

Marie Dehmer
Quality Assurance Representative

INTERNATIONAL
NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9335 ENDEAVOR DRIVE S E
CALGARY AB T3S 0A1

Mtr #: 196,836

PO #: CI-10-469

Sales Order #: C001011456 Date: 10/14/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed

We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58104 ←

ACCEPTANCE - 105N
YEAR 2010
JOB # 2011-8169-50
PCL # 36
SIGNED BY JR 11-04-05

125-001

PO #12-1834

Material: A/SA105N 09

Item	Quantity	Description
14		36 - 3 X 1 3M THP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.110	1.01	0.010	0.012	0.03	0.007
	S	SI	V					
	0.019	0.19	0.00					

Carbon Equivalency: Ladle 0.40

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	72,500	51,250	33.20	63.75	153 BHN	153 BHN

Normalized

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

Marie Dehmer
Quality Assurance Representative

OK

柏維鐵工股份有限公司
高雄縣仁武鄉烏林村仁心路 303 號
BOTH-WELL STEEL FITTINGS CO., LTD.
NO.303, JEN-HSIN ROAD JEN-WU HSIANG
KAOHSIUNG HSIEN, TAIWAN R.O.C.(81460)
TEL: 886-7-371-0497, 371-1536, 372-0260 FAX: 886-7-371-3864, 371-3882
web site:http://www.bothwell.com.tw e-mail:bothwell@www.bothwell.com.tw or boco@mail.bothwell.com.tw

An ISO 9001:2000 Registered Manufacturer

ISO 9001 BUREAU VERITAS Certification

ANAB

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN10204/DIN50049/3.1.B

CUSTOMER: SEYBOLD INTERNATIONAL CORP. INVOICE NO: BW089706124 125-001 ORIGIN: TAIWAN

CERT NO: 83367 ORDER NO: 8180(PO 45001165) L/C NO: DATE: 12/06/08

PO# 122630 PAGE: 4

ITEM	BOTH WELL HT.CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION: ASTM A105N -05 ASME SA105N -A06
			CONFORM TO A105N		
010	2921	303071 7060	90D ELBOW 1-1/4" 3000# NPT	80 PC	DIMENSION: ASME B16.11-2005
012	2558	388170 7082	TEE 1/4" 3000# NPT	494 PC	
012	2601	389651	TEE 1/4" 3000# NPT	6 PC	
013	2972	304320 7104	TEE 1-1/2" 3000# NPT	200 PC	SURFACE: BY VISUAL...GOOD
014	2869	399852 7150	FULL CPLG 3/8" 3000# NPT	1600 PC	
015	2888	301215 7162	FULL CPLG 1" 3000# NPT	1742 PC	
015	2957	303916	FULL CPLG 1" 3000# NPT	6258 PC	

YEAR 2010 JOB. 2011-8169-570 ITEM # 36 SIGNED BY 11-04-05

CHEMICAL COMPOSITION (%)

ITEM	BOTH WELL HT.CD.	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)	CE
Min		-	0.100	0.600	-	-	-	-	-	-	-	-	-
Max		0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	-	0.430
010	2921	0.200	0.180	0.840	0.018	0.008	0.100	0.090	0.060	0.020	0.002	0.001	0.373
012	2558	0.210	0.200	0.860	0.020	0.013	0.150	0.090	0.060	0.010	0.003	0.000	0.388
012	2601	0.200	0.200	0.850	0.022	0.006	0.140	0.100	0.050	0.010	0.003	0.003	0.377
013	2972	0.190	0.200	0.930	0.019	0.018	0.140	0.080	0.060	0.010	0.003	0.001	0.377
014	2869	0.200	0.200	0.850	0.014	0.011	0.150	0.060	0.050	0.010	0.002	0.001	0.369
015	2888	0.190	0.200	0.860	0.015	0.013	0.140	0.070	0.050	0.020	0.002	0.001	0.364
015	2957	0.180	0.200	0.860	0.023	0.010	0.160	0.140	0.050	0.020	0.003	0.001	0.370

MECHANICAL TEST

ITEM	BOTH WELL HT.CD.	Tensile Strength (KSI)	Yield Strength (KSI)	Elon-Gation (%)	R of A (%)	Hardness (AVG.) (HB)
Min		70.0	36.0	22.0	30.0	-
Max		-	-	-	-	187
010	2921	75.5	49.1	32.6	66.6	142
012	2558	77.8	57.5	29.6	64.3	140
012	2601	77.9	57.1	31.6	64.0	143
013	2972	74.4	51.3	34.2	65.4	142
014	2869	76.6	59.5	34.2	66.9	142
015	2888	76.4	54.7	35.0	66.2	142
015	2957	80.5	58.1	32.4	62.4	152

Remark:
NORMALIZED:860°C A.C.
CONFORMS TO NACE MR0175-2003/MR0103

STEEL MAKING PROCESS : ELECTRIC FURNACE

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN

C.C. Hsieh
Q.C. MANAGER
CHIN CHENG HSIEH

C.C. Huang
INSPECTOR
CHUN CHIEH HUANG

BW-D0839 REV:0

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25-001

OK

I.M.L.

INDUSTRIA MECCANICA LIGURE SPA

Rev 1 23/29

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

SEYBOLD INTERNATIONAL CORP.	Certificate Nr 19390	Dated 01.12.2006
20 Holly Street, Unit 205	Invoice Nr 1194	Dated 28.11.2006
TORONTO M4S 3B1 CANADA CA	Del. Note Nr 1993	Dated 28.11.2006

16030 CASARZA LIGURE- Genova - Italy - Via Giancarlo Farina 25 - Tel.0185.467661 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204

CONFORMS TO SA 105N
YEAR 2010 ED
JOB . 2011-8169-50
ITEM # 37
SIGNED BY DJ March 7/11

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
HOV	31729	022	45001252	2008-2E201-0001072-022	76	FITTING HEX.H.PLUG THRD NPT 4" A105N CODE : 24965	SEE NOTE	SATISFACTORY
G30	76253	002	45001252	2008-2E201-0001072-002	125	FITTING 90 ELB. THRD NPT 2M 3/4" A105N CODE : 6930	SEE NOTE	SATISFACTORY
GC2	45258	002	45001252	2008-2E201-0001072-002	25	FITTING 90 ELB. THRD NPT 2M 3/4" A105N CODE : 6930	SEE NOTE	SATISFACTORY
A64	77612	002	45001252	2008-2E201-0001072-002	600	FITTING 90 ELB. THRD NPT 2M 3/4" A105N CODE : 6930	SEE NOTE	SATISFACTORY
GR5	39700	002	45001252	2008-2E201-0001072-002	225	FITTING 90 ELB. THRD NPT 2M 3/4" A105N CODE : 6930	SEE NOTE	SATISFACTORY
GU1	75499	002	45001252	2008-2E201-0001072-002	325	FITTING 90 ELB. THRD NPT 2M 3/4" A105N CODE : 6930	SEE NOTE	SATISFACTORY
TX2	72469	005	45001252	2008-2E201-0001072-005	1250	FITTING TEE THRD NPT 2M 3/4" A105N CODE : 6957	SEE NOTE	SATISFACTORY
9E1	74121	012	45001252	2008-2E201-0001072-012	1300	FITTING 90 ELB. SW 3M 1" A105N CODE : 7432	SEE NOTE	SATISFACTORY
2H0	74577	008	45001252	2008-2E201-0001072-008	90	FITTING 90 ELB. THRD NPT 3M 1" A105N CODE : 7057	SEE NOTE	SATISFACTORY
→	71759	010	45001252	2008-2E201-0001072-010	3850	FITTING COUPLING THRD NPT 3M 3/4" A105N CODE : 7158	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
HOV	31729	022	ASTM A105	0,195	0,240	0,980	0,024	0,018	0,140	0,060	0,010	0,009	0,240	0,003	0,001	0,000	0,005	0,409	
G30	76253	002	ASTM A105	0,190	0,220	1,000	0,019	0,012	0,080	0,050	0,010	0,005	0,210	0,001	0,000	0,000	0,013	0,392	
GC2	45258	002	ASTM A105	0,180	0,160	0,940	0,021	0,014	0,060	0,100	0,017	0,000	0,230	0,000	0,000	0,009	0,000	0,374	
A64	77612	002	ASTM A105	0,185	0,200	0,900	0,021	0,013	0,100	0,060	0,010	0,005	0,190	0,002	0,001	0,000	0,004	0,374	
GR5	39700	002	ASTM A105	0,190	0,230	1,090	0,015	0,014	0,110	0,090	0,020	0,018	0,180	0,030	0,001	0,000	0,025	0,422	
GU1	75499	002	ASTM A105	0,195	0,190	1,030	0,022	0,014	0,100	0,060	0,010	0,005	0,220	0,002	0,001	0,000	0,015	0,408	
TX2	72469	005	ASTM A105	0,180	0,220	0,950	0,026	0,014	0,100	0,060	0,010	0,006	0,190	0,002	0,001	0,000	0,021	0,377	
9E1	74121	012	ASTM A105	0,185	0,200	0,970	0,014	0,012	0,080	0,060	0,010	0,005	0,200	0,001	0,000	0,000	0,022	0,382	
2H0	74577	008	ASTM A105	0,180	0,220	0,980	0,015	0,014	0,080	0,050	0,010	0,005	0,210	0,001	0,000	0,000	0,025	0,379	
	71759	010	ASTM A105	0,200	0,250	0,960	0,019	0,010	0,070	0,050	0,010	0,006	0,140	0,001	0,001	0,000	0,026	0,389	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=O 2=□	YIELD POINT N/mm2 >=1,5%
HOV	31729	022	122,65	50,00	349,0	529,0	31,0	59,0	159 - 163	0,0	0,0	KV	20	101	97	99	1	0,0
G30	76253	002	122,65	50,00	306,0	522,0	30,0	56,0	160 - 168	0,0	0,0	KV	20	104	100	106	1	0,0
GC2	45258	002	122,65	50,00	364,0	548,0	34,0	56,0	160 - 164	0,0	0,0	KV	20	106	100	108	1	0,0
A64	77612	002	122,65	50,00	336,0	548,0	31,0	54,0	160 - 166	0,0	0,0	KV	20	94	92	90	1	0,0
GR5	39700	002	122,65	50,00	345,0	564,0	34,0	56,0	160 - 164	0,0	0,0	KV	20	98	97	105	1	0,0
GU1	75499	002	122,65	50,00	364,0	539,0	31,0	54,0	160 - 166	0,0	0,0	KV	20	106	108	107	1	0,0
TX2	72469	005	122,65	50,00	305,0	570,0	32,0	53,0	162 - 166	0,0	0,0	KV	20	110	105	101	1	0,0
9E1	74121	012	122,65	50,00	311,0	509,0	31,4	55,7	151 - 157	0,0	0,0	KV	20	104	100	100	1	0,0
2H0	74577	008	122,65	50,00	306,0	513,0	33,0	55,4	151 - 157	0,0	0,0	KV	20	104	100	101	1	0,0
	71759	010	122,65	50,00	322,0	529,0	32,0	58,2	158 - 164	0,0	0,0	KV	20	104	109	102	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	ORIGIN	Our Ref.
HOV	31729	022	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	082014
G30	76253	002	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	051382
GC2	45258	002	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	031368
A64	77612	002	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	051400
GR5	39700	002	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	051025
GU1	75499	002	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	051323
TX2	72469	005	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	061316
9E1	74121	012	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	081303
2H0	74577	008	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	081315
	71759	010	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	081080

NOTES ASME B16 11/05 - ANSI B31.1/B31.3 - IML STD - ANSI B1 1-B18.2.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY	QUALITY CONTROL DEPARTMENT	MANUFACTURER'S SYMBOL	MANUFACTURER'S SYMBOL
	BORIS FIZZOTTI	FITTINGS IML	STUDBOLTS

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LOG NO. 322968 PAGE 9

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CUSTOMER: VAN LEEUWEN PIPE & TUBE

Date 07/02/08

CUSTOMER'S Order No.: 45001168

Bonney Order No. BO0036282

Po# 120503
J# 125-001

OK

SHIPPED TO: VAN LEEUWEN PIPE & TUBE
2875 - 64TH AVENUE

EDMONTON, ABT6P1R1 Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
			SA/A105N
34	500	4049	3/8 3M A105N COUP T
	7150		C .200 MN 1.020 P .006 S .021 SI .220
			NI .030 CU .090 CO .003 CR .050 MO .010
			V .000 AL .029 NB .013
			CE(LONG FORMULA) = 0.39
			T/S 77125 Y/S 57875 EL 32.85 RA 69.25
			BRINELL HARDNESS1: 141 HARDNESS2: 139
35	5000	4105	1/2 3M A105N COUP T
	7154		C .200 MN 1.030 P .011 S .023 SI .200
			NI .040 CU .160 CO .004 CR .100 MO .010
			V .000 AL .026 NB .018
			CE(LONG FORMULA) = 0.41
			T/S 77000 Y/S 53000 EL 32.00 RA 70.00
			BRINELL HARDNESS1: 150 HARDNESS2: 150
36	4500	4147	3/4 3M A105N COUP T
	7153		C .210 MN 1.080 P .011 S .015 SI .230
			NI .030 CU .120 CO .003 CR .040 MO .010
			V .000 AL .017 NB .014
			CE(LONG FORMULA) = 0.41
			T/S 75394 Y/S 51757 EL 34.90 RA 67.60
			BRINELL HARDNESS1: 150 HARDNESS2: 150
		4181	3/4 3M A105N COUP T
			C .200 MN 1.020 P .007 S .019 SI .190
			NI .040 CU .160 CO .003 CR .060 MO .010
			V .000 AL .023 NB .015
			CE(LONG FORMULA) = 0.40
			T/S 74375 Y/S 48904 EL 34.60 RA 67.60
			BRINELL HARDNESS1: 139 HARDNESS2: 139

CONFORMS TO SA 105
YEAR 2006
JOB # 2011-8169-50
ITEM # 38
SIGNED BY 11-04-05

***** CONTINUED ON NEXT PAGE *****

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks

by Cris Boozel

CMTR: REV 1

CERTIFIED MILL TEST REPORT

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LOG NO. 322968 PAGE 14

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CUSTOMER: VAN LEEUWEN PIPE & TUBE

Date 07/02/08

CUSTOMER'S Order No.: 45001168

Bonney Order No. B000036282

SHIPPED TO: VAN LEEUWEN PIPE & TUBE
2875 - 64TH AVENUE

EDMONTON, ABT6P1R1 Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.

THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.

CERTIFYING ASTM A105-05 / ASME SA105-04 EDITION

ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)

THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF BOTH NACE MR0103-2005 AND NACE MR0175-2002.

CONFORMS TO SA 105N
YEAR 2010 ED
JOB # 2011-8169-50
ITEM # 38
SIGNED BY DG April 5/11

***** END OF CERTIFICATION *****

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory check:

by

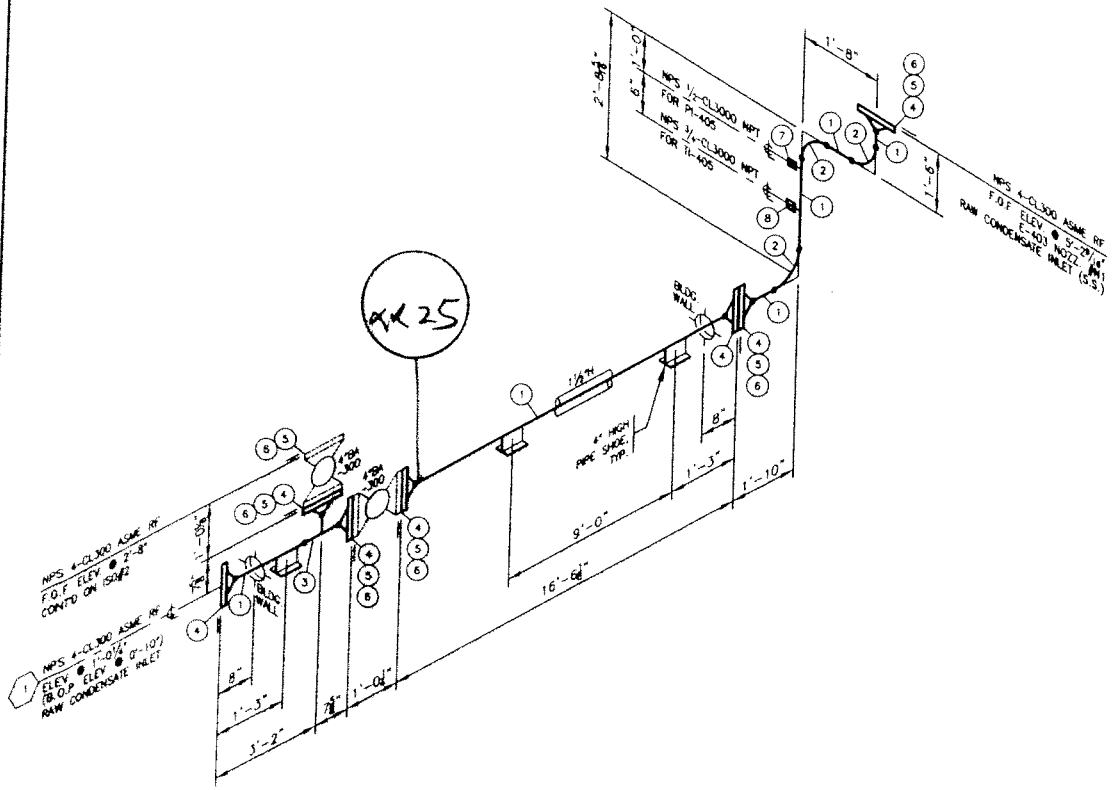
Cris Boozel

CMTR: REV 1

256 welds

8169-50

Radiography Weld Map



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	4"	PIPE, Sch STD SMLS, SA-106 Gr B	22'-5 13/16"	242.59
2	3	4"	ELL, 90° LR Sch STD, SA-234-WPB		26.10
3	1	4"	TEE, STR Sch STD, SA-234-WPB		13.50
4	7	4"	FLG, RFWN CL300 Sch STD BORE, SA-105N		175.00
5	48	3/4"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (4"-CL300)	4 1/2"	45.00
6	6	4"	GASKET, 1/8" Thk, CL300 RF, CG Flexcarb Flexitalic 304SS		6.00
7	1	1/2"	FULL CPLG, THRD CL3000 FS, SA-105N		0.28
8	1	3/4"	FULL CPLG, THRD CL3000 FS, SA-105N		0.42
			TOTAL WEIGHT: 508.89		

SHOP.

FOR CONSTRUCTION

DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	515 lbs	CAPACITY:	2.62 M³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC

FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT ON UN-INSULATED AREAS ONLY

INSULATION: 1½" THK FIBERGLASS 5/8 EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PROG2-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REVISIONS			
REV.	DATE	DESCRIPTION	
0	2011-03-15	ISSUED FOR CONSTRUCTION	

DRAWN	RWM
DATE	2011-02-23
SCALE	NTS
CHK'D	RCL

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

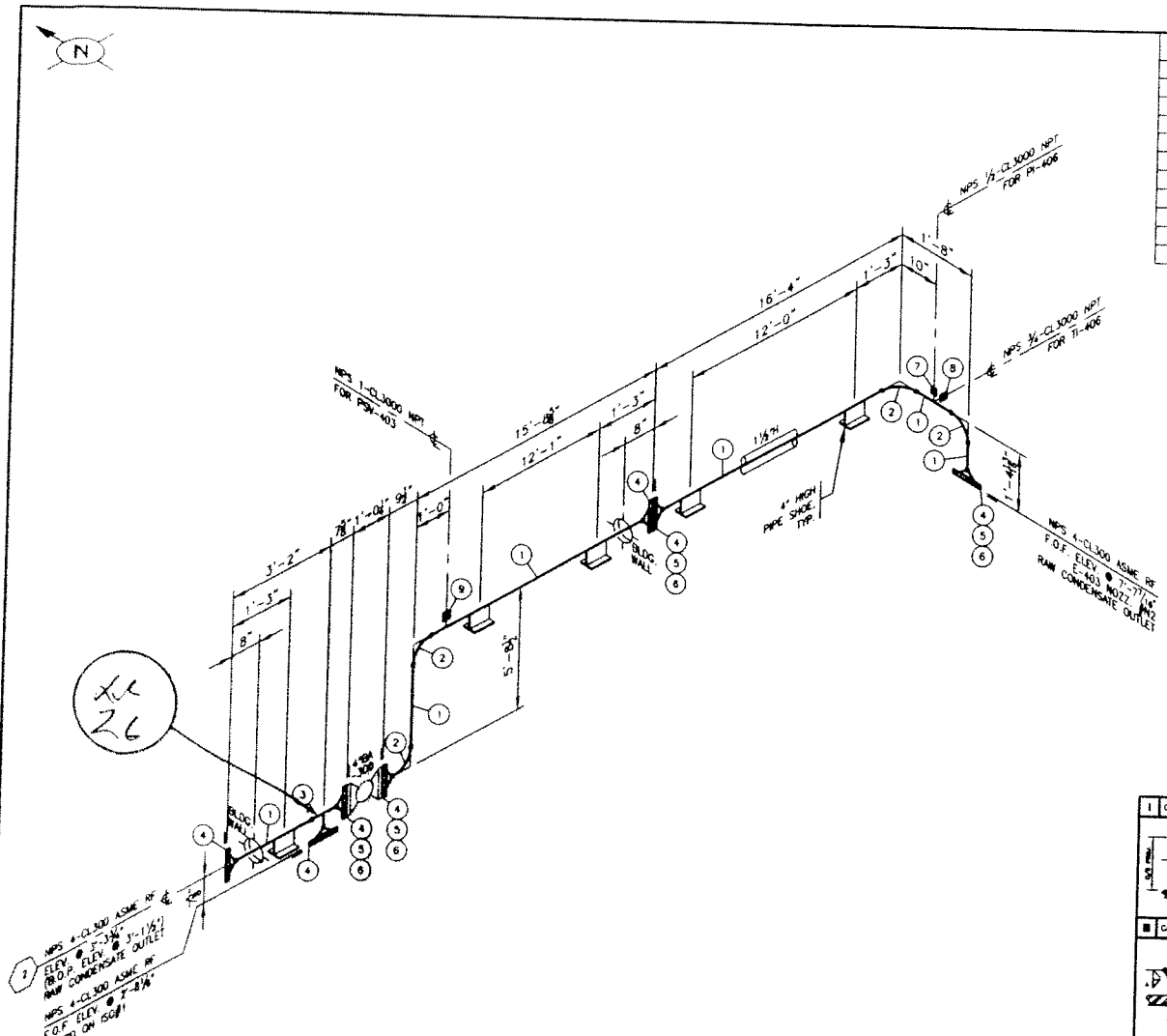
PIPING ISOMETRIC
RAW CONDENSATE FROM SKID EDGE TO E-403 (S.S.)
ISO #1

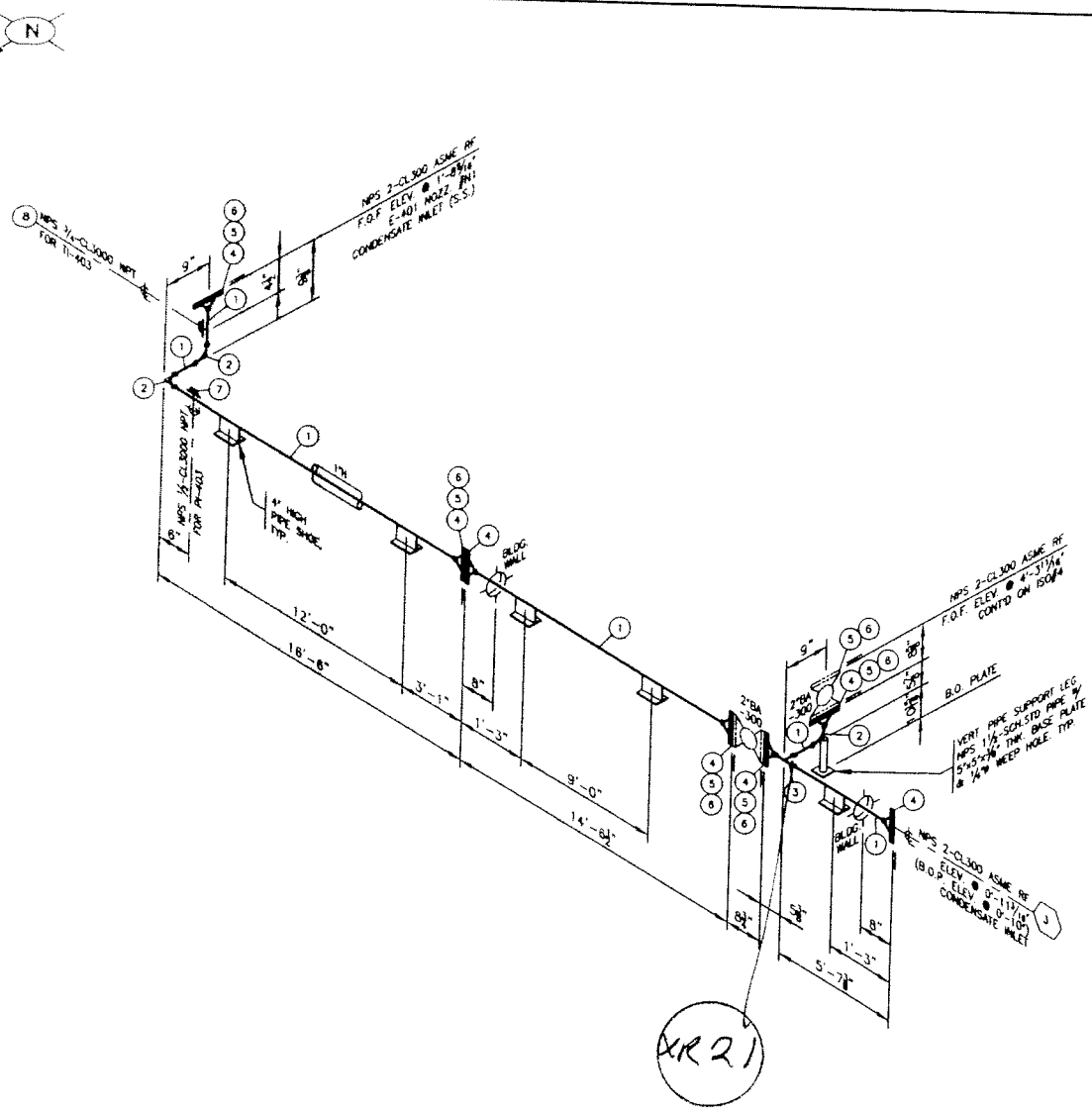
LOCATION: WAREHEAD COMPRESSOR STATION — L.S.D. 03-06-049-18 W5M

CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-001/021 — REV. 0

B-2011-8169-505-001.dwg USER mcleachern DATE 03/18/2011 - 4:10 P


N
NPS ½-CL3000 NPT FOR PI-406
NPS ¾-CL3000 NPT FOR TI-406
NPS 1-CL3000 NPT FOR PSV-403
16'-4"
12'-0"
15'-08"
12'-1"
1'-3"
1'-8"
10"
8"
1'-0"
3'-2"
1'-3"
8"
5'-8½"
1'-4½"
1½"TH
4" HIGH PIPE SHOE, TYP.
CONC. WALL
NPS 1-CL300 ASME RF
F.O.F. ELEV. 97'-7¼"
RAW CONDENSATE OUTLET
NPS 4-CL300 ASME RF
F.O.F. ELEV. 97'-3¾"
RAW CONDENSATE OUTLET
NPS 4-CL300 ASME RF
F.O.F. ELEV. 97'-8¼"
CONT'D ON ISO #1
XX
XX
XX



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	35'-11 15/16"	131.38
2	3	2"	ELL, 90° LR Sch STD, SA-234-WPB		4.50
3	1	2"	TEE, STR Sch STD, SA-234-WPB		2.90
4	7	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		63.00
5	48	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	24.00
6	8	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		6.00
7	1	2"x1/2"	THREDOLET, CL3000 FS, SA-105N		0.24
8	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
			TOTAL WEIGHT: 232.37		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	245 lbs	CAPACITY:	0.99 ft³
SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6			
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC			
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT			
ON UN-INSULATED AREAS ONLY			
INSULATION: 1" THK FIBERGLASS ⅝ EMBOSSED ALUMINUM JACKETING			

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGX2-MR-LT-R2
6.

ONE (1) UNIT REQUIRED

REV	DATE	DESCRIPTION
0	2011-03-16	ISSUED FOR CONSTRUCTION

REVISIONS

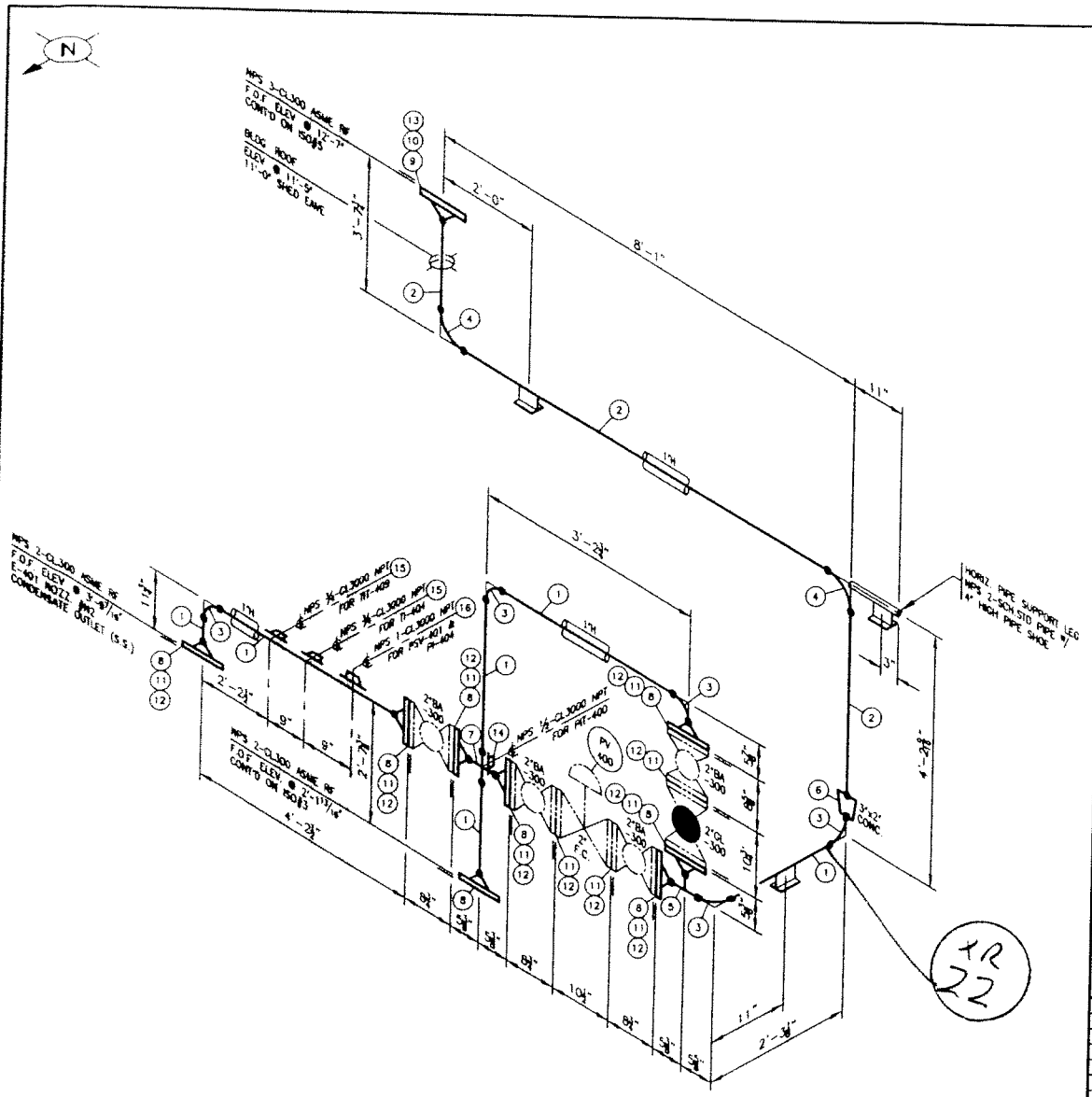
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SCALE: NTS
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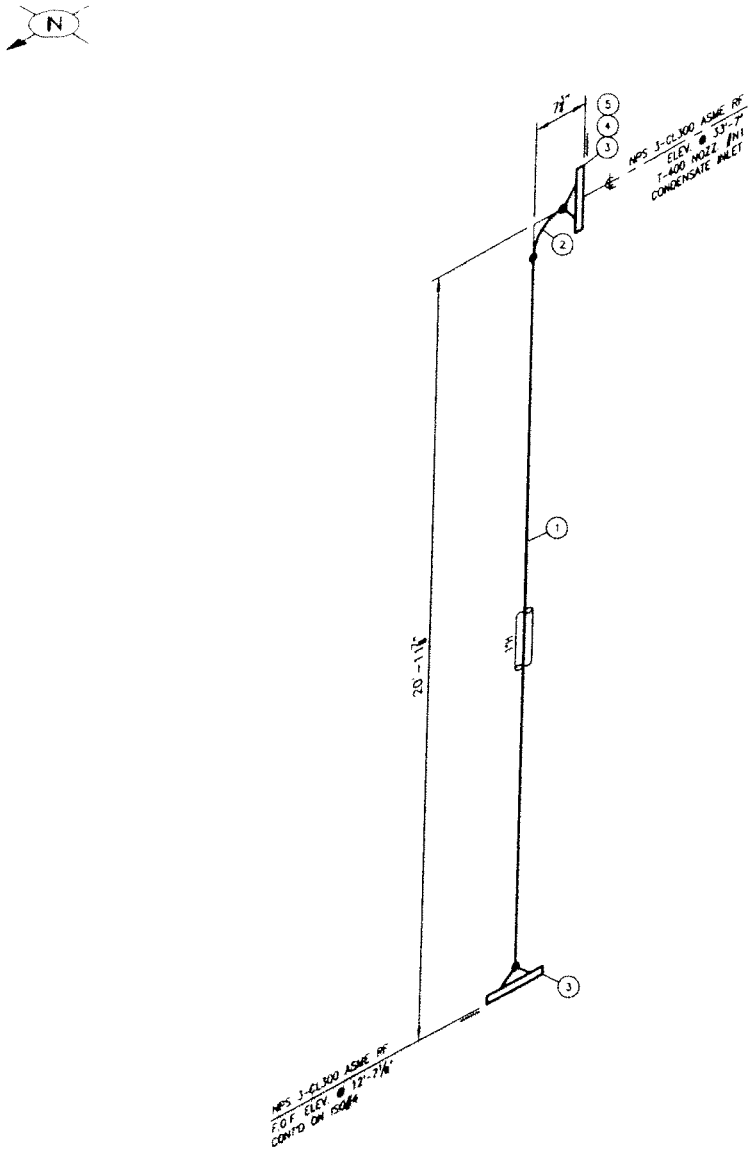
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
CONDENSATE FROM SKID EDGE TO E-401 (S.S.)
ISO #3

LOCATION: MINEHEAD COMPRESSOR STATION
L.S.D. 03-06-048-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-003/021 REV 0

B-2011-8169-50S-003.dwg USER: mcrochem DATE: 03/16/2011 - 6:09 P


N
NPS 3-CL300 ASME RF
T.O.F. ELEV. 17'-7"
CONT'D ON ISO #3
BLDG. ROOF ELEV. 11'-9"
SHIELD EMIC.
3'-7½"
2'-0"
8'-1"
11"
12H
NPS 2-CL300 ASME RF
T.O.F. ELEV. 3'-10 1/4"
NOZZ. N1
CONDENSATE OUTLET (S.S.)
11½"
NPS ½-CL3000 NPT FOR R1-409
NPS ½-CL3000 NPT FOR T1-404
NPS 1-CL3000 NPT FOR PSV-401 @ P1-404
3'-2½"
2'-2½"
9"
8"
2'-7½"
NPS ½-CL3000 NPT FOR P&T-400
2"SCH 160
2"SCH 80
2"SCH 160
2"SCH 80
2"SCH 160
2"SCH 80



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	3"	PIPE, Sch STD SMLS, SA-106 Gr B	20'-4"	154.13
2	1	3"	ELL, 90° LR Sch STD, SA-234-WPB		4.70
3	2	3"	FLG, RFWN CL300 Sch STD BORE, SA-105N		30.00
4	8	3/4"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (3"-CL300)	4 1/4"	7.50
5	1	3"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		1.00
TOTAL WEIGHT: 197.33					

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

I CA-PIG62-AW-LT-R2	II CAB-PIG62-AW-LT-R3 / MO-PIG62-AW-LT-R0		
III CA-PIG62-AW-LT-R2	IV AA-PIG62-AW-LT-R2		

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	205 lbs	CAPACITY:	1.09 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALUME EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY

INSULATION: 1" THK FIBERGLASS 5/6 EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIG62-AW-LT-R2
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-02-24	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN	RWM
DATE	2011-02-24
SCALE	NTS
CHKD	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

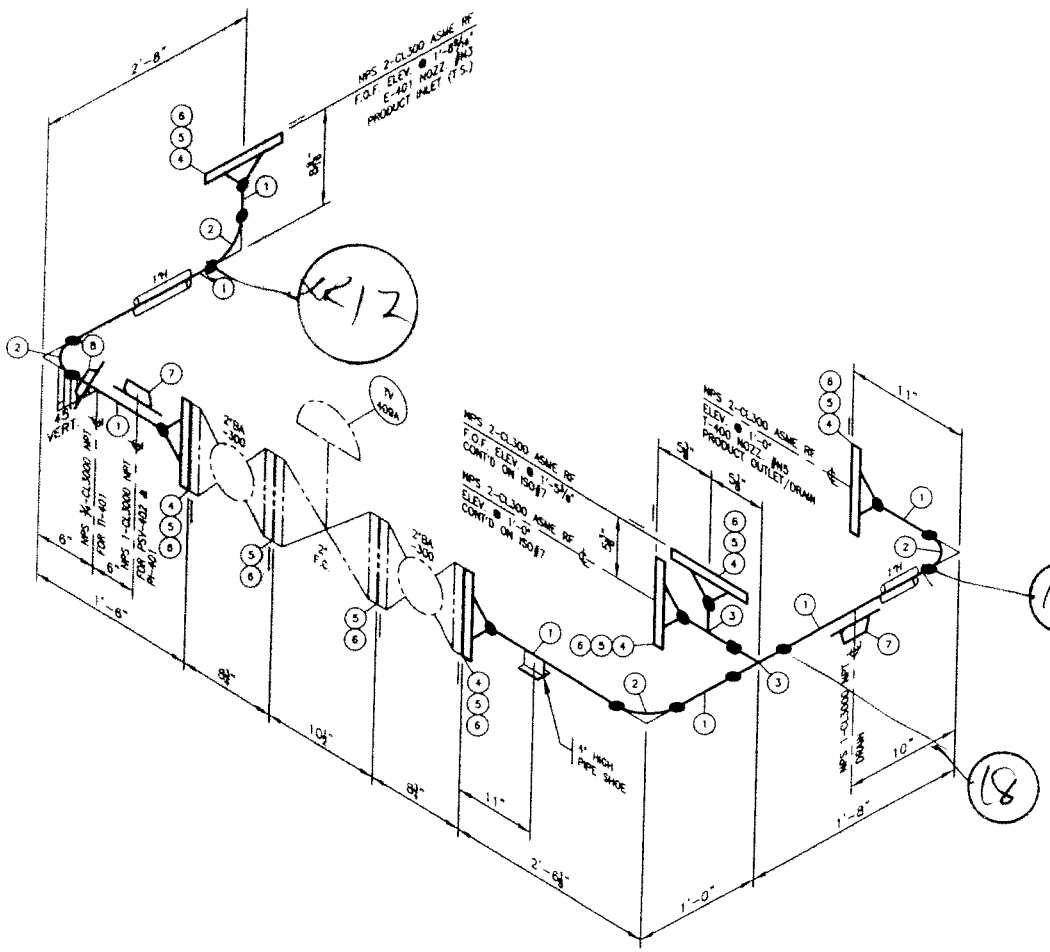
PIPING ISOMETRIC
CONDENSATE FROM E-401 (S.S.) TO T-400 CONT'D
ISO #3

LOCATION: MINEHEAD COMPRESSOR STATION
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

L 5 0 03-08-048-18 W5M

DWG/SHOP ORDER: B-2010-8169-50S-005/021 REV 0

B-2011-8169-50S-005.dwg USER: mceacheri DATE: 03/16/2011 - 4:10 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	7'-5 15/16"	27.36
2	4	2"	ELL, 90° LR Sch STD, SA-234-WPB		6.00
3	2	2"	TEE, STR Sch STD, SA-234-WPB		5.80
4	6	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		54.00
5	64	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	32.00
6	8	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexcarb Flexitallic 3045S		8.00
7	2	2"x1"	THREDOLET, CL3000 FS, SA-105N		1.24
8	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
			TOTAL WEIGHT 134.75		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 20

I	CA-PIG62-AW-LT-R2	II	CAB-PIG62-AW-LT-R3 MCI-PIG62-AW-LT-R0
III	CA-PIG62-AW-LT-R2	IV	AA-PIG62-AW-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	145 lbs	CAPACITY:	0.29 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY

INSULATION: 1" THK FIBERGLASS 5# EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIG62-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-02-24	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN	RWM
DATE	2011-02-24
SCALE	NTS
CHK'D	

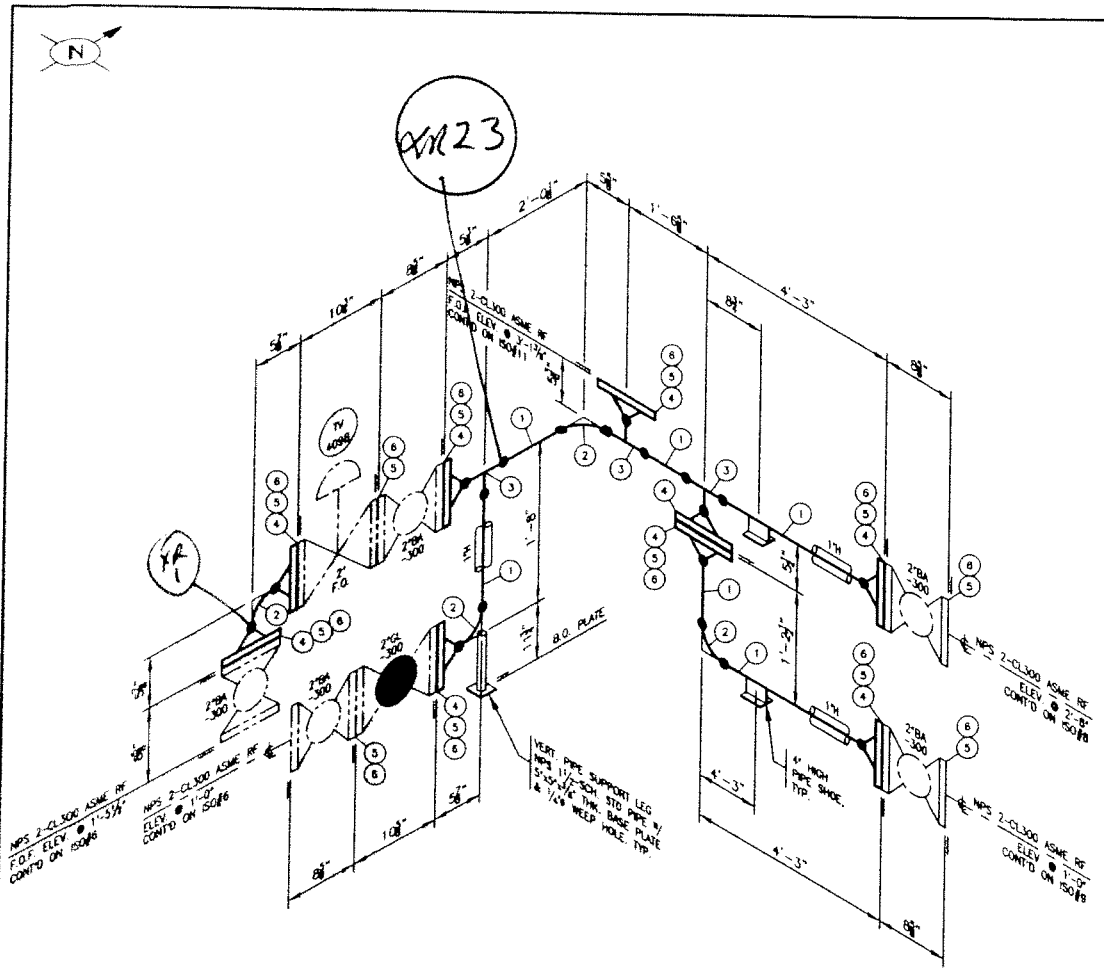
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
PRODUCT FROM T-400 TO E-401 (T.S.)
ISO #6

LOCATION: MINEHEAD COMPRESSOR STATION — L.S.D. 03-06-049-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: **B-2010-8169-50S-006/021** REV. 0

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B-2011-8169-50S-006.dwg USER mcaschern DATE 03/16/2011 - 4:10 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	12'-1"	44.10
2	4	2"	ELL, 90° LR Sch STD, SA-234-WPB		6.00
3	3	2"	TEE, STR. Sch STD, SA-234-WPB		8.70
4	9	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		81.00
5	96	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	48.00
6	12	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		12.00
TOTAL WEIGHT: 199.80					

SHOP

FOR CONSTRUCTION

DATE: MAR 17 2011

I CA-PIGG2-AW-LT-R2	II CAB-PIGG2-AW-LT-R2 / MO-PIGG2-AW-LT-R2		
III CA-PIGG2-AW-LT-R2	IV AA-PIGG2-AW-LT-R2		

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	210 lbs	CAPACITY:	0.53 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC

FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT

ON UN-INSULATED AREAS ONLY

INSULATION: 1" THK FIBERGLASS 6# EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGG2-AW-LT-R2
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-15	ISSUED FOR CONSTRUCTION

REVISIONS

DESIGN	RWM
DATE	2011-02-24
SCALE	NTS
CHK'D	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

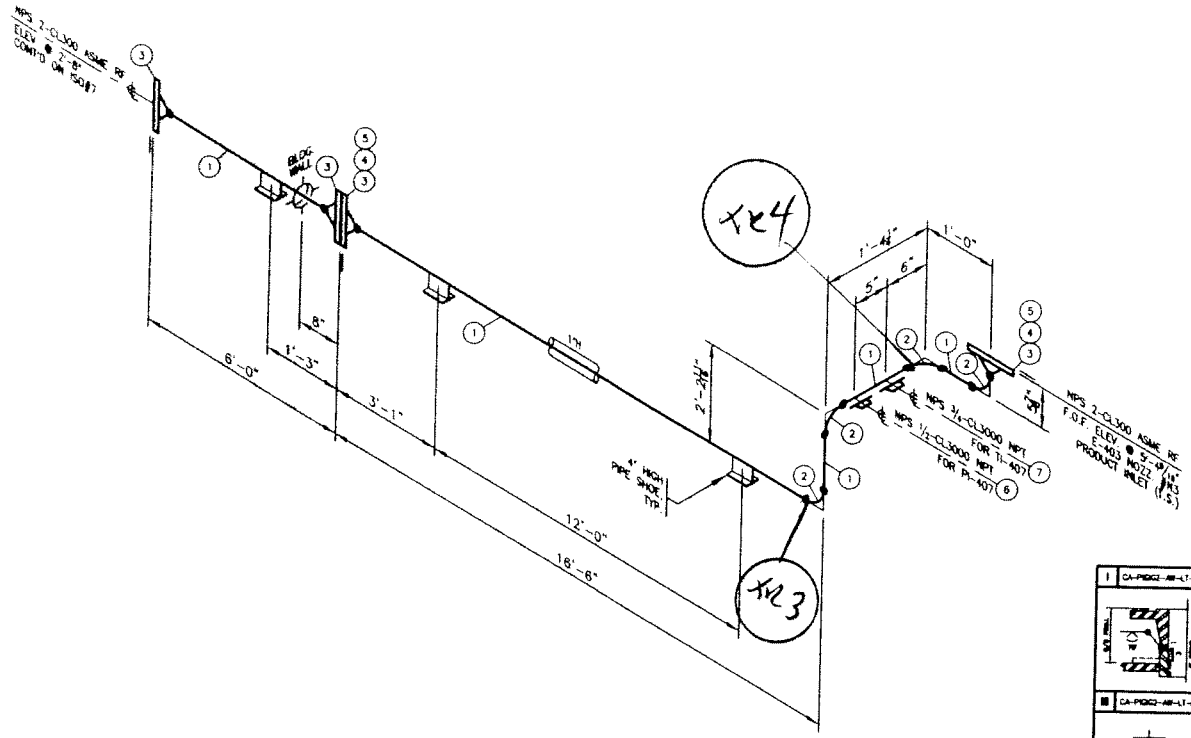
PIPING ISOMETRIC
PRODUCT FROM T-400 TO E-403 (T.S.)
ISO #7

LOCATION: MAINEHEAD COMPRESSOR STATION L.S.D. 03-06-049-18 W5M

CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-007/021 REV. 0

B-2011-8169-50S-007.dwg USER: mcmechern DATE: 03/16/2011 - 4:10 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	24'-6 5/16"	89.52
2	4	2"	ELL, 90° LR Sch STD, SA-234-WPB		6.00
3	4	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		36.00
4	16	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	8.00
5	2	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		2.00
6	1	2"x1/2"	THREDOLET, CL3000 FS, SA-105N		0.24
7	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
TOTAL WEIGHT: 142.11					

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

I CA-PIGI2-AW-LT-R2 | II CAB-PIGI2-AW-LT-R3, MC-PIGI2-AW-LT-R3 | III CA-PIGI2-AW-LT-R2 | IV AA-PIGI2-AW-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	150 lbs	CAPACITY:	0.63 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY
INSULATION: 1" THK FIBERGLASS C/S EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGI2-AW-LT-R2
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0		ISSUED FOR CONSTRUCTION

REVISIONS

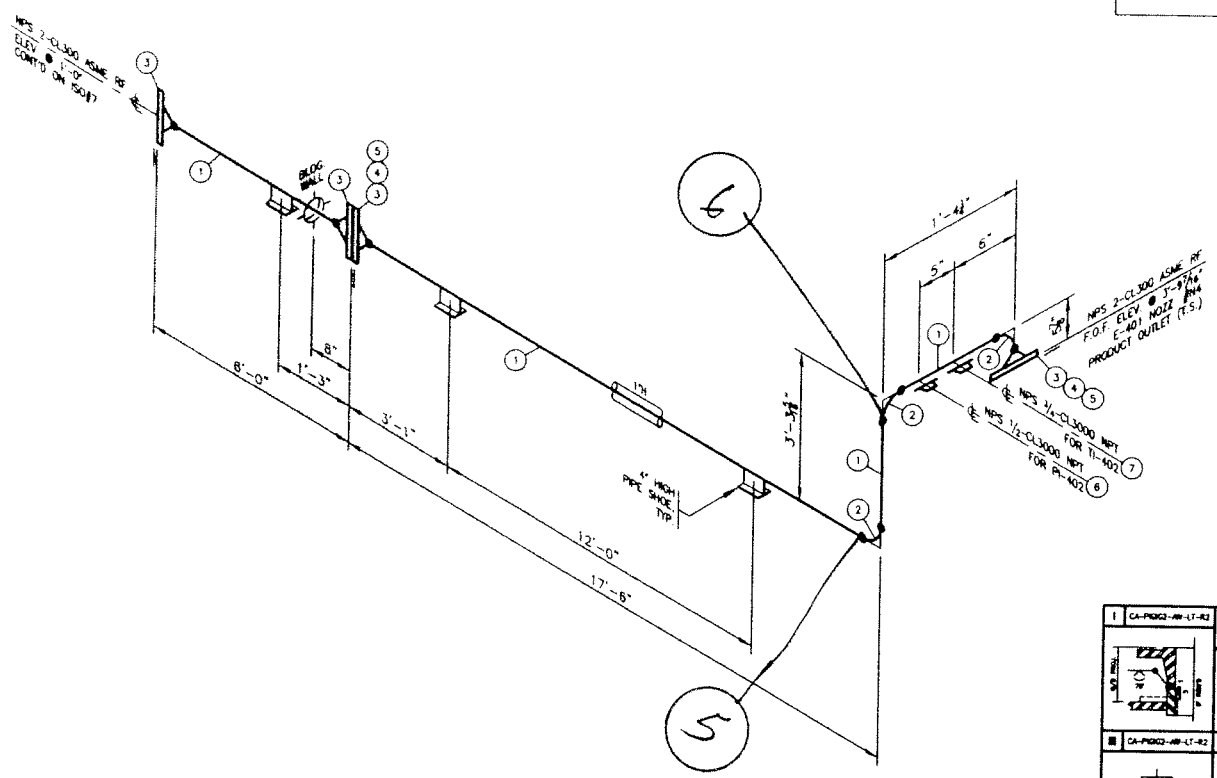
DRAWN: RWM
DATE: 2011-02-24
SCALE: NTS
CHKD:

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
PRODUCT FROM T-400 TO E-403 (T.S.) CONT'D
ISO ∅8

LOCATION: WINEHEAD COMPRESSOR STATION
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
L.S.D. 03-06-049-15 W5M
DWG/SHOP ORDER: B-2010-8169-50S-008/021 REV 0

B-2011-8169-50S-008.dwg USER: mcnachern DATE: 03/16/2011 - 4:10 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	26'-1 3/16"	95.26
2	3	2"	ELL, 90° LR Sch STD, SA-234-WPB		4.50
3	4	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		36.00
4	16	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	8.00
5	2	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexcarb Flexitalic 304SS		2.00
6	1	2"x1/2"	THREDOLET, CL3000 FS, SA-105N		0.24
7	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
			TOTAL WEIGHT 146.35		

SHOP
FOR CONSTRUCTION
DATE: ~~MAR 17 2011~~

I CA-PIGG2-AW-LT-R2 | II CAB-PIGG2-AW-LT-R3, MCI-PIGG2-AW-LT-R0 | III CA-PIGG2-AW-LT-R2 | IV AA-PIGG2-AW-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	155 lbs	CAPACITY:	0.66 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY
INSULATION: 1" THK FIBERGLASS 5/6 EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1.
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGG2-AW-LT-R2
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-15	ISSUED FOR CONSTRUCTION

REVISIONS

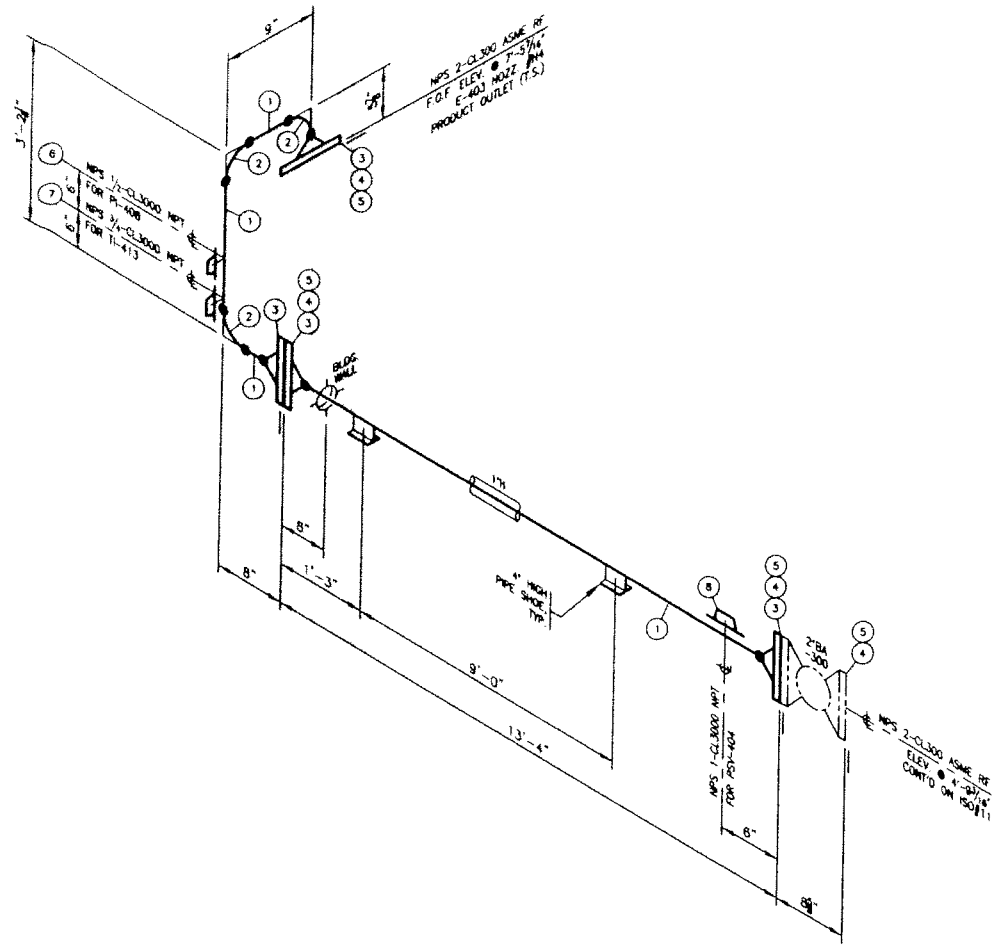
DRAWN: RWM
DATE: 2011-02-25
SCALE: NTS
CHKD:

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
PRODUCT FROM E-401 (T.S.) TO E-403 (T.S.)
ISO

LOCATION: WINEHEAD COMPRESSOR STATION
L.S.D. 03-06-049-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD.
DWG/SHOP ORDER: B-2010-8169-50S-009/021 REV. 0

B-2010-8169-50S-009.dwg USER: mcpacheri DATE: 03/16/2011 - 4:09 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch.STD SMLS, SA-106 Gr B	15'-10 3/4"	56.02
2	3	2"	ELL, 90° LR Sch.STD, SA-234-WPB		4.50
3	4	2"	FLG, RFWN CL300 Sch.STD BORE, SA-105N		36.00
4	32	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	16.00
5	4	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 3045S		4.00
6	1	2"x1/2"	THREDOLET, CL3000 FS, SA-105N		0.24
7	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
8	1	2"x1"	THREDOLET, CL3000 FS, SA-105N		0.62
TOTAL WEIGHT 119.73					

FOR CONSTRUCTION
DATE: MAR 17 2011

I	CA-PIG62-AB-LT-R2	II	CAB-PIG62-AB-LT-R3
			MO-PIG62-AB-LT-R6
III	CA-PIG62-AB-LT-R2	IV	AA-PIG62-AB-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	130 lbs	CAPACITY:	0.44 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVAURE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY
INSULATION: 1" THK FIBERGLASS 5# EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1.
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIG62-AB-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DRWN	CHK'D	APP'D	DESCRIPTION
0	2011-02-25	RMM			ISSUED FOR CONSTRUCTION

REVISIONS

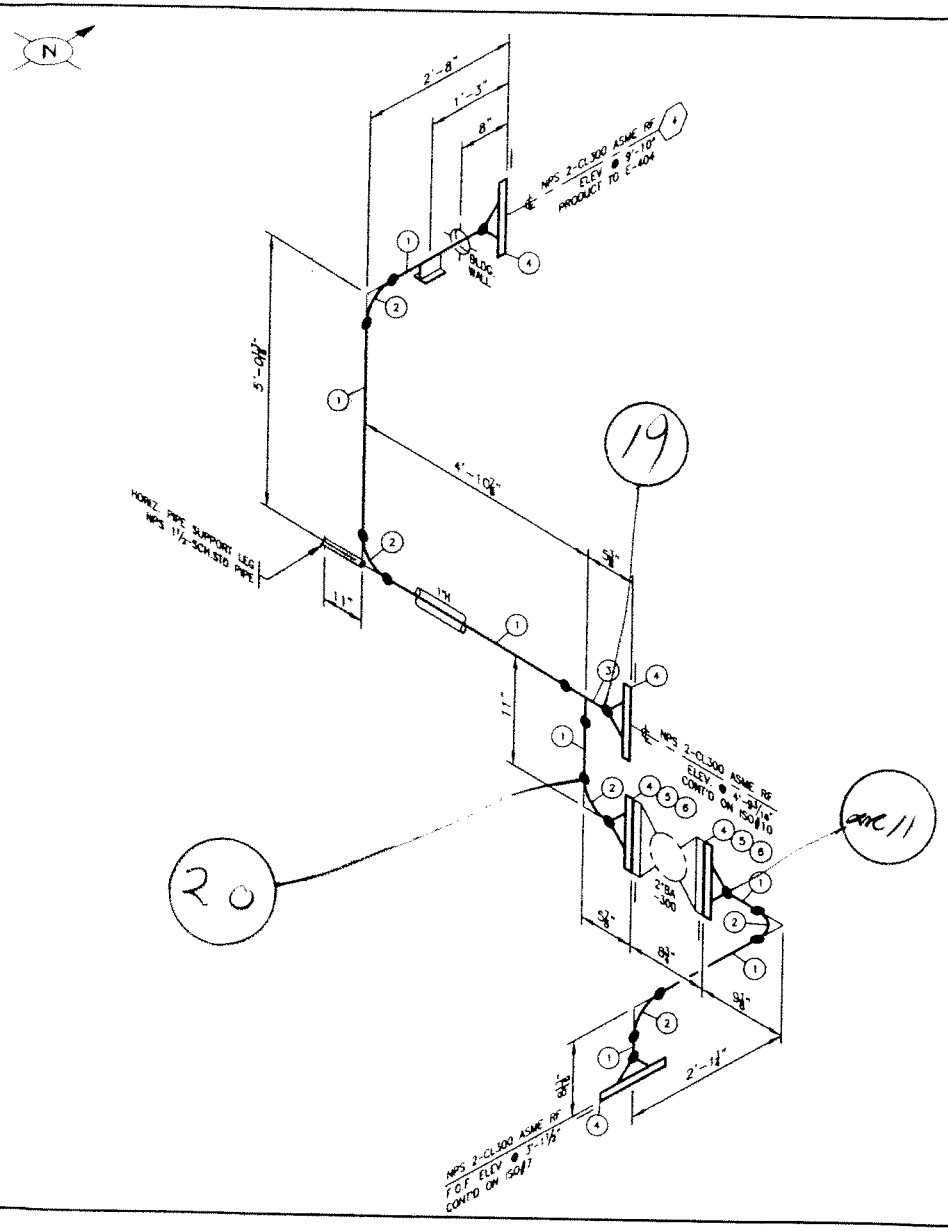
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

DRWN RMM
DATE 2011-02-25
SCALE NTS
CHK'D

PIPING ISOMETRIC
PRODUCT FROM E-403 (T.S.) TO E-404
ISO #10

LOCATION: MINEHEAD COMPRESSOR STATION
U.S.O. 03-06-049-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-010/021 REV. 0

B-2011-8169-50S-010.dwg USER micaschern DATE 03/16/2011 - 4:09 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	13'-7 3/4"	49.81
2	5	2"	ELL, 90° LR Sch STD, SA-234-WPB		7.50
3	1	2"	TEE, STR Sch STD, SA-234-WPB		2.90
4	5	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		45.00
5	18	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	8.00
6	2	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		2.00
			TOTAL WEIGHT: 115.21		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	125 lbs	CAPACITY:	0.42 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY
INSULATION: 1" THK FIBERGLASS 6 EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIG62-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-25	ISSUED FOR CONSTRUCTION

REVISIONS

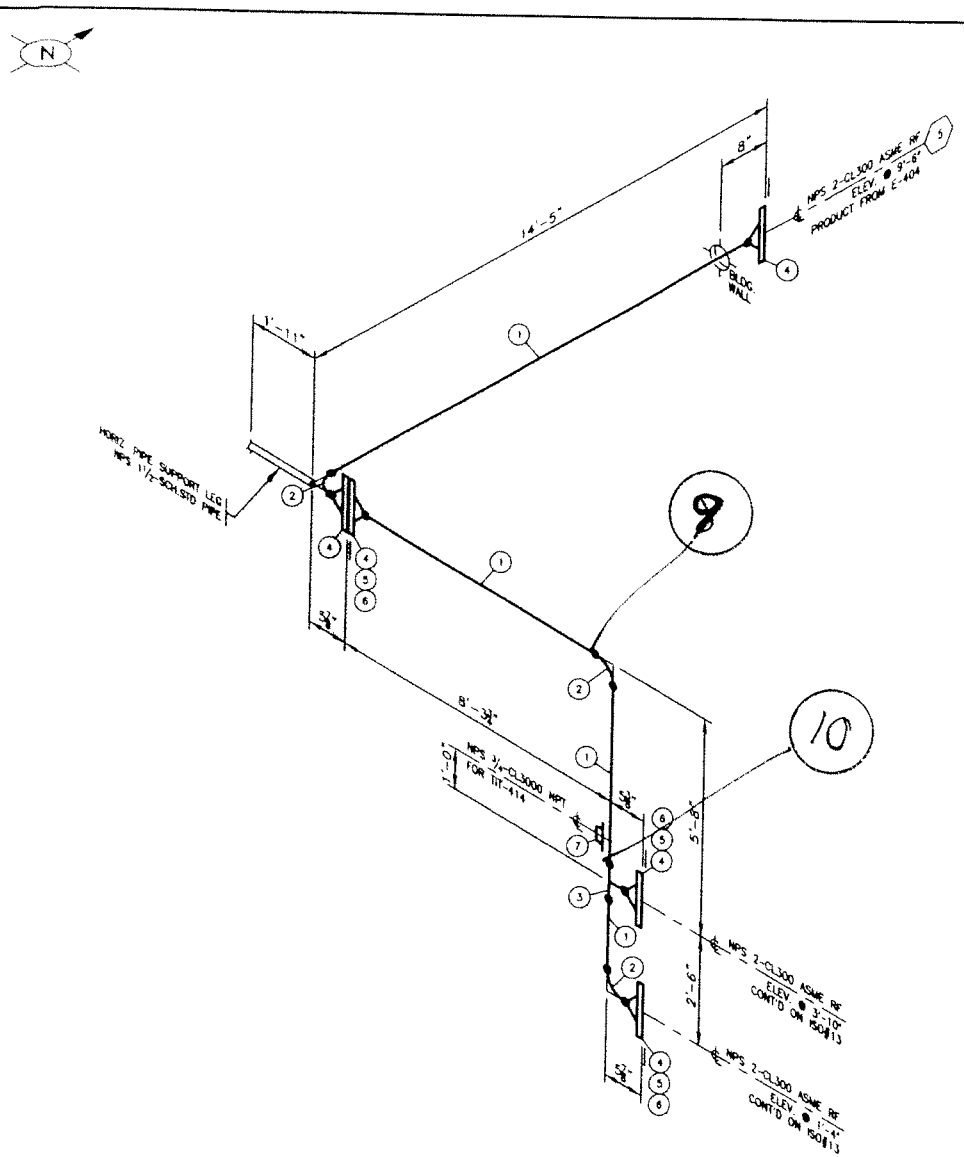
DRAWN: RWM
DATE: 2011-02-25
SCALE: NTS
CHKD:

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
PRODUCT FROM E-403 (T.S.) TO E-404 CONT'D
ISO #11

LOCATION: MINEHEAD COMPRESSOR STATION
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-011/021 REV. 0

B-2011-8169-50S-011.dwg USER mcsichern DATE 03/16/2011 - 4:09 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	28'-11 1/8"	105.58
2	3	2"	ELL, 90° LR Sch STD, SA-234-WPB		4.50
3	1	2"	TEE, STR Sch STD, SA-234-WPB		2.90
4	5	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		45.00
5	24	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	12.00
6	3	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 3045S		3.00
7	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
			TOTAL WEIGHT: 173.33		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	180 lbs	CAPACITY:	0.73 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 1.5-2.5 mils DFT CLOVERDALE T-101 ZINC PHOSPHATE GREY OVERALL
FINISH: 1.5-2.5 mils DFT CLOVERDALE SERIES 111 (#20-F-34) WARM GREY MARINE ENAMEL

INSULATION: NONE

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGG2-AW-LT-R2
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-15	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN	RWM
DATE	2011-02-25
SCALE	NTS
CHK'D	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

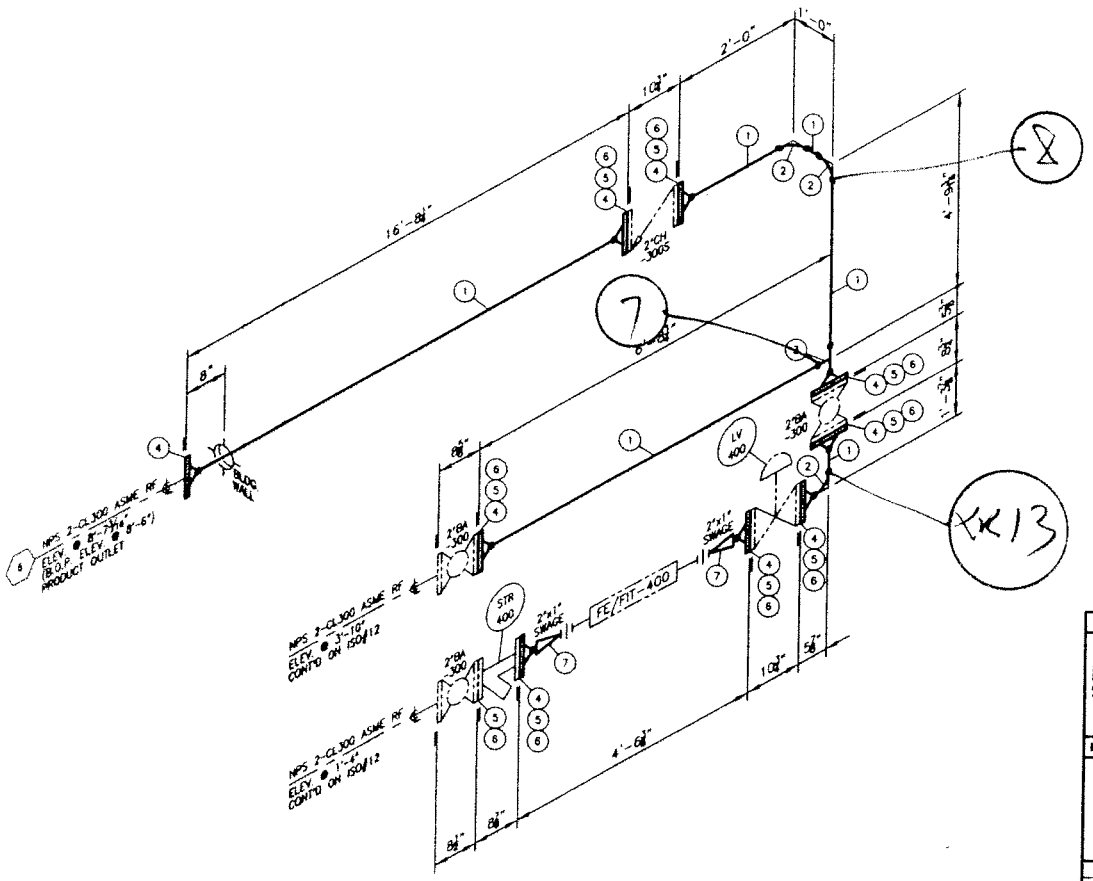
PIPING ISOMETRIC
PRODUCT FROM E-404 TO SKID EDGE
ISO #12

LOCATION: MINEHEAD COMPRESSOR STATION — L.S.D. 03-06-049-18 W5M

CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-012/021 — REV. 0

B-2011-8169-50S-012.dwg USER: mkeachern DATE: 03/16/2011 - 4:09 p



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	29'-6 5/16"	107.77
2	3	2"	ELL, 90° LR Sch.STD, SA-234-WPB		4.50
3	1	2"	TEE, STR Sch.STD, SA-234-WPB		2.90
4	9	2"	FLG, RFWN CL300 Sch.STD BORE, SA-105N		81.00
5	72	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	36.00
6	9	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		9.00
7	2	2"x1"	SWAGE, CONC Sch STD x Sch.XS, SA-234-WPB BLE-TSE		3.90
			TOTAL WEIGHT 245.07		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	255 lbs	CAPACITY:	0.88 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 1.5-2.5 mils DFT CLOVERDALE T-101 ZINC PHOSPHATE GREY OVERALL

FINISH: 1.5-2.5 mils DFT CLOVERDALE SERIES 111 (#20-F-34) WARM GREY MARINE ENAMEL

INSULATION: NONE

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGIG2-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	BY	DESCRIPTION
0	2011-03-15	RWM	ISSUED FOR CONSTRUCTION

REVISIONS

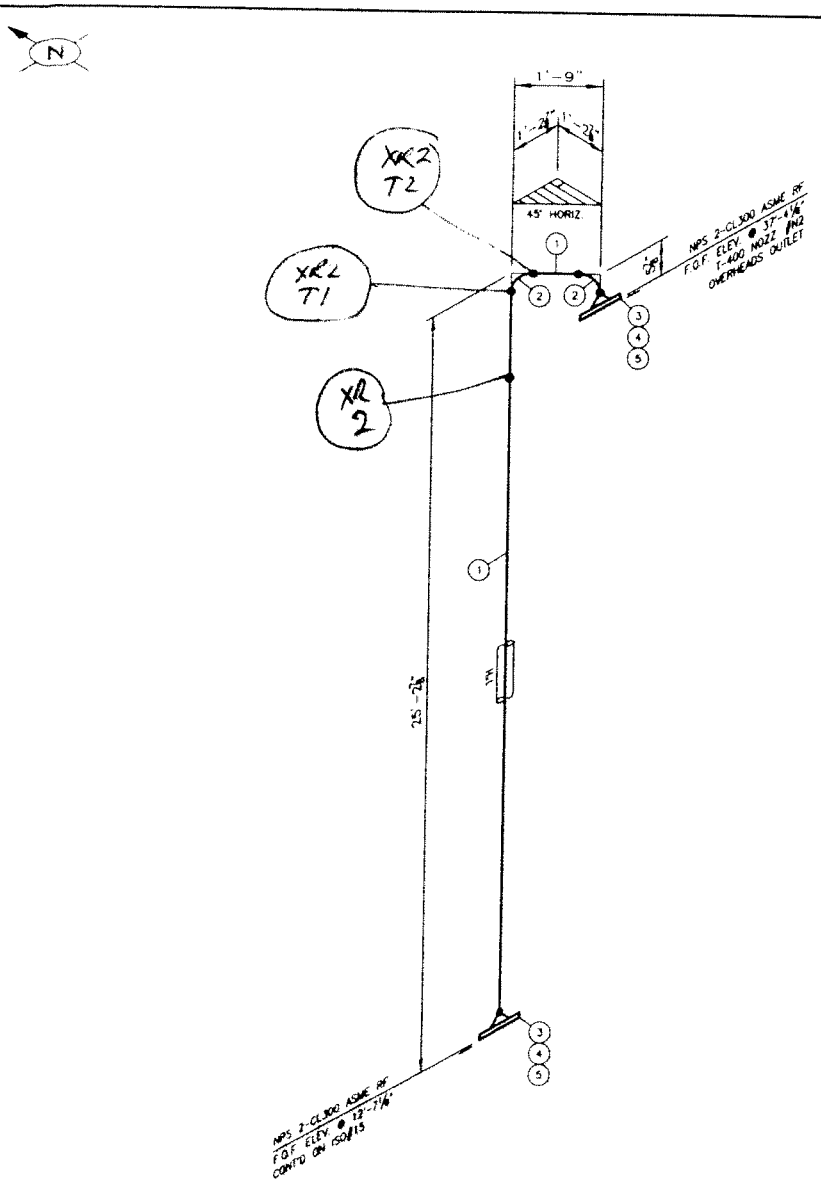
DRAWN RWM
DATE 2011-02-25
SCALE NTS
CHK'D RWM

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
PRODUCT FROM E-404 TO SKID EDGE CONT'D
ISO #13

LOCATION: MINEHEAD COMPRESSOR STATION
L.S.D. 03-08-049-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-013/021
REV 0

B-2011-8169-50S-013.dwg, USER: mseachern, DATE: 03/16/2011 - 6:10 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	25'-11 5/8"	94.79
2	2	2"	ELL, 90° LR Sch STD, SA-234-WPB		3.00
3	2	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		18.00
4	16	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	8.00
5	2	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitalic 304SS		2.00
TOTAL WEIGHT 125.79					

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

I	CA-PIGG2-AB-LT-R2
II	CAB-PIGG2-AB-LT-R3 MO-PIGG2-AB-LT-R6
III	CA-PIGG2-AB-LT-R2
IV	AA-PIGG2-AB-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 300°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	135 lbs	CAPACITY:	0.63 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY
INSULATION: 1" THK FIBERGLASS 5/8 EMBOSSED ALUMINUM JACKETING

1 PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION
2 SHOP/FIELD CHECK ALL DIMENSIONS
3 EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4 FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5 MISCELLANEOUS WELDS USE PROCEDURE AA-PIGG2-AB-LT-R2
6

ONE (1) UNIT REQUIRED

REV.	DATE	BY	DESCRIPTION
0	2011-02-25	RWM	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN	RWM
DATE	2011-02-25
SCALE	NTS
CHK'D	

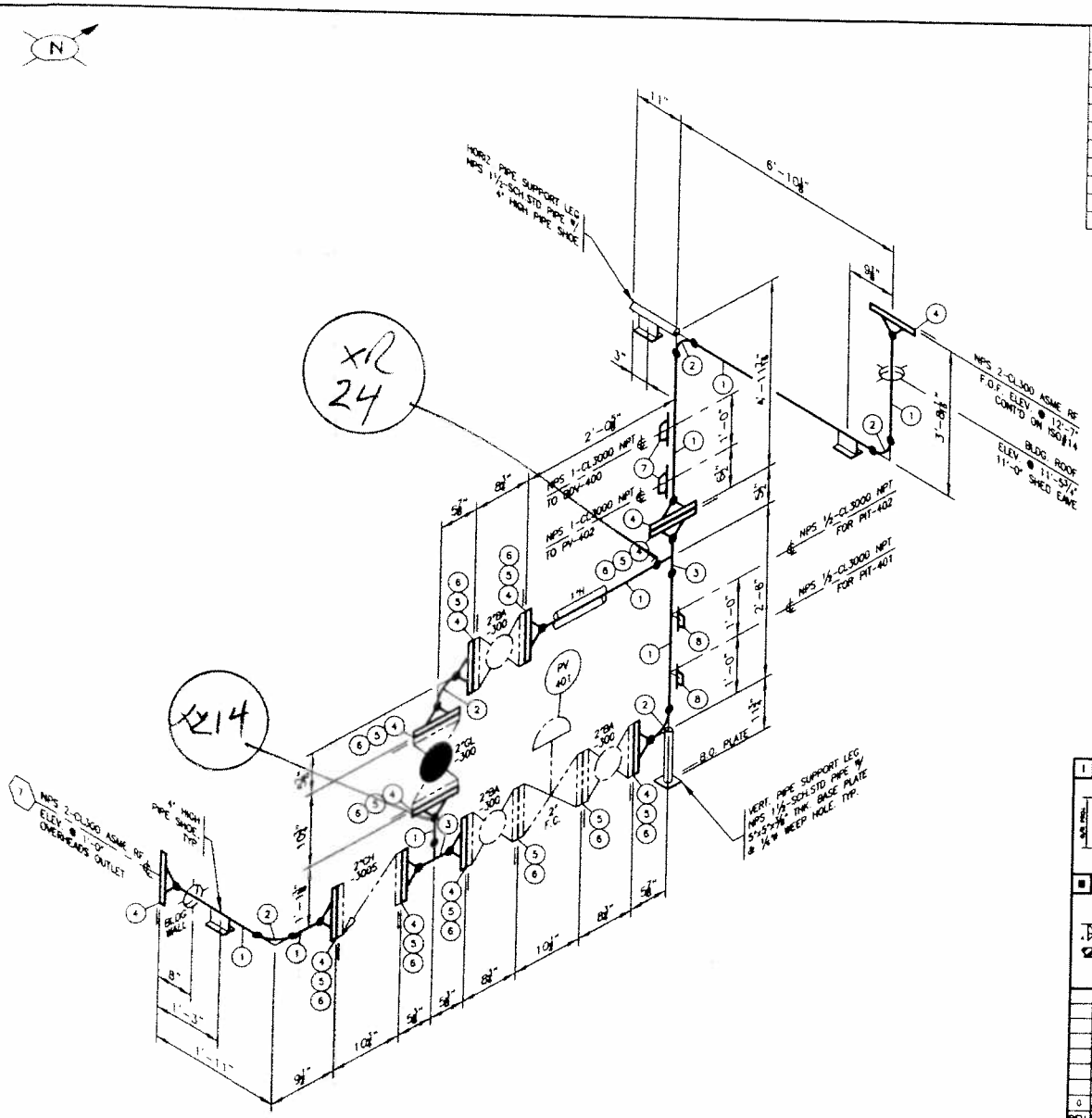
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
OVERHEADS FROM T-400 TO SKID EDGE
ISO #14

LOCATION: WAREHEAD COMPRESSOR STATION
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-014/021 REV. 0

L.S.D. 03-06-049-18 W5M

B-2011-8169-50S-014.dwg USER: mceachern DATE: 03/18/2011 - 4:09 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	19'-11 1/8"	72.73
2	5	2"	ELL, 90° LR Sch STD, SA-234-WPB		7.50
3	2	2"	TEE, STR, Sch STD, SA-234-WPB		5.80
4	12	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		108.00
5	88	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	44.00
6	11	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 30455		11.00
7	2	2"x1"	THREDOLET, CL3000 FS, SA-105N		1.24
8	2	2"x1/2"	THREDOLET, CL3000 FS, SA-105N		0.46
			TOTAL WEIGHT: 250.75		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

I	CA-PIG02-AR-LT-R2	II	CAB-PIG02-AR-LT-R3 MO-PIG02-AR-LT-R0
III	CA-PIG02-AR-LT-R2	IV	AA-PIG02-AR-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG ● 500°F	M.D.M.T.:	-20°F ● 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	280 lbs	CAPACITY:	0.70 M³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY

INSULATION: 1" THK FIBERGLASS 5/8 EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIG02-AR-LT-R2
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-16	ISSUED FOR CONSTRUCTION

REVISIONS

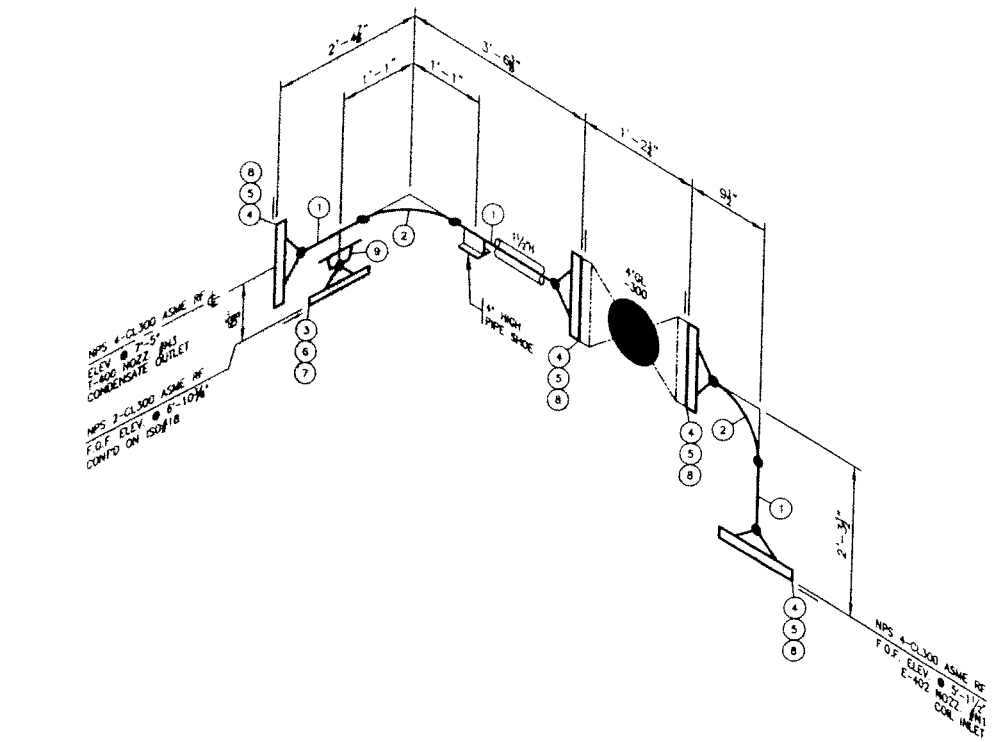
DRAWN: RWM
DATE: 2011-02-25
SCALE: NTS
CHKD:

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
OVERHEADS FROM T-400 TO SKID EDGE CONT'D
ISO #15

LOCATION: MINEHEAD COMPRESSOR STATION — L.S.D. 03-06-048-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-015/021 — REV. 0

B-2011-8169-50S-015.dwg USER mmachern DATE: 03/16/2011 - 4:09 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	4"	PIPE, Sch STD SMLS, SA-106 Gr B	5'-9 7/8"	62.83
2	2	4"	ELL, 90° LR Sch STD, SA-234-WPB		17.40
3	1	2"	FLG, RFWN CL300 Sch STD BORE, SA-105N		9.00
4	4	4"	FLG, RFWN CL300 Sch STD BORE, SA-105N		100.00
5	32	3/4"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (4"-CL300)	4 1/2"	30.00
6	8	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	4.00
7	1	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		1.00
8	4	4"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		4.00
9	1	4"x2"	WELDOLET, SCH STD, SA-105N		1.75
			TOTAL WEIGHT: 229.98		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	240 lbs	CAPACITY:	0.82 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6
PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC
FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT
ON UN-INSULATED AREAS ONLY
INSULATION: 1½" THK FIBERGLASS 9# EMBOSSED ALUMINUM JACKETING

1 PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF ASME B31.3 2008 EDITION.
2 SHOP/FIELD CHECK ALL DIMENSIONS.
3 EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4 FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5 MISCELLANEOUS WELDS USE PROCEDURE AA-PIGG2-AW-LT-R2.
6

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-16	ISSUED FOR CONSTRUCTION

REVISIONS

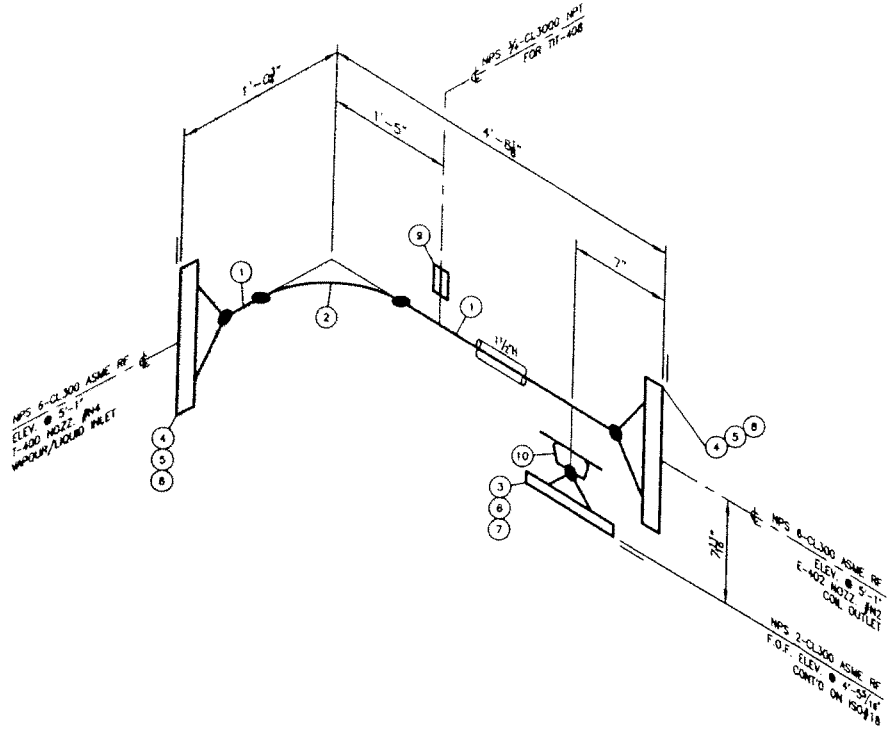
DRAWN	RWM
DATE	2011-02-25
SCALE	NTS
CHK'D	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
CONDENSATE FROM T-400 TO E-402
ISO #16

LOCATION: MINEHEAD COMPRESSOR STATION
L.S.D. 03-08-049-18 W5M
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
DWG/SHOP ORDER: B-2010-8169-50S-016/021
REV. 0

B-2011-8169-50S-016.dwg USER: mceachern DATE: 03/16/2011 -- 4:09 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	6"	PIPE, Sch STD SMLS, SA-106 Gr B	4'-0 5/8"	76.87
2	1	6"	ELL, 90° SR Sch STD, SA-234-WPB		16.60
3	1	2"	FLG, RFWN CL300 Sch.STD BORE, SA-105N		9.00
4	2	6"	FLG, RFWN CL300 Sch.STD BORE, SA-105N		84.00
5	24	3/4"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (6"-CL300)	4 3/4"	23.00
6	8	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	4.00
7	1	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		1.00
8	2	6"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		2.00
9	1	3/4"	FULL CPLG, THRD CL3000 FS, SA-105N		0.42
10	1	6"x2"	WELDOLET, SCH STD, SA-105N		1.75
			TOTAL WEIGHT 218.64		

SHOP

FOR CONSTRUCTION

DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	230 lbs	CAPACITY:	1.19 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC

FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT

ON UN-INSULATED AREAS ONLY

INSULATION: 1½" THK FIBERGLASS 6# EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGX2-AW-LT-R2
6.

ONE (1) UNIT REQUIRED

REV	DATE	DESCRIPTION
0	2011-02-25	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN	RMW
DATE	2011-02-25
SCALE	NTS
CHKD	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC

VAPOUR / LIQUID FROM E-402 TO T-400

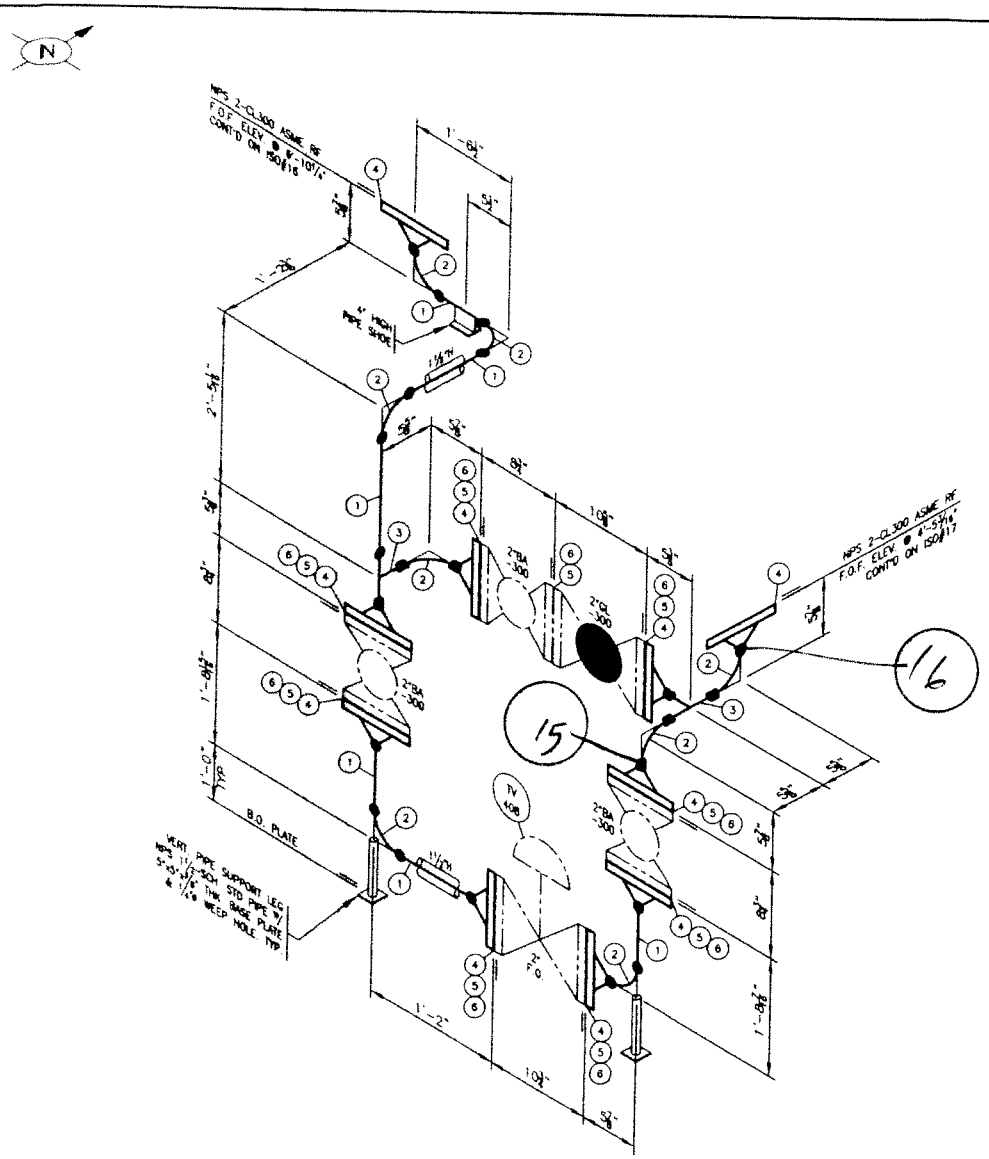
ISO #17

LOCATION: MINEHEAD COMPRESSOR STATION — LSD 03-06-049-18 W5M

CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/w EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-017/021 REV 0

B-2011-8169-50S-017.dwg USER: mcnachan DATE: 03/17/2011 - 8.39 A



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	6'-9 1/16"	24.66
2	8	2"	ELL, 90° LR Sch.STD, SA-234-WPB		12.00
3	2	2"	TEE, STR. Sch.STD, SA-234-WPB		5.80
4	10	2"	FLG, RFWN CL300 Sch.STD BORE, SA-105N		90.00
5	72	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	36.00
6	9	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 304SS		9.00
			TOTAL WEIGHT 177.46		

SHOP
FOR CONSTRUCTION
DATE: ~~MAR 17 2011~~

I	CA-PIGI2-AW-LT-R2	II	CAB-PIGI2-AW-LT-R3 MCI-PIGI2-AW-LT-R0
III	CA-PIGI2-AW-LT-R2	IV	AA-PIGI2-AW-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	185 lbs	CAPACITY:	0.38 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC

FINISH: 1.0-1.5 mils DFT CLOVERDALE 83204 ACRYLIC HEAT RESISTANT

ON UN-INSULATED AREAS ONLY

INSULATION: 1½" THK FIBERGLASS 5/8 EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGI2-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011 SEP 26	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN	RWM
DATE	2011-02-28
SCALE	NTS
CHK'D	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
TV-408 BYPASS
ISO #18

LOCATION: MINEHEAD COMPRESSOR STATION L.S.D. 03-06-049-18 W5M

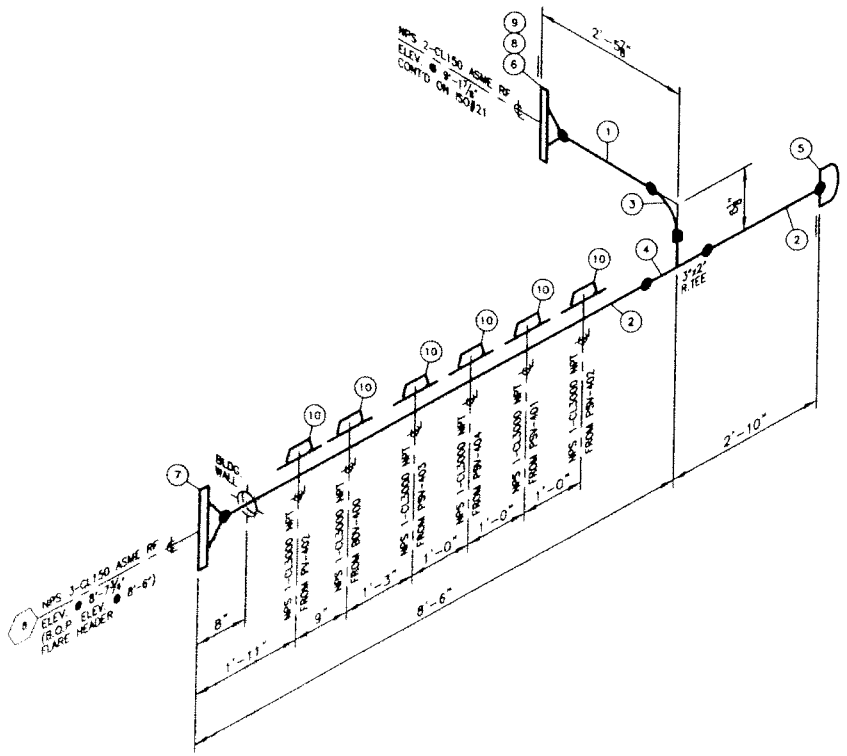
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-018/021 REV. 0

B-2011-8169-50S-018.dwg USER: mcaschern DATE: 03/16/2011 - 4:09 P

BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	2'-0 1/8"	7.34
2	1	3"	PIPE, Sch STD SMLS, SA-106 Gr B	10'-6"	79.59
3	1	2"	ELL, 90° LR Sch.STD, SA-234-WPB		1.30
4	1	3"x2"	TEE, REDUCING Sch.STD, SA-234-WPB		6.50
5	1	3"	CAP, Sch.STD, SA-234-WPB		1.40
6	1	2"	FLG, RFWN CL150 Sch.STD BORE, SA-105N		6.00
7	1	3"	FLG, RFWN CL150 Sch.STD BORE, SA-105N		11.25
8	4	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL150)	3 1/4"	1.50
9	1	2"	GASKET, 1/8" Thk, CL150 RF, CG Flexicarb Flexitallic 304SS		1.00
10	6	3"x1"	THREDOLET, CL3000 FS, SA-105N		3.72
TOTAL WEIGHT: 119.80					



SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	150 PSIG @ 200°F	M.D.M.T.:	-20°F @ 150 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	225 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	125 lbs	CAPACITY:	0.66 ft³
SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6			
PAINT: PRIMER: 1.5-2.5 mils DFT CLOVERDALE T-101 ZINC PHOSPHATE GREY OVERALL			
FINISH: 1.5-2.5 mils DFT CLOVERDALE SERIES 111 (#20-F-34) WARM GREY MARINE ENAMEL			
INSULATION: NONE			

I CA-PIGI2-AW-LT-R2 | II CAB-PIGI2-AW-LT-R3 / MC-PIGI2-AW-LT-R0 | III CA-PIGI2-AW-LT-R2 | IV AA-PIGI2-AW-LT-R2

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1.
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGI2-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV	DATE	DESCRIPTION
0	2011-03-15	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN: RWM | DATE: 2011-02-28 | SCALE: NTS | CHK'D: JRL

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

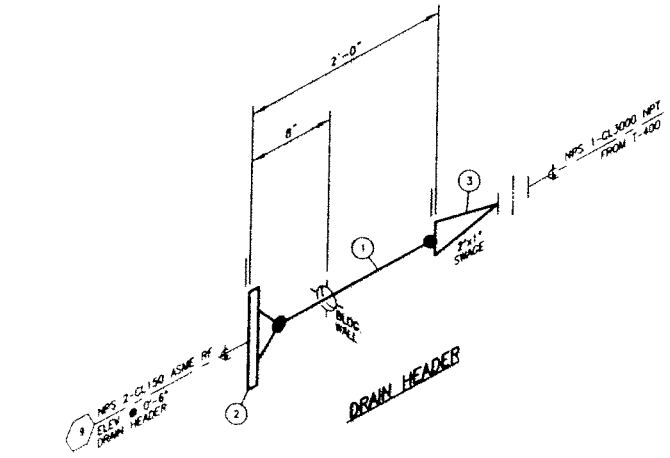
PIPING ISOMETRIC
FLARE HEADER
ISO #19

LOCATION: WINEHEAD COMPRESSOR STATION — L.S.D. 03-04-049-18 W5M

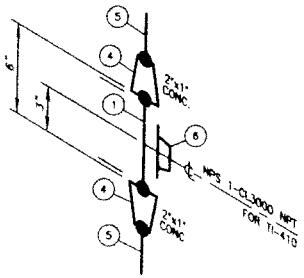
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-019/021 | REV. 0

B-2011-8169-50S-019.dwg USER: measchern DATE: 03/16/2011 - 4:08 P



DRAIN HEADER



TW BOTTLE

BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch STD SMLS, SA-106 Gr B	2'-3"	8.21
2	1	2"	FLG, RFWN CL150 Sch STD BORE, SA-105N		6.00
3	1	2"x1"	SWAGE, CONC Sch STD x Sch XS, SA-234-WPB BLE-TSE		1.95
4	2	2"x1"	REDUCER, CONC Sch STD x Sch XS, SA-234-WPB		2.02
5	2	1"	NIPPLE, Sch XS SMLS, SA-106 Gr B BOE-TOE	4"	2.44
6	1	2"x3/4"	THREDOLET, CL3000 FS, SA-105N		0.35
			TOTAL WEIGHT: 20.97		

SHOP
FOR CONSTRUCTION
DATE: MAR 17 2011

DESIGN DATA			
M.A.W.P.:	150 PSIG @ 200°F	M.D.M.T.:	-20°F @ 150 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	225 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	25 lbs	CAPACITY:	0.08 ft³
SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6			
PAINT: PRIMER: 1.5-2.5 mils DFT CLOVERDALE T-101 ZINC PHOSPHATE GREY OVERALL			
FINISH: 1.5-2.5 mils DFT CLOVERDALE SERIES 111 (#20-F-34) WARM GREY MARINE ENAMEL			
INSULATION: NONE			

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION.
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIGI02-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-02-28	ISSUED FOR CONSTRUCTION

REVISIONS

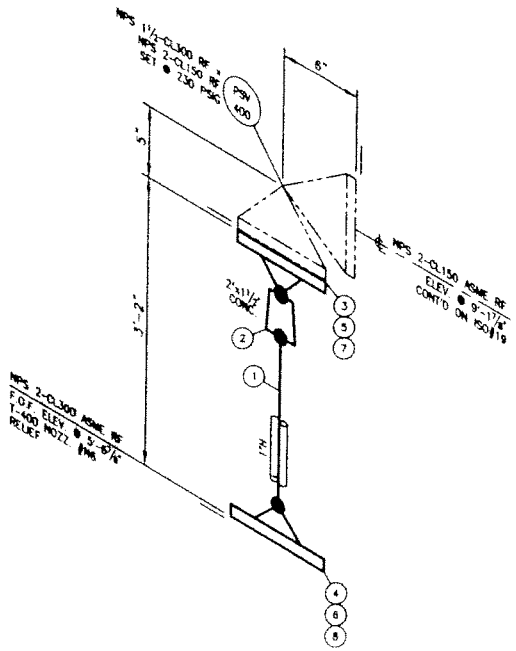
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

PIPING ISOMETRIC
DRAIN HEADER & TW BOTTLE
ISO #20

LOCATION: MINEHEAD COMPRESSOR STATION
CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD
L.S.D. 03-06-049-18 W5M

DWG/SHOP ORDER: B-2010-8169-50S-020/021 REV. 0

B-2011-8169-50S-020.dwg USER mcpacheran DATE 03/16/2011 - 4:08 P



BILL OF MATERIAL

MARK	QTY	SIZE (NPS)	DESCRIPTION	LENGTH	WEIGHT
1	1	2"	PIPE, Sch.STD SMLS, SA-106 Gr B	2'-5 3/16"	8.88
2	1	2"x1 1/2"	REDUCER, CONC Sch.STD x Sch XS, SA-234-WPB		1.20
3	1	1 1/2"	FLG, RFWN CL300 Sch.XS BORE, SA-105N		8.00
4	1	2"	FLG, RFWN CL300 Sch.STD BORE, SA-105N		9.00
5	4	3/4"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (PSV-400)	4 1/2"	3.50
6	8	5/8"	STUDS SA-193-B7 c/w (2) HEX NUTS SA-194-2H (2"-CL300)	3 1/2"	4.00
7	1	1 1/2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 3045S		1.00
8	1	2"	GASKET, 1/8" Thk, CL300 RF, CG Flexicarb Flexitallic 3045S		1.00
TOTAL WEIGHT: 38.58					

SHOP

FOR CONSTRUCTION

DATE: ~~MAR 17 2011~~

I CA-PIG02-AW-LT-R2 | II CAB-PIG02-AW-LT-R3, MCI-PIG02-AW-LT-R0 | III CA-PIG02-AW-LT-R2 | IV AA-PIG02-AW-LT-R2

DESIGN DATA

M.A.W.P.:	400 PSIG @ 500°F	M.D.M.T.:	-20°F @ 400 PSIG
RADIOGRAPHY:	10%	P.W.H.T.:	NONE
HYDROTEST:	635 PSIG	CORROSION ALLOWANCE:	1/16"
SHIPPING WT.:	45 lbs	CAPACITY:	0.09 ft³

SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6

PAINT: PRIMER: 5.0-8.0 mils DFT CLOVERDALE 83295 CLOVALINE EPOXY NOVALAC

FINISH: 1.0-1.5 mils DFT CLOVERDALE 83206 ACRYLIC HEAT RESISTANT

ON UN-INSULATED AREAS ONLY

INSULATION: 1" THK FIBERGLASS C/S EMBOSSED ALUMINUM JACKETING

1. PIPING TO BE IN ACCORDANCE W/ THE LATEST EDITION OF: ASME B31.3 2008 EDITION
2. SHOP/FIELD CHECK ALL DIMENSIONS.
3. EXEMPT FROM IMPACT TESTING PER FIGURE 323.2.2A CURVE B.
4. FLANGES AND FITTINGS EXEMPT AS PER TABLE A-1
5. MISCELLANEOUS WELDS USE PROCEDURE AA-PIG02-AW-LT-R2.
6.

ONE (1) UNIT REQUIRED

REV.	DATE	DESCRIPTION
0	2011-03-16	ISSUED FOR CONSTRUCTION

REVISIONS

DRAWN: FNW | DATE: 2011-02-28 | SCALE: NTS | CHK'D: ARC

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

PIPING ISOMETRIC
RELIEF FROM T-400 TO PSV-400
ISO #21

LOCATION: WAREHEAD COMPRESSOR STATION — L.S.D. 03-08-049-18 W5M

CUSTOMER: HUSKY OIL OPERATIONS LIMITED c/o EXCELSIOR ENGINEERING LTD

DWG/SHOP ORDER: B-2010-8169-50S-021/021 | REV. 0

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B-2011-8169-50S-021.dwg USER: mcapchern DATE: 03/16/2011 - 4:10 P

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	TECHNIQUE # USED:	CODE:
APR 4 2011	RT P#2 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	STD	ACCEPTANCE: 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- [ ] SINGLE WALL EXPOSURE
- [X] DOUBLE WALL EXPOSURE
- [X] SINGLE WALL VIEWING
- [ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
XR1	2" SCH 40	5												✔	
XR2	2" SCH 40	5								3			POROSITY IN ROOT @ 5-7"		X

COSTING

SOURCE TYPE:	IR 192			HRS.	@	
STRENGTH:	28 Ci			8" FILM	@	
SOD:	2.221"			17" FILM	@	
OFD:	.154"			PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1	2	2" SCH 40	PIPE	@	
FOCAL SPOT SIZE:	.12"			PIPE	@	
				PIPE	@	

COMMENTS: _____ TOTAL EXPOSURES: 6

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	TECHNIQUE # USED:	CODE:
APR 6 2011	RT P#2 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	STD	ACCEPTANCE: 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- ☐ SINGLE WALL EXPOSURE
- ☒ DOUBLE WALL EXPOSURE
- ☒ SINGLE WALL VIEWING
- ☐ DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJEC
XR3	2" SCH 40	8													✔	
XR4	2" SCH 40	5									1				✔	

COSTING

SOURCE TYPE:	IR 192		HRS.	@	
STRENGTH:	27 Ci		8" FILM	@	
SOD:	2.221"		17" FILM	@	
OFD:	.154"		PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1	2	2" SCH 40 PIPE	@	
FOCAL SPOT SIZE:	.12"		PIPE	@	
			PIPE	@	

COMMENTS: _____ TOTAL EXPOSURES: 6

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	TECHNIQUE # USED:	CODE:
APR 7 2011	RT P#2 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	STD	ACCEPTANCE: 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- ☐ SINGLE WALL EXPOSURE
- ☒ DOUBLE WALL EXPOSURE
- ☒ SINGLE WALL VIEWING
- ☐ DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
XR5	2" SCH 40	8												✔	
XR6	2" SCH 40	8												✔	
XR7	2" SCH 40	8								1	1			✔	
XR8	2" SCH 40	8								1				✔	
XR9	2" SCH 40	8								1				✔	
XR10	2" SCH 40	8											GAUGE IN TEE @ 2" FILL & GRIND	✔	
XR11	2" SCH 40	5										1		✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@	
STRENGTH:	27 Ci			8" FILM	@	
SOD:	2.221"			17" FILM	@	
OFD:	154"			PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1	7	2" SCH 40	PIPE	@	
FOCAL SPOT SIZE:	.12"			PIPE	@	
				PIPE	@	

COMMENTS: _____ TOTAL EXPOSURES: 21

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	TECHNIQUE # USED:	CODE:
APR 11 2011	RT P#2 REV # 0	B31 3
MATERIAL:	MAT'L THICKNESS:	EDITION 2008a ADDENDA -
P1	STD	ACCEPTANCE 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- [ ] SINGLE WALL EXPOSURE
- [X] DOUBLE WALL EXPOSURE
- [X] SINGLE WALL VIEWING
- [ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJECT
XR12	2" SCH 40	5													✔	
XR13	2" SCH 40	11													✔	
XR14	2" SCH 40	11								1					✔	

COSTING

SOURCE TYPE:	IR 192			HRS	@	
STRENGTH:	26 Ci			8" FILM	@	
SOD:	2.221"			17" FILM	@	
OFD:	154"			PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1	3	2" SCH 40	PIPE	@	
FOCAL SPOT SIZE:	12"			PIPE	@	
				PIPE	@	

COMMENTS _____ TOTAL EXPOSURES 9

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	TECHNIQUE # USED	CODE
APR 12 2011	RT P#2 REV # 0	B31 3
MATERIAL:	MAT'L THICKNESS:	EDITION 2008a ADDENDA -
P1	STD	ACCEPTANCE: 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK; (1) SLIGHT; (2) MEDIUM; (3) SEVERE

- [ ] SINGLE WALL EXPOSURE
- [X] DOUBLE WALL EXPOSURE
- [X] SINGLE WALL VIEWING
- [ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJECT
XR15	2" SCH 40	11													✓	
XR16	2" SCH 40	8													✓	
XR17	2" SCH 40	5													✓	
XR18	2" SCH 40	5													✓	
XR19	2" SCH 40	5										2		GRIND ROOT	✓	
XR20	2" SCH 40	5													✓	

COSTING

SOURCE TYPE:	IR 192		HRS.	@	
STRENGTH:	26 Ci		8" FILM	@	
SOD:	2.221"		17" FILM	@	
OFD:	.154"		PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1	6	2" SCH 40 PIPE	@	
FOCAL SPOT SIZE:	12"		PIPE	@	
			PIPE	@	

COMMENTS _____ TOTAL EXPOSURES 18

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	TECHNIQUE # USED:	CODE:
APR 17 2011	RT P#2 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	STD	ACCEPTANCE: 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK; (1) SLIGHT; (2) MEDIUM; (3) SEVERE

- ☐ SINGLE WALL EXPOSURE
- ☒ DOUBLE WALL EXPOSURE
- ☒ SINGLE WALL VIEWING
- ☐ DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
XR21	2" SCH 40	8								1				✔	
XR22	2" SCH 40	8												✔	
XR23	2" SCH 40	8												✔	
XR24	2" SCH 40	5								1				✔	
XR25	4" SCH 40	8												✔	
XR26	4" SCH 40	5										1		✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	
STRENGTH:	25 Ci			8" FILM	
SOD:	2.221"			17" FILM	
OFD:	.154"			PIPE	
FILM TYPE:	AGFA D4 CLASS 1	4	2" SCH 40	PIPE	
FOCAL SPOT SIZE:	.12"	2	4" SCH 40	PIPE	
				PIPE	

@			
@			
@			
@			
@			
@			
@			

COMMENTS: _____ TOTAL EXPOSURES: 18

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	HOOKUP CONDENSATE STABILIZER PACKAGE	2011-8169-50
DATE:	**TECHNIQUE # USED:**	**CODE:**
MAY 2 2011	RT P#2 REV # 0	B31.3
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2008a **ADDENDA:** -
P1	STD	ACCEPTANCE: 5% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK; (1) SLIGHT; (2) MEDIUM; (3) SEVERE

☐ SINGLE WALL EXPOSURE
☒ DOUBLE WALL EXPOSURE
☒ SINGLE WALL VIEWING
☐ DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
XR2R	2" SCH 40	5								1				✔	
XR2T1	2" SCH 40	5												✔	
XR2T2	3" SCH 40	5												✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	61 Ci			8" FILM	@
SOD:	2.221"			17" FILM	@
OFD:	154"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1	2	2" SCH 40	PIPE	@
FOCAL SPOT SIZE:	12"	1	3" SCH 40	PIPE	@
				PIPE	@

COMMENTS _____ TOTAL EXPOSURES: 9

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN _____ LEVEL SNT III CGSB II

Alco Gas + Oil

CUSTOMER PO#: 125777 -8169-50

VALVE TYPE/ASSEMBLY#: 961102 MA / 74864000

TYCO VALVES & CONTROLS - EDMONTON
ANDERSON GREENWOOD CROSBY
FUNCTIONAL TEST REPORT

ORDER#: 3144292-00

DATE: 04/07/11

GAUGE# (FINAL): 210155-42 09/11

LEAK TEST PROCEDURE: A.P.I. STANDARD 527

	SERIAL NO.	TAG	CAPACITY RATING	BACK PRESSURE TEST	ASSY TECH	SET NAMEPLATE	SPECIFIED RESEAT	LEAK TEST	TESTED BY
1)	C10-49412	PSV-401 ✓	894 SCFM	30 PSIG	FV	400 ✓ PSIG / CDTP	PSIG	360 PSIG / 1 min TIME	
2)	C11-00516	PSV-402 ✓	894 SCFM	30 PSIG	FV	403 PSIG		~~0~~ BPM	FV
3)	C11-00521	PSV-403 ✓	894 SCFM	30 PSIG	FV	407 PSIG		20 BPM	FV
4)	C11-10324	PSV-404 ✓	894 SCFM	30 PSIG	FV	404 PSIG		25 BPM	FV
5)						404 PSIG		8 BPM	FV
6)									
7)									
8)									
9)									
10)									

TRACEABILITY REQUIREMENTS - HEAT/CODE NUMBERS FOR TRACEABLE COMPONENTS

	BODY/CYLINDER	BASE	BONNET	NOZZLE	DISC		
)	75EC	033					
)	F0465	0588					
)	F0402	0588					
)	F8990	0390					
)							
)							
)							

CDTP CALCULATION:

SET NAMEPLATE:

- BACK PRESS:

+ TEMP CORR:

C.D.T.P. =

GENERAL COMMENTS:

CRN# 0G0703.92

. PRESSURES IN "PSIG" UNLESS OTHERWISE INDICATED.
BUBBLES PER MINUTE (AIR), CUBIC CENTIMETER PER MINUTE (LIQUID),
CEPTABLE "0" STEAM

3rd PARTY INSPECTION	
SIGNATURE	DATE

TEST MEDIUM	
GAS/VAPOUR	✓
LIQUID	
STEAM	

INSPECTED BY / DATE

117

CUSTOMER: Alco Gas + Oil

CUSTOMER PO#: 125777 [redacted]

VALVE TYPE/ASSEMBLY#: 1H2F2 J05E35SJ/ 823060000E

TYCO VALVES & CONTROLS - EDMONTON
ANDERSON GREENWOOD CROSBY
FUNCTIONAL TEST REPORT

ORDER#: 3144292-00

DATE: 03/23/11

GAUGE# (FINAL): 210155-42 09/11

LEAK TEST PROCEDURE: A.P.I. STANDARD 527

	SERIAL NO.	TAG	CAPACITY RATING	BACK PRESSURE TEST	ASSY TECH	SET NAMEPLATE	SPECIFIED RESEAT	LEAK TEST	TESTED BY
						230 PSIG ✓ CDTP	PSIG	207 PSIG 1 min TIME	
1)	C10-53848	PSV-400 ✓	1470 SCFM	30 PSIG	FV	234 PSIG		0 BPM	FV
2)									
3)									
4)									
5)									
6)									
7)									
8)									
9)									
10)									

TRACEABILITY REQUIREMENTS - HEAT/CODE NUMBERS FOR TRACEABLE COMPONENTS

	BODY/CYLINDER	BASE	BONNET	NOZZLE	DISC		
1)	F0425		L2798	M955			
2)							
3)							
4)							
5)							
6)							
7)							
8)							
9)							
10)							

CDTP CALCULATION:

SET NAMEPLATE:

- BACK PRESS:

+ TEMP CORR:

C.D.T.P. =

GENERAL COMMENTS:

CRN# 0G0703.92

L PRESSURES IN "PSIG" UNLESS OTHERWISE INDICATED.
BUBBLES PER MINUTE (AIR), CUBIC CENTIMETER PER MINUTE (LIQUID),
CEPTABLE "0" STEAM

3rd PARTY INSPECTION

SIGNATURE	DATE

TEST MEDIUM	
GAS/VAPOUR	✓
LIQUID	
STEAM	

SMUW

INSPECTED BY / DATE

Form C-289 Rev 1 02-06-12

Phase # : 2011-8169-01
Phase Title: Raw Condensate-Pre Heater

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports	X	
2. CRN's	X	
3. Nameplate Copy	X	
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT	X	
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

(A) 602814

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada
(Name and address of Manufacturer)

2. Manufactured for Husky Oil Operations Ltd c/o Excelsior Engineering Ltd - 400, 1110 Centre Street NE Calgary AB T2E 2R2
(Name and address of Purchaser)

3. Location of installation MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)
(Name and address)

4. Type: HORIZONTAL (Horiz., vert., or sphere) | 192 NEN RAW CONDENSATE-PRE HEATER (Tank, separator, jkt. vessel, heat exh., etc.) | 2011-8169-01 (Manufacturer's serial number)

V-3989.2 (CRN) | D-2011-8169-01-001/001 R0 (Drawing number) | N/A (National Board number) | 2011 (Year built)

5. ASME Code, Section VIII, Div. 1 2010 EDITION (Edition and Addenda (date)) | N/A (Code Case No.) | N/A [Special Service per UG-120(d)]

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) Number of course(s): 1 (b) Overall length (ft & in.): 15'-9 3/8" SEAM/SEAM

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter, in.	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	8.625"OD	15'-9 3/8"	SA-106 GrB	0.322"	1/16"	S	N/A	100%	7	NONE	100%	N/A	N/A

7. Heads: (a) SEE TUBESHEET (Material spec. number, grade or type) (H.T. — time and temp.) (b) SEE TUBESHEET (Material spec. number, grade or type) (H.T. — time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(b)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

If removable, bolts used (describe other fastening) N/A
(Material spec. number, grade, size, number)

8. Type of jacket N/A Jacket closure N/A
(Describe as ogee & weld, bar, etc.)
If bar, give dimensions N/A If bolted, describe or sketch.

9. MAWP 400 PSI (internal) 0 PSI (external) at max. temp. 300°F (internal) 300°F (external) Min. design metal temp. -20°F at 400 PSI

10. Impact test NO, CHARPY IMPACT TEST EXEMPT PER UG-20(f), FLANGES PER UCS-66(c) at test temperature of N/A
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. Hydrostatic 520 PSIG Proof test N/A

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-516Gr.70MT [Stationary (Mat'l Spec. No.)] | 7 7/8" [Diameter (subject to press.)] | 1.420 (Nominal thickness) | TS/SS 1/16" (Corr. allow.) | Welded [Attachment (welded or bolted)]

N/A [Floating (Mat'l Spec. No.)] | N/A (Diameter) | N/A (Nominal thickness) | N/A (Corr. allow.) | N/A (Attachment)

13. Tubes: SA-179 (Mat'l Spec. No., Grade or Type) | 3/4" (O.D.) | 14 BWG (Nominal thickness) | 44 (Number) | Straight [Type (Straight or U)]

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): 2 (b) Overall length 1'-9 1/2" SM/SM

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
2	8.625"OD	0'-10 3/4"	SA-106 GrB	0.322"	1/16"	S	N/A	100%	1	SPOT	70%	N/A	N/A

15. Heads: (a) SA-105N NPS 8 CL300 RF BLIND (Mat'l Spec. No., Grade or Type) (H.T.-Time & Temp.) (b) SA-105N NPS 8 CL300 RF BLIND (Mat'l Spec. No., Grade or Type) (H.T.-Time & Temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	1.625"	1/16"	N/A	N/A	N/A	N/A	N/A	13"BCD	N/A	N/A	N/A	N/A	N/A
(b)	END	1.625"	1/16"	N/A	N/A	N/A	N/A	N/A	13"BCD	N/A	N/A	N/A	N/A	N/A

If removable, bolts used (describe other fastening) 24pc-7/8"DIA X 5 1/2"LG UNC-2A SA-193-B7 STUDS c/w 2 SA-194-2H HEX NUTS EACH
(Mat'l Spec. No., Grade, size, No.)

FORM U-1 (Back)

16. MAWP 400 PSI (internal) 0 PSI (external) at max. temp. 300°F (internal) 300°F (external) Min. design metal temp. -20°F at 400 PSI

17. Impact test EXEMPT Shells & Tubesheets Per UG-20(f) & Flanges UCS-66(c) at test temperature of N/A
(Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb. test press. Hydrostatic 520 PSIG Proof test N/A

19. Nozzles, inspection, and safety valve openings:

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp.Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Channel Cover	2	8"	CL300RFWN	N/A	SA105N	0.322"	1/16"	N/A	N/A	TYPE 1	Channel
COND INLET	1	4"	CL300RFWN	SA-106B	SA105N	0.337"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
COND OUT	1	4"	CL300RFWN	SA-106B	SA105N	0.337"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
PROD INLET	1	2"	CL300RFWN	SA-106B	SA105N	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	Tube Side
PROD OUT	1	2"	CL300RFWN	SA-106B	SA105N	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	Tube Side
VENT/DRAIN	2	3/4"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	SHELL
VENT/DRAIN	2	3/4"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	Tube Side

20. Supports: Skirt No (Yes or No) Lugs NO (No.) Legs NO (No.) Others SADDLES (Describe) Attached WELDED TO SHELL (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:
(List the name of part, item number, mfg's. name and identifying number):
N/A

22. Remarks: IMPACT TEST EXEMPT STUDS & NUTS PER UCS-66 NOTE(c), TUBES EXEMPT PER UCS-66(d)
HEATING SURFACE 136.4 FT^2 / VOLUME 5.58 FT^3 / MPI TUBESHEETS PER UG-93(d)
AS BUILT DRAWING D-2011-8169-01-001/001 R1 / PSV LOCATED IN PIPING
INSPECTION OPENING OMITTED PER UG 46(a) / RT TUBESIDE PER UW-11(a)5(b), RT SHELLSIDE - NONE

CERTIFICATE OF SHOP 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 Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 14259 Expires OCTOBER 7 , 2013

Date 3/30/2011 Name Alco Gas & Oil Production Equipment LTD. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP INSPECTION

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 of ALBERTA have inspected the pressure vessel described in this Manufacturer's Data Report on MARCH 30 , 2011 , and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 03-30-11 Signed (Authorized Inspector) Commissions NB12897 A/B A3245 (Nat'l Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No. Expires ,

Date Name (Assembler) Signed (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

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 and employed by of have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items , not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 Signed (Authorized Inspector) Commissions (Nat'l Board incl. endorsement, State, Province and No.)

ABSA
the pressure equipment safety authority

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

March 18, 2011

Attention: Magdi Ghobrial
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
5203 75 STREET
EDMONTON, AB T6E 5S5

The design submission, tracking number 2011-01088, originally received on February 22, 2011 was surveyed and accepted for registration as follows:

CRN : V3989.2 **Accepted on:** March 18, 2011

Reg Type: New Design

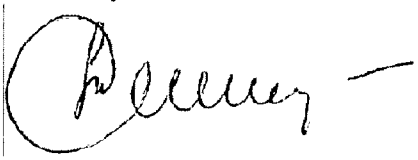
Drawing No. : D-2011-8169-01-001/001 Rev 0

Description	MAWP	Design Temperature	MDMT
SS Internal Pressure	2758 kPa	149°C	-29°C
TS Internal Pressure	2758 kPa	149°C	-29°C

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

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3367 or fax (780) 437-7787 or e-mail Onshchenko@absa.ca.

Sincerely,



ONSHCHENKO, TETYANA, P. Eng.

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

_____ Year Built

_____ Serial Number

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

_____ Year Built

_____ Serial Number

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date 03-02-11

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER :
HUSKY OIL OPERATIONS LTD	2011-8169-01	DRAWING NUMBER
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	D-2011-8169-01-001/001

ITEMS:	COMMENTS:	INITIALS		
		HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
7-192 NEN RAW CONDENSATE PRE-HEATER NPS 8 X 16'-0" TS/TS				
Repair Procedure Approved				
Approved Drawings	V-3989.2			* R 03-30-11
Material Checked Against Drawing Bill of Material	CHECKED 08 MAR 2011			
Mill Test Checked Ht FF 03-14-11 SS 03-08-11 TS	CHECKED 08 MAR 2011			* V 03-08-4
Impact Test	EXEMPT UG-20(f), UCS-66(c),(a) & CURVE(d)			
Unit Layout	2011/03/23			
Weld Procedure Approved	REVIEWED 18 FEB 2011			
Welder(s) Qualifications	REVIEWED 18 FEB 2011			
Fit-Up: Shell & Heads	TYPE 1 / TYPE 7 08 MAR 2011			
Nozzles & Fittings	08 MAR 2011			
Internals	08 MAR 2011			
Externals	08 MAR 2011			
Connections: Location	08 MAR 2011			
Rating	CL300 CL3000 08 MAR			
ernal Inspection	Shell - 03-02-11 TTS - 03-08-11 08 MAR			* H 03-08-4
Internals Installed	08 MAR 2011			
Weld Profile, Sizes & ID	CHECKED 08 MAR 2011			1 03-08-4
Radiographs	UW-11(a)5(b) 28 FEB 2011			* R 03-08-11
Other NDE	MPI TUBESHEETS 08 MAR 2011			R 03-30-4
Stamping	CHECKED 08 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED 08 MAR 2011			* H 03-08-4
Alternative Test		-		
PWHT Charts Checked	NONE	-		
Hydrostatic Test/Chart SS	520PSIG GAGE# G3, G12 16 MAR 2011		MAR 16/11	* H 03-16-11
Hydrostatic Test/Chart TS	520PSIG GAGE# H7, H9 17 MAR 2011		MAR 17/11	* H 03-17-11
MDR	30 MAR 2011			* H
Name Plate	30 MAR 2011			* H 3-30-11

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA105N RFBL	1.625"	30731	Repads			
Shell	SA-106B	0.322"	1034836V				
	"	"	1031738V				
				Tubes	SA-179	14 BWG	09-A-52 20904-0142
Tubesheet	SA-516-70MT	1.420"	1618K 3/202				

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

MATERIAL CONTROL & NDE LIST

SERIAL NUMBER: 2011-8169-01
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 8, 2011

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT	MPI TS AFT MACH	MPI TS AFT WELD		
CHANNEL BLIND	NPS 8 CL300 RF	SA-105N	30731						
CHANNEL FLANGE	NPS 8 CL300 STD	SA-105N	10/37015						
CHANNEL SHELL	NPS 8 SMLS PIPE STD	SA-106B	1034836V		✓				
TUBESHEET	8.625"DIA X 1.420" MTAF	SA-516-70MT	1618K-31202						
SHELL	NPS 8 SMLS PIPE STD	SA-106B	1031738V						
TUBESHEET	8.625"DIA X 1.420" MTAF	SA-516-70MT	1618K-31202						
CHANNEL SHELL	NPS 8 SMLS PIPE STD	SA-106B	1034836V						
CHANNEL FLANGE	NPS 8 CL300 STD	SA-105N	10/37015		✓				
CHANNEL BLIND	NPS 8 CL300 RF	SA-105N	30731						
N1 RFWN	NPS 4 CL300 XH	SA-105N	38445						
N2 RFWN	NPS 4 CL300 XH	SA-105N	38445						
N3 RFWN	NPS 2 CL300 XH	SA-105N	920981						
N4 RFWN	NPS 2 CL300 XH	SA-105N	920981						

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

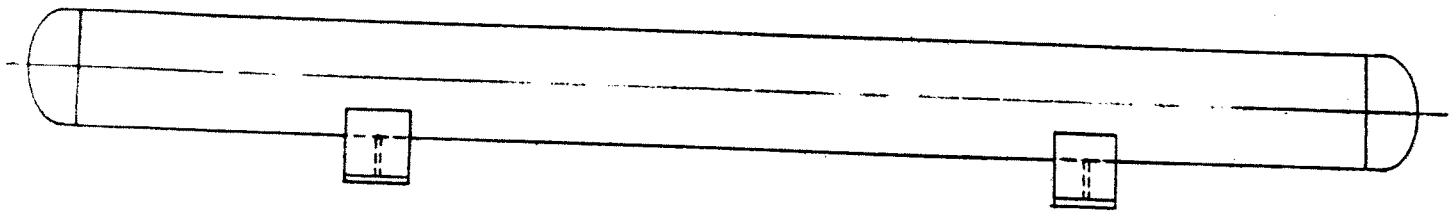
MATERIAL CONTROL & NDE LIST

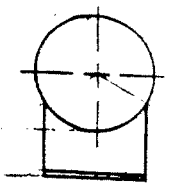
SERIAL NUMBER: 2011-8169-01
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 8, 2011

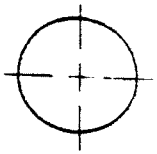
NONDESTRUCTIVE TESTING WHEN REQUIRED

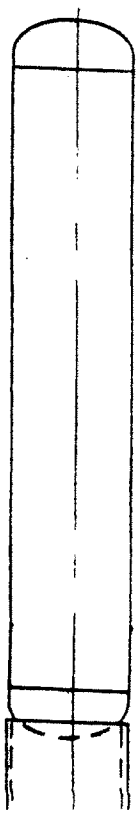
ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR					
C1A COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
C1B COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
C2A COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
C2B COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
NOZZLE NECK	NPS 2 SMLS PIPE XH	SA-106B	0942155V						
	NPS 4 SMLS PIPE XH	SA-106B	10603130						

CUSTOMER: HUSKY OIL
SERIAL No: 2011-8169-01









DATE: FEB. 28, 2011 FILLED BY: KET

TYPE OF VESSEL: 8 5/8" O.D. x 16'-0" T3/T3 (7-192) NEN EXCHANGER DRWG. NO:

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:						
	8 5/8"	20	1618K	31202	SA-516-70 NACE	1 1/2" ⇒ 1.42
SHELL:	8"	1, 3	1031738V		SA-106-B	STD.
		7	1034836V		SA-106-B	STD.
	2"	9	0942155V		SA-106-B	XH
	4"	11	10603130		SA-106-B	XH
	3/8"	24	09A-52	+ 20904-0143	SA-179	14 ga
PADS:		43	63146	7326K	SA-516-70 NACE	1/4"
SKIRT:						
SADDLES:						

8169-01

Appendix L
REV. 0
DWG. D-2900

MATERIAL REPORT

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

DOUG 7/8/86
NTS

40 105

CONFORMS TO SA 106B
YEAR 2010 ED
JOB # 2011-E169-01
ITEM # 1
8 STD
8 MAR 2011
VERIFIED BY

Contract No: 2210001532
Name of Customer: IMEX CANADA INC.
PO.NO.: ~~PO749-09~~ 945354
Description: SEAMLESS STEEL LINE PIPE
TOTAL: 447 PIECES, 151 BUNDLES, 254.505 MT

HENGYANG VALIN STEEL TUBE CO., LTD

MILL CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

Date: MAY 28,2010
Page: 1/3

SPEC:ASTM A53-2007/A106-2006/ASME SA53-2007/SA106-2007/API 5L-2007,NACE MR-0175/ISO 15156-2:2003,NACE MR-0103:2005;CSA Z245.1 Gr 290 Cat.I Sour Service

CERTIFICATE NO.: 10-02-0210

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT (MT)	SKU#
5	K44003110	1031738V	B/290	8"*0.322"*20FT	11	52	1040	13.489	2860061
6.1	K44003092	1031737V	B/290	8"*0.322"*40FT	22	65	2600	33.714	2860062
6.2	K44003101	1031738V	B/290	8"*0.322"*40FT	46	138	5520	71.576	2860062
7	K43L02100	0935169	B/290	8"*0.5"*20FT	4	20	400	7.88	2860036
8	K43L02110	0935169	B/290	8"*0.5"*40FT	11	32	1280	25.216	2860037
				TOTAL:	94	307	10840	151.875	

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST EMI	MPI	TYPE	C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	TI	B	Nb	CE
5				P	0.12	0.28	1.07	0.008	0.001	0.04	0.02	0.05	0.01	0.023	0.02	0.0001	0.025	0.32
	HOT-ROLLED	OK	N/A	P	0.11	0.27	1.06	0.008	0.001	0.04	0.02	0.05	0.01	0.023	0.02	0.0001	0.025	0.31
				L	0.12	0.29	1.10	0.008	0.001	0.05	0.02	0.05	0.01	0.023	0.03	0.0001	0.025	0.33
6.1				P	0.14	0.28	1.09	0.008	0.002	0.04	0.02	0.04	0.01	0.026	0.03	0.0001	0.025	0.34
	HOT-ROLLED	OK	N/A	P	0.13	0.29	1.08	0.008	0.002	0.04	0.02	0.04	0.01	0.026	0.03	0.0001	0.025	0.33
				L	0.11	0.28	1.03	0.008	0.001	0.04	0.02	0.05	0.01	0.023	0.025	0.0001	0.025	0.30
6.2				P	0.11	0.28	1.06	0.007	0.002	0.04	0.02	0.06	0.01	0.026	0.02	0.0001	0.025	0.31
	HOT-ROLLED	OK	N/A	P	0.11	0.28	1.05	0.007	0.002	0.04	0.02	0.06	0.01	0.026	0.02	0.0001	0.025	0.31
				L	0.12	0.29	1.10	0.008	0.001	0.05	0.02	0.05	0.01	0.023	0.03	0.0001	0.025	0.33
7				P	0.12	0.27	1.08	0.006	0.002	0.08	0.03	0.04	0.01	0.026	0.02	0.0001	0.026	0.32
	HOT-ROLLED	OK	N/A	P	0.13	0.26	1.07	0.006	0.002	0.08	0.03	0.04	0.01	0.026	0.02	0.0001	0.026	0.33
				L	0.11	0.25	1.07	0.008	0.001	0.10	0.03	0.05	0.01	0.023	0.03	0.0002	0.028	0.32
8				P	0.13	0.25	1.08	0.007	0.002	0.08	0.03	0.04	0.01	0.023	0.03	0.0001	0.026	0.33
	HOT-ROLLED	OK	N/A	P	0.12	0.26	1.07	0.007	0.002	0.08	0.03	0.04	0.01	0.023	0.03	0.0001	0.026	0.32
				L	0.11	0.25	1.07	0.008	0.001	0.10	0.03	0.05	0.01	0.023	0.03	0.0002	0.028	0.32

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σb (PSI)	ELONGATION δ%	IMPACT Ak J			HARDNESS HRC	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
	strip ,L,bo=38mm,Lo=50mm			SIZE	AK	Ori/Tem				
5	73225	59450	45		N/A		1.0	2360	OK	N/A
6.1	68150	55100	41.5		N/A		1.0	2360	OK	N/A
6.2	72500	58000	45		N/A		1.0	2360	OK	N/A
7	65975	49300	51		N/A		1.0	3000	OK	N/A
8	65975	49300	53.5		N/A		1.0	3000	OK	N/A

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 EN10204 3.1.B
4 Hardness certified to NACE MR 0175(Latest Edition)_,ISO15156-1:2003
5.TYPE:P-Product analysis L-Ladle analysis.

VERIFIED BY
WESTLUND

QUALITY MANAGER

Contract No.: 2210001926-3
L/C NO.: 0FAHD5-00546
P.O.NO.: PO.SCL-10-0628-2100 (LOT D)
Name of Customer: CE FRANKLIN
DESCRIPTION: SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE.
TOTAL: 204PIECES, 64BUNDLES, 112.221MT, 8165.42FT

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL TEST REPORT

Date: OCT. 21, 2010
Page: 1/1

Add: 10 Daixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

SPEC.: ASTM A53B-2007/A106B-2008, ASME SA53B/SA106B-2010, API 5LB/X42, PSL-2-2008, NACE MR-0175-2005/ ISO 15156-2(REGION 3) / MR-0103/SS (CSA Z245.1 GRADE 290 CATEGORY I)

CERTIFICATE NO: 2010-01-08-24

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	QUANTITY (MT)	ACTUAL WEIGHT(MT)
1	KX4L02150	935267	B/X42/GR.290	6"*0.280"*40FT	4	27	1080.7	9.308	
2	K92L18091	10348836V	B/X42/GR.290	8"*0.322"*40FT	14	42	1681.12	21.798	
	K92L18092	10348836V	B/X42/GR.290	8"*0.322"*40FT	29	84	3362.24	43.586	
3	K91L20660	10348835V	B/X42/GR.290	10"*0.365"*40FT	17	51	2041.36	37.519	

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
1	HOT-ROLLED	OK	N/A	P	0.11	0.26	1.01	0.007	0.0014	0.07	0.03	0.06	0.03	0.0015	0.035	0.0001	0.028	9.182	0.303
				P	0.12	0.27	1.02	0.007	0.0014	0.07	0.03	0.06	0.03	0.0015	0.035	0.0001	0.028	8.5	0.315
				L	0.13	0.29	1.05	0.007	0.0020	0.09	0.03	0.05	0.01	0.0100	0.030	0.0001	0.025	8.077	0.327
2	HOT-ROLLED	OK	N/A	P	0.11	0.27	1.00	0.008	0.0010	0.07	0.03	0.03	0.01	0.0017	0.025	0.0001	0.025	9.091	0.292
				P	0.11	0.26	1.00	0.008	0.0010	0.07	0.03	0.03	0.01	0.0017	0.025	0.0001	0.025	9.091	0.292
				L	0.12	0.23	1.03	0.010	0.0014	0.04	0.02	0.04	0.01	0.0100	0.028	0.0001	0.029	8.583	0.308
	HOT-ROLLED	OK	N/A	P	0.11	0.27	1.00	0.008	0.0011	0.07	0.03	0.03	0.01	0.0019	0.025	0.0001	0.025	9.091	0.292
				P	0.11	0.26	1.00	0.008	0.0011	0.07	0.03	0.03	0.01	0.0019	0.025	0.0001	0.025	9.091	0.292
				L	0.12	0.23	1.03	0.010	0.0014	0.04	0.02	0.04	0.01	0.0100	0.028	0.0001	0.029	8.583	0.308
3	HOT-ROLLED	OK	N/A	P	0.12	0.19	1.01	0.010	0.0024	0.06	0.03	0.05	0.01	0.0022	0.021	0.0001	0.025	8.417	0.307
				P	0.11	0.19	1.02	0.010	0.0024	0.06	0.03	0.05	0.01	0.0022	0.021	0.0001	0.025	9.278	0.298
				L	0.11	0.25	1.05	0.012	0.0015	0.06	0.02	0.04	0.01	0.0100	0.026	0.0001	0.031	9.545	0.302

NO.	TENSILE STRENGTH	YIELD STRENGTH σs (PSI)	ELONGATION δ (%)	IMPACT TEST					SHEAR FRACTURE			HYDROSTATIC TEST (PSI)	FLATTEN TEST	BEND TEST	SSC TEST	HIC TEST
				Ori/Tem (℃)	Dime(mm)	AKV (J)	% shear area	HARDNESS HRC≤22								
	strip L_bo=25mm,Lo=50mm															
1	68875	55825	36	N/A	N/A	N/A	N/A	OK	N/A	N/A	N/A	2670	OK	N/A	N/A	N/A
	strip L_bo=38mm,Lo=50mm															
2	68875	56550	45	T/O	10*6.67*55	V8/192.0/69.0/198.0	N/A	OK	N/A	N/A	N/A	2370	OK	N/A	N/A	N/A
	68875	56550	44.5	T/O	10*6.67*55	V8/186.0/208.0/216.0	N/A	OK	N/A	N/A	N/A	2370	OK	N/A	N/A	N/A
3	68875	55100	39	T/O	10*7.5*55	V8/248.0/260.0/253.0	N/A	OK	N/A	N/A	N/A	2440	OK	N/A	N/A	N/A

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 10204.3.1 AND NACE MR-0175
4. TYPE:P-Product analysis L-Ladle analysis;
5. ORIGIN: MADE IN CHINA
6 *1 =Mn/C

8" STO

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-01
ITEM # 2
SIGNED BY 08 MAR 2011

QUALITY MANAGER:

(2) 8169-01

8" CL 300 W/N FLANGE RF STD BORE A105N

P.O. # 125494 Item# 1
Heat Number: 10/30715
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1501 - 4

PO # 125494

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI
SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.865441
Fax +39 031.655149
quality.mff@fermas.com

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 3788 Del/Dated 21.09.2010
Fattura / Invoice N. 2605 Del/Dated 20.09.2010
DDT / Del Note N. 4913 Del/Dated 20.09.2010
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA / HEAT CODE HEAT: 10/30715 — POS. ITEM: 042
VS.ORDINE / YOUR REFERENCE: 640/TRANS AM
Q.TA' QTY
DESCRIZIONE / DESCRIPTION: W/N 300 RF 8" STD A105
DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5
VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY
MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,185	0,250	1,110	0,008	0,010	0,100	0,050	0,010	0,019	0,130	0,002	0,001	0,000	0,025	0,404

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	341,0	530,0	31,0	60,0	163,0 - 165,0	KV	20	89	89	86	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 10/71475 — POS. ITEM: 047
VS.ORDINE / YOUR REFERENCE: 640/TRANS AM
Q.TA' QTY
DESCRIZIONE / DESCRIPTION: W/N 300 RF 1" XS A105
DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5
VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY
MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,180	0,220	1,080	0,007	0,014	0,090	0,050	0,010	0,018	0,180	0,004	0,001	0,000	0,025	0,396

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO Y.ELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	336,0	542,0	33,0	58,0	164,0 - 166,0	KV	20	83	88	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 661578 — POS. ITEM: 050
VS ORDINE / YOUR REFERENCE: 640/TRANS AM
Q.TA' QTY
DESCRIZIONE / DESCRIPTION: W/N 300 RF 2.1/2" XS A105
DIM IN ACC. A / DIM ACCORDANCE TO: ASME/ANSI B16.5
VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY
MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,181	0,212	1,100	0,015	0,010	0,059	0,040	0,020	0,001	0,082	0,001	0,001	0,000	0,023	0,388

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	335,0	537,0	30,0	61,0	156,0 - 159,0	KV	20	82	84	84	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

NOTE MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

CONFORMS TO SA 105N
YEAR 2010ED
JOB # 2011-8169-01
ITEM # 3
SIGNED BY 23 FEB 2011

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT: S. Corti Sergio
ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY:
MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL: MFF

(2) 8169-01

Po # 125494

8" CL 300 BLIND FLANGE RF A105N

Rev'd By: SB

Trans Am Piping Products Ltd. - 1581 - S10 - 10/30731 Item# 2
Heat Number: 286396
Shipment/Seq #:

METALFAR
PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI
SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@farmas.com

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 4261 Del/Dated 21.10.2010
Fattura / Invoice N. 2965 Del/Dated 21.10.2010
DDT / Del Note N. 5580 Del/Dated 21.10.2010
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA / HEAT CODE HEAT: 10/72714 | POS. ITEM: 083 | VS.ORDINE / YOUR REFERENCE: 640/TRANS AM
DESCRIZIONE / DESCRIPTION: BLIND 150 RF 4" A105
DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5
VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,190	0,220	1,130	0,009	0,013	0,070	0,050	0,020	0,018	0,200	0,003	0,002	0,000	0,026	0,414

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	343,0	555,0	33,0	57,0	166,0 - 170,0	KV	20	80	88	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 10/30731 | POS. ITEM: 093 | VS.ORDINE / YOUR REFERENCE: 640/TRANS AM
DESCRIZIONE / DESCRIPTION: BLIND 300 RF 8" A105
DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5
VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,185	0,230	1,130	0,009	0,010	0,090	0,060	0,010	0,016	0,160	0,000	0,000	0,000	0,026	0,408

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	345,0	531,0	31,0	60,0	163,0 - 165,0	KV	20	90	88	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 286396 | POS. ITEM: 094 | VS.ORDINE / YOUR REFERENCE: 640/TRANS AM
DESCRIZIONE / DESCRIPTION: BLIND 300 RF 18" A105
DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5
VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,200	0,230	1,170	0,005	0,011	0,080	0,040	0,010	0,002	0,040	0,020	0,001	0,000	0,023	0,420

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	329,0	557,0	33,0	71,0	166,0 - 170,0	KV	20	86	84	85	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

NOTE MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

CONFORMS TO SA 105N
YEAR 2010 - ED
JOB # 2011-8169-01
ITEM # 4
SIGNED BY 23 FEB 2011

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT: S. Corti Sergio

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY:

MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL: MFF

COMPLAINTS TO: 105N
YEAR 2010 E0
JOB # 2011-8169-01
ITEM # 8
SIGNED BY 24 FEB 2011

125-001

PO-173864

SAN ENG STEEL FORGING CO LTD
311, Jen Hsin Road, Jen Wu Hsiang
Kaohsiung Hsien, 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.: 7002448(2)-NOV

Certificate No.: SE-2448B
Date: 05/18/2010
Page: 1 OF 4

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09/ASME SA105-09	ASME B16.5-09 CSA Z245.12

Item No	CODE NO	DESCRIPTION	QUANTITY
1	6222	300 WNRF XS 2" A105N	244 PCE
2	6222	300 WNRF XS 2" A105N	16 PCE
3	11445	150 SWRF XS 1" A105N	170 PCE
4	11443	150 SWRF XS 1/2" A105N	60 PCE
5	4051	150 THRF 6" A105N	60 PCE
6	11449	300 SWRF XS 3/4" A105N	50 PCE
7	16630	150 BLRF 12" A105N	15 PCE
8	5098	150 WNRF STD 5" A105N	20 PCE
9	11437	150 SWRF STD 2" A105N	17 PCE
10	11437	150 SWRF STD 2" A105N	3 PCE

CHEMICAL COMPOSITION (%)

Item No	Heat No.	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N	CE(*3)
	Min	-	0.100	0.600	-	-	-	-	-	-	-	-	-	
	Max	0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-	
1	920981	0.222	0.270	1.040	0.015	0.012	0.005	0.016	0.051	0.002	0.009	0.005	0.003	0.403
2	921032	0.219	0.280	1.020	0.010	0.009	0.009	0.015	0.054	0.002	0.003	0.005	0.006	0.397
3	64319	0.200	0.290	0.940	0.017	0.009	0.170	0.150	0.130	0.020	0.002	0.001	0.012	0.411
4	21530	0.210	0.160	1.130	0.007	0.010	0.050	0.060	0.050	0.005	0.003	0.005	0.009	0.418
5	28008	0.220	0.230	1.080	0.013	0.011	0.060	0.040	0.030	0.010	0.003	0.005	0.009	0.416
6	931202	0.199	0.290	1.050	0.011	0.013	0.008	0.015	0.049	0.002	0.002	0.001	0.007	0.381
7	915542	0.209	0.280	1.030	0.018	0.019	0.017	0.024	0.050	0.005	0.022	0.005	0.006	0.391
8	21530	0.210	0.160	1.130	0.007	0.010	0.050	0.060	0.050	0.005	0.003	0.005	0.009	0.418
9	21533	0.200	0.160	1.060	0.010	0.011	0.060	0.070	0.030	0.005	0.003	0.005	0.010	0.398
10	29570	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009	0.409

Item No	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: Minimum: Joule			Material Supplier
	Min	485.0	250.0	22.0	-	30.0	1	2	3	
	Max	-	-	-	187	-				
1	920981	521.7	337.3	32.2	157	65.0				NTMK
2	921032	511.9	347.2	34.0	155	67.0				NTMK
3	64319	513.9	319.7	33.2	155	65.9				RED OCTOBER
4	21530	519.8	335.4	36.0	154	66.8				OEMK
5	28008	515.8	323.6	40.0	157	61.1				OEMK
6	931202	513.9	372.7	33.2	156	68.0				NTMK
7	915542	509.9	352.1	35.8	149	69.5				NTMK
8	21530	519.3	335.4	36.0	154	66.8				OEMK
9	21533	515.8	337.4	34.4	153	68.6				OEMK
10	29570	491.3	298.1	35.4	150	65.9				OEMK

■ HEAT TREATMENT(*2)
☒ N

■ REMARKS
880°CX3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156.2
CONFORMS WITH Z245.12 CAT I GR 248 SOUR SERVICE-05
TEST SPECIMEN ORIENTATION TRANSVERSE

*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=Furance 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. SE 70.C.J QUALITY ASSURANCE DEPT

Manager of Quality Assurance Dept

110149

8/9/2010

https://gpts.nov.com/MTR/gifvie).aspx?docIDs=191065

Customer: COMMERCIAL METALS COMPANY DBA CMC DALLAS TRADING
6565 N MACARTHUR BLVD ,SUITE 800,IRVING,TX 75039,USA

Description:
PRIME NEWLY PRODUCED CARBON STEEL SEAMLESS LINE PIPE
LC NO:118572/290836 P.O.NO:62430 LOT NO:1
TOTAL: 4387 PIECES, 130 BUNDLES, 257.754MT

HENGYANG STEEL TUBE GROUP INTERNATIONAL TRADING INC.

MILL TEST CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993

Date: SEP 07,2009
Page: 2/3

P.C. 421001

SPEC: ASTM/ASME SA53/A53/A106/SA106/API 5L,PSL-1 GRADE B,CSA Z245.1 GRADE 290

CERTIFICATE NO: 09-07-0905

ITEM NO	BATCH NO	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)
8	997302502	0911799	X42	2" x 0.344" x SRL	5	145	3045	10.313
9	997302608	0924156	X42	2" x 0.154" x SRL	14	840	17640	29.249
10	997302607	0911794	X42	2" X 0.154" x DRL	2	69	2760	4.576
10	998300129	0923934	X42	2" X 0.154" x DRL	1	20	800	1.326
11	997302609	0814695	X42	2" X 0.218" x DRL	2	50	2000	4.56
12	997102615	0911796	X42	2" X 0.218" x SRL	4	176	3696	8.428
12	997102616	0924155V	X42	2" X 0.218" x SRL	8	352	7392	16.856
12	997102617	0911794	X42	2" X 0.218" x SRL	7	276	5796	13.217
12	997102618	0911796	X42	2" X 0.218" x SRL	6	264	5544	12.642
13	997302613	0924157	X42	3" X 0.216" x DRL	8	124	4960	17.066
		TOTAL:			57	2316	53833	118.233

2" XH
CONFORMS TO SA 106 B
YEAR 2010 ED
JOB. 2011-8169-01
ITEM # 9
SIGNED BY 08 MAR 2011

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST ET	NONDESTRUCTIVE TEST MPI	TYPE	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Ti	Nb	CE
8	HOT-ROLLED	OK	N/A	P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				L	0.15	0.31	1.10	0.012	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
9	HOT-ROLLED	OK	N/A	P	0.15	0.32	1.11	0.015	0.002	0.07	0.03	0.05	0.01	0.032	0.01	0.003	0.001	0.35
				P	0.15	0.31	1.12	0.015	0.002	0.07	0.03	0.05	0.02	0.023	0.01	0.003	0.001	0.36
				L	0.14	0.31	1.16	0.016	0.003	0.08	0.04	0.05	0.02	0.023	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.15	0.009	0.005	0.06	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
				P	0.15	0.30	1.15	0.009	0.005	0.05	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
				L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.05	0.01	0.029	0.01	0.003	0.001	0.37
10	HOT-ROLLED	OK	N/A	P	0.15	0.35	1.09	0.015	0.005	0.07	0.02	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				P	0.15	0.36	1.10	0.015	0.005	0.07	0.02	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				L	0.14	0.37	1.14	0.014	0.004	0.06	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
11	HOT-ROLLED	OK	N/A	P	0.16	0.35	1.12	0.013	0.005	0.08	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				P	0.16	0.35	1.12	0.013	0.005	0.08	0.03	0.03	0.01	0.042	0.01	0.005	0.001	0.36
				L	0.17	0.39	1.15	0.015	0.002	0.06	0.03	0.03	0.01	0.042	0.01	0.006	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.09	0.010	0.004	0.05	0.02	0.04	0.04	0.040	0.01	0.005	0.001	0.38
				P	0.15	0.29	1.10	0.010	0.004	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
				L	0.15	0.31	1.20	0.012	0.003	0.06	0.03	0.05	0.01	0.020	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.08	0.010	0.003	0.06	0.02	0.04	0.01	0.023	0.01	0.003	0.001	0.37
				P	0.15	0.28	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.040	0.01	0.002	0.001	0.35
				L	0.13	0.32	1.19	0.012	0.005	0.06	0.03	0.05	0.02	0.020	0.01	0.002	0.001	0.36
12	HOT-ROLLED	OK	N/A	P	0.16	0.29	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.026	0.01	0.003	0.001	0.36
				P	0.15	0.29	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
				L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.04	0.01	0.021	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.11	0.010	0.003	0.05	0.02	0.05	0.01	0.029	0.01	0.003	0.001	0.37
				P	0.16	0.28	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				L	0.13	0.31	1.14	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
13	HOT-ROLLED	OK	N/A	P	0.13	0.31	1.16	0.009	0.003	0.06	0.03	0.05	0.01	0.027	0.01	0.003	0.001	0.34
				P	0.13	0.31	1.15	0.009	0.003	0.05	0.02	0.03	0.02	0.023	0.01	0.006	0.001	0.34
				L	0.13	0.30	1.16	0.015	0.003	0.07	0.03	0.05	0.02	0.024	0.01	0.006	0.001	0.34
																0.002	0.001	0.35

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (Mpa) strip L,bo=19mm,Lo=50mm	ELONGATION δ (%)	IMPACT Ak (J) SIZE	IMPACT Ak (J) AK	IMPACT Ak (J) Orl/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
8	68875	49300	41		N/A		OK	3000	N/A	OK
9	65975	45675	33		N/A		OK	3000	N/A	OK
10	69600	50750	37		N/A		OK	3000	N/A	OK
10	70325	53650	37		N/A		OK	3000	N/A	OK
11	68150	47850	33.5		N/A		OK	3000	N/A	OK
12	69600	52200	34.5		N/A		OK	3000	N/A	OK
12	68875	50025	31		N/A		OK	3000	N/A	OK
12	71050	50750	32.5		N/A		OK	3000	N/A	OK
12	69600	52200	33.5		N/A		OK	3000	N/A	OK
13	68875	49300	37		N/A		OK	3000	N/A	OK

REMARKS: 1. We hereby certify that the material has been manufactured, sampled, tested and inspected in accordance with the required standards.
2. Properties compliance to EN10204 3.1.B
3. BRINELL /Rockwell hardness certified to NACE MR 0175-03 and MR 0103-03.
4. TYPE: P--Product analysis L--Ladle analysis.
5 CHEMICAL,MECHANICAL AND PHYSICAL PROPERTIES ARE IN COMPLIANCE WITH CONTRACTED QUALITY AND TOLERANCES AS PER OMMERCIAL METALS COMPANY-DBA CMC DALLAS TRADING DT PURCHASE ORDER NUMBER 62430
6.MTR AND STENCILING PER CSA 245.1 GRADE 290 LATEST EDITION PSI PER API 5L SPECIFICATION LATEST EDITION ON MTR AND PIPE.

QUALITY MANAGER:

108914

MTR View

12/16/2009

https://gpts.nov.com/MTR/gifviewer.aspx?docIDs=189622

METALFAR

PRODOTTI INDUSTRIALI S.P.A.
23881 CESANA BRIANZA (LC) ITALY
Tel. 031.855441 - Fax 031.855149
MATERIAL TEST DEPARTMENT
SALA PROVE ED ANALISI MATERIALI

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001 : 2000 =

TRANS AM PIPING PRODUCTS LTD
233061 ENDEAVOR DRIVE S.E.
CALGARY-ALBERTA

125-001
AS#117005

INSPECTION CERTIFICATE EN 10204/3.1 — *CERTIFICATO DI COLLAUDO*

N.: 2699/ 19/07/2007
INVOICE / FATTURA: 2411/ 18/07/2007
S.: 50929
DEL. NOTE / BOLLA: 4045/ 18/07/2007

PAG.: 1

4" CL 300 W/N FLANGE RF XH
BORE A105N

HEAT CODE COD. COLATA	HEAT COLATA	ITEM POS.	YOUR P.O. VS. ORDINE	OUR REFERENCE NS. ORDINE	QUANTITY QUANTITÀ	DESCRIPTION DESCRIZIONE		DIM. ACCORDANCE TO DIM. IN ACCORDO A	VISUAL & DIMENSIONAL VISIVO E DIMENSIONALE
	38445	0022	C107-369	07001942 0029		W/N 300 RF 4" XS	A105	ASME/ANSI B16.5	SATISFACTORY
	147031	0010	C107-268	07001139 0019		W/N 150 RF 12" XS	A105	ASME/ANSI B16.5	SATISFACTORY
	63109	0032	C107-369	07001942 0039		W/N 600 RF 10" 80	A105	ASME/ANSI B16.5	SATISFACTORY
	15384	0053	C107-369	07001942 0060		BLIND 150 RF 12"	A105	ASME/ANSI B16.5	SATISFACTORY
	64202.	0023	C107-364	07001904 0030		W/N 600 RF 10" XS	LF2CL1	ASME/ANSI B16.5	SATISFACTORY
	147499	0055	C106-767	06003814 0062		W/N 600 RF 12" 80	A105	ASME/ANSI B16.5	SATISFACTORY

HEAT CODE COD. COLATA	HEAT COLATA	ITEM POS.	MATERIAL MATERIALE	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Nb %	N %	Al %	C.E. %	ORIGIN ORIGINE
	38445	0022	ASTM A 105	0.195	0.250	0.990	0.026	0.015	0.090	0.060	0.010	0.007	0.160	0.001	0.002	0.008	0.005	0.394	EUROPE
	147031	0010	ASTM A 105	0.190	0.190	1.060	0.003	0.012	0.100	0.060	0.010	0.006	0.180	0.000	0.002	0.008	0.025	0.404	EUROPE
	63109	0032	ASTM A 105	0.190	0.220	1.040	0.008	0.007	0.040	0.070	0.020	0.002	0.190	0.003	0.001	0.006	0.028	0.393	EUROPE
	15384	0053	ASTM A 105	0.190	0.220	1.120	0.012	0.009	0.040	0.110	0.020	0.001	0.200	0.001	0.002	0.006	0.028	0.409	EUROPE
	64202.	0023	ASTM A350 LF2 CL1/2	0.190	0.250	1.060	0.013	0.011	0.070	0.080	0.020	0.000	0.300	0.004	0.006	0.008	0.027	0.410	EUROPE
	147499	0055	ASTM A 105	0.190	0.210	1.090	0.005	0.008	0.080	0.070	0.010	0.000	0.170	0.000	0.002	0.000	0.026	0.405	EUROPE

HEAT CODE COD. COLATA	HEAT COLATA	ITEM POS.	TEST SPECIMEN PROVETTA mm² DIRECTION Direzione	mm LOCATION Posizione	YIELD POINT Snervamento N/mm² ≥ 675	TENSILE STRENGTH Rottura N/mm²	ELONGATION Allungamento % ≥	REDUCTION OF AREA Contrazione % ≥	HARDNESS Durezza Hb	BEND TEST Piega	FLATTENING TEST Schiacciam.	IMPACT TEST - Resilienza Joule / cm² U.NI.	TYPE TIPO mm	°C	1	2	3	SHAPE FORMA 1 = ▭ 2 = □	S	W	X	YIELD POINT SNERVAMENTO N/mm² ≥ 1,5 R	ODE.RE
	38445	0022	126.60	50.80	340.0	522	31.0	59.0	163-165	0.0	0.0		KV	20	82	86	84	1				0.	
	147031	0010	126.60	50.80	327.0	535	30.0	60.0	163-165	0.0	0.0		KV	20	85	83	86	1				0.	
	63109	0032	126.60	50.80	313.0	527	31.0	63.0	156-159	0.0	0.0		KV	20	84	82	85	1				0.	
	15384	0053	126.60	50.80	407.0	543	33.0	63.0	163-165	0.0	0.0		KV	20	83	81	87	1				0.	
	64202.	0023	126.60	50.80	326.0	551	30.0	62.0	166-170	0.0	0.0		KV	-50	63	66	63	1				0.	
	147499	0055	126.60	50.80	337.0	530	31.0	61.0	159-163	0.0	0.0		KV	20	83	87	85	1				0.	

HEAT CODE COD. COLATA	HEAT COLATA	ITEM POS.	MATERIAL IN ACCORDANCE TO MATERIALE IN ACCORDO A	HEAT TREATMENT TRATTAMENTO TERMICO	
	38445	0022	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	147031	0010	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	63109	0032	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	15384	0053	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	64202.	0023	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	147499	0055	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE

CONFORMS TO SA 105N
YEAR 2010 ED
JOB 2011-8169-01
ITEM # 10
SIGNED BY 23 FEB 2011

NOTE
MATERIAL IN ACCORDANCE WITH NACE MR-0175/~~2003~~

QUALITY CONTROL DEPARTMENT — *UFFICIO CONTROLLO QUALITÀ*
BRACCHI FLAVIO

INSPECTION AUTHORITY — *ENTE UFFICIALE COLLAUDO*

MANUFACTURER'S SYMBOL — *MARCHIO PRODUZIONE*
MFF

HEAT NUMBER : 38445
TRANS AM PIPING PRODUCTS - REV'D BY:
Shipment/Seq # : 6 - 7 - 1390 - 2

4" XH BLK SEAMLESS STEEL PIPE
A106 GR B B.E. , D.R.L.

P.O.# 123953 Item# 1
Heat Number: 10603130
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1264 2

CONFORMS TO SA 106-B
YEAR 2010 ED
AGS # 2011-8169-01
ITEM # 11
SIGNED BY D B MAR 2011

4"XH

YANTAI LUBAO STEEL PIPE CO., LTD.
NO 185 XINGFU MIDDLE ROAD, YANTAI, CHINA
TEL: 0086 535-6843946/6854750 FAX: (0535)5842245
HTTP://WWW.LUBAOSTEEL-TUBE.COM

MILL TEST CERTIFICATE

(EN10204 3.1)

PURCHASER	TRANS AM PIPING PRODUCTS LTD.,	DESCRIPTION OF GOODS	PIPE
DIMENSION STANDARD	ASME B36.10	CUSTOMER'S NO.	L00109 / CERTIFICATE NO. BGTYG1605110000700
MATERIAL SPECIFICATION	ASTM A106-B-2006, ASME SA106-B-2007, API 5L B-2007	DATE OF DELIVERY	20100511 / SUB CONTRACT NO. G0C6007921
	CSA Z245.1-2007 Gr.241 Cat I	P.O NO.	TICI-10-182 / DATE OF ISSUE 20100511
	NACE MR0175-2003/ISO 15156	STAMP OF MILL INSPECTOR	LICENSE NO.

O.D 114.3mm 4" XH W.T 8.56mm Length 11-11.8M Total Length

Total Pieces Total Weight Delivery Condition As-Rolled Total Bundles Order Quantity

Making Meshed Hot Finished Seamless

No.	Heat No.	* 1 * 2	C	Si	Mn	P	S	Cu	Ni	Cr	V	Mo	Ti	B	Nb	CE	Lot No.	* 3	* 4	* 5	Y.S.	T.S.	E L	EYT	Impact Test * 3	* 4	* 5	* 6	* 7	1	2	3	AVG	Hardness Brinnel (HR)	Pieces	Weight MT
MIN			0	0.1	0.29	0	0	0	0	0	0	0	0	0	0						Mpa		%												
MAX			0.22	0.9	1.06	0.035	0.035	0.40	0.40	0.40	0.08	0.15	0.01	0.001	0.01																				
	10603130	H	0.19	0.25	0.46	0.020	0.008	0.01	0.02	0.03	0.01	0.01	0	0	0	0.28	0231024				240	415	22.0												
																					999	999													
		P	1	2	310	490	29.0																											164	
		P	1	2	295	470	30.0																											161	

ET	E.M.I	U.T.	M.P.I.	Visual & Dimensions	Coating	Drift Test
—	GOOD	—	—	Good	Good	—
Expansion	Ring Expansion	Ring Tensile	Flattening	Bending	Flanging	SSCC
—	—	—	Good	—	—	—

Hydrostatic Pressure	Duration of Time
19.00MPa	5s
Macrostructure	Heat Treatment
—	—

NOTES: 2* Chemical Composition H:Heat (Ladle) Analysis 3* P= Pipe Body;4* L=Longtudinal 5* 2-ScripT×20mm; G.L =Gauge Length L1=5.65SQRT(F0)

Remark: *** L/C NO.: DPCHCV012667

SURVEYOR: WE HERE CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF ABOVE SPECIFICATIONS AND PURCHASE ORDER, AND MET THE REQUIREMENTS.

CHIEF OF QUALITY CONTROL DEPT.

edmonton exchanger
& manufacturing ltd.

35 years of growth and excellence 1975 – 2010

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

OK

Customer ALCO GAS & OIL PRODUCTION PO 123131 Work Order C83973 Date 2010/04/29 CofC# 15729 Page 1 of 1

Item#	Description	Qty	Heat#	Brinell Hardn.
P83973-1	PLATE(S) - 1.5000" NOM X 97" X 240" (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	1618K-31202	151

Brinell Equipment: Newage Calibrated Pin
Brinell Hardness Tester

Material being supplied conforms to the latest ASME Code Section II, Part A, 2007 Edition, Addenda July 1, 2009. All welders and procedures are qualified to ASME Code Section IX.

Supplementary Examination - Items

CONFORMS TO SA 516-70MT
YEAR 2010 ED
JOB # 2011-8169-01
ITEM # 20
SIGNED BY 08 MAR 2011

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	MILL ORDER
E10706-J1010 ER	2010/02/10	2010/03/13	169101	-	CN -622381	58585

CHARGE TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
5545 - 89TH STREET
EDMONTON, ALBERTA
T6E 5W9

SHIP TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
SWITCH Z057 / EAST EDMONTON
CLOVER BAR, AB

CUSTOMER SPECIFICATION
HR PLATE - CARBON - ASME SA516 GR 70 (09B) - CVNL 15/12 FT LBS AT -50 F - ALG-STE7 R12 2010-01-15, PER SA20 - ESP-03R2 - HEAT ANALYSIS INCLUDING CE & %B, PRODUCT ANALYSIS INCLUDING %B, SSC - FINE GRAIN - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NORMALIZED 30 MINUTES MIN. PER INCH @ 1670 F

MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN.ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'SRECORD KEEPING PRACTICES

J. JOHNSTON
MANAGING METALLURGIST

SUPPLEMENTARY INSTRUCTION TEST CERT 1: WHIEMSTRA@EDMONTONEXCHANGER.COM TEST CERT 2: PLATE TEST COUPON:

INSP/TR TEST REPORTS REQ'D - INCL C.E. & BORON PRODUCT ANALYSIS 2000137882 PF
CUST USE VESSEL FABRICATION 2010/03/23 08:48

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT

MEETS EN 10204 3.1
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM
ALL HEATS FULLY KILLED
HEATS INDICATED WITH (*) FINE GRAINED
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

15393

* PRODUCT SHIPPED *

CUSTOMER ITEM 00001 OUR ITEM 001 DIMENSIONS 1.500 X 97 X 480 "

PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT	PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT
31191	1568K-52	1	19806	31192	1568K-54	1	19806
31200	1618K-04	1	19806	31202	1618K-53	1	19806

* MECHANICAL PROPERTIES *

TENSILE TESTS:

HEAT	PLATE NUMBER	SAMPLE SRCE	SAMPLE GAUGE	TEST COND	TEST METH	TEST DIR	YIELD KSI	TENSILE KSI	% ELONG	
1568K	31191	166"	1.5000	N	.2	T	49.0	76.0	36(2")	LAB
1568K	31192	166"	1.5000	N	.2	T	50.0	77.0	36(2")	ALG
1618K	31200	166"	1.5000	N	.2	T	48.1	75.0	36(2")	ALG
1618K	31202	166"	1.5000	N	.2	T	47.3	75.3	37(2")	ALG

CONFORMS TO SA 516-70 NT
YEAR 2010 ED
JOB # 2011-8169-01
ITEM # 20
SIGNED BY 08 MAR 2011

IMPACT TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	TEST COND	METH	DIR	SIZE	TEMP	FULLSIZE ENERGY *	FTLB	* AVG*		SPEC	LAB
1568K	31191	166"	1.5000	N	CVN	L	FULL	-50F	73	51	74	66	ASTM	ALG

WarningThe test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of the specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel.

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	MILL ORDER
E10706-J1010 ER	2010/02/10	2010/03/13	169101	-	CN -622381	58585

CHARGE TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
5545 - 89TH STREET
EDMONTON, ALBERTA
T6E 5W9

SHIP TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
SWITCH Z057 / EAST EDMONTON
CLOVER BAR, AB

CUSTOMER SPECIFICATION
HR PLATE - CARBON - ASME SA516 GR 70 (09B) - CVNL 15/12 FT LBS AT -50 F - ALG-STE7 R12 2010-01-15, PER SA20 - ESP-03R2 - HEAT ANALYSIS INCLUDING CE & %B, PRODUCT ANALYSIS INCLUDING %B, SSC - FINE GRAIN - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NORMALIZED 30 MINUTES MIN. PER INCH @ 1670 F

MILL TEST REPORTS

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J. JOHNSTON
MANAGING METALLURGIST

SUPPLEMENTARY INSTRUCTION TEST CERT 1: WHIEMSTRA@EDMONTONEXCHANGER.COM TEST CERT 2: PLATE TEST COUPON:

INSP/TR TEST REPORTS REQ'D - INCL C.E. & BORON PRODUCT ANALYSIS 2000137882 PF
CUST USE VESSEL FABRICATION 2010/03/23 08:48

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* * * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * *

HEAT	PLATE NUMBER	SRCE	GAUGE IN	COND	METH	DIR	SIZE	TEST TEMP	FULLSIZE ENERGY * FTLB	* AVG*	SPEC	LAB
1568K	31192	166"	1.5000	N	CVN	L	FULL	-50F	74 61 68	68	ASTM	ALG
1618K	31200	166"	1.5000	N	CVN	L	FULL	-50F	79 64 89	77	ASTM	ALG
1618K	31202	166"	1.5000	N	CVN	L	FULL	-50F	74 54 82	70	ASTM	ALG

PRODUCT ANALYSIS TESTS:

HEAT	PLATE NUMBER	COND	C TI	MN SN	P N	S AS	SI ZR	CR PB	NI SB	CU	MO	AL	CB	V	B	DO
1568K	31192		.18	1.10	.017	.004	.31	.02	.14	.02	.01	.028	.000	.016	.0002	.38
			.003		.0040											
1618K	31200		.18	1.08	.010	.004	.30	.03	.14	.04	.01	.032	.000	.015	.0003	.38
			.003		.0050											

* * * * * * * * * * * * * * * * * * CHEMICAL PROPERTIES * * * * * * * * * * * * * * * * *

HEAT (WT %)	C TI	MN SN	P N	S AS	SI ZR	CR PB	NI SB	CU	MO	AL	CB	V	B	DO
1568K*+	.20	1.09	.017	.005	.32	.02	.15	.02	.00	.027	.000	.016		.40
	.003		.0036											
1618K*+	.20	1.09	.012	.004	.32	.02	.14	.04	.00	.032	.000	.015		.40
	.004		.0052											

CONFORMS TO SA 516-70MT
YEAR 2010FD
JOB # 2011-8169-01
ITEM # 20
SIGNED BY Mar 8/2011

M&TR APPROVED EDMONTON EXCHANGER

Warning The test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of the specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel.

Zhangjiagang Huacheng Imp&Exp Co.,Ltd

337 Renmin Road(E),Tangqiao Town,Zhangjiagang City,Jiangsu Province,China

0137-C-09

Mill Test Certificate(EN 10204 Type 3.1)

TO:TUBES CANADA,22 EAST LAKE CRESCENT AIRDRIE,AB T4A 2H3 CANADA P.O.No.:C-1942-01&C-1945-01 &C-1951-01 MTC NO.:TC0901-1 Date:3 Mar,2009

Description: COLD DRWAN SEAMLESS CARBON STEEL TUBE Specification:ASME SA179 Product NO:930422 etc Invoice No:HC0901

Heat No.	Chemical Composition(%)												
	C	Mn	S	P	Si	Cr	Ni	Cu	Mo	Al	V	Ti	Sn
09-A-52	0.11	0.46	0.001	0.006	...	...	...	...	...	...	...	...	...

Size OD X WT X L	Heat No.	Lot.No.	Quantity		Mechanical Properties								Flattening	Flaring	100% Eddy	Surface	Dimension
			Kg	Pc	Yield Stress(Mpa)		Tensile Strength(Mpa)		Elongation(%)		Hardness(HRB)		Test	Test	Current Test	Inspection	Inspection
3/4"x14GAx51'-1'	09-A-52	930422	3978	275	235	250	370	350	51	50	40	42	passed	passed	passed	passed	Ok
1"x10GAx15.25'		930285	3984	450	250	260	360	370	54	52	56	55	passed	passed	passed	passed	Ok
1"x12GAx24'		930286	4086	456	245	255	360	365	53	52	54	52	passed	passed	passed	passed	Ok
1-1/4"x13GAx30'		930357	2860	240	265	270	385	390	53	51	50	51	passed	passed	passed	passed	Ok
1-1/4"x14GAx32'		930358	2770	230	260	275	385	395	50	49	52	53	passed	passed	passed	passed	Ok
1"x14GAx48'		930278	3082	182	260	265	385	390	50	49	48	49	passed	passed	passed	passed	Ok
1"x14GAx38'		930279	3250	192	265	270	390	395	49	48	46	48	passed	passed	passed	passed	Ok
TOTAL		930281	3812	238	265	275	385	395	50	49	43	45	passed	passed	passed	passed	Ok
		930228	3662	192	245	260	355	370	53	52	47	48	passed	passed	passed	passed	Ok
		930229	3776	198	250	260	360	375	52	51	46	48	passed	passed	passed	passed	Ok
		930389	2910	196	250	260	365	375	51	50	42	43	passed	passed	passed	passed	Ok
			38170	**2849**													

Remarking: 1.We hereby certify that this certificate is issued and signed by the manufacturer's Quality Representative

2.Tubes supplied are annealed,seamless & Cold Drawn

3.All of testing conform to ASME/SA450.The certificate shall be original,the copy、fax are not valid.

4.Tubes meet NACE MR0175/NACE MR0103 CE<0.43

Signed by:

Quality Assurance

Seal:

CONFORMS TO SA 179
YEAR 2010 ED
JOB # 2011-8169-01
ITEM # 24
SIGNED BY 08 MAR 2011

TUBES CANADA
1403 912 4052
THESE MILL TEST REPORTS APPLY TO:
YOUR P.O. No. 125220
JOB NUMBER 125-01

3/4" 14 BWG Tubing

C FLOOR FINANCIAL SERVICES INC

CONFORMS TO SA 179
YEAR 2010.ED
JOB # 2011-8169-01
ITEM # 24
SIGNED BY 08 MAR 2011

TUBING
.75" BWG 14

OK

MILL TEST REPORTS

Alco

YOUR P.O. # 120091-125-01
QUALITY'S INVOICE # C7631

TOTAL P.002

Zhangjiagang Yichen Steel Tube Co.,Ltd .

ADD: NANHUA ROAD, TANGQIAO TOWN, ZHANGJIANG CITY, JIANGSU P.R. CHINA

MILL TEST CERTIFICATE / MANUFACTURER'S CERTIFICATE(As Per EN-10204 Type 3.1B)

MANUFACTURER:ZHANGJIAGANG YICHEN STEEL TUBE CO.,LTD

PRODUCT:COLD-DRAWN SEAMLESS STEEL TUBE

CUSTOMER: PERFICON STEEL GMBH

SPECIFICATION STD.:ASTM A179/ASME SA179 latest edition

Invoice No.00313037 **Document Credit NO.: DPCTBD900297** **Issue Date:February24th,2009**

Purchase Order No.: 850.588 **Customer Ref: C7631** **Quote Ref: 50.588** **Date Of Issue : 090522**

Certificate No:9008345/8346 **Total Pages: 1**

TOTAL: 4024 PIECES N.W:56245 KGS CUT- LENGTH:193582.36(Total ft)

No.	Heat No.	Lot No.	Steel Grade	Tube dimension	Pieces	Weight (Kgs.)	PRODUCTS COMPOSITION (%)									
							C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V
							0.06-0.18	≤0.25	0.27-0.63	≤0.035	≤0.035					
1	94CB0516	WZL0906-019-1	ASTM A179/ASME SA179 ASTM/ASME A/SA192	OD0.75"×0.083"MW×48'1"L	2841	39730	0.09	0.24	0.57	0.01	0.014	0.085	0.03	0.1	nil	nil
2	20904-0143	WZL0906-019-2		OD0.75"×0.083"MW×48'1"L	1183	16515	0.10	0.21	0.47	0.023	0.003	0.03	0.01	0.04	0.007	nil
3																
4																
5																
6																

No.	MECHANICAL PROPERTIES					Technological Properties			Nondestr-uctive Test	Surface Quality		Dimension Tolerance	
	Yield strength σs≥180Mpa	Tensile Strenth σb≥325Mpa	Elongation δ≥35% (50mm)	Hardness ≤72HRB		Flatten-ing Test	Flaring Test	Flange Test	E.T.	Inside	Outside	O.D.	W.T.
1	275/280	375/380	50/52	54	56	PASSED	PASSED	PASSED	OK	GOOD	GOOD	OK	OK
2	250/260	370/375	50/48	52	53	PASSED	PASSED	PASSED	OK	GOOD	GOOD	OK	OK
3													
4													
5													
6													

Note: 1. We hereby certify that this certificate is issued and signed by the manufacturer's Quality Representative

2. We hereby certify that the a.m tube was manufactured, sampled, tested and inspected in accordance with the specification ASTM A179/ASME SA179 latest edition,and the requirements designated in the purchase order and that the results met the requirements of that specifications, andthe other requirements.

3. Tubes supplied with this order are multiple length heat treatment (Normalized) at 650℃ hold 20 minutes, then air cooling, seamless & Cold Drawn.

4.Eddy Current test according to ASTM A/ASME SA 450/ ASTM A/ASME SA1016 /ASTM E309

5.The radioactivity of the products meets the standards of SN/0570-2007.

ZHANGJIAGANG YICHEN STEEL TUBE CO.,LTD.
QUALIFIED PRODUCTS

MANAGING REPRESENTATIVE: WANGZAIJUN **STAMPER:WANGWEI** **DATE:** 07-03-09

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 15922

Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.

Purchaser Order No. 119259

Date: 2008-11-12

Distributor:

Distributor Order No:

7878-50

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	5	3/4" X 4" LONG 3000 THRD COUPLING B16.11	A/SA105N	HCL	1-1/2" RD BAR ASTM A105, A350 GR LF2 CL 1, A696 GR C, ASME SA105, SA350 GR LF2 CL 1, SA696 GR C, API 6A, NACE MR01-75-75, EN 10204 3.1B

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
HCL	.167	1.072	.011	.018	.188	.131	.114	.024	.162	.020	.001	-	-	.026		

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	HCL	420 N/mm2	549 N/mm2	30	69	159	123-120-127 @ -46 C. J ULTRASONIC EXAMINATION: 10	NORMZE: 1697 F. 3 HRS A.C. C.E.: .400

CONFORMING TO SA 105N 350LF2CL1
YEAR 2010 ED
JOB # 2011-S169-01
ITEM # 36
SIGNED BY 24 FEB 2011 OK

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y Lee

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	SALE ORDER
W31373	2010/08/18	2010/10/14	198784	-	TTPX -811299	66173

CHARGE TO CUSTOMER NAME&ADDRESS
SAMUEL, SON & CO. LIMITED
701 - 15 AVENUE
NISKU, ALBERTA
T9E 7L5

SHIP TO CUSTOMER NAME&ADDRESS
SAMUEL, SON & CO. LIMITED
C/O CPR TRANSFER FACILITY
EDMONTON, ALBERTA

CUSTOMER SPECIFICATION
HR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (09B) - CVNL 20/16 FT LBS AT -50 F - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - MEETS NACE MR0175 - BHN 200 MAX FULLY KILLED - FINE GRAIN - NORMALIZED FOR 08 MINUTES MIN. @ 1670 F

MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S RECORD KEEPING PRACTICES.

M. MCLEAN
MANAGING METALLURGIST

SUPPLEMENTARY INSTRUCTION TEST CERT 1: JMELOCHE@SAMUEL.COM TEST CERT 2: MTR@SAMUEL.COM PLATE TEST COUPON:

INSP TR TEST REPORTS REQ'D - INCL BHN FOR INFO .
CUST USE RESALE P/N E

2000162631 PF
2010/10/20 13:16

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2424 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT.

MEETS EN 10204 3.1
ISC QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM
ALL HEATS FULLY KILLED
HEATS INDICATED WITH (*) FINE GRAINED
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

SAMUEL, SON & CO., LTD.
CERTIFIED COPY OF
TEST REPORT
YOUR P.O. 124709
OUR ORDER 424216
DATE 11/18/10
FILLED BY:

* * * * * * * * * * * * * * * * * * * PRODUCT SHIPPED * * * * * * * * * * * * * * * * * * *

CUSTOMER ITEM 00002 OUR ITEM 001 DIMENSIONS .250 X 120 X 480 "

PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT
65145	7326K-54	1	4083
65146	7326K-54	2	8167

* * * * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * * * *

TENSILE TESTS:

HEAT	PLATE NUMBER	SAMPLE SRCE	SAMPLE GAUGE	TEST COND	TEST METH	TEST DIR	YIELD KSI	TENSILE KSI	% ELONG	
7326K	65145	166"	.2500	N	.2	T	55.0	76.3	26(8")	LAB
7326K	65146 ←	166"	.2500	N	.2	T	53.4	75.3	25(8")	ALG
										ALG

CSA - 516-70 MT
YEAR 2010 ED
JOB 2011-8169-01
CSA # 43
SIGNED BY 08 MAR 2011

HARDNESS TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	TEST COND	TEST METH	HARDNESS	
7326K	65145	166"	.2500	N	BH	156	LAB
7326K	65146	166"	.2500	N	BH	155	ALG
							ALG

1/4" PL

Warning The test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of the specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	MILL ORDER
W31373	2010/08/18	2010/10/14	198784	-	TTPX -811299	66173

CHARGE TO CUSTOMER NAME&ADDRESS
SAMUEL, SON & CO. LIMITED
701 - 15 AVENUE
NISKU, ALBERTA
T9E 7L5

SHIP TO CUSTOMER NAME&ADDRESS
SAMUEL, SON & CO. LIMITED
C/O CPR TRANSFER FACILITY
EDMONTON, ALBERTA

CUSTOMER SPECIFICATION
HR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (09B) - CVNL 20/16 FT LBS AT -50 F - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - MEETS NACE MR0175 - BHN 200 MAX FULLY KILLED - FINE GRAIN - NORMALIZED FOR 08 MINUTES MIN. @ 1670 F

SUPPLEMENTARY INSTRUCTION TEST CERT 1: JMELOCHE@SAMUEL.COM TEST CERT 2: MTR@SAMUEL.COM PLATE TEST COUPON:

INSPTR TEST REPORTS REQ'D - INCL BHN FOR INFO .
CUST USE RESALE P/N E

2000162631 PF
2010/10/20 13:16

MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RECORDED IN ACCORDANCE WITH THE COMPANY'S RECORD KEEPING PRACTICES.

M. MCLEAN
MANAGING METALLURGIST

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705) 945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT.

* * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * *

IMPACT TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	COND	TEST METH	TEST DIR	TEST SIZE	TEST TEMP	FULLSIZE ENERGY * FTLB	FTLB	FTLB	* AVG*	SPEC LAB
7326K	65145	166"	.2500	N	CVN	L	1/2	-50F	68	83	105	85	ASTM ALG
→ 7326K	65146	166"	.2500	N	CVN	L	1/2	-50F	70	70	72	71	ASTM ALG

* * * * * * * * * * * * * * * * * CHEMICAL PROPERTIES * * * * * * * * * * * * * * * * *

HEAT	(WT %)	C	MN	P	S	SI	CR	NI	CU	MO	AL	CB	V	B	DO
		TI	SN	N	AS	ZR	PB	SB							
7326K*+		.20	1.08	.009	.009	.32	.04	.04	.09	.01	.036	.000	.001		.40
		.003													

CONFORMS TO 516-70 MT
YEAR 2010 ED
JOB # 2011-8169-01
ITEM # 43
SIGNED BY 18 MAR 2011

1/4" R

SAMUEL, SON & CO., LTD.
CERTIFIED COPY OF TEST REPORT
YOUR P.O. 124709
OUR ORDER 424216
DATE 11/18/10
FILLED BY:

Warning The test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of the specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY OIL OPERATIONS LIMITED	DESCRIPTION: 7-192 NEN RAW CONDENSATE PRE-HEATER	ALCO JOB NUMBER: 2011-8169-01
DATE: MAR 3 2011	TECHNIQUE # USED: MPT P#1 REV 0	CODE: SECTION VIII DIV 1 EDITION: 2010 ADDENDA
MATERIAL:	MAT'L THICKNESS: 1.420"	ACCEPTANCE: APPENDIX 6

[X]	PRE HEAT TREATMENT	[ ]	POST HEAT TREATMENT	[ ]	POST HYDRO TEST										
TEST EQUIPMENT- Y6 YOKE 43530 TAG#128		[ ]	BLACK LIGHT -	[ ]	B/L METER -										
[ ]	BLACK ON WHITE CONRAST - MAGNAFLUX	[ ]	WCP BATCH #	[ ]	7HF PREPARED BATH #										
[X]	DRY	[ ]	WET	[ ]	FLUORESCENT	[X]	RED	[ ]	GREY	[ ]	B/WHITE	[ ]	OTHER		
[X]	YOKE	[ ]	PROD	[ ]	COIL	[X]	A/C	[ ]	D/C	[X]	CONTINUOUS	[ ]	RESIDUAL		
BASE METAL		[ ]	GROUND	[X]	MACHINED	[ ]	PAINTED	[ ]	SHOT BLASTED	[ ]	NEW CONDITION				
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		[X]	SHOP LIGHTS	[ ]	TROUBLE LIGHT	[X]	FLASHLITE	[X]	W/L METER S/N B100448						

NOTES: MAGNETIC PARTICLE EXAMINATION OF TUBE SHEETS AFTER MACHINING.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

TUBE SHEET #1 - ACCEPTED

TUBE SHEET #2 - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN _____ LEVEL III SNT: ✓ CGSB _____

TIME: 1 HR

_____ / HR

TOTAL COST: _____

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY OIL OPERATIONS LIMITED	DESCRIPTION: 7-192 NEN RAW CONDENSATE PRE-HEATER	ALCO JOB NUMBER 2011-8169-01
DATE: MAR 8 2011	TECHNIQUE # USED: MPT P#1 REV 0	CODE SECTION VIII DIV 1 EDITION 2010 ADDENDA
MATERIAL:	MAT'L THICKNESS: 1.420"	ACCEPTANCE APPENDIX 6

X	PRE HEAT TREATMENT				POST HEAT TREATMENT						POST HYDRO TEST				
TEST EQUIPMENT- Y6 YOKE 43530 TAG#128					BLACK LIGHT -						B/L METER -				
	BLACK ON WHITE CONRAST - MAGNAFLUX				WCP BATCH #						7HF PREPARED BATH #				
X	DRY		WET		FLUORESCENT			X	RED		GREY		B/WHITE		OTHER
X	YOKE		PROD		COIL	X	A/C		D/C	X	CONTINUOUS		RESIDUAL		
BASE METAL			GROUND	X	MACHINED				PAINTED		SHOT BLASTED		NEW CONDITION		
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		X	SHOP LIGHTS		TROUBLE LIGHT			X	FLASHLITE	X	W/L METER S/N B100448				

NOTES: MAGNETIC PARTICLE EXAMINATION OF TUBE SHEETS AFTER WELDING.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

TUBE SHEET #1 - ACCEPTED

TUBE SHEET #2 - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN LEVEL III SNT ✓ CGSB

TIME 1 HR

/ HR

TOTAL COST

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	7-192 NEN RAW CONDENSATE CONDITIONER	2011-8169-01
DATE:	**TECHNIQUE # USED:**	**CODE:**
FEB 28 2011	RT P#7 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2010 **ADDENDA:** -
P1	.322"	ACCEPTANCE: UW-52 UW-11-5b SPOT

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- [X] SINGLE WALL EXPOSURE
- [ ] DOUBLE WALL EXPOSURE
- [X] SINGLE WALL VIEWING
- [ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
CH1	0-8	8												✔	
CH2	0-8	8												✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	40 Ci		2	8" FILM	@
SOD:	3.990"			17" FILM	@
OFD:	.322"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1			PIPE	@
FOCAL SPOT SIZE:	.12"			PIPE	@
				PIPE	@

COMMENTS: _____ TOTAL EXPOSURES: 2

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN _____ LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-01 (TUBESIDE)*

DESCRIPTION: *192 NEN RAW CONDENSATE PRE-HEATER*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST: HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *520* psig

POSITION OF THE UNIT TESTED HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *H7 & H9*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

3/17/2011

QC INSPECTOR/ ALCO GAS & OIL **DATE**

3/17/2011

3RD PARTY INSPECTOR **DATE**

AB245 03-17-11

AUTHORIZED INSPECTOR **DATE**

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-01 (SHELLSIDE)*

DESCRIPTION: *192 NEN RAW CONDENSATE PRE-HEATER*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *520* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G3 & G12*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

QC INSPECTOR/ ALCO GAS & OIL	*3/16/2011* **DATE**
3RD PARTY INSPECTOR	3/16/2011 **DATE**
AUTHORIZED INSPECTOR AB245	03-16-11 **DATE**

Phase # : 2011-8169-02
Phase Title: Horizontal Condensate Conditioner

TABLE OF CONTENTS

Title		Availability	
		Yes	No
1. Data Reports		X	
2. CRN's		X	
3. Nameplate Copy		X	
4. Travel Sheet		X	
5. Impact Test Reports			N/A
6. Material Control		X	
7. Material Reports		X	
8. MTR's		X	
9. NDE	MPT		N/A
	LPT		N/A
	RADIOGRAPHY	X	
	ULTRA SONIC		N/A
10. Stress Relieve Charts			N/A
11. Hydrotest Report(s)		X	
12. Hydro Chart			N/A
13. PSV & Valve Cert.			N/A

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only) A602799
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada
(Name and address of manufacturer)

2. Manufactured for Husky Oil Operations Ltd c/o Excesior Engineering Ltd. - 400, 1110 Centre Street NE Calgary AB T2E2R2
(Name and address of purchaser)

3. Location of installation MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)
(Name and address)

4. Type: Horizontal (Horiz. or vert., tank) | 2011-8169-02 (Mfgrs serial No.) | V-3992.2 (CRN) | D-2011-8169-02-001/1R0 (Drawing No.) | N/A (Nat'l. Bd. No.) | 2011 (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 EDITION
to Year

----- (Addenda (Date)) | N/A (Code Case Nos.) | N/A (Special Service per UG-120(d))

6. Shell: SA-516Gr.70MT (Material spec. number, grade) | 5/8" (Nominal thickness) | 1/16" (Corr. allow.) | 46 3/4" (Inner diameter) | 16'-0"SM/SM [Length (overall)]

7. Seams: TYPE 1 (Long. (Welded, Dbl., Sngl., Lap, Butt)) | FULL (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. SA-516Gr.70MT (Spec. No., Grade) (b) Matl. SA-516Gr.70MT (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	0.580"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave
(b)	END	0.680"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave

If removable, bolts used (describe other fastenings) N/A
(Matl., Spec. No., Gr., Size, No.)

9. MAWP: 400 PSI (internal) | 0 PSI (external) at max. temp. 300°F (internal) | 300°F (external)

Min. design metal temp. -20°F at 400 PSI . Hydro., pneu., or comb. test pressure Hydrostatic 520 PSI

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
COND INLET	1	6"	CL300RFWN	SA106B/105N	0.719"	N/A	UW 16.1(c)	SHELL
COND OUT	1	6"	CL300RFWN	SA106B/105N	0.719"	N/A	UW16.1(c)	SHELL
Water Out/Drain	1	2"	CL300RFWN	SA333-6/234WPB*	0.344"	N/A	UW16.1(c)	SHELL
PSV	1	2"	CL300RFWN	SA333-6/105N	0.344"	N/A	UW16.1(c)	SHELL
WLB	1	2"	CL300RFWN	SA333-6/105N	0.344"	N/A	UW16.1(c)	SHELL
WLB	1	2"	CL300RFWN	SA333-6/105N	0.344"	N/A	UW16.1(c)	Boot Shell
MANWAY	1	20"	CL300RFWN	SA333-6/105N	1.031"	N/A	UW16.1(c)	END HEAD
BOOT	1	12"	SMLS PIPE	SA106B	0.500"	SA-516Gr.70MT	UW16.1(c)	SHELL

11. Supports: Skirt No (Yes or no) Lugs NO (No.) Legs NO (No.) Other SADDLES (Describe) Attached WELDED TO SHELL (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
(Name of part, item number, Mfgr's. name and identifying stamp)

IMPACT TEST EXEMPT PER UG 20 (f), FLANGES PER UCS-66(c), MANWAY NECK PER UCS-66(g) / RT PER UW-11(a)5(b)

CONDENSATE CONDITIONER CAP 214 FT^3 / AS BUILT DRAWING D-2011-8169-02-001/001 R1

PSV ON VESSEL / BOOT HEAD: 12.750"OD X 0.375" MTAF, SA516-70MT, 2:1 ELLIPTICAL RATIO, CONCAVE

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 Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. 14259 expires October 7 , 2013

Date MAR 22, 2011 Co. name Alco Gas & Oil Production Equipment LTD. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by Alco Gas & Oil Production Equipment LTD. at 5203 75th St., Edmonton, Alberta T6E 5S5 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 MARCH 22 , 2011 , and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 03-22-11 Signed (Authorized Inspector) Commissions NB12897 A/B AB245 [Nat'l Board (incl. endorsements) State, Prov. and No.]

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

(A) 602799

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada
(Name and address of Manufacturer)

2. Manufactured for Husky Oil Operations Ltd c/o Excesior Engineering Ltd. - 400, 1110 Centre Street NE Calgary AB T2E2R2
(Name and address of Purchaser)

3. Location of installation MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)
(Name and address)

4. Type: Horizontal (Horiz., vert., or sphere) | CONDENSATE CONDITIONER (Tank, separator, heat exh., etc.) | 2011-8169-02 (Mfg's serial No.)

V-3992.2 (CRN) | D-2011-8169-02-001/1R0 (Drawing No.) | N/A (National Board Number) | 2011 (Year built)

Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
DPI	1	3/4"	COUPLING	SA105N	N/A	CL6000	1/16"	N/A	UW16.1(c)	N/A	SHELL
PI / DPI	1	3/4"	COUPLING	SA105N	N/A	CL6000	1/16"	N/A	UW16.1(c)	N/A	SHELL
TEMP IND	1	3/4"	COUPLING	SA105N	N/A	CL6000	1/16"	N/A	UW16.1(c)	N/A	SHELL

Data Report Item Number	Remarks
MANWAY BLIND	NPS 20 CL300 RF SA-105N
BOLTINGS	24pc - 1 1/4"DIA X 8 1/4"LG 8UN-2A SA-193-B7 STUDS c/w 2 SA-194-2H HEX NUTS EACH
	*FLANGE MATERIAL IS SA-105N

Certificate of Authorization: Type U No. 14259 Expires October 7 2013

Date 3/22/2011 Name Alco Gas & Oil Production Equipment LTD. (manufacturer) Signed (Representative)

Date 03-22-11 Name (Authorized Inspector) Commission NB12897 A/B AB245 (Nat'l. Board incl. endorsement, state, province and no.)

ABSA
the pressure equipment safety authority

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

March 18, 2011

Attention: Magdi Ghobrial
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
5203 75 STREET
EDMONTON, AB T6E 5S5

<TOFAXNUM:780-466-8110>
<TONAME:Magdi Ghobrial>
<NOCOVER>

The design submission, tracking number 2011-01150, originally received on February 25, 2011 was surveyed and accepted for registration as follows:

CRN : V3992.2 **Accepted on:** March 18, 2011

Reg Type: New Design

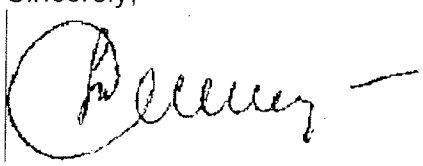
Drawing No. : D-2011-8169-02-001/001 Rev 0

Description	MAWP	Design Temperature	MDMT
Internal Pressure	2758 kPa	149°C	-29°C

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

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3367 or fax (780) 437-7787 or e-mail Onshchenko@absa.ca.

Sincerely,



ONSHCHENKO, TETYANA, P. Eng.

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

400 psi at 300 °F
Max. Allowable Working Pressure

0 psi at 300 °F
Max. Allowable External Working Pressure

-20 °F at 400 psi
Minimum Design Metal Temperature

2011 — Year Built

2011-8169-07 — Serial Number

CRN V-3992.2 — A No. 8169.07

NAME CONDENSATE CONDITIONER — TAG V-511

HEAD SA516-70MT 0.660/0.580 in — C.A. 0.062 in

SHELL SA516-70MT 0.62 in — HYDRO 520 psi

2011-8169-50

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date 03-02-11

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER : (A) 602799
HUSKY OIL OPERATIONS LTD	2011-8169-02	DRAWING NUMBER
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	D-2011-8169-02-001/001
ITEMS: HORIZONTAL CONDENSATE CONDITIONER 48"OD X 16'-0" S/S	COMMENTS:	INITIALS

		HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings	V-3992.2			* R 03-22-11
Material Checked Against Drawing Bill of Material	CHECKED 17 MAR 2011			
Mill Test Checked HC# 03-17-11	CHECKED 17 MAR 2011			* V 03-18-11
Impact Test	EXEMPT UG-20(f), UCS-66(c), CURVE(B), FIG UCS-66.1			
Unit Layout	2011/03/03			
Weld Procedure Approved	REVIEWED 25 FEB 2011			
Welder(s) Qualifications	REVIEWED 25 FEB 2011			
Fit-Up: Shell & Heads	TYPE 1 15 MAR 2011			
Nozzles & Fittings	17 MAR 2011			
Internals	15 MAR 2011			
Externals	17 MAR 2011			
Connections: Location	17 MAR 2011			
Rating	CL300 CL6000 17 MAR 2011			
Internal Inspection	Course 1+2, CS2 + Boot - 03-04-11 Circ 3 - 03-08-11 Hw Hd 03-09-11 15 MAR 2011			* H 03-15-11
Internals Installed	15 MAR 2011			
Weld Profile, Sizes & ID	CHECKED 17 MAR 2011			I 03-18-11
Radiographs	UW-11(a)5(b) 10 MAR 2011			* R 03-18-11
Other NDE				
Stamping	CHECKED 17 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED 17 MAR 2011			(H) 03-18-11 →
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart	520PSIG GAGE# G9,618 18 MAR 2011			* H 03-18-11
MDR	22 MAR 2011			* H 03-22-11
Name Plate	22 MAR 2011			* H 03-22-11

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-516-70MT	0.680"	G6637 SB816302O6	Repads	SA-516-70MT	0.625"	SB96743 PR4829601
	SA-516-70MT	0.580"	313509 116SS				
	SA-516-70MT	0.375"	GS291 771910538				
Shell	SA-516-70MT	0.625"	SB67966 PR3233240				
	"	"	WOP560 P36				
Tubesheet							

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

MATERIAL CONTROL & NDE LIST

SERIAL NUMBER: 2011-8169-02
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 17, 2011

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT				
END HEAD	48.000"OD X 0.580" MTAF	SA-516-70MT	313509-11655						
SHELL	48"OD X 8'-0"LG X 0.625" THK	SA-516-70MT	SB67966-PB32332401		✓ ✓				
SHELL	48"OD X 8'-0"LG X 0.625" THK	SA-516-70MT	W0F560-D36		✓ ✓				
END HEAD	48.000"OD X 0.680" MTAF	SA-516-70MT	G6637-581630206		✓				
REPAD	3.000"W X 0.625" THK	SA-516-70MT	SB96743-PB46829601						
N1 RFWN	NPS 6 CL300 S160	SA-105N	31655						
N2 RFWN	NPS 6 CL300 S160	SA-105N	31655						
N3 RFWN	NPS 2 CL300 S160	SA-105N	921032						
N4 RFWN	NPS 2 CL300 S160	SA-105N	921032						
N5A RFWN	NPS 2 CL300 S160	SA-105N	921032						
N5B RFWN	NPS 2 CL300 S160	SA-105N	921032						
BOOT SHELL	NPS 12 SMLS PIPE XH	SA-106B	0681949						
BOOT HEAD	12.750"OD X 0.375" MTAF	SA-516-70MT	G5291-771910538		✓				

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

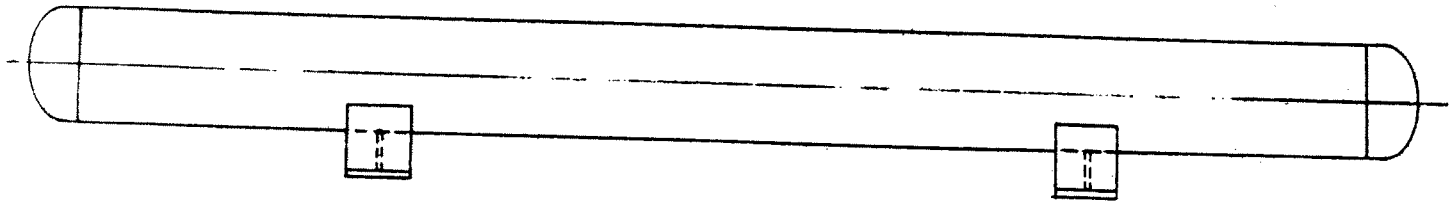
SERIAL NUMBER: 2011-8169-02
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 17, 2011

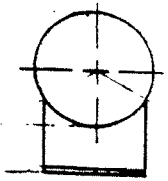
MATERIAL CONTROL & NDE LIST

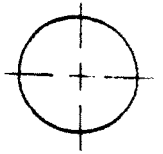
NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT				
MANWAY NECK	NPS 20 SMLS PIPE S80	SA-333-6	609543		✓				
MANWAY FLANGE	NPS 20 CL300 RFWN S80	SA-105N	187177						
MANWAY BLIND	NPS 20 CL300 RF	SA-105N	450393						
C1 COUPLING	NPS $^{3}/_{4}$ CL6000	SA-105N	3239						
C2 COUPLING	NPS $^{3}/_{4}$ CL6000	SA-105N	3239						
C3 COUPLING	NPS $^{3}/_{4}$ CL6000	SA-105N	3239						
NOZZLE NECKS	NPS 6 SMLS PIPE S160	SA-106B	J6K3659 / 0830845						
	NPS 2 SMLS PIPE S160	SA-333-6	41025						
#39 90° LR ELBOW	NPS 2 S160	SA+234 WPB	10410604						

CUSTOMER: HUSKY OIL
SERIAL No: 8169-02









DATE: Mar. 4. 2011 FILLED BY: M. Burt DRWG. NO: 8169-02

TYPE OF VESSEL:

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:	48" O.D.	1	G6637 ✓	5816302O6	SA-516-70 MT	3/4"
	48" O.D.	2	313509 ✓	11655		5/8"
COURSE # 1	48" O.D.	4	WOF560 ✓	D36	SA-516-70 MT	5/8"
COURSE # 2	48" O.D.	4	SB67966 ✓	PB32332401	SA-516-70 MT	5/8"
SHELL:	6 1/2" X 3'-7 1/2"	16	4208K ✓	49922	SA-516-70 MT	5/8"
	9" X 1'-0 X 6"	20	3153H-04 ✓	21639	SA-516-70 MT	5/8"
	20" O.D.	25	609543 ✓		SA-333-6	3/4"
	6"	34	J6K3059 ✓		SA-106-B	SCH80
	6"	34	0830845 ✓		SA-106-B	SCH160
	2"	38.41.42	41025 ✓		SA-333-6	SCH160
PADS:		7	G5291 ✓	771910538	SA-516-70 MT	SCH160
						1/2"
SKIRT:						
SADDLES:						

8169-02

Appendix L
REV. 0
DWG. D-2900

MATERIAL REPORT

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

DOUG 7/8/86
NTS

CERTIFICATE OF COMPLIANCE

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 ALCO GAS & OIL PRODUCTION PO 125275 Work Order C88128 Date 2011/01/31 CofC# 22171

Item#	Description	Qty	Heat#	Brinell Hardn.	Required Min Thk	Recorded Min Thk	Form. Proc.
H88128-1	HEAD(S) - Semi-Elliptical 2:1 - 0.3750" NOM (0.2800"_MIN) X 16" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	2	SA49752-PC69180603	153	0.2800"	0.3450"	1
H88128-2	HEAD(S) - Semi-Elliptical 2:1 - 0.3750" NOM (0.2800"_MIN) X 16" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	2	SA49752-PC69180603	154	0.2800"	0.3450"	1
H88128-3	HEAD(S) - Semi-Elliptical 2:1 - 0.6250" NOM (0.5800"_MIN) X 48" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	313509-11655 A	MTR	0.5800"	0.5950"	1
H88128-4	HEAD(S) - Semi-Elliptical 2:1 - 0.7500" NOM (0.6800"_MIN) X 48" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	G6637-581630206	MTR	0.6800"	0.7160"	1
H88128-5	HEAD(S) - Semi-Elliptical 2:1 - 0.5000" NOM (0.3800"_MIN) X 12.75" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	G5291-771910538	MTR	0.3800"	0.4470"	1

CONFORMING TO SA 516-70MT
YEAR 2010 ED
QW # 2011-8169-02
ITEM # 1, 2, 7
VERIFIED BY 01 FEB 2011

OK

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

Customer ALCO GAS & OIL PRODUCTION PO 125275 Work Order C88128 Date 2011/01/31 CofC# 22171

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, 2010.

Supplementary Examination - Items

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: 283822-19.12.07

A08/ Manufacturer's order/ A03 Certificate No.: 329574-005

Sheet: 1/...

A05 Established Inspecting body: DH

A06 Purchaser: ARCELOR CANADA CHICA A07.1 No.

Final receiver: EDMONTON STEEL, EDMON A07.2 No. E10456-J1010 LG

B01 Product: HOT ROLLED PLATES

14134

B02/ Steel design. SA516-70

B03 Any suppl. requirements: ASME-2A:04+A06
DIL-HUE-2:R21-2006-04-27

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	96,50000 x	480,00000	3724	N	313507	11823-01	
02	1	0,6250 x	120,50000 x	480,00000	4650	N	313509	11654-03	
02	1	0,6250 x	120,50000 x	480,00000	4650	N	313509	11655-02	
02	1	0,6250 x	120,50000 x	480,00000	4650	N	313509	11655-03	
02	1	0,6250 x	120,50000 x	480,00000	4650	N	313509	11656-01	
02	1	0,6250 x	120,50000 x	480,00000	4650	N	313511	11275-01	
**	5				23250				
***	6				26974				

B04 Product delivery condition

ITEM NO.: 01-03
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.: 01-03
STEEL DESIGNATION **SA516 70 MTLTV SA516 60 MTLTV**
HEAT NO. / TRADEMARK / ROLLED PLATE NO.-TEST NO. / INSPECTOR'S STAMP

CONFORMING TO SA 516-70M-11
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 2
SIGNED BY 01 FEB 2011 OK

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.

QM-System: Certification as per ISO 9001

LAMBERT
Test House Manager

A H B
Inspector's stamp

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

Date 20.12.07 PP 1

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: 283822-19.12.07

A08/ Manufacturer's order/ A03 Certificate No.: 329574-005

Sheet: 2/...

A05 Established inspecting body: DH

A06 Purchaser: ARCELOR CANADA CHICA A07.1 No.

Final receiver: EDMONTON STEEL,EDMON A07.2 No. E10456-J1010 LG

B01 Product: HOT ROLLED PLATES

B02/ Steel design.: SA516-70

B03 Any suppl. requirements: ASME-2A:04+A06
DIL-HUE-2:R21-2006-04-27

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	313507	11823		K1	Q	RT	48,9	73,7	28,9	
02	313509	11654		K1	Q	RT	49,4	73,5	29,4	
02	313509	11655		K1	Q	RT	48,4	73,1	27,0	
02	313509	11656		K1	Q	RT	48,0	73,5	27,0	
02	313511	11275		K1	Q	RT	51,5	75,1	29,4	

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	C33 Testing method	C35 C31 Individual values			C32 Mean value
01	313507	11823		K1	O	RT	HBW 10/3000	HB 145	147	148	147
02	313509	11654		K1	O	RT	HBW 10/3000	HB 145	146	144	145
02	313509	11655		K1	O	RT	HBW 10/3000	HB 148	149	146	148
02	313509	11656		K1	O	RT	HBW 10/3000	HB 146	148	144	146
02	313511	11275		K1	O	RT	HBW 10/3000	HB 148	150	150	149

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	313507	11823		K1	LV	-51		CHP-V			AV 118	112	108	113
02	313509	11654		K1	LV	-51		CHP-V			AV 195	109	109	138
02	313509	11655		K1	LV	-51		CHP-V			AV 147	148	140	145
02	313509	11656		K1	LV	-51		CHP-V			AV 94	101	60	85
02	313511	11275		K1	LV	-51		CHP-V			AV 93	89	79	87

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.

QM-System: Certification as per ISO 9001

LAMBERT
Test House Manager

AHB Inspector's stamp

Date 20.12.07

PP 1

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

DILLINGER HÜTTE

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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: 283822-19.12.07

A08/ Manufacturer's order/ A03 Certificate No.: 329574-005

Sheet: 3/...

A05 Established Inspecting body: DH

A06 Purchaser: ARCELOR CANADA CHICA A07.1 No.

Final receiver: EDMONTON STEEL,EDMON A07.2 No. E10456-J1010 LG

B01 Product: HOT ROLLED PLATES

B02/ Steel design. SA516-70

B03 Any suppl. requirements: ASME-2A:04+A06
DIL-HUE-2:R21-2006-04-27

C70-C99 Chemical composition % - Heat analysis

B07.2 Heat	C70	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
313507	Y	0,173	0,339	1,14	0,009	0,0028	0,0047	0,016	0,007	0,044	0,029	0,001	0,000	0,001	0,001
313509 ←	Y	0,177	0,328	1,13	0,008	0,0011	0,0055	0,015	0,008	0,028	0,038	0,003	0,000	0,001	0,002
313511	Y	0,175	0,354	1,14	0,008	0,0012	0,0051	0,023	0,008	0,031	0,043	0,002	0,000	0,001	0,002

B07.2 Heat	C70	B	CA	AL-T
313507	Y	0,0001	0,0039	0,042
313509 ←	Y	0,0001	0,0017	0,040
313511	Y	0,0002	0,0020	0,044

C94 Heat analysis Carbon equivalent / Alloying restrictions

B07.2 Heat								
313507	FO-02=	0,37	FO-55=	0,10	FO-78=	0,04	FO-91=	6,6
313509 ←	FO-02=	0,38 ✓	FO-55=	0,09	FO-78=	0,05	FO-91=	6,4
313511	FO-02=	0,38	FO-55=	0,11	FO-78=	0,05	FO-91=	6,5

C95 Ladle treatment

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

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
313507	11823	K1	0,173	0,338	1,13	0,008	0,0025	0,0048	0,016	0,006	0,045	0,028	0,000	0,000	0,000	0,002
313509	11648 ✓	K1	0,175	0,325	1,12	0,007	0,0010	0,0054	0,015	0,007	0,026	0,039	0,003	0,000	0,000	0,002
313511	11402	K1	0,168	0,353	1,12	0,007	0,0012	0,0051	0,019	0,008	0,029	0,041	0,002	0,000	0,001	0,002
313511	11416	K1	0,178	0,342	1,13	0,007	0,0013	0,0050	0,017	0,007	0,028	0,041	0,002	0,000	0,000	0,002

A04 Manufacturer's mark: DH

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

QM-System: Certification as per ISO 9001

LAMBERT
Test House Manager

AHB Inspector's stamp

Date 20.12.07

PP 1

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

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

DILLINGER HÜTTE

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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: 283822-19.12.07

A08/ Manufacturer's order/ A03 Certificate No.: 329574-005 Sheet: 4

A05 Establiished Inspecting body: DH

A06 Purchaser: ARCELOR CANADA CHICA A07.1 No.

Final receiver: EDMONTON STEEL,EDMON A07.2 No. E10456-J1010 LG

B01 Product: HOT ROLLED PLATES

B02/ Steel design. SA516-70

B03 Any suppl. requirements: ASME-2A:04+A06
DIL-HUE-2:R21-2006-04-27

C70-C99 Chemical composition % - Product analysis

B07.2 Heat	B07.1 Test No.	C01	B	CA	AL-T
313507	11823	K1	0,0001	0,0032	0,044
313509	11648 ✓	K1	0,0000	0,0015	0,040
313511	11402	K1	0,0000	0,0021	0,042
313511	11416	K1	0,0001	0,0020	0,042

C94 Product analysis Carbon equivalent / Alloying restrictions

B07.2 Heat	B07.1 Test No.	C01				
313507	11823	K1	FO-02=	0,37	FO-55=	0,10
313509	11648 ✓	K1	FO-02=	0,37 ✓	FO-55=	0,09
313511	11402	K1	FO-02=	0,37	FO-55=	0,10
313511	11416	K1	FO-02=	0,38	FO-55=	0,09

MTR APPROVED EDMONTON EXCHANGE

C94 Carbon equivalent formula / Alloying restrictions

FO-02 = C+(MN/6)+(CR+MO+V)/5+(NI+CU)/15
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
RESULT OF MARKING, SURFACE, SHAPE AND DIMENSIONS: NO REMARKS

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 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.

QM-System: Certification as per ISO 9001

LAMBERT
Test House Manager

AHB Inspector's stamp

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

Date 20.12.07 PP 1

B

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38581010
契約番号 CONTRACT No. : 8-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07
文書番号 DOCUMENT No. :
需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家管理番号 CUSTOMER'S CONTROL No. : E3001P05Q1 E0

本社 HEAD OFFICE : 〒100-8071 東京都千代田区大手町二丁目6番3号 2-6-3, OTEMACHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
君津製鐵所 KIMITSU WORKS : 〒299-1141 千葉県君津市君津1番地 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF, 299-1141 JAPAN

証明書番号 CERTIFICATE No. : P-96300 頁 PAGE 8
発行年月日 DATE OF ISSUE : 2008-09-03
1001 2**DM***** *****CEW**

寸法 DIMENSION mm, "inch, 'feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	GL ※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL % ※3	BEND TEST 良/不良 ※4	LOCATION ORIENTATION ※1	SIZE ※2	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW		C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100	V ×100	Ti ×100	Ceq. 1 ×100	熱処理条件 CONDITION OF SUPPLY ※7
																	N	TE3	TE1			SN	CA	B	TI			Pcm	Sol. Al	Ceq. 2
																	×1000	×1000	×100		×100	×100	×10000	×10000	×100				×100	×100
02			G6637	TESTED-PL										282	AVG		15	38	143	7	1	1	2	2	0	12	0	32	39	
0.75"X120.5"X480"	1	5579	20413	581630207	T	C	52	76	31		T	L	F	269	268	153		32	2	5		0	12	2	0					
														256																
																P	15	38	145	7	1	1	1	2	0	13	0		40	
																		32		4			20	1	0					
02			G6637											282	AVG		15	38	143	7	1	1	2	2	0	12	0	32	39	
0.75"X120.5"X480"	1	5579	20413	581630208	T	C	52	76	31		T	L	F	269	268	153		32	2	5		0	12	2	0					
														256																
																P	15	38	145	7	1	1	1	2	0	13	0		40	
																		32		4			20	1	0					
02			G6637	TESTED-PL										253	AVG		15	38	143	7	1	1	2	2	0	12	0	32	39	
0.75"X120.5"X480"	1	5579	20417	581630203	T	C	54	76	29		T	L	F	233	225	154		32	2	5		0	12	2	0					
														220																
																P	15	38	145	7	1	1	1	2	0	13	0		40	
																		32		4			20	1	0					

注釈 NOTES
※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:任意方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$
※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:標準寸法 FULL SIZE, 2:2.5mm, 3:3.33mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:延性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment
温度 Temperature C F

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.

14650

J. Adachi
君津製鐵所厚板管理グループリーダー
GROUP MANAGER
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AY402310379Z

用紙区分：厚板

B

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38581010
契約番号 CONTRACT No. : 8-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07
文書番号 DOCUMENT No. :

新日本製鐵株式會社
Nippon Steel Corporation

鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. : E3001P05Q1 E0

本社 HEAD OFFICE : 〒100-8071 東京都千代田区大手町二丁目6番3号 2-6-3, OTEMACHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
君津製鐵所 KIMITSU WORKS : 〒299-1141 千葉県君津市君津1番地 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF, 299-1141 JAPAN

証明書番号 CERTIFICATE No. : P-96300 PAGE : 9
発行年月日 DATE OF ISSUE : 2008-09-03
1001 2**DM***** *****CEW**

寸法 DIMENSION mm, "inch, 'feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1 ※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL % ※3	BEND TEST ※4	衝撃試験 IMPACT TEST LOCATION ORIENTATION ※1	SIZE ※5	2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100	V ×100	TAl ×100	Ceq.1 ×100	N ×1000	TE3 ×1000	TE1 ×100	SN ×100	CA ×10000	B ×10000	TI ×100	Pcm ×100	Sol.Al ×100	Ceq.2 ×100	HEAT TREATMENT CONDITION OF SUPPLY ※7
02			G6637										253	AVG	15	38	143	7	1	1	2	2	0	12	0	32	39										
0.75"X120.5"X480"	1	5579	20417	581630204	TC	54	76	29		TL	F233	225	154		32	2	5		0	12	2	0														
												220																									
														P	15	38	145	7	1	1	1	2	0	13	0		40										
																32		4			20	1	0														
02			G6637	TESTED-PL									241	AVG	15	38	143	7	1	1	2	2	0	12	0	32	39										
0.75"X120.5"X480"	1	5579	20418	581630201	TC	54	76	31		TL	F243	251	154		32	2	5		0	12	2	0														
												236																									
														P	15	38	145	7	1	1	1	2	0	13	0		40										
																32		4			20	1	0														
02			G6637										241	AVG	15	38	143	7	1	1	2	2	0	12	0	32	39										
0.75"X120.5"X480"	1	5579	20418	581630202	TC	54	76	31		TL	F243	251	154		32	2	5		0	12	2	0														
												236																									
														P	15	38	145	7	1	1	1	2	0	13	0		40										
																32		4			20	1	0														

注 記 NOTES
※1 Location Orientation 位置・方向, T:頭部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 G L 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$
※3 R A :絞り Reduction of Area, Y R:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:標準寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, C R:Controlled Rolled, N I C:NIC Process/TMC Process, C L C:CLC Process/TMC Process, A R:As Rolled, T M R:TMR Process/TMC Process, N R:Normalizing Rolled
S H:延性破面率 Shear Fracture, C F:脆性破面率 Crystallinity Fracture, L E:横膨出 Lateral 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
温度 Temperature C F C F

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.

T. Adachi
君津製鐵所厚板管理グループリーダー
GROUP MANAGER
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

用紙区分 厚板

AY4013203792

B

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38581010
契約番号 CONTRACT No. : 8-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07
文書番号 DOCUMENT No. :

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. : E3001P05Q1 E0

本社 HEAD OFFICE : 〒100-8071 東京都千代田区大手町二丁目6番3号 2-6-3, OTEMACHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
君津製鐵所 KIMITSU WORKS : 〒299-1141 千葉県君津市君津1番地 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF. 299-1141 JAPAN

証明書番号 CERTIFICATE No. : P-96300 頁 PAGE : 10
発行年月日 DATE OF ISSUE : 2008-09-03
1001 2**DM***** *****CEW**

寸法 DIMENSION mm, "inch, 'feet	員数 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: LOCATION ORIENTATION ※1, GL ※2, 耐力降伏点 YS 0.2% KSI, 引張強さ TS KSI, 伸び EL %, % ※3	BEND TEST 曲げ試験 ※4	衝撃試験 IMPACT TEST: LOCATION ORIENTATION ※1, SIZE ※5, 2V-50F FT.LB 平均値 AVG, 個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION %: C, Si, Mn, P, S, Cu, Ni, Cr, Mo, Nb, V, TAl, Ceq.1, N, TE3, TE1, SN, CA, B, TI, Pcm, Sol.Al, Ceq.2	熱処理条件 CONDITION OF SUPPLY ※7
02			G6637	TESTED-PL						
0.75"X120.5"X480"	1	5579	20426	581630205 TC	54	76	33	TLF	259 263 261	AVG 154
									C 15 Si 38 32 Mn 143 2 P 7 5 S 1 Cu 1 0 Ni 2 12 Cr 2 2 Mo 0 0 Nb 12 V 0 TAl 32 Ceq.1 39	
									N P15 TE3 145 TE1 7 4 SN 1 CA 1 20 B 2 1 TI 0 0 Pcm 13 Sol.Al 0 Ceq.2 40	
02			G6637							
0.75"X120.5"X480"	1	5579	20426	581630206 TC	54	76	33	TLF	259 263 261	AVG 154
									C 15 Si 38 32 Mn 143 2 P 7 5 S 1 Cu 1 0 Ni 2 12 Cr 2 2 Mo 0 0 Nb 12 V 0 TAl 32 Ceq.1 39	
									N P15 TE3 145 TE1 7 4 SN 1 CA 1 20 B 2 1 TI 0 0 Pcm 13 Sol.Al 0 Ceq.2 40	
02			G6637	TESTED-PL						
0.75"X120.5"X480"	1	5579	20431	581630209 TC	53	76	30	TLF	250 239 261	AVG 153
									C 15 Si 38 32 Mn 143 2 P 7 5 S 1 Cu 1 0 Ni 2 12 Cr 2 2 Mo 0 0 Nb 12 V 0 TAl 32 Ceq.1 39	
									N P15 TE3 145 TE1 7 4 SN 1 CA 1 20 B 2 1 TI 0 0 Pcm 13 Sol.Al 0 Ceq.2 40	

注釈 NOTES
※1 Location Orientation 位置・方向, T:頭部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$
※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:規格寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:延性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment
温度 Temperature C F

CONFORMING TO SA 516-70MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 1
SIGNED BY 01 FEB 2011 OK

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.

J. Adachi
君津製鐵所厚板管理グループリーダー
GROUP MANAGER
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

用紙区分 厚板

B

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38581010
契約番号 CONTRACT No. : 8-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07
文書番号 DOCUMENT No. :
需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF C-OMPANIES

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家管理番号 CUSTOMER'S CONTROL No. :

本社 HEAD OFFICE : 〒100-8071 東京都千代田区大手町二丁目6番3号 2-6-3, OTEMACHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
君津製鐵所 KIMITSU WORKS : 〒299-1141 千葉県君津市君津1番地 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF. 299-1141 JAPAN

証明書番号 CERTIFICATE No. : P-96300 頁 PAGE : 11
発行年月日 DATE OF ISSUE : 2008-09-03
1001 2**DM***** *****CE*** E3001P05Q1 E

寸法 DIMENSION mm, ":inch, ':feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	GL ※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	BEND TEST ※4	LOCATION ORIENTATION ※1	SIZE ※5	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW ※6	化学成分 CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Nb	V	TAl	Ceq. I	CONDITION OF SUPPLY ※7
02			G6639	TESTED-PL											253	AVG	15	37	143	7	1	2	1	2	0	13	0	37	39	
0.75"X120.5"X480"	1	5579	26692	581630211	TC	I	54	76	31			TL	F	262	257	148		30	2	5		0	9	2	0				
															276														
																	P15	38	144	6	1	2	1	2	0	13	0		40	
																		32		5			12	1	0				
03			G6639	TESTED-PL											274	AVG	15	37	143	7	1	2	1	2	0	13	0	37	39	
1.125"X97"X480"	1	6741	20459	581630301	TC	I	52	75	33			TL	F	280	304	150		30	2	5		0	9	2	0				
															261														
																	P15	38	144	6	1	2	1	2	0	14	0		40	
																		34		5			11	1	0				
03			G6639												274	AVG	15	37	143	7	1	2	1	2	0	13	0	37	39	
1.125"X97"X480"	1	6741	20459	581630302	TC	I	52	75	33			TL	F	280	304	150		30	2	5		0	9	2	0				
															261														
																	P15	38	144	6	1	2	1	2	0	14	0		40	
																		34		5			11	1	0				

注 NOTES ※1 Location Orientation 位置・方向、T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4.$\sqrt{So}$
※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:規格寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:脆性破面率 Shear Fracture, CF:結晶破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment
温度 Temperature °C °F

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.

T. Adachi

君津製鐵所厚板管理グループリーダー
GROUP MANAGER
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

明細区分：厚板

AX4013403723

B

注文者 SHIPPER	HANWA CO., LTD.
注文者照合番号 REFERENCE No.	228-38581010
契約番号 CONTRACT No.	8-831-H1-5-8-AT01
商品名 COMMODITY	HOT ROLLED STEEL PLATES
規格 SPECIFICATION	ASME SA-516 GRADE 70-E07
文書番号 DOCUMENT No.	

新日本製鐵株式會社
Nippon Steel Corporation

本社 HEAD OFFICE：〒100-8071 東京都千代田区大手町二丁目6番3号 2-6-3, OTEMACHI, CHIYODA-KU, TOKYO 100-8071, JAPAN
君津製鐵所 KIMITSU WORKS：〒299-1141 千葉県君津市君津1番地 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF. 299-1141 JAPAN

鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

証明書番号 CERTIFICATE No.	P-96300
頁 PAGE	41E
発行年月日 DATE OF ISSUE	2008-09-03
需要家 CUSTOMER	EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No.	1001 2**DM***** *****CE** E3001P05Q1

寸法 DIMENSION mm, ":inch, ':feet	員数 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: 位置 LOCATION ORIENTATION ※1	GL ※2	耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	曲げ試験 BEND TEST ※4	衝撃試験 IMPACT TEST: 位置 LOCATION ORIENTATION ※1	SIZE ※5	2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION %																熱処理 CONDITION OF SUPPLY ※7
																	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100	V ×100	Ti ×100	Ceq.1 ×100				
																		N ×10000	TE3 ×1000	TE1 ×100		SN ×1000	CA ×10000	B ×10000	TI ×100		Pcm ×100	Sol. Al ×100	Ceq.2 ×100				
10			G6635	TESTED-PL																												
2.5"X97"X480"	1	14975	20392	58163101 3TCH			53	75	37			TLF	261	267	AVG	144	15	37	144	7	1	2	2	2	0	12	0	31	40				
														250				32	2	6		0	11	1	0							
																	P15	37	144	6	1	2	2	2	0	11	0		40				
																		32		6			16	1	0							
TOTAL	14	01327110																														

HEAT TREATMENT.
PLATE & TEST SPECIMEN NORMALIZING : 910CX 10MIN.
CHARPY IMPACT TEST TEMPERATURE (SI) : - 46C
LADLE CEQ1 = C+MN/6+(NI+CU)/15+(CR+MO+V)/5
PRODUCT CEQ1 = C+MN/6+(NI+CU)/15+(CR+MO+V)/5
LADLE TE1 = CU+NI+CR+MO
LADLE TE3 = CR+MO
PRODUCT TE1 = CU+NI+CR+MO
CHEMICAL COMPOSITION % : "N" X10000
CHEMICAL COMPOSITION % : "SN" X1000
CHEMICAL COMPOSITION % : "TE3" X100
LADLE TREATMENT : VACUUM DEGASSED
SULPHIDE SHAPE CONTROL

MHR APPROVED EDMONTON EXCHANGER

注 釈 NOTES

※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis

※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:$5.65\sqrt{So}$, K:$4\sqrt{So}$

※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:規準寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis, 温度 Temperature

※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled

SH:延性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment

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WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.

J. Adachi

君津製鐵所厚板管理グループリーダー
GROUP MANAGER
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AY4012303792

用紙区分：厚板

B

注文者 SHIPPER	HANWA CO., LTD.
注文者照合番号 REFERENCE No.	228-38501030
契約番号 CONTRACT No.	0-831-H1-5-8-AT01
商品名 COMMODITY	HOT ROLLED STEEL PLATES
規格 SPECIFICATION	ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No.	

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES

需要家管理番号 CUSTOMER'S CONTROL No. :

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

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE : 35

発行年月日 DATE OF ISSUE : 2010-08-23

1001 2**DM*****
*****CE***
E3001P0700 E07

寸法 DIMENSION mm, ": inch, ': feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION GL ※1 ※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL % ※3	% ※4	BEND TEST DIRECTION	LOCATION ORIENTATION ※1	SIZE ※5	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HB	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100 ×1000	V ×100 ×1000	TiAl ×1000	Ceq.1 ×100	CONDITION OF SUPPLY
																N ×10000	TE3 ×10000	TE1 ×100		SN ×100	CA ×10000	B ×10000	TI ×100		Pcm ×100	Sol.Al ×100	Ceq.2 ×100	※7
04			G5291	TESTED-PL										293	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X96.5"X480"	1	2979	37486	771910427	TC	56	77	30			TL	F	281	284	157		35	2	4		0	16	1	0					
														267														
															P	15	38	144	8	2	1	2	2	0	13	0		40	
																	35		5		0	20	0	0				
04			G5291	FROM										293	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X96.5"X480"	3	8937	37486	771910428	TC	56	77	30			TL	F	281	284	157		35	2	4		0	16	1	0					
				TO										267														
				771910430																								
															P	15	38	144	8	2	1	2	2	0	13	0		40	
																	35		5		0	20	0	0				
05			G5291	TESTED-PL										292	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	1	3721	37466	771910509	TC	55	77	28			TL	F	297	292	156		35	2	4		0	16	1	0					
														307														
															P	15	38	144	8	2	1	2	2	0	13	0		40	
																	35		5		0	20	0	0				

注 記 NOTES

※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis

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※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled

SH:剪断破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment

温度 Temperature C: C F: C F:

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.

15593

T. Adachi

君津製鐵所厚板管理グループリーダー
Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

B

注文者 SHIPPER	HANWA CO., LTD.
注文者照合番号 REFERENCE No.	228-38501030
契約番号 CONTRACT No.	0-831-H1-5-8-AT01
商品名 COMMODITY	HOT ROLLED STEEL PLATES
規格 SPECIFICATION	ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No.	

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

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

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE : 36
発行年月日 DATE OF ISSUE : 2010-08-23
1001 2**DM***** *****CE**
E3001P07Q0 E07

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. :

寸法 DIMENSION mm, ": inch, ': feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	GL ※2	引張試験 TENSILE TEST 耐力 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	IMPACT TEST DIRECTION ※4	LOCATION ※1	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION % C ×100 ×1000	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100 ×1000	V ×100 ×1000	T.Al ×100	Ceq.1 ×100	熱処理 HEAT TREATMENT	CONDITION OF SUPPLY ※7
					※1	※2				※3	※4	※1	※5			※6	N ×1000	TE3 ×1000	TE1 ×100	×100	SN ×1000	CA ×10000	B ×10000	TI ×100	Pcm ×100	Sol.Al ×100	Ceq.2 ×100		
05 0.5"X120.5"X480"	3	11163	G5291 37466	FROM 771910510 TO 771910512	T	C	55	77	28		T	L	F297	292 292 307	AVG 156	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39		
																P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40		
05 0.5"X120.5"X480"	1	3721	G5291 37468	TESTED-PL 771910539	T	C	56	78	27		T	L	F305	312 299 305	AVG 155	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39		
																P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40		
05 0.5"X120.5"X480"	3	11163	G5291 37468	FROM 771910540 TO 771910542	T	C	56	78	27		T	L	F305	312 299 305	AVG 155	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39		
																P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40		

注釈 NOTES

※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis

※2 GL 測点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$

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焼鈍 Temperature C: °C F: °F

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T. Adachi

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Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

B'

新日本製鐵株式會社
Nippon Steel Corporation

鋼材検査証明書
INSPECTION CERTIFICATE

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

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38501030
契約番号 CONTRACT No. : 0-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No. :

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. :

証明書番号 CERTIFICATE No. : P-08348
頁 PAGE : 37
発行年月日 DATE OF ISSUE : 2010-08-23
1001
2**DM*****
*****CE***
E3001P0700 E07

寸法 DIMENSION mm, ":inch, ':feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION GL ※1	※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	BEND TEST ※4	LOCATION ORIENTATION ※1	SIZE ※5	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	※6	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100	V ×1000	TAl ×1000	Ceq.1 ×100	CONDITION OF SUPPLY ※7
05			G5291	TESTED-PL											270	AVG		15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	1	3721	37469	771910543	TC	I	56	77	29			TL	F	273	272	157			35	2	4		0	16	1	0				
															277															
																	P	15	38	144	8	2	1	2	2	0	13	0		40	
																			35		5		0	20	0	0				
05			G5291	FROM											270	AVG		15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	3	11163	37469	771910544 TO 771910546	TC	I	56	77	29			TL	F	273	272	157			35	2	4		0	16	1	0				
															277															
																	P	15	38	144	8	2	1	2	2	0	13	0		40	
																			35		5		0	20	0	0				
05			G5291	TESTED-PL											291	AVG		15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	1	3721	37472	771910535	TC	I	55	76	28			TL	F	297	306	157			35	2	4		0	16	1	0				
															294															
																	P	15	38	144	8	2	1	2	2	0	13	0		40	
																			35		5		0	20	0	0				

注 訳 NOTES
※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
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温度 Temperature C: F:

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T. Adachi

君津製鐵所厚板管理グループリーダー
Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AX4026807

B

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38501030
契約番号 CONTRACT No. : 0-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
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鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. :

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

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE : 38
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1001 2**DM***** *****CE*** E3001P07Q0 E07

寸法 DIMENSION mm, ": inch, ': feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	GL ※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL % ※3	% ※4	BEND TEST 曲げ試験	LOCATION ORIENTATION ※1	SIZE ※5	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100	V ×100	T.Al ×100	Ceq.1 ×100	CONDITION OF SUPPLY
																	N ×1000	TE3 ×1000	TE1 ×100		Sol.Al ×100	CA ×10000	B ×10000	Ti ×100		Pcm ×100		Ceq.2 ×100	MT
05			G5291	FROM																								
0.5"X120.5"X480"	3	11163	37472	771910536	TC	I	55	76	28			TL	F	297	291	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
				TO											306	157		35	2	4		0	16	1	0					
				771910538											294														
																P	15	38	144	8	2	1	2	2	0	13	0		40
																		35		5		0	20	0	0				
05			G5291	TESTED-PL											290	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	1	3721	37473	771910513	TC	I	55	76	29			TL	F	285	285	157		35	2	4		0	16	1	0					
															280														
																P	15	38	144	8	2	1	2	2	0	13	0		40
																		35		5		0	20	0	0				
05			G5291	FROM											290	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	3	11163	37473	771910514	TC	I	55	76	29			TL	F	285	285	157		35	2	4		0	16	1	0					
				TO											280														
				771910516																									
																P	15	38	144	8	2	1	2	2	0	13	0		40
																		35		5		0	20	0	0				

注釈 NOTES ※1 Location Orientation 位置・方向, T:頭部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$
※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:標準寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:延性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment
温度 Temperature C: F:

CONFORMING TO SA 516-70MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 7
SIGNED BY 01 FEB 2011 OK

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.

J. Adachi
君津製鐵所厚板管理グループリーダー
Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

B

新日本製鐵株式會社
Nippon Steel Corporation

鋼材検査証明書
INSPECTION CERTIFICATE

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

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38501030
契約番号 CONTRACT No. : 0-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07-A08 (AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)
文書番号 DOCUMENT No. :
需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. :

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE 39
発行年月日 DATE OF ISSUE : 2010-08-23
1001 2**DM***** *****CE** E3001P0700 E07

寸法 DIMENSION mm, ": inch, ': feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	BEND TEST ※4	衝撃試験 IMPACT TEST LOCATION ※1 ORIENTATION SIZE ※5 2V-50F FT.LB 平均値 AVG	2V-50F FT.LB 個々値 EACH	HBW ※6	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×1000	V ×1000	Ti ×1000	Ceq.1 ×100	N ×1000	TE3 ×1000	TE1 ×100	SN ×100	CA ×10000	B ×10000	Ti ×100	Pcm ×100	Sol.Al ×100	Ceq.2 ×100	CONDITION OF SUPPLY ※7
05 0.5"X120.5"X480"	1	3721	G5291 37474	771910517	TCI	55	77	30			TLF306	300 308 310	AVG 157	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39										
														P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40										
05 0.5"X120.5"X480"	3	11163	G5291 37474	FROM 771910518 TO 771910520	TCI	55	77	30			TLF306	300 308 310	AVG 157	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39										
														P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40										
05 0.5"X120.5"X480"	1	3721	G5291 37476	771910532	TCI	55	77	29			TLF265	271 276 249	AVG 156	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39										
														P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40										

注 記 NOTES
※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
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※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio,
※4 A:合格 Acceptable,
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※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
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温度 Temperature C: F:

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君津製鐵所厚板管理グループリーダー
Head of Deparment
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

B

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注文者照合番号 REFERENCE No.	228-38501030
契約番号 CONTRACT No.	0-831-H1-5-8-AT01
商品名 COMMODITY	HOT ROLLED STEEL PLATES
規格 SPECIFICATION	ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No.	
需要家 CUSTOMER	EDMONTON EXCHANGER GROUP OF C-OMPANIES
需要家管理番号 CUSTOMER'S CONTROL No.	

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

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

証明書番号 CERTIFICATE No.	P-08348
頁 PAGE	40
発行年月日 DATE OF ISSUE	2010-08-23
	1001
	2**DM******
	*****CEW**
	E3001P07Q0 E07

寸法 DIMENSION mm,":inch,':feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION 注1	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% 注3	BEND TEST 注4	LOCATION ORIENTATION 注1	SIZE 注5	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100 ×1000	V ×100 ×1000	TAl ×100	Ceq.1 ×100	CONDITION OF SUPPLY
																N ×1000	TE3 ×1000	TE1 ×100		SN ×100	CA ×10000	B ×10000	TI ×100	Pcm ×100	Sol.Al ×100	Ceq.2 ×100	注7
05 0.5"X120.5"X480"	2	7442	G5291 37476	FROM 771910533 TO 771910534	TCI	55	77	29			TLF	265	271 276 249	AVG 156		15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
															P	15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	
05 0.5"X120.5"X480"	1	3721	G5291 37478	TESTED-PL 771910521	TCI	56	77	30			TLF	288	275 289 299	AVG 154		15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
															P	15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	
05 0.5"X120.5"X480"	3	11163	G5291 37478	FROM 771910522 TO 771910524	TCI	56	77	30			TLF	288	275 289 299	AVG 154		15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
															P	15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	

注釈 NOTES

注1 Location Orientation 位置・方向, T:頭部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis

注2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$

注3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, 注4 A:合格 Acceptable, 注5 F:四号寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:8.7mm, 9:製品板厚 PlateThickness, 注6 P:製品分析 Product Analysis,

注7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled

SH:延性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment

試験温度 Temperature °C °F

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。

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PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

B

新日本製鐵株式會社
Nippon Steel Corporation

鋼材検査証明書
INSPECTION CERTIFICATE

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

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38501030
契約番号 CONTRACT No. : 0-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No. :

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE : 41
発行年月日 DATE OF ISSUE : 2010-08-23

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. : 1001 2**DM***** *****CEW** E3001P07Q0 E07

寸法 DIMENSION mm, ':inch, ':feet	員数 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 採取位置 LOCATION ORIENTATION ※1	試験片 DIR ※2	耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	試験片 TEST DIRECTION	衝撃試験 IMPACT TEST 採取位置 LOCATION ORIENTATION ※1	試験片 DIR ※2	2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Nb	V	TiAl	Ceq.1	熱処理 HEAT TREATMENT CONDITION OF SUPPLY
05 0.5"X120.5"X480"	1	3721	G5291 37479	TESTED-PL 771910501	TC	L	55	77	27		TL	F	297	299	AVG 156		15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
														294 298															
																P	15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	
05 0.5"X120.5"X480"	3	11163	G5291 37479	FROM 771910502 TO 771910504	TC	L	55	77	27		TL	F	297	299 294 298	AVG 156		15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
																P	15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	
05 0.5"X120.5"X480"	1	3721	G5291 37480	TESTED-PL 771910505	TC	L	56	77	28		TL	F	300	297 296 308	AVG 156		15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
																P	15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	

注釈 NOTES
※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4.$\sqrt{So}$
※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:標準寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:延性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment
処理温度 Temperature C: °C F: °F

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。

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T. Adachi
君津製鐵所厚板管理グループリーダー
Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AX4026907S2

B

新日本製鐵株式會社
Nippon Steel Corporation

鋼材検査証明書
INSPECTION CERTIFICATE

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

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文書番号 DOCUMENT No. :
需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF COMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. : E3001P07Q0 E07

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

証明書番号 CERTIFICATE No. : P-08348
頁 PAGE : 42
発行年月日 DATE OF ISSUE : 2010-08-23
1001 2**DM***** *****CEW**

寸法 DIMENSION mm,":inch,':feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	BEND TEST DIRECTION ※4	LOCATION ORIENTATION ※1	衝撃試験 IMPACT TEST 2V - 50F FT LB 平均値 AVG	個々値 EACH	HBW	化学成分 CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Nb	V	TAl	Ceq.1	熱処理 CONDITION OF SUPPLY
05 0.5"X120.5"X480"	3	11163	G5291 37480	FROM 771910506 TO 771910508	TC	56	77	28		TL	F	300	297 296 308	AVG 156	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
															P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	
05 0.5"X120.5"X480"	1	3721	G5291 37482	TESTED-PL 771910525	TC	56	77	30		TL	F	289	293 290 285	AVG 156	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
															P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	
05 0.5"X120.5"X480"	1	3721	G5291 37482	771910526	TC	56	77	30		TL	F	289	293 290 285	AVG 156	15	37 35	142 2	8 4	1	1 0	1 16	2 1	0 0	12	0	26	39	
															P15	38 35	144	8 5	2	1 0	2 20	2 0	0 0	13	0		40	

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※1 Location Orientation 位置・方向, T:幅部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
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試験 Temperature C: °C F: °F

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Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AX4027905752

8

注文者 SHIPPER : HANWA CO., LTD.
注文者照合番号 REFERENCE No. : 228-38501030
契約番号 CONTRACT No. : 0-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No. :

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF C-OMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. :

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

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE : 43
発行年月日 DATE OF ISSUE : 2010-08-23
1001 2**DM***** *****CE*** E3001P0700 E07

寸法 DIMENSION mm,":inch,':feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION GL ※1 ※2	引張試験 TENSILE TEST 耐力降伏点 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	IMPACT TEST DIRECTION ※4	LOCATION ORIENTATION ※1	SIZE ※5	衝撃試験 IMPACT TEST 2V - 50F FT. LB 平均値 AVG	個々値 EACH	HBW ※6	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100 ×1000	V ×1000 ×1000	T.Al ×1000	Ceq.1 ×100	熱処理状態 CONDITION OF SUPPLY ※7
05			G5291	TESTED-PL										291	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	1	3721	37483	771910547	TC	55	77	29			TL	F	282	278	156		35	2	4		0	16	1	0					
														277															
															P	15	38	144	8	2	1	2	2	0	13	0		40	
																	35		5		0	20	0	0					
05			G5291	FROM										291	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	3	11163	37483	771910548 TO 771910550	TC	55	77	29			TL	F	282	278	156		35	2	4		0	16	1	0					
														277															
															P	15	38	144	8	2	1	2	2	0	13	0		40	
																	35		5		0	20	0	0					
05			G5291	TESTED-PL										302	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
0.5"X120.5"X480"	1	3721	37484	771910528	TC	55	78	30			TL	F	296	279	156		35	2	4		0	16	1	0					
														306															
															P	15	38	144	8	2	1	2	2	0	13	0		40	
																	35		5		0	20	0	0					

注 記 NOTES

※1 Location Orientation 位置・方向, T:頭部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis

※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:90mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65$\sqrt{So}$, K:4$\sqrt{So}$

※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:規格寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,

※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:脆性破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment

温度 Temperature C: °C F: °F

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.

T. Adachi

君津製鐵所厚板管理グループリーダー
Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AX4027107875

B

新日本製鐵株式會社
Nippon Steel Corporation

鋼材検査証明書
INSPECTION CERTIFICATE

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

注文者 SHIPPER : HANWA CO., LTD.
注文者照会番号 REFERENCE No. : 228-38501030
契約番号 CONTRACT No. : 0-831-H1-5-8-AT01
商品名 COMMODITY : HOT ROLLED STEEL PLATES
規格 SPECIFICATION : ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No. :

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF C-OMPANIES
需要家管理番号 CUSTOMER'S CONTROL No. :

証明書番号 CERTIFICATE No. : P-08348 頁 PAGE : 44
発行年月日 DATE OF ISSUE : 2010-08-23
1001 2**DM*****
*****CE***
E3001P07Q0 E07

寸法 DIMENSION mm,':inch,':feet	員数 QUANTITY	質量 MASS KG	製鋼番号 CAST No. / 試験番号 TEST No.	製品番号 PLATE No.	LOCATION ORIENTATION ※1	引張試験 TENSILE TEST 耐力 YS 0.2% KSI	引張強さ TS KSI	伸び EL %	% ※3	IMPACT TEST DIRECTION ※4	LOCATION ORIENTATION ※1	衝撃試験 IMPACT TEST 2V-50F FT.LB 平均値 AVG	個々値 EACH	HBW ※6	化学成分 CHEMICAL COMPOSITION % C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	Nb ×100	V ×1000	TAl ×100	Ceq.1 ×100	熱処理条件 CONDITION OF SUPPLY ※7
05			G5291	FROM																							
0.5"X120.5"X480"	2	7442	37484	771910529	TC	55	78	30		TL	F	296	302	AVG	15	37	142	8	1	1	1	2	0	12	0	26	39	
				TO									279	156		35	2	4		0	16	1	0					
				771910530									306															
														P	15	38	144	8	2	1	2	2	0	13	0		40	
																35		5		0	20	0	0				
05			G5290	TESTED-PL									311	AVG	15	38	143	6	1	2	2	2	0	13	0	23	40	
0.5"X120.5"X480"	1	3721	39666	771910551	TC	55	76	28		TL	F	297	289	155		37	2	6		0	16	2	0				
													290															
														P	15	38	146	6	1	2	2	2	0	14	0		40	
																38		6		1	19	0	0				
05			G5290	TESTED-PL									280	AVG	15	38	143	6	1	2	2	2	0	13	0	23	40	
0.5"X120.5"X480"	1	3721	39718	771910552	TC	55	78	28		TL	F	288	289	155		37	2	6		0	16	2	0				
													295															
														P	15	38	146	6	1	2	2	2	0	14	0		40	
																38		6		1	19	0	0				

注釈 NOTES
※1 Location Orientation 位置・方向, T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis
※2 GL 標点距離 Gage Length, A:50mm 平形試験片 Rectangular, B:50mm 丸形試験片 Round, C:70mm 平形試験片 Rectangular, D:70mm 丸形試験片 Round, E:80mm 平形試験片 Rectangular, F:80mm 丸形試験片 Round, G:200mm, H:2", I:8", J:5.65√So, K:4√So
※3 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:標準寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 PlateThickness, ※6 P:製品分析 Product Analysis,
※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR:Controlled Rolled, NIC:NIC Process/TMC Process, CLC:CLC Process/TMC Process, AR:As Rolled, TMR:TMR Process/TMC Process, NR:Normalizing Rolled
SH:剪断破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR:Stress Relieved/Post Weld Heat Treatment
温度 Temperature C: F:

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。

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J. Adachi

君津製鐵所厚板管理グループリーダー
Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

B-

注文者 SHIPPER	HANWA CO., LTD.
注文者照合番号 REFERENCE No.	228-38501030
契約番号 CONTRACT No.	0-831-H1-5-8-AT01
商品名 COMMODITY	HOT ROLLED STEEL PLATES
規格 SPECIFICATION	ASME SA-516 GRADE 70-E07-A08
文書番号 DOCUMENT No.	

新日本製鐵株式會社
Nippon Steel Corporation
鋼材検査証明書
INSPECTION CERTIFICATE

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

証明書番号 CERTIFICATE No.	P-08348
頁 PAGE	76E
発行年月日 DATE OF ISSUE	2010-08-23

(AS PER EN 10204 CERTIFICATE ON MATERIAL TESTS 3.1)

需要家 CUSTOMER : EDMONTON EXCHANGER GROUP OF C-OMPANIES

需要家管理番号 CUSTOMER'S CONTROL No. : 1001 2**DM***** *****CE*** E3001P0700 E07

寸法 DIMENSION mm, ":inch, ':feet	員数 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: 方向 LOCATION ORIENTATION ※1; 試験片 No. ※2; 耐力降伏点 YS 0.2% KSI; 引張強さ TS KSI; 伸び EL %; % ※3	曲げ試験 BEND TEST ※4; 方向 LOCATION ORIENTATION ※1; 試験片 SIDE ※5	衝撃試験 IMPACT TEST 2V - 50F FT.LB: 平均値 AVG; 個々値 EACH	硬さ試験 HBW	化学成分 CHEMICAL COMPOSITION % ※6: C ×100; Si ×100; Mn ×100; P ×1000; S ×1000; Cu ×100; Ni ×100; Cr ×100; Mo ×100; Nb ×100; V ×100; TiAl ×100; Ceq.1 ×100; N ×1000; TE3 ×1000; TE1 ×100; SN ×1000; CA ×10000; B ×10000; Ti ×100; Pcm ×100; Sol.Al ×100; Ceq.2 ×100	熱処理状態 CONDITION OF SUPPLY ※7
				HEAT TREATMENT.						
				PLATE & TEST SPECIMEN NORMALIZING : 910CX 10MIN.						
				CHARPY IMPACT TEST TEMPERATURE (SI) : - 46C						
				LADLE CEQ1 = C+MN/6+(NI+CU)/15+(CR+MO+V)/5						
				PRODUCT CEQ1 = C+MN/6+(NI+CU)/15+(CR+MO+V)/5						
				LADLE TE1 = CU+NI+CR+MO						
				LADLE TE3 = CR+MO						
				PRODUCT TE1 = CU+NI+CR+MO						
				CHEMICAL COMPOSITION % : 'N' X10000						
				CHEMICAL COMPOSITION % : 'SN' X1000						
				CHEMICAL COMPOSITION % : 'TE3' X100						
				LADLE TREATMENT : VACUUM DEGASSED						
				SULPHIDE SHAPE CONTROL						

KITR APPROVED EDMONTON EXCHANGER

注釈 NOTES

※1 Location Orientation 位置・方向. T:頂部 Top, B:底部 Bottom, L:圧延方向 Longitudinal, C:直角方向 Transverse, Z:板厚方向 Through Thickness, R:45° 方向 45Deg. to the Longitudinal Axis

※2 GL 標点距離 Gage Length, A: 50mm 平形試験片 Rectangular, B: 50mm 丸形試験片 Round, C: 70mm 平形試験片 Rectangular, D: 70mm 丸形試験片 Round, E: 80mm 平形試験片 Rectangular, F: 80mm 丸形試験片 Round, G: 200mm, H: 2", I: 8", J: $5.65\sqrt{So}$, K: $4\sqrt{So}$

※3 RA: 絞り Reduction of Area, YR:降伏比 Yield Ratio, ※4 A:合格 Acceptable, ※5 F:標準寸法 FULL SIZE, 2:2.5mm, 3:3.3mm, 4:3.33mm, 5:5.0mm, 6:6.67mm, 7:7.5mm, 8:6.7mm, 9:製品板厚 Plate Thickness, ※6 P:製品分析 Product Analysis,

※7 N:焼準 Normalized, Q:焼入れ Quenched, T:焼戻し Tempered, CR: Controlled Rolled, NIC: NIC Process/TMC Process, CLC: CLC Process/TMC Process, AR: As Rolled, TMR: TMR Process/TMC Process, NR: Normalizing Rolled

SH:剪断破面率 Shear Fracture, CF:脆性破面率 Crystallinity Fracture, LE:横膨出 Lateral Expansion, AGS:オーステナイト粒度 Austenite Grain Size, FGS:フェライト粒度 Ferrite Grain Size, SR: Stress Relieved/Post Weld Heat Treatment

製品温度 Temperature C: °C F: °F

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。

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J. Adachi

君津製鐵所厚板管理グループリーダー

Head of Department
PLATE QUALITY CONTROL DEPT.
KIMITSU WORKS

AX4022B

CERTIFICATE OF COMPLIANCE

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 ALCO GAS & OIL PRODUCTION PO 125221-125-01 Work Order C87888 Date 2011/01/13 CofC# 21752

Item#	Description	Qty	Heat#	Brinell Hardn.
W87888-1	PLATE(S) - 0.6250" NOM X 96.5" X 480" (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	SB67966-PB32332401 ← **See note *Rough Rounded Mill Edge* below.**	164
		1	SB67697-PB32158604 **See note *Rough Rounded Mill Edge* below.**	151

Brinell Equipment: Newage Calibrated Pin
Brinell Hardness Tester

Supplementary Requirements

Rough Rounded Mill Edge: Rough Rounded Mill Edge on plate. See MTR for width of plate certified to the physical & chemical results. Make sure rough rounded mill edges are cut off prior to using.

Material being supplied conforms to the latest ASME Code Section II, Part A, 2010 Edition, Addenda July 1, 2010. All welders and procedures are qualified to ASME Code Section IX.

Supplementary Examination - Items

CONFORMS TO SA 516-70MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 4
SIGNED BY 17 MAR 2011

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호: 070406-PPSA-004-010
Date of Issue/발행일자: [redacted]

Order No./계약번호:0002735375
PO No./주문번호:E10588 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (ISO10474/3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70

13232

2007. 4. 12

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol.A -3
									3:113																
*** Sub Total (030) ***			48						A:114																
*** HEAT TREATMENT ===> Normalized : 890 C 25min. ***						178,608 (kg)			393,757 (LBS)																
15.875x2452 x12192.00 .625×96.5×480	PB32158401-8404	4	14,896 32,840	SB67697	T	54.0	80.8	27	1:107 2:61 3:100 A:89		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30
15.875x2452 x12192.00 .625×96.5×480	PB32158501-8504	4	14,896 32,840	SB67697	T	53.7	81.4	28	1:102 2:101 3:107 A:103		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30
15.875x2452 x12192.00 .625×96.5×480	PB32158601-8604	4	14,896 32,840	SB67697	T	54.5	81.5	28	1:105 2:108 3:74 A:96		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30
15.875x2452 x12192.00 .625×96.5×480	PB32158701-8704	4	14,896 32,840	SB67697	T	54.1	81.4	27	1:63 2:97		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular)
YP Method : 0.2% off-set
* Impact Test Direction : Longitudinal, T.L.R(Trans Longitude Ratio) 5/8" TL
* Division - L:Ladle Analysis
* Chemical Composition Unit. -2 x1/100, -3 x1/1000, -4 x1/10000, -5 x1/100000
* Tr : It is within the standard range(<0.008%) and include trace elements
* Supply Condition : As-Rolled unless otherwise Heat Treated.

CERTIFIED TO SA 516-70 MT
YEAR
JOB #
ITEM #
SIGNED BY

A) This material was producted under a quality system manual Rev 5 dated JUL 01 2006 and PQQ01 Rev 3 dated JUL 01 2006 audited and approved by customer as conforming to the requirements of ASME Sec. II NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order

* This Mill Test Certificate cannot be copied for any purpose

KT-101 to MAR.01.2005

Surveyor To:

Na. Chi Bong

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Na. C B

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:070406-PPSA-004-011
Date of Issue/발행일자 [redacted]

Order No./계약번호:0002735375
PO No./주문번호:E10588 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (ISO10474/3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70

2007. 4. 12

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol.Al -3
15.875x2452 x12192.00 .625×96.5×480	PB32332401-2404	4	14,896 32,840	SB67966	T	54.1	79.0	27	3.101 A:87 1:133 2 89 3.135 A:119		L	1785	337	1156	98	12	2	24	1	93	Tr	Tr	2	20	26
*** Sub Total (040) ***			20				74,480 (kg)		164,198 (LBS)																
*** HEAT TREATMENT ===> Normalized : 890℃ 26min. ***																									
15.875x3061 x12192.00 .625×120.5×480	PB32153101-3104	4	18,600 41,004	SB67694	T	50.9	76.3	28	1:112 2:118 3:125 A:118		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
15.875x3061 x12192.00 .625×120.5×480	PB32153401-3404	4	18,600 41,004	SB67694	T	51.9	76.4	27	1:72 2 69 3.80 A:74		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
15.875x3061 x12192.00 .625×120.5×480	PB32153501-3504	4	18,600 41,004	SB67694	T	51.8	75.9	28	1:99 2:124 3:103		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular)
YP Method : 0.2% off-set
* Impact Test Direction : Longitudinal,
T.L.R(Trans Longitude Ratio)
* Division - L Ladle Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

5/8" PL

COMPLIES TO SA 516-70 MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 4
SIGNED BY 17 MAR 2011

This material was producted under a quality system manual Rev 5 dated JUL 01 2006 and POQ01 Rev 0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec III NCA-3800 and(or) KEPIC MNA/ SNA4300
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order

This Mill Test Certificate cannot be copied for any purpose

Surveyor To:

AT-161, to MAR.01 2006

Na, Chai Bong

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Na C B

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:070406-PPSA-004-012
Date of Issue/발행일자 [redacted]

2007. 4. 12

Order No./계약번호:0002735375
PO No./주문번호:E10588 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (ISO10474/3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No 제강번호	Position	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	Division	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol.Al -3
15.875x3061 x12192.00 .625x120.5x480	PB32153601-3604	4	18,600 41,004	SB67694	T	50.9	75.9	27	A:108 1:41 2:37 3:37		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
15.875x3061 x12192.00 .625x120.5x480	PB32153701-3704	4	18,600 41,004	SB67694	T	52.1	76.9	28	A:38 1:106 2:105 3:100		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
15.875x3061 x12192.00 .625x120.5x480	PB32187601-7604	4	18,600 41,004	SB67694	T	49.3	75.9	27	A:104 1:103 2:105 3:100		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
15.875x3061 x12192.00 .625x120.5x480	PB32153001-3004	4	18,600 41,004	SB67697	T	53.7	79.2	26	A:103 1:71 2:83 3:63		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30
15.875x3061 x480 .625x120.5 x12192.00	PB32153201-3204	4	18,600 41,004	SB67697	T	53.5	78.9	28	A:72 1:111 2:96		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test. Direction : Longitudinal, T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.5 dated JUL.01.2006 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

* This Mill Test Certificate cannot be copied for any purpose

KT-101, to MAR.01.2005

Surveyor To:

Na, Chai Bong

Chief of material testing section Na C.B

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호 070406-PPSA-004-013
Date of Issue/발행일자 [redacted]

2007. 4. 12

Order No./계약번호:0002735375
PO No./주문번호:E10588
(ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (ISO10474/3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
15.875x3061 x12192.00 .625x120.5x480	PB32153301-3304	4	18,600 41,004	SB67697	T	54.8	79.6	28	3:97 A:101 1:95 2:111 3:110		L	1882	382	1195	116	24	2	23	6	104	Tr	Tr	1	18	30
15.875x3061 x12192.00 .625x120.5x480	PB32355001-5003	3	13,950 30,753	SB67966	T	50.9	77.2	27	A:105 1:32 2:58 3:38		L	1785	337	1156	98	12	2	24	1	93	Tr	Tr	2	20	25
15.875x3061 x12192.00 .625x120.5x480	PB32355101-5103	3	13,950 30,753	SB67966	T	51.2	77.6	28	A:43 1:124 2:108 3:124		L	1785	337	1156	98	12	2	24	1	93	Tr	Tr	2	20	25
15.875x3061 x12192.00 .625x120.5x480	PB32355201-5203	3	13,950 30,753	SB67966	T	54.0	79.6	27	A:119 1.89 2:81 3.69		L	1785	337	1156	98	12	2	24	1	93	Tr	Tr	2	20	26
15.875x3061	PB32355301-5303	3	13,950	SB67966	T	51.1	77.3	25	A:80 1:58		L	1785	337	1156	98	12	2	24	1	93	Tr	Tr	2	20	25

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : Longitudinal, T L R(Trans Longitude Ratio)
* Division - L Ladle Analysis
* Chemical Composition Unit. -2:x1/100, -3:x1/1000, -4 x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev 5 dated JUL 01 2006 and PQG01 Rev 0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec III NCA-3800 and(or) KEPIC MNA/ SNA4300
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order

* This Mill Test Certificate cannot be copied for any purpose

KOLAS KT-101, to MAR.01.2008

Surveyor To:

Na, Cho; Bong

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Na C B

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호 070406-PPSA-004-014
Date of Issue/발행일자 [redacted]

2007. 4. 12

Order No./계약번호:0002735375
PO No./주문번호:E10588 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (ISO10474/3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol.Al 3
x12192.00			30,753						2:38																
.625 x 120.5 x 480									3:72																
									A:55																
*** Sub Total (050) ***			48			223,200 (kg)			492,064 (LBS)																
*** HEAT TREATMENT ===> Normalized : 890°C 30min. ***																									
19.050x2452	PB32158201-8204	4	17,876	SB67694	T	49.3	77.3	29	1:117		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
x12192.00			39,408						2:95																
.750 x 96.5 x 480									3:100																
									A:104																
19.050x2452	PB32158301-8304	4	17,876	SB67694	T	50.9	77.7	30	1:67		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
x12192.00			39,408						2:104																
.750 x 96.5 x 480									3:87																
									A:86																
19.050x2452	PB32187801-7804	4	17,876	SB67694	T	50.2	75.4	28	1:125		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
x12192.00			39,408						2:118																
.750 x 96.5 x 480									3:118																
									A:120																
19.050x2452	PB32187901-7904	4	17,876	SB67694	T	48.2	75.0	28	1:87		L	1755	354	1152	108	25	2	23	6	116	Tr	Tr	1	16	30
.750 x 96.5 x 480																									

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : Longitudinal, T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev 5 dated JUL.01.2006 and POQ01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order

* This Mill Test Certificate cannot be copied for any purpose

KT-181, to MAR.61.2005

Surveyor To:

Na, Chai Bong

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Na C B

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:070406-PPSA-004-020
Date of Issue/발행일자:[redacted]
2007. 4. 12

Order No./계약번호:0002735375
PO No./주문번호:E10588
(ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (ISO10474/3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sc	Al -2
*** Sub Total (100) ***			14			104,188 (kg)			A:134 229,692 (LBS)																	
*** HEAT TREATMENT ===> Normalized : 890°C 51min. ***																										
*** Lot Total ***			268			1,099,032 (kg)			2,422,915 (LBS)																	
*** Grade Total ***			268			1,099,032 (kg)			2,422,915 (LBS)																	
*** Grand Total ***			268			1,099,032 (kg)			2,422,915 (LBS)																	
									=== Last Item ===																	

* LOT NO ==> VACUUM DEGASSED

MTR APPROVED EDMONTON EXCHANGER

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test. Direction : Longitudinal, T.L R(Trans Longitude Ratio)
* Division - L:Ladle Analysis
* Chemical Composition Unit -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev 5 dated JUL.01.2006 and PQQC1 Rev. 0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order

* This Mill Test Certificate cannot be copied for any purpose

ISO 9001 KT-191, for MAR.01.2005

Surveyor To:

Na, Chai Bong

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Na C B

SSAB

Test Certificate

12400 Highway 43 North, Axis, Alabama 36505

Form TC1: Revision 1: Date 31 Oct 2000

Customer:
SAMUEL & SON LIMITED
(A DIVISION OF SAMUEL SALES)
2360 DIXIE ROAD
MISSISSAUGA
ON L4YIZ7

Customer P.O. No.: W35681E & 41-271362 | **Mill Order No.:** 41-271364-03 | **Shipping Manifest :** AR096680

Product Description: ASTM A516-70(06)/ASME SA516-70(09A)
LCVN 20 FT.LBS.@-50F/A673-P
HARDNESS REPORTED FOR INFO. ONLY
NORMALIZED

Ship Date: 20 Jul 10
Cert Date: 20 Jul 10

Cert No: 081233123
(Page 1 of 1)

Size: 0.625 X 120.0 X 480.0 (IN)

Tested Pieces / Tensiles / Charpy Impact Tests

Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong % 2in 8in	Tst Dir	Average Hardness	Abs. Energy(FTLB) 1 2 3 Avg	% Shear 1 2 3 Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
W0F560	D36	0.627 X 120.0 (DISCRT)	L	51000	74000		26	T	151.7 HBW	42 36 28 35.3		-60F	L	10.	

Chemical Analysis

Heat Id	C	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Mo	Cb	V	Ti	CEV	ORGN
W0F560	.18	1.09	.010	.003	.19	.028	.020	.22	.12	.11	.05	.003	.005	.016	.42	USA

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED
DURING THE MANUFACTURE OF THIS PRODUCT
KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE
CEV (IIW) = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15
NORMALIZED PLATES. HEATED AT 1650F FOR 29 MINUTES.

W0F560 D36 6178799 PCES: 1, WGT: 10289
W0F560 D36 6178797 PCES: 1, WGT: 10287
W0F560 D36 6178798 PCES: 1, WGT: 10289
W0F560 D36 6178795 PCES: 1, WGT: 10302

CONFORMING TO SA 516-70MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 4
SIGNED BY 17 MAR 2011

SAMUEL [illegible]
CERT [illegible]
TEST [illegible]
YOUR PO 124463-125-1
OUR ORDER 104384
DATE 10/19/10
FILED BY

Cust Part # :

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION

Jason Thomas
SENIOR METALLURGIST

客户名称: SINO PIPE CO., LIMITED
CLIENT:
合同编号: CSST2006/212
CONTRACT NO:
产品名称: SEAMLESS CARBON STEEL PIPES
DESCRIPTION:
检验标准: ASTM A106 Gr.B/ASME SA106 Gr.B/API 5L-43ed NACE MR-0175
STANDARD:

产品质量证明书
MILL TEST CERTIFICATE
SPECIAL STEEL PRODUCT QUALITY CERTIFICATION

CSST 攀钢集团成都钢铁有限责任公司
PANGANG GROUP CHENGDU IRON & STEEL CO., LTD.

地址:中国 四川 成都市东风南路一号
ADDRESS:No.1 South Dongfeng Road, Chengdu Sichuan P.R.China TEL:028-84502093 FAX:028-84503981
电话:028-84502093 传真:028-84503981 邮编:610066
P.O.BOX: 610066

质证书号: 2006212003-3
CERTIFICATE NO: 00004388
收头: CSST2006/212
SHIPPING MARKS:

合计: 242 根; 2950.404 米; 225.864 吨;
TOTAL: PIECES: METERS: TONS:

NO	编号 PACKAGE NO	钢号 STEEL GRADE	炉批号 HEAT NO	批号 BATCH NO	熔炼方式① MELTING METHOD	交货状态② CONDITION OF SUPPLY	规格(mm) SIZE 外径 O.D/NPS	壁厚 W.T	长度 LENGTH	QUANTITY 根数 PIECES	米数 METERS	重量 TONS	水压试验 HYDROSTATIC TEST 压力(MPa) PRESSURE	时间 TIME	结果(9) RESULT	无损检验 NDT 探伤方法③ METHOD	试样尺寸④ SAMPLE SIZE	结果(9) RESULT	表面及尺寸 SURFACE DIMENSION (9)
1		B	06827738	Y3360904B5	EAF	HR	12 3/4"	0.375"	40FT	31	377.962	27.900	1260	5S	ACCEPTABLE				ACCEPTABLE
2		B	06827743	Y3360904B4	EAF	HR	12 3/4"	0.375"	40FT	42	512.064	37.800	1240	5S	ACCEPTABLE				ACCEPTABLE
3		B	06827745	Y3360904B5	EAF	HR	12 3/4"	0.375"	40FT	84	1024.128	75.600	1240	5S	ACCEPTABLE				ACCEPTABLE
4		B	06827746	Y3360904B0	EAF	HR	12 3/4"	0.375"	40FT	5	60.960	4.500	1240	5S	ACCEPTABLE				ACCEPTABLE
5		B	06827747	Y3360904B0	EAF	HR	12 3/4"	0.375"	40FT	52	633.984	46.800	1240	5S	ACCEPTABLE				ACCEPTABLE
6		B	0681948	Y3460900B2	EAF	HR	12 3/4"	0.500"	40FT	17	207.264	20.196	1650	5S	ACCEPTABLE				ACCEPTABLE
7		B	0681949	Y3460900B3	EAF	HR	12 3/4"	0.500"	40FT	11	134.112	13.068	1650	5S	ACCEPTABLE				ACCEPTABLE

NO	试样号 SAMPLE NO	拉伸试验 TENSILE TEST ⑤ 试样尺寸 SAMPLE SIZE (mm)	屈服强度 YIELD (MPa)		抗拉强度 TENSILE (MPa)		延伸率 ELONGATION (%)		冲击试验 IMPACT TEST (STANDARD:ASTM A370) ⑤ ℃ A样 单值(J) INDIVIDUAL VALUE				B样 单值(J) INDIVIDUAL VALUE				平均值(J) AVERAGE		环拉试验 RING TENSILE TEST (9)	环扩试验 RING EXPANDING TEST (9)	计货规定的附加试验 ADDITIONAL TESTS SPECIFIED IN ORDER HARDNESS TEST: (HB)			压扁试验 FLATENING TEST (9)
1	T3360904B5A/B	38.1	320	325	505	510	37	38													152	137	141	ACCEPTABLE
2	T3360904B4A/B	38.1	315	300	505	510	35	36													143	137	144	ACCEPTABLE
3	T3360904B5A/B	38.1	310	310	510	510	38	37													144	137	143	ACCEPTABLE
4	T3360904B0A/B	38.1	295	315	505	505	39	37													152	157	150	ACCEPTABLE
5	T3360904B5A/B	38.1	305	305	500	505	36	35													160	143	157	ACCEPTABLE
6	T3460900B2A/B	38.1	315	310	515	510	36	36													143	143	143	ACCEPTABLE
7	T3460900B3A/B	38.1	310	310	505	490	35	37													144	143	150	ACCEPTABLE

ORIGINAL

化学成份 CHEMICAL COMPOSITION (%)

NO		C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Nb	Ti	B	产品分析碳当量⑥CE 标准值⑦	产品分析碳当量⑥CE 实际值⑧
1	HEAT ANALYSIS	0.21	0.26	0.60	0.015	0.018	0.03	0.05	0.01	0.08	0.01	0.001	0.01	0.0005		
	PRODUCT ANALYSIS	0.22 | 0.22	0.26 | 0.26	0.58 | 0.59	0.014 | 0.014	0.019 | 0.019	0.03 | 0.03	0.05 | 0.05	0.02 | 0.02	0.10 | 0.10	0.01 | 0.01	0.001 | 0.001	0.01 | 0.01	0.0004 | 0.0004		
2	HEAT ANALYSIS	0.20	0.27	0.56	0.018	0.014	0.02	0.04	0.01	0.06	0.01	0.001	0.01	0.0005		
	PRODUCT ANALYSIS	0.22 | 0.22	0.26 | 0.24	0.60 | 0.60	0.015 | 0.016	0.021 | 0.013	0.05 | 0.02	0.05 | 0.04	0.02 | 0.02	0.09 | 0.06	0.01 | 0.01	0.001 | 0.001	0.01 | 0.01	0.0004 | 0.0004	<=0.40	0.34 | 0.34
3	HEAT ANALYSIS	0.20	0.25	0.59	0.018	0.015	0.02	0.04	0.01	0.07	0.01	0.001	0.01	0.0005		
	PRODUCT ANALYSIS	0.21 | 0.21	0.24 | 0.24	0.61 | 0.60	0.016 | 0.016	0.016 | 0.014	0.02 | 0.02	0.04 | 0.04	0.02 | 0.02	0.06 | 0.06	0.01 | 0.01	0.001 | 0.001	0.01 | 0.01	0.0004 | 0.0004	<=0.40	0.33 | 0.33
4	HEAT ANALYSIS	0.20	0.27	0.60	0.017	0.017	0.02	0.05	0.01	0.10	0.01	0.001	0.01	0.0005		
	PRODUCT ANALYSIS	0.21 | 0.22	0.26 | 0.26	0.59 | 0.60	0.016 | 0.016	0.021 | 0.021	0.05 | 0.05	0.05 | 0.06	0.09 | 0.02	0.09 | 0.09	0.01 | 0.01	0.001 | 0.001	0.010 | 0.010	0.0004 | 0.0004	<=0.40	0.33 | 0.34
5	HEAT ANALYSIS	0.20	0.23	0.60	0.015	0.013	0.02	0.04	0.01	0.07	0.01	0.001	0.01	0.0005		
	PRODUCT ANALYSIS	0.22 | 0.23	0.26 | 0.24	0.58 | 0.61	0.014 | 0.016	0.020 | 0.015	0.03 | 0.03	0.05 | 0.04	0.02 | 0.02	0.10 | 0.06	0.01 | 0.01	0.001 | 0.001	0.010 | 0.010	0.0005 | 0.0004	<=0.40	0.34 | 0.34
6	HEAT ANALYSIS	0.22	0.24	0.60	0.010	0.006	0.02	0.04	0.01	0.07	0.010	0.001	0.01	0.0005		
	PRODUCT ANALYSIS	0.24 | 0.23	0.30 | 0.30	0.61 | 0.61	0.012 | 0.011	0.005 | 0.005	0.02 | 0.02	0.04 | 0.04	0.01 | 0.01	0.07 | 0.07	0.01 | 0.01	0.001 | 0.001	0.01 | 0.01	0.0004 | 0.0004	<=0.40	0.36 | 0.35
7	HEAT ANALYSIS	0.20	0.24	0.56	0.010	0.016	0.02	0.04	0.01	0.07	0.01	0.001	0.010	0.0005		
	PRODUCT ANALYSIS	0.24 | 0.21	0.25 | 0.26	0.60 | 0.58	0.011 | 0.014	0.005 | 0.006	0.02 | 0.04	0.04 | 0.04	0.01 | 0.02	0.07 | 0.09	0.01 | 0.01	0.001 | 0.001	0.01 | 0.01	0.0004 | 0.0004	<=0.40	0.36 | 0.33

REMARKS: 1、TO BE DELIVERIED IN THEORETICAL WEIGHT.
2、THIS IS TO CERTIFY THAT THE PRODUCT HAS BEEN INSPECTED AS PER RELEVANT SPECIFICATION AS STIPULATED IN THE ORDER, QUALIFIED WITH ALL THE DATA IN COMPLIANCE WITH THE SPECIFICATION.
3、THE ORIGINAL QUALITY CERTIFICATE IS THE FOUNDATION OF ACCEPTANCE WHILE THE COPY IS NOT ACCEPTANCE VOUCHER AND ONLY FOR REFERENCE.
4、①MELTING METHOD: 电炉—EAF 电渣重熔—ESR 转炉—BOF 电炉+VD—EAF+VD
5、②CONDITION OF SUPPLY: QUENCHED AND TEMPERED—Q+T, HOT ROLLED—HR, QUENCHED—Q, NORMALIZED—N, ANNEALED—A, TEMPERED—T, HOT EXPANDED—HE
6、③METHOD 磁粉检验—MT 超声检验—UT 涡磁检验—LMT 涡流检验—ET
7、④SAMPLE SIZE:C10—10%刻槽 (10%NOTCH) (OR 12.5%)
8、⑤ORIENTATION OF SPECIMEN: 纵向—LON 横向—TRA
9、⑥CARBON EQUIVALENT OF PRODUCT ANALYSIS
10、标准值⑦STANDARD VALUE
11、实际值⑧ACTUAL VALUE
12、⑨合格—ACCEPTABLE

EN 10204 3.1.B
MEETS REQUIREMENTS OF NACE MR0175/ISO-15156
COMCO PO#7147

检查员: INSPECTOR:
质量负责人: APPROVED BY QUALITY MANAGER:
制表时间: FILLING FORM DATE: 2006 年 YEAR 11 月 MONTH 17 日 DAY

CONFORMING TO SA 106B
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 8
SIGNED BY 17 MAR 2011

12"XH

PO#: 114680-125-001 Item#: 2 ValueAdd Prod: P 12 XS S6 D BC CustProd: P 12 XS S6 D BC SO#: 394021 Heat#: 0681949

Edmonton Exchanger & Manufacturing Ltd.
5545-89 Street, Edmonton, Alberta T6E 5W9
Telephone (780) 468-6722 Fax (780) 466-5155

OK

QCC-004
Rev.4
Date:April 1, 2005
Approved By:S.Z.

Certificate of Compliance

Customer ALCO GAS & OIL PRODUCTION PO 117978 Work Order C75585 Date 2008/07/04 CofC# 2344

Item#	Description	Qty	Heat#
W75585-1	PLATE(S) - 0.3750" NOM X 96.5" X 480" (Material Spec: SA 516-70 Normalized)	1	G7996-Y71220113
		1	G7995-Y71220104
		1	G7996-Y71220109
W75585-2	PLATE(S) - 0.3750" NOM X 120.5" X 480" (Material Spec: SA 516-70 Normalized)	1	E7H157-D01 **See note *Rough Rounded Mill Edge* below.**
		1	E7H157-D04 **See note *Rough Rounded Mill Edge* below.**
		1	E7H157-D04 **See note *Rough Rounded Mill Edge* below.**
		1	E7H157-D04 **See note *Rough Rounded Mill Edge* below.**
		1	E7H157-D05 **See note *Rough Rounded Mill Edge* below.**
W75585-3	PLATE(S) - 0.5000" NOM X 96.5" X 480" (Material Spec: SA 516-70 Normalized)	1	SB94600-PB45594203 **See note *Rough Rounded Mill Edge* below.**
		1	SB94600-PB45594103 **See note *Rough Rounded Mill Edge* below.**
		1	SB94600-PB45594104 **See note *Rough Rounded Mill Edge* below.**
W75585-4	PLATE(S) - 0.5000" NOM X 120.5" X 480" (Material Spec: SA 516-70 Normalized)	1	SB94609-PB45624103
		1	SB94606-PC36025903
		1	SB94606-PC36025603
		1	SB94606-PC36025602
W75585-5	PLATE(S) - 0.6250" NOM X 120.5" X 480" (Material Spec: SA 516-70 Normalized) →	1	SB96743-PB46829601 **See note *Rough Rounded Mill Edge* below.**

COMPLIES TO SA 516-70 MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 9
SIGNED BY 17 MAR 2011

Edmonton Exchanger & Manufacturing Ltd.
5545-89 Street, Edmonton, Alberta T6E 5W9
Telephone (780) 468-6722 Fax (780) 466-5155

QCC-004
Rev.4
Date:April 1, 2005
Approved By:S.Z.

Certificate of Compliance

Customer ALCO GAS & OIL PRODUCTION PO 117978 Work Order C75585 Date 2008/07/04 CofC# 2344

Supplementary Requirements

Rough Rounded Mill Edge: Rough Rounded Mill Edge on plate. See MTR for width of plate certified to the physical & chemical results. Make sure rough rounded mill edges are cut off prior to using.

Normalized Material Identification Marking:
'MT' indicates normalized by the mill per ASME Code Section II, part A, SA 20, para. 13.1.1.
'GMT' indicates normalized by Edmonton Exchanger per ASME Code Section II, part A, SA 20, para. 13.1.2.
'GT' indicates normalized by Edmonton Exchanger per ASME Code Section VIII Div. 1, UG-85 or ASME Code Section I, PG-77.4.

The items listed above (if applicable) comply with the requirements of ASME Code Section I, PG-80 and Section VIII, Div. 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, 2007 Edition, Addenda July 1, 2007.

Steve Zubrycky] (QAM)

Supplementary Examination - Items

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호 :080222-PPSA-006-001
Date of Issue/발행일자:Feb., 27, 2008

14238

Order No./계약번호:0003114506
PO No./주문번호:E 10634-1 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2004EDITION)

Size/치수	Product No. 제품번호	COIL Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.625"x96.50"x480"	PC36888301-8302	2	7,446 16,416	SB96608	T	52.1	77.9	30	1:121 2:138 3:111 A:123		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35
0.625"x96.50"x480"	PC36888101-8103	3	11,169 24,624	SB96608	T	51.6	77.6	28	1:94 2:129 3:133 A:119		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35
0.625"x96.50"x480"	PC36888001-8003	3	11,169 24,624	SB96608	T	51.9	77.5	28	1:112 2:119 3:100 A:111		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35
0.625"x96.50"x480"	PC36888401-8403	3	11,169 24,624	SB96608	T	53.8	80.4	28	1:132 2:123 3:102 A:119		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35
0.625"x96.50"x480"	PC36888201-8203	3	11,169 24,624	SB96608	T	51.9	77.6	27	1:100 2:86 3:109		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test : Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test : Direction : Longitudinal, T.L.R(Trans Longitude Ratio)
* Division : L:Ladle Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.5 dated JUL.01,2006 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material.
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
This material is fine grained steel.
* This Mill Test Certificate cannot be copied for any purpose

Surveyor To:

W. G. Jo

Chief of material testing section Jo, Won Gook

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:080222-PPSA-006-002
Date of Issue/발행일자:Feb., 27, 2008

Order No./계약번호:0003114506
PO No./주문번호:E 10634-1 (ASME2004EDITION)
Supplier/수문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2004EDITION)

Size/치수	Product No. 제품번호	COIL Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.625"x96.50"x480"	PC36887901-7903	3	11,169 24,624	SB96508	T	52.5	78.5	25	A:98 1:142 2:139 3:139 A:139		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35
0.625"x96.50"x480"	PC36887801-7803	3	11,169 24,624	SB96608	T	51.9	77.7	25	1:103 2:72 3:97 A:91		L	1870	374	1159	63	14	2	25	Tr	106	Tr	Tr	1	21	35
*** Sub Total (040) ***			20				74,460 (kg)		164,154 (LBS)																
*** HEAT TREATMENT ===> Normalized 890°C 26min. ***																									
0.625"x120.50"x480"	PB46800401-0404	4	18,600 41,004	SB96741	T	51.6	76.7	27	1:121 2:106 3:133 A:120		L	1912	343	1151	120	9	2	22	1	100	Tr	Tr	1	19	23
0.625"x120.50"x480"	PB46846801-6802	2	9,300 20,502	SB96741	T	53.1	79.8	29	1:115 2:122 3:103 A:113		L	1912	343	1151	120	9	2	22	1	100	Tr	Tr	1	19	23

* Position : T Top, M Middle, B : Bottom
* Tensile Test Direction Transversal, Gauge Length : 200㎜(Rectangular), YP Method 0.2% off-set
* Impact Test Direction : Longitudinal, T.L.R(Trans Longitude Ratio)
* Division : L Ladle Analysis
* Chemical Composition Unit -2:x1/100, -3:x1/1000, -4:x1/10000, -5 x1/100000
* Tr It is within the standard range(<0.008%) and include trace element
* Supply Condition : As-Rolled unless otherwise Heat Treated

A) This material was producted under a quality system manual Rev.5 dated JUL.01.2006 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec III NCA-3800 and(or) KEPIC MNA/ SNA4300
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
This material is fine grained steel
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Surveyor To:

W. G. Jo

Chief of material testing section Jo, Won Gook

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:080222-PPSA-006-003
Date of Issue/발행일자:Feb., 27, 2008

Order No./계약번호:0003114506
PO No./주문번호:E 10634-1 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2004EDITION)

Size/치수	Product No 제품번호	COIL Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.625"x120.50"x480"	PB46829301-9303	3	13,950 30,753	SB96741	T	52.5	77.5	28	1:91 2.133 3:122 A:116		L	1912	343	1151	120	9	2	22	1	100	Tr	Tr	1	19	23
0.625"x120.50"x480" →	PB46829601-9603	3	13,950 30,753	SB96743	T	55.4	81.1	28	1:113 2.93 3:102 A:103		L	1941	334	1183	88	20	2	20	1	93	Tr	Tr	1	16	34
0.625"x120.50"x480"	PB46829501-9503	3	13,950 30,753	SB96743	T	53.1	78.9	28	1:124 2:134 3:123 A:127		L	1941	334	1183	88	20	2	20	1	93	Tr	Tr	1	16	34
0.625"x120.50"x480"	PB46800101-0103	3	13,950 30,753	SB96743	T	53.4	78.0	29	1:139 2:150 3:141 A:143		L	1941	334	1183	88	20	2	20	1	93	Tr	Tr	1	16	34
0.625"x120.50"x480"	PB46800001-0003	3	13,950 30,753	SB96743	T	53.4	77.7	28	1:122 2.126 3:114		L	1941	334	1183	88	20	2	20	1	93	Tr	Tr	1	16	34

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* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : Longitudinal, T-L R(Trans Longitude Ratio)
* Division - L:Ladle Analysis
* Chemical Composition Unit : -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element
* Supply Condition : As-Rolled unless otherwise Heat Treated

COMPLYING TO SA 516-70MT
2010 ED
JOB # 2011-8169-02
ITEM # 9
SIGNED BY 17 MAR 2011

A) This material was producted under a quality system manual Rev.5 dated JUL.01.2006 and PQQC1 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material.
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Surveyor To:

W. G. Jo
Chief of material testing section Jo, Won Gook

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:080222-PPSA-006-004
Date of Issue/발행일자:Feb., 27, 2008

Order No./계약번호:0003114506
PO No./주문번호:E 10634-1 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2004EDITION)

Size/지수	Product No 제품번호	COIL Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.625"x120.50"x480"	PB46914101-4103	3	13,950 30,753	SB96743	T	54.0	77.9	26	A:121 1:134 2:121 3:135		L	1941	334	1183	88	20	2	20	1	93	Tr	Tr	1	16	34
0.625"x120.50"x480"	PC36957701-7703	3	13,950 30,753	SB96749	T	52.4	79.8	29	A:130 1:119 2:121 3:109		L	1950	330	1144	78	14	2	23	Tr	94	Tr	Tr	1	18	38
0.625"x120.50"x480"	PC36957601-7603	3	13,950 30,753	SB96749	T	52.2	79.2	28	A:117 1:135 2:153 3:159		L	1950	330	1144	78	14	2	23	Tr	94	Tr	Tr	1	18	38
0.625"x120.50"x480"	PC36957501-7503	3	13,950 30,753	SB96749	T	52.8	79.2	29	A:149 1:118 2:136 3:114		L	1950	330	1144	78	14	2	23	Tr	94	Tr	Tr	1	18	38
0.625"x120.50"x480"	PB47919401	1	4,650 10,251	SB98670	T	52.6	77.2	25	A:122 1:139 2:143		L	1817	342	1151	68	15	2	23	Tr	89	Tr	Tr	1	19	25

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length 200㎜(Rectangular), YP Method 0.2% off-set
* Impact Test Direction : Longitudinal, T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis
* Chemical Composition Unit. -2:x1/100, -3:x1/1000, -4:x1/10000, -5 x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

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B) No repair welding was performed to the products.
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W. G. Jo

Chief of material testing section Jo, Won Gook

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:080222-PPSA-006-005
Date of Issue/발행일자:Feb., 27, 2008

Order No./계약번호:0003114506
PO No./주문번호:E 10634-1 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2004EDITION)

Size/치수	Product No 제품번호	COIL Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.625"x120.50"x480"	PB47919902	1	4,650 10,251	SB98670	T	53.7	76.6	29	3:136 A:139 1:138 2:132 3:145 A:138		L	1817	342	1151	68	15	2	23	Tr	89	Tr	Tr	1	19	25
0.625"x120.50"x480"	PB47919904	1	4,650 10,251	SB98670	T	53.7	76.6	29	1:138 2:132 3:145 A:138		L	1817	342	1151	68	15	2	23	Tr	89	Tr	Tr	1	19	25
0.625"x120.50"x480"	PB47919801-9804	4	18,600 41,004	SB98670	T	55.7	80.4	27	1:173 2:151 3:148 A:157		L	1817	342	1151	68	15	2	23	Tr	89	Tr	Tr	1	19	25
*** Sub Total (950) ***			40			186,000 (kg)			410,054 (LBS)																
*** HEAT TREATMENT ===> Normalized 890°C 30min ***																									
0.750"x96.50"x480"	PB46803301-3304	4	17,868 39,392	SB96741	T	50.3	76.4	26	1:137 2:148		L	1912	343	1151	120	9	2	22	1	100	Tr	Tr	1	19	23

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test : Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test : Direction : Longitudinal, T-L-R(Trans-Longitude Ratio)
* Division - L : Ladle Analysis
* Chemical Composition Unit : -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.5 dated JUL.01,2006 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order
This material is fine grained steel.
* This Mill Test Certificate cannot be copied for any purpose

Surveyor To:

W.G. Jo

Chief of material testing section Jo, Won Gook

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호 :080225-PPSA-004-001
Date of Issue/발행일자:Feb., 27, 2008

Order No./계약번호:0003114506
PO No./주문번호:E 10634-1 (ASME2004EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1B)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2004EDITION)

Size/치수	Product No 제품번호	COIL Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.875"x120.50"x480"	PC37834801	1	6,512 14,356	SB98670	T	53.4	77.3	28	1:119 2:142 3:133 A:131		L	1817	342	1151	68	15	2	23	Tr	89	Tr	Tr	1	19	25
*** Sub Total (890) ***			1			6,512 (kg)			14,356 (LBS)																
*** HEAT TREATMENT ===> Normalized 890℃ 46min ***																									
*** Lot Total ***			238			1,488,417 (kg)			3,281,349 (LBS)																
*** Grade Total ***			238			1,488,417 (kg)			3,281,349 (LBS)																
*** Grand Total ***			238			1,488,417 (kg)			3,281,349 (LBS)																
									=== Last Item ===																

* LOT NO ==> VACUUM DEGASSED

MTR APPROVED EDMONTON EXCHANGER

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : Longitudinal, T.L R(Trans Longitude Ratio)
* Division - L:Ladle Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range(<0.008%) and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev 5 dated JUL.01,2006 and PQG01 Rev 0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
This material is fine grained steel
* This Mill Test Certificate cannot be copied for any purpose

Surveyor To:

W.G. Jo

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Jo, Won Gook

DAEWOO INTERNATIONAL
www.daewoo.com
100-714 서울 중구 남대문로 5가 541 ㈜대우빌딩 중앙사서함 2810호
C.P.O Box 2810 Seoul 100-714, Korea TEL : 759-2114 : FAX : 753-9489

Mar 11, 2008

ATTN : Edmonton Exchanger.
C.C : To whom it may concern.

Subject: Posco Plate SA516 Grade 70 for Pressure Vessel Quality.

This letter is written to certify that Posco/Daewoo comply with DIN 50049/3.1B, EN10204(2004)/3.1B and ISO 10474/3.1B, also guarantee ASME 2004 Edition-2006 Addendum for PO no. 10623 and 10634 which was supplied by Posco for Edmonton Exchanger. Due to limited space in MTR electric system, it only shows ASME 2004 Edition and EN10204 3.1(or ISO10474 3.1B) which please understand.

Best Regard,

Y.H.KIM
Team Leader
Hot Rolled Steel Team 3, Steel Division 1
Daewoo International Corporation

MTR APPROVED
EDMONTON EXCHANGER

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER		MILL ORDER
00531CT002E -01	2010/06/03	2010/07/27	188633	-	CP	-317377	63332

CHARGE TO CUSTOMER NAME&ADDRESS
WILKINSON A DIVISION OF PREMETALCO INC
9525-60TH AVENUE
EDMONTON ALBERTA
T6E 0C3

SHIP TO CUSTOMER NAME&ADDRESS
WILKINSON STEEL AND METALS
C/O BATES EQUIPMENT
4060 - 99TH STREET
EDMONTON, ALBERTA

OK

MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S RECORD KEEPING PRACTICES

M. MCLEAN
MANAGING METALLURGIST

CUSTOMER SPECIFICATION
ABR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (09B) - CVNL 20/16 FT LBS AT -50 F - FULLY KILLED - FINE GRAIN - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NACE MR0175 - BHN 200 MAX NORMALIZED FOR 21 MINUTES MIN @ 1670 F

SUPPLEMENTARY INSTRUCTION TEST CERT 1: CATHY STEPANIUK 780-437-0840 TEST CERT 2: MEL ELIAS 604-301-3244
PLATE TEST COUPON:

SPTR TEST REPORTS REQUIRED
LAST USE RESALE

2000153634 PF
2010/08/12 07:19

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT

MEETS EN 10204 3.1
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM
ALL HEATS FULLY KILLED
HEATS INDICATED WITH (*) FINE GRAINED
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

* * * * * * * * * * * * * * * * * * * PRODUCT SHIPPED * * * * * * * * * * * * * * * * * * *

CUSTOMER ITEM 00001 OUR ITEM 002 DIMENSIONS .625 X 96 X 480 "

PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT	PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT
49922	✓4208K-02	1	8167	49923	5247K-04	2	16335
49924	✓5247K-52	2	16335				

* * * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * * * *

TENSILE TESTS:

HEAT	PLATE NUMBER	SAMPLE SRCE	SAMPLE GAUGE	TEST COND	TEST METH	TEST DIR	YIELD KSI	TENSILE KSI	% ELONG	
4208K	49922 ✓	166"	.6250	N	.2	T	51.0	75.0	28(8")	LAB
5247K	49923 ✓	166"	.6250	N	.2	T	53.1	77.0	27(8")	ALG
5247K	49924 ✓	166"	.6250	N	.2	T	53.3	77.0	25(8")	ALG

HARDNESS TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	TEST COND	TEST METH	HARDNESS	
4208K	49922	166"	.6250	N	BH	151	LAB
5247K	49923	166"	.6250	N	BH	154	ALG
							ALG

5/8" PLATE

CONFORMS TO SA 516-70 MT
YEAR 2010 ED
LOT # 2011-8169-02
ITEM # 16
SIGNED BY 17 MAR 2011

"Warning" The test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel.

S01001TR006-1 ALCO GAS AND OI - Cert#: P00531CT002.4208K.49922 - P.O.#: 124379

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER		MILL ORDER
PO0531CT002E	2010/06/03	2010/07/27	188633	-	CP	-317377	63332

CHARGE TO CUSTOMER NAME&ADDRESS
WILKINSON A DIVISION OF PREMETALCO INC
9525-60TH AVENUE
EDMONTON ALBERTA
T6E 0C3

SHIP TO CUSTOMER NAME&ADDRESS
WILKINSON STEEL AND METALS
C/O BATES EQUIPMENT
4060 - 99TH STREET
EDMONTON, ALBERTA

CUSTOMER SPECIFICATION
HR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (09B) - CVNL 20/16 FT LBS AT -50 F - FULLY KILLED - FINE GRAIN - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NACE MR0175 - BHN 200 MAX NORMALIZED FOR 21 MINUTES MIN @ 1670 F

MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S RECORD KEEPING PRACTICES.

M. MCLEAN
MANAGING METALLURGIST

SUPPLEMENTARY INSTRUCTION **TEST CERT 1: CATHY STEPANIUK 780-437-0840 TEST CERT 2: MEL ELIAS 604-301-3244**
PLATE TEST COUPON:

SPCTR **TEST REPORTS REQUIRED** 2000153634 PF
TEST USE **RESALE** 2010/08/12 07:19

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT.

* * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * *

HEAT	PLATE NUMBER	SRCE	GAUGE IN	* TEST * COND	METH	HARDNESS	LAB
247K	49924	166"	.6250	N	BH	152	ALG

IMPACT TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	* * * * TEST * * * * COND	METH	DIR	SIZE	TEMP	FULLSIZE ENERGY * FTLB	* AVG*	SPEC	LAB
208K	49922	166"	.6250	N	CVN	L	FULL	-50F	81 90 46	72	ASTM	ALG
247K	49923	166"	.6250	N	CVN	L	FULL	-50F	48 69 73	63	ASTM	ALG
247K	49924	166"	.6250	N	CVN	L	FULL	-50F	61 79 94	78	ASTM	ALG

* * * * * * * * * * * * * * * CHEMICAL PROPERTIES * * * * * * * * * * * * * * *

HEAT (WT %)	C	MN	P	S	SI	CR	NI	CU	MO	AL	CB	V	B	DO
	TI	SN	N	AS	ZR	PB	SB							
4208K**	.20	1.10	.010	.004	.31	.02	.15	.03	.00	.028	.000	.015		.40
	.003													
5247K**	.20	1.09	.012	.003	.33	.03	.14	.03	.01	.027	.000	.014		.40
	.003													

Warning** The test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel.

S01001TR006-1 ALCO GAS AND OI - Cert#: P00531CT002.4208K.49922 - P.O.#: 124379-

ALGOMA STEEL INC.

105 West Street, Sault Ste. Marie, Ontario Canada P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	DAILY NUMBER	SHIPPER'S NO.	CARRIER	PAGE	VENDOR
P80116CT002	2008/01/29	2008/06/03	081783	-	TTIX -156393		32274

CHARGE TO CUSTOMER NAME AND ADDRESS

WILKINSON A DIVISION OF PREMETALCO INC
9525-60TH AVENUE
EDMONTON ALBERTA
T6E 0C3

SHIP TO CUSTOMER NAME AND ADDRESS

WILKINSON STEEL AND METALS
C/O BATES EQUIPMENT
4060 - 99TH STREET
EDMONTON, ALBERTA

CUSTOMER SPECIFICATION

HR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (04) - CVNL 15/12 FT LBS AT -50 F - FINE GRAIN - NORMALIZED 1650F NOM FOR 5 MIN/INCH MIN. - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NACE MR0175 - BHN 200 MAX

SUPPLEMENTARY INSTRUCTIONS

TEST CERT 1: WILKINSON STEEL AND METALS C/O BATES EQUIPMENT 780 -437-0840 TEST CERT 2: PLATE TEST COUPON:

INSP TR TEST REPORTS REQUIRED

CUST USE RESALE

2000067031 PF PF
2008/06/03 12:11

MILL TEST REPORTS

ALGOMA STEEL INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

J. JOHNSTON
MANAGING METALLURGIST

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OK

MEETS EN 10204 3.1
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ALGOMA.COM
ALL HEATS FULLY KILLED
HEATS INDICATED WITH (*) FINE GRAINED

* * * * * * * * * * * * * * * * * * * PRODUCT SHIPPED * * * * * * * * * * * * * * * * * * *

CUSTOMER ITEM 00008 OUR ITEM 017 DIMENSIONS .750 X 96 X 480 "

PLATE NUMBER	HEAT	NO. PIECES	WEIGHT	PLATE NUMBER	HEAT	NO. PIECES	WEIGHT
21639	3153H-04	1	9801				

* * * * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * * * *

TENSILE TESTS:

HEAT	PLATE NUMBER	SAMPLE SRCE	SAMPLE GAUGE	TEST COND	TEST METH	TEST DIR	YIELD KSI	TENSILE KSI	% ELONG	
3153H	21639	166"	.7500	N	.2	T	52.0	77.0	26(8")	LAB ALG

HARDNESS TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	TEST COND	TEST METH	HARDNESS	
3153H	21639	166"	.7500	N	BH	153	LAB ALG

IMPACT TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	TEST COND	METH	DIR	SIZE	TEMP	FULLSIZE FTLB	ENERGY AVG	
3153H	21639	166"	.7500	N	CVN	L	FULL	-50F	66 14	47 42	LAB ALG

CONFORMS TO SA 516-70MT
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 20
SIGNED BY 17 MAR 2011

WARNING THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT OF THE PARTICULAR ITEM(S) FROM WHICH THIS CERTIFICATE IS PREPARED. MEETS THE MINIMUM

S91203TR001-2 ALGO GAS AND OI - Cert#: PR0116CT002 3153H.75 - P.O.#: 12200-125-

ALGOMA STEEL INC.

105 West Street, Sault Ste. Marie, Ontario Canada P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	IN TO DATE	SHIP DATE	TALLY NUMBER	SHIPPER'S NO.	CARRIER	PAGE	INVOICE
P80116CT002	2008/01/29	2008/06/03	081783	-	TTIX -156393		32274

CHARGE TO CUSTOMER NAME AND ADDRESS

WILKINSON A DIVISION OF PREMETALCO INC
9525-60TH AVENUE
EDMONTON ALBERTA
T6E 0C3

SHIP TO CUSTOMER NAME AND ADDRESS

WILKINSON STEEL AND METALS
C/O BATES EQUIPMENT
4060 - 99TH STREET
EDMONTON, ALBERTA

CUSTOMER SPECIFICATION

HR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (04) - CVNL 15/12 FT LBS AT -50 F - FINE GRAIN - NORMALIZED 1650F NOM FOR 5 MIN/INCH MIN. - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NACE MR0175 - BHN 200 MAX

SUPPLEMENTARY INSTRUCTIONS

TEST CERT 1: WILKINSON STEEL AND METALS C/O BATES EQUIPMENT 780 -437-0840 TEST CERT 2: PLATE TEST COUPON:

INSPN TEST REPORTS REQUIRED

POST USE RESALE

2000067031 PF PF

2008/06/03 12:11

MILL TEST REPORTS

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J. JOHNSTON
MANAGING METALLURGIST

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CHEMICAL PROPERTIES

HEAT	(WT %)	C	MN	P	S	SI	CR	NI	CU	MO	AL	CB	V	B	DO
		TI	SN	N	AS	ZR	PB	SB							
3153H*		.20	1.08	.017	.003	.32	.03	.16	.06	.00	.038	.000	.020	.0002	40
		.003													

WARNING THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM SPECIFIED YIELD STRENGTH AND (2) THE CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OBTAINED HEREIN CAN NOT BE [illegible]

SY120417H0003-2 ALGO GAS AND CI - Cert#: P80116CT002.315 HR.25 - P.O.#: 12200-125-

Order#: 95849 Seq: 2 PO#: 125386 Heat#: 187177.v/26 Mill: Nicola Galperti

Part#: FL 20 3 R W 80 5 Part Desc: Flanges 20 (508mm O.D.) 300# RAISED FACE WELD NECK SCH 80 A/SA105N

Capitale Sociale € 2.582.600,00 interamente versato
Sede Legale e Amministrativa: 23824 DERVIO (LC) - Via Enrico Fermi, 46
C.C.I.A.A. Lecco n.00206990138 - R.E.A.79815 - C.F. e P.IVA IT00206990138
Stabilimento - Uffici Amministrativi / Workshop - Warehouse - Offices - Melting address:
22010 GERA LARIO (CO) - Località S.Agata - Tel. 0344-97200 - Fax 0344-97210
E-mail : galperti@galperti.com - www.galperti.com

CERTIFICATO DI COLLAUDO / TEST CERTIFICATE		NS.ORDINE / INTERNAL JOB
EN 10204 / EN 10204	3.1	100233

COMCO PIPE & SUPPLY CO.LTD A DIVISION OF

RUSSEL METALS INC. 5910- 17TH STREET
EDMONTON, ALBERTA T5J 2K1 (CDN)

① 8169-02

CERTIFICATO / M.T.CERTIFICATE N.	DATA / DATE	VS.ORDINE / YOUR	DATA / DATE
010889/1	29/04/2010	E1-503 PO# 125386	10/02/2010

POS / ITEM	DESCRIZIONE / DESCRIPTION	QUANTITA' QUANTITY	S/A	MATERIALE / MATERIAL	N° COLATA / PROVA HEAT N°/TEST N°	ACCIAIERIA STEEL MILL	#
073/073	20" 300 WN RF 80 SA105 B1 FSF4	5	S	ASTM A 105/05 N →	187177.V/26	VENETE SPA	A

ANALISI CHIMICA / CHEMICAL ANALYSIS

#		C %	MN %	SI %	P %	S %	CR %	NI %	MO %	CU %	V %	SN %	AL %	NB %	TI %	N %	CO%	B %	H %
A		0,152	1,177	0,228	0,013	0,012	0,100	0,148	0,029	0,175	0,018	0,009	0,029	0,003	0,014	0,008	0,012	0,0003	
A	C	0,150	1,180	0,225	0,010	0,010	0,095	0,145	0,030	0,170	0,015	0,005	0,035	0,002	0,010	0,008	0,012	0,0003	

#		O %	AS%	CA%	04%	03%	FC%	FL%
A		0,001	0,008	0,001	0,470	0,129	0,348	0,399
A	C	0,001	0,008	0,001	0,455	0,125	0,346	0,395

NOTE / NOTES

04=Copper+Nickel+Chromium+Molybd.+Vanadium CU+NI+CR+MO+V
03=Chromium + Molybdenum CR+MO
FC=Carbon Equivalent Short Formula C+(MN/6)
FL=Carbon Equivalent Long Formula C+(MN/6)+((CR+MO+V)/5)+((NI+CU)/15)

C = ANALISI DI PRODOTTO / CHECK ANALISYS

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

#		TRAZIONE / TENSILE: TIPO TYPE	DIAMETRO PROVETTA DIAMETER mm.	SEZIONE AREA mmq.	LUNGHEZZA LENGHT mm.	TEMP. TEMPERATURE C	ROTTURA TENSILE Mpa	SNERVAMENTO YIELD Mpa	ALL. ELONG %	CONTR. REDUCT. %	RESILIENZA / CHARPY TEST: TIPO TYPE KV	TEMP. TEMPERATURE C	VALORI / VALUES Joule	DUREZZA HB HARDNESS (AVERAGE)
A	S		12,50	122,70	50,00	20	485	250	22,0	30,0		20	Min. 27 Med. 27	187
A	O		12,50	122,70	50,00	20	536	320	30,0	66,1		20	68 - 71 - 75	158

CONFORMS TO SA 105 N
YEAR 2007 ED 2009 A
JOB # 2011-8169-02
ITEM # 24
SIGNED BY DS Feb 4/11

NOTE / NOTES

O = OTTENUTE / OBTAINED
S = STANDARD

#	TRATTAMENTI TERMICI / HEAT TREATMENTS
A	Normalized at 900 dgr.C for 3 h.-Cooling from 900 dgr.C in still air
A	

NOTE GENERALI / GENERAL NOTES

FINITURE / ROUGHNESS
FSF4=Ra 3,2 - Ra 6,3

STANDARD
B1 = ASME B16.5 Ed.2003

NOTE / NOTES

MARCHIO DI FABBRICA / TRADE MARK	DATA COLLAUDO INT. / INT. INSPECT DATE	COLLAUDATORE INT. / INT. INSPECTOR
	29/04/2010	E.SBATTELLA

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY

LLOYD'S REGISTER QUALITY ASSURANCE ISO9001

6A - 0388
16A - 0097
17D - 0018

Certified acc. PED 97/23/EC
By LLOYD'S Register
No. LRC 160212

Order#: 95849 Seq: 2 PO#: 125366 Heat#: 187177.v/26 Mill: Nicola Galperti
Part#: FL 20 3 R W 80 5 Part Desc: Flanges 20 (508mm O.D.) 300# RAISED FACE WELD NECK SCH 80 A/SA105N

The Original

Capitale Sociale €2.582.500 interamente versato
Sede Legale e Amministrativa:
23824 DERVIO (LC) – Via Enrico Fermi, 46
C.C.I.A.A. Lecco n.00205990138 - R.E.A. n. 79815 C.F. e P.IVA IT00205990138
Stabilimento - Uffici Amministrativi / Workshop - Warehouse - Offices - Mailing address:
22010 GERA LARIO (CO) – Località S.Agata – Tel. (0344) 97200
Telefax (0344) 97210 – E-MAIL ADDRESS: galperti@galperti.com
WEB SITE : galperti.com

Dimensional & Visual Inspection Report

Page 1 of 1 | Date 29/04/2010

CLIENT : **COMCO & PIPE**		SUPPLIER : **OFFICINE NICOLA GALPERTI E FIGLIO**	
CLIENT ORDER No. : **E1-503**		SUPPLIER'S Ref.No. : **100233**	
ITEMS: *ALL ITEMS*	ATTACHED CERTIFICATES : 010861/1 to 010909/1		

THE FOLLOWING OPERATION HAVE BEEN WITNESSED BY : *INTERNAL INSPECTOR*

- v DIMENSIONAL AND VISUAL INSPECTION
- v EXTERNAL VISUAL CHECK
- v VISUAL ROUGHNESS CONTROL ON FACING
- v MARKING
- v HARDNESS TEST CHECK

RESULTS : **SATISFACTORY ACCORDING TO:** ASME B16.5 & P.O. Requirements

S.AGATA : 29/04/2010

p.Off. NICOLA GALPERTI & FIGLIO S.p.A.

E.Sbattella
(Quality control deparmtent)

Order#: 95849 Seq: 2 PO#: 125366 Heat#: 187177.v/26 Mill: Nicola Galperti
Part#: FL 20 3 R W 80 5 Part Desc: Flanges 20 (508mm O.D.) 300# RAISED FACE WELD NECK SCH 80 A/SA105N

The Original

Capitale Sociale €2.582.600 interamente versato
Sede Legale e Amministrativa:
23824 DERVIO (LC) – Via Enrico Fermi, 46
C.C.I.A.A. Lecco n.00205990138 - R.E.A. n. 79815 C.F. e P.IVA IT00205990138
Stabilimento - Uffici Amministrativi / Workshop - Warehouse - Offices - Mailing address:
22010 GERA LARIO (CO) – Località S.Agata – Tel. (0344) 97200
Telefax (0344) 97210 – E-MAIL ADDRESS: galperti@galperti.com
WEB SITE : galperti.com

Certificate of Material Compliance

Page 1 of 1 | Date 29/04/2010

CLIENT	: **COMCO & PIPE**	SUPPLIER	: **OFFICINE NICOLA GALPERTI E FIGLIO**
CLIENT ORDER No.	: **E1-503**	SUPPLIER'S Ref.No.	: **100233**
ITEMS: *ALL ITEMS*		ATTACHED CERTIFICATES :	010861/1 to 010909/1

We hereby certify that all items supplied for the above purchase order meet all requirements of the applicable specifications of manufacture, the purchase order item descriptions, purchase specifications and purchase order requirements.We certify that all applicable heat treatments, chemical analysis, mechanical tests, non destructive examinations, welding procedures, etc., as required in the purchase order, were performed and that the results were in accordance with the requirements of the purchase order. We certify that all required analysis and tests were performed on final production parts, or on specimens which were representative in all respects, of the final production part.We certify that all the instruments used for all the mesurements are properly calibrated in according to our internal procedure P011.

MATERIAL ACCORDING TO : ***Nace MR-01-75 / ISO 15156***

CONFORMS TO SA 105 N
YEAR 2007 E.D 2009b A
JOB # 2011-8169-02
ITEM #
SIGNED BY DG Feb 4/11

S.AGATA : 29/04/2010

p.Off. NICOLA GALPERTI & FIGLIO S.p.A.
E.Sbattella
(Quality control deparmtent)

(1) 8169-02

PO # 125570

CONFORMS TO SA 333-6
YEAR 2010ED
JOB # 2011-8169-02
ITEM # 25
SIGNED BY [illegible] 3 MAR 201
Licence No.:

ADD: JINTANG ROAD DONGLI DISTRICT, TIANJIN, CHINA
TEL: 86-22-24801217
FAX: 86-22-24801291

TIANJIN PIPE (GROUP) CORPORATION
QUALITY CERTIFICATE

No.: 10102213

Contract No.	TPCO-10404E	L/C No.		O.D.×W.T.	20" ×SCH80 (φ508×26.19mm)	Packing	IN LOOSE
Order	Comco Pipe&Supply Company	Product	SEAMLESS STEEL LINE PIPE	Steel grade	GR.6	Total pieces	6
P.O. No.	E1-1139	Port of desti.		Man. Method	HOT ROLLING SEAMLESS	Total metres	
Standard	ASTM A333/ASME SA333(2005)			Length range	10.00-12.00	Total Tons	21.640

	Heat No.	Lot No.	Quantity Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	Tensile test(MPa) 1*	Tem. ℃	T.S.	Type	Y.S.	Elong. %	Shrink %	Impact test(J) 2*	Tem. ℃	Size	AK1	Shear %	AK2	Shear %	AK3	Shear %	AVE	Shear %
2	609543	150	6			21.640	N	150-08-023	A	25	460	Rt0.5	290	39.0		A	-45	10*10	212	80	132	50	280	100	208	77
								150-08-024	A	25	465	Rt0.5	295	38.0												
	Total		6			21.640		Note:	A:bar,L,do=12.70mm Lo=50mm							A:V/L										

	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)
3	609543	150	150-08-023		151.0	151.0	152.0	153.0	152.0	152.0	153.0	152.0	150.0	152.0	150.0	150.0	149.0	150.0	150.0	EMI+UT/L3+L3	G	G
	609543	150	150-08-024		143.0	141.0	141.0	142.0	142.0	141.0	139.0	142.0	140.0	141.0	151.0	149.0	148.0	146.0	149.0		G	G

	Heat No. / Steel speci.		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	CE(PCM)	CE(IIW)	Hydro. Test
4	609543	L	0.14	0.27	1.07	0.011	0.004	0.03	0.02	0.01	0.07	0.045	0.03	<0.005	<0.01	<0.0005	0.0013	0.0068				0.34	15Mpa/8s
	14Mn5V	P	0.15	0.26	1.07	0.011	0.004	0.03	0.02	0.01	0.07	0.051	0.03	<0.01	<0.01	<0.0005		0.0070				0.35	
		P	0.14	0.25	1.07	0.010	0.004	0.03	0.02	0.01	0.07	0.051	0.03	<0.01	<0.01	<0.0005		0.0070				0.34	
		L																					
		P																					
		P																					
		L																					
		P																					
		P																					

5	NDE (100%)	Visual and Dimension	Hydro. Test	Pipe End NDE	Pipe End Bevelling	Residual Mag. Test	SSCC	HIC
	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: Normalized: 940℃×30Minutes1) ALUMINUM KILLED STEEL 和 EAF-LF -CONTINUOUS CASTING2) EN10204-3.13) CE =C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/154) NACE MR-0175 (2003) /MR-0103(2007)/ISO 15156 (2009)

No.	QR-11-8.2.4-19	Date	2010-11-5
Page	(1)		

Remark:destl.=destination;Tem.=Temperature;speci.= specification;Man.=Manufacture;Fla.=Flattening;G=Good;Hydro.=Hydrostatic; Mag=Magnetic

(FOR EXPORT ONLY)

3/18/14

Order#: 101967 Seq: 1 PO#: [illegible]70-8169-02 Heat#: 609543 Mill: Tianjin P[illegible] (Group) Corporation
Part#: PC 20 80 S6 1 Part Desc: Crop Pipe 20 80 SMLS SA/A106-B 1

ADD: JINTANG ROAD DONGLI
DISTRICT, TIANJIN, CHINA
TEL: 86-22-24801217
FAX: 86-22-24801291

TIANJIN PIPE (GROUP) CORPORATION
QUALITY CERTIFICATE

Licence No.:

No.: 10102213

Contract No.	TPCO-10404E	L/C No.		O.D.×W.T.	20" ×SCH80 (φ508×26.19mm)	Packing	IN LOOSE
Order	Comco Pipe&Supply Company	Product	SEAMLESS STEEL LINE PIPE	Steel grade	GR.6	Total pieces	6
P.O. No.	E1-1139	Port of desti.		Man. Method	HOT ROLLING SEAMLESS	Total metres	
Standard	ASTM A333/ASME SA333(2005)			Length range	10.00-12.00	Total Tons	21.640

	Heat No.	Lot No.	Quantity Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	Tensile test(MPa) 1*	Tem. ℃	T.S.	Type	Y.S.	Elong. %	Shrink %	2*	Tem. ℃	Size	Impact test(J) AK1	Shear %	AK2	Shear %	AK3	Shear %	AVE	Shear %
2	609543	150	6			21.640	N	150-08-023	A	25	460	Rt0.5	290	39.0		A	-45	10*10	212	80	132	50	280	100	208	77
								150-08-024	A	25	465	Rt0.5	295	38.0												
	Total		6			21.640		Note:	A:bar,L,do=12.70mm Lo=50mm										A:V/L							

	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)
3	609543	150	150-08-023		151.0	151.0	152.0	153.0	152.0	152.0	153.0	152.0	150.0	152.0	150.0	150.0	149.0	150.0	150.0	EMI+UT/L3+L3	G	G
	609543	150	150-08-024		143.0	141.0	141.0	142.0	142.0	141.0	139.0	142.0	140.0	141.0	151.0	149.0	148.0	146.0	149.0		G	G

	Heat No.		Chemical composition % (L: Ladle analysis P:Product analysis) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	CE(PCM)	CE(IIW)	Hydro. Test
4	Steel speci.																						
	609543	L	0.14	0.27	1.07	0.011	0.004	0.03	0.02	0.01	0.07	0.045	0.03	<0.005	<0.01	<0.0005	0.0013	0.0068				0.34	15Mpa/8s
	14Mn5V	P	0.15	0.26	1.07	0.011	0.004	0.03	0.02	0.01	0.07	0.051	0.03	<0.01	<0.01	<0.0005		0.0070				0.35	
		P	0.14	0.25	1.07	0.010	0.004	0.03	0.02	0.01	0.07	0.051	0.03	<0.01	<0.01	<0.0005		0.0070				0.34	
		L																					
		P																					
		P																					
		L																					
		P																					
		P																					

5	NDE (100%)	Visual and Dimension	Hydro. Test	Pipe End NDE	Pipe End Bevelling	Residual Mag. Test	SSCC	HIC
	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: Normalized: 940℃×30Minutes1) ALUMINUM KILLED STEEL 和 EAF-LF -CONTINUOUS CASTING2) EN10204-3.13) CE =C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/154) NACE MR-0175 (2003) /MR-0103(2007)/ISO 15156 (2009)

No.	QR-11-8.2.4-19	Date	
Page	(1)		2010-11-5

Remark:destl.=destination;Tem.=Temperature;speci.= specification;Man.=Manufacture;Fla.=Flattening;G=Good;Hydro.=Hydrostatic; Mag=Magnetic

(FOR EXPORT ONLY)

Order#: 101967 Seq: 1 PO#: 12[illegible]70-8169-02 Heat#: 609543 Mill: Tianjin Pi[illegible] (Group) Corporation
Part#: PC.20.80.S6.1 Part Desc: Crop Pipe 20 80 SMLS SA/A 106-B 1

0169-02

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

PS 4125 SEL

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7003141(1)COMCO

Certificate No.: SE3141A1
Date: 10/25/2010
Page: 1 OF 1

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09 / ASME SA105-09	ASME B16.5-09 CSA Z245.12

Item No.	CUSTOMER P/N	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%) C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
			Min Max	- 0.350	0.100 0.350	0.600 1.050	- 0.035	- 0.040	- 0.400	- 0.300	- 0.400	- 0.120	- 0.080	- 0.020	- -			
1		150 BL RF 18" A105N	10 PCE	0.180	0.120	1.110	0.021	0.003	0.008	0.200	0.010	0.001	0.004	0.001	0.001			0.406
2		300 BL RF 18" A105N	5 PCE	0.200	0.230	1.120	0.013	0.004	0.080	0.120	0.120	0.020	0.004	0.001	0.007			0.428
3		150 BL RF 20" A105N	15 PCE	0.200	0.190	1.140	0.018	0.011	0.160	0.120	0.060	0.020	0.001	0.001	0.009			0.433
4		300 BL RF 20" A105N	1 PCE	0.190	0.220	1.120	0.013	0.004	0.090	0.120	0.120	0.020	0.005	0.002	0.001			0.419
5	→	300 BL RF 20" A105N	4 PCE	0.190	0.220	1.120	0.014	0.005	0.120	0.120	0.130	0.030	0.004	0.002	0.007			0.423
6		900/1500 WN RF XS 2" A105N	25 PCE	0.210	0.160	1.130	0.007	0.010	0.050	0.060	0.050	0.005	0.003	0.005	0.009			0.418
7		900/1500 WN RTJ S160 2" A105N	25 PCE	0.207	0.280	1.060	0.010	0.015	0.012	0.021	0.048	0.005	0.002	0.005	0.005			0.393
8		1500 WN RF XS 3" A105N	20 PCE	0.200	0.170	1.100	0.007	0.011	0.060	0.090	0.040	0.005	0.003	0.005	0.009			0.409
9		1500 WN RTJ XS 3" A105N	20 PCE	0.207	0.280	1.060	0.010	0.015	0.012	0.021	0.048	0.005	0.002	0.005	0.005			0.393

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: Minimum: Joule 1	2	3	Material Supplier
	Min	485.0	250.0	22.0	-	30.0				
	Max	-	-	-	187	-				
1	4316236	501.1	327.5	37.4	150	74.6				ACOMINAS
2	951570	509.9	371.7	34.8	151	72.9				GODO STEEL
3	278362	525.6	361.9	33.6	152	70.4				SEAH BESTEEL
4	951558	522.7	398.1	34.0	156	74.6				GODO STEEL
5	450393 ←	523.7	365.8	38.6	150	72.9				GODO STEEL
6	21530	519.8	335.4	36.0	154	66.8				OEMK
7	10915	505.0	354.0	33.2	147	69.5				NTMK
8	21532	515.8	331.5	34.2	155	66.8				OEMK
9	10915	505.0	354.0	33.2	147	69.5				NTMK

■ HEAT TREATMENT(*2)
☒ N

■ REMARKS
880 °C X 3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156.2
CONFORMS WITH Z245.12 CAT I GR.248 SOUR SERVICE-05
TEST SPECIMEN ORIENTATION: TRANSVERSE

*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=Furance Cooled, W.C=Water Cooled, O.C=Oil Cooled.

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

CONFORMS TO SA 105 N
YEAR 2007 ED 2009 bA
JOB # 2011 - 8169 - 02
ITEM # 26
SIGNED BY 29 Feb 4/11

SAN ENG STEEL FORGING CO., LTD. SE 26.0.2 QUALITY ASSURANCE DEP'T

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.

Manager of Quality Assurance Dep't

Order#: 95849 Seq: 3 PO#: 125[illegible] Heat#: 450393 Mill: San Eng Steel
Part#: F 20 3 R B 5 Part Desc: Flanges 20 (508mm O.D.) 300# RAISED FACE BLIND A/SA105N

(2)8169-02

METALFAR

PRODOTTI INDUSTRIALI S.P.A.
23861 CESANA BRIANZA (LC) ITALY
Tel. 031.655441 - Fax 031.655149
MATERIAL TEST DEPARTMENT
SALA PROVE ED ANALISI MATERIALI

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001 : 2000 -

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY-ALBERTA T3S 0 A1

PO #125574

INSPECTION CERTIFICATE EN 10204/3.1

CERTIFICATO DI COLLAUDO

N.: 391/ 03/02/2009
INVOICE / FATTURA 274/ 03/02/2009
S.: 57173
DEL. NOTE / BOLLA 507/ 03/02/2009
PAG.: 1

6" CL 300 W/N FLANGE RF
SCH 160 BORE A105N

AT CODE / D. COLATA	HEAT / COLATA	ITEM / POS.	YOUR P.O. / VS. ORDINE	OUR REFERENCE / NS. ORDINE	QUANTITY / QUANTITA	DESCRIPTION / DESCRIZIONE		DIM. ACCORDANCE TO / DIM. IN ACCORDO A	VISUAL & DIMENSIONAL / VISIVO E DIMENSIONALE
	31655	0041	CI08-376	08002342 0051		W/N 300 RF 6" 120	A105	ASME/ANSI B16.5	SATISFACTORY
	32387.	0052	CI08-422	08003066 0062		THRD 150 RF 3"	LF2CL1	ASME/ANSI B16.5	SATISFACTORY
	31565.	0008	CI08-495	08003406 0018		W/N 300 RF 8" STD	LF2CL1	ASME/ANSI B16.5	SATISFACTORY
→	31655 F	0015	CI08-531	08003594 0025		W/N 300 RF 6" 160	A105	ASME/ANSI B16.5	SATISFACTORY
	76150	0026	CI08-570	08003987 0034		W/N 300 RF 2" XS	A105	ASME/ANSI B16.5	SATISFACTORY
	75207	0090	CI08-570	08003987 0098		S/O 150 RF 4"	A105	ASME/ANSI B16.5	SATISFACTORY

AT CODE / D. COLATA	HEAT / COLATA	ITEM / POS	MATERIAL / MATERIALE	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Nb %	N %	Al %	C.E. %	ORIGIN / ORIGIN
	31655	0041	ASTM A 105	0.200	0.230	1.020	0.009	0.009	0.090	0.050	0.010	0.007	0.200	0.003	0.000	0.000	0.010	0.407	EUROPE
	32387.	0052	ASTM A350 LF2 CL1/2	0.195	0.240	1.170	0.012	0.014	0.110	0.050	0.010	0.019	0.150	0.020	0.001	0.000	0.027	0.430	EUROPE
	31565.	0008	ASTM A350 LF2 CL1/2	0.190	0.250	1.100	0.010	0.012	0.110	0.060	0.010	0.015	0.180	0.021	0.001	0.000	0.025	0.417	EUROPE
	31655	0015	ASTM A 105	0.200	0.230	1.020	0.009	0.009	0.090	0.050	0.010	0.007	0.200	0.003	0.000	0.000	0.010	0.407	EUROPE
	76150	0026	ASTM A 105	0.185	0.190	0.920	0.022	0.015	0.090	0.050	0.010	0.005	0.190	0.001	0.001	0.000	0.011	0.374	EUROPE
	75207	0090	ASTM A 105	0.205	0.210	1.000	0.010	0.010	0.060	0.050	0.010	0.009	0.150	0.002	0.001	0.000	0.029	0.399	EUROPE

AT CODE / D. COLATA	HEAT / COLATA	ITEM / POS	TEST SPECIMEN mm PROVETTA: SECTION / Sezione	LENGHT / Lunghezza	YIELD POINT / Snervamento N/mm² ≥ 32%	TENSILE STRENGHT / Rottura N/mm² ≥	ELONGATION / Allungamento % ≥	REDUCTION OF AREA / Contrazione % ≥	HARDNESS / Durezza Hb	BEND TEST / Piega	FLATTENING TEST / Schiacciam	IMPACT TEST - Resilienza Joule / cm² U.M.	TYPE / TIPO KV/KC mm	°C	1	2	3	SHAPE / FORMA	S	W	X	YIELD POINT / SNERVAMENTO N/mm² ≥ 10%	OU
	31655	0041	126.60	50.80	382.0	534	30.0	58.0	163-165	0.0	0.0		KV	20	86	86	88	1				0.0	
	32387.	0052	126.60	50.80	386.0	544	30.0	58.0	164-166	0.0	0.0		KV	-50	67	63	63	1				0.0	
	31565.	0008	126.60	50.80	383.0	534	30.0	58.0	163-165	0.0	0.0		KV	-50	67	60	65	1				0.0	
	31655	0015	126.60	50.80	382.0	534	30.0	58.0	163-165	0.0	0.0		KV	20	86	86	88	1				0.0	
	76150	0026	126.60	50.80	330.0	533	34.0	60.0	163-165	0.0	0.0		KV	20	83	86	82	1				0.0	
	75207	0090	126.60	50.80	334.0	546	31.0	58.0	164-166	0.0	0.0		KV	20	86	84	88	1				0.0	

AT CODE / D. COLATA	HEAT / COLATA	ITEM / POS	MATERIAL IN ACCORDANCE TO / MATERIALE IN ACCORDO A	HEAT TREATMENT / TRATTAMENTO TERMICO	
	31655	0041	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	32387.	0052	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	31565.	0008	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	31655	0015	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	76150	0026	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE
	75207	0090	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE

TE
ATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 105N

QUALITY CONTROL DEPARTMENT / UFFICIO CONTROLLO QUALITÀ
BRACCHI FLAVIO

INSPECTION AUTHORITY / ENTE UFFICIALE COLLAUDO

MANUFACTURER'S SYMBOL / MARCHIO PRODUZIONE
MFF

FOR ARE TO SA
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 33
SOLD TO 04 MAR 2011

HEAT NUMBER : 31655
TRANS AM PIPING PRODUCTS - REV'D BY: 11
Shipment/Seq #: S 9 - 1059

P.O.# 16334 JOB# 8169-02-04/8146-30 Item# 1

Page 1 of 1

OK

Contract No.: 2210000675-1
L/C NO.: N.ILC.02999
Name of Customer: NATIONAL OILWELL
ORDER NO.: MSI-5296 (LOT A) P.O. NO.: 1116399
Description: SEAMLESS CARBON STEEL PIPE
TOTAL: 263PIECES, 58BUNDLES, 110.670MT, 10254FT

HENGYANG VALIN STEEL TUBE CO., LTD

MILL CERTIFICATE

Date: MAY 13, 2008 (Revised date: NOV. 06, 2008)
Page: 1/4

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

SPEC: ASTM A53B-2002/A106B-2002a, ASME SA53B/SA106B-2004, API 5LB/X42, PSL1-2004, NACE MR-0175-2003

CERTIFICATE NO: 08-03-0511

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	QUANTITY (MT)	ACTUAL WEIGHT(MT)
1	284400304	0831522	B/X42	6"*0.280"*40FT	33	162	6480	55.825	
2	284100408	0830847	B/X42	6"*0.432"*40FT	8	39	1560	20.234	
	284100409	0831520	B/X42	6"*0.432"*40FT	8	36	1440	18.676	
3	284300405	0732879	B/X42	6"*0.719"*21FT	2	10	210	4.324	
	284300405	0830845	B/X42	6"*0.719"*21FT	1	4	84	1.729	
4	284300404	0831520	B/X42	6"*0.719"*40FT	6	12	480	9.882	

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST		CHEMICAL COMPOSITION %												
		EMI	U.T	C	SI	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	
1	HOT-ROLLED	OK		0.17	0.41	0.89	0.012	0.007	0.11	0.04	0.03	0.01	0.003	0.01	0.001	
2	HOT-ROLLED	OK		0.17	0.40	0.82	0.017	0.007	0.13	0.08	0.05	0.01	0.008	0.01	0.003	
	HOT-ROLLED	OK		0.19	0.39	0.87	0.013	0.007	0.13	0.05	0.06	0.01	0.006	0.01	0.001	
3	HOT-ROLLED	OK		0.16	0.39	0.84	0.013	0.009	0.1	0.03	0.04	0.01	0.010	0.01	0.001	
	HOT-ROLLED	OK		0.16	0.39	0.84	0.013	0.009	0.1	0.03	0.04	0.01	0.010	0.01	0.001	
4	HOT-ROLLED	OK		0.19	0.39	0.87	0.013	0.007	0.13	0.05	0.06	0.01	0.005	0.01	0.001	

NO.	σb (PSI) TENSILE STRENGTH	σs (PSI) YIELD STRENGTH	δ (%) ELONGATION	Ak (J) IMPACT			HRC HARDNESS	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
	strip ,L,bo=25mm,Lo=50mm			SIZE	AK	Ori/Tem				
1	74675	55825	40				HRC 6	2660	OK	
2	76850	52200	43.5				HRC 6	3000	OK	
	78300	52925	42				HRC 6.5	3000	OK	
3	71775	46400	43				HRC 5.5	3000	OK	
	71775	46400	43				HRC 5.5	3000	OK	
4	73950	47850	40				HRC 5	3000	OK	

REMARKS: 1. We hereby certify that the material has been manufactured, sampled, tested and inspected in accordance with the required standards.
2. Properties compliance to DIN 50049 3.1.B/UNI EN10204 3.1B.
3. BRINELL /Rockwell hardness certified to NACE MR-0175-2003.
4. SPECIMEN SIZE: (Pipe end, Longitudinal, Gauge Length=2")
A. For pipes≤1" full length specimen were used;
B. For pipes > 1" longitudinal strip specimen were used; the width of the gauge length portion is 3/4".
5. Origin: Made in China.

QUALITY MANAGER

HENGYANG VALIN STEEL TUBE CO., LTD HUNAN CHINA

CONFORMS TO SA 106B
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 34
SIGNED BY 17 MAR 2011

106138

Ps
6" 160

MTR View

3/20/2009

https://gpts.nov.com/MTR/gifviewer.aspx?docIDs=185204

INSPECTION CERTIFICATE

SUMITOMO METAL INDUSTRIES, LTD.
WAKAYAMA STEEL WORKS (KAINAN)
260-100, FUNOO, KAINAN, JAPAN

CERTIFICATE NO. : BYYF7325 PAGE: 1 DATE: 2006-05-17

CUSTOMER :EMCO CORPORATION
ORDER NO. :9106934-00
SHIPPER :MARUBENI-ITOCHU STEEL INC. 090 JH2 CVB74904 6P13J000203
COMMODITY :SEAMLESS STEEL PIPE

STANDARD SPECIFICATION :ASTM A106-04B / ASME 2004(A05) SA-106 GR.B NDE CSA Z245.1-C1 GR.290

MILL WORK NO. :BYYF7325 O.D.:NB6 W.T.:0.719inch LENGTH:40feet QUANTITY:10pcs. MASS:8240kg

HEAT NO.	PRODUCTS PCS.
J6K3659	10

HEAT TREATMENT:AS ROLLED
DEOXIDATION:KILLED

6 S160 A06 DRL
2520065

CHEMICAL COMPOSITION(%)

	*1	C	Si	Mn	P *2	S *2	Cu	Cr	Ni	Mo	Ti	V	Nb	B *2	*U4	*CEQ
SPEC. MIN.	R	-	10	29	-	-	-	-	-	-	-	-	-	-	-	-
MAX.	R	26	50	106	30	35	40	40	40	15	11	8	11	1	100	42
HEAT NO.																
J6K3659	L	18	22	102	16	6	2	5	2	0	0	0	1	0	9	36
	P	18	23	103	18	7	3	6	2	0	0	0	2	0	11	37
	P	19	23	103	18	6	3	6	2	0	0	0	1	0	11	38

*1 R:LADLE & PRODUCT ANALYSIS
L:LADLE ANALYSIS
P:PRODUCT ANALYSIS

*2: X1000
OTHER:X100

*U4:Cu+Ni+Cr+Mo+V

*CEQ:C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15

TENSILE TEST

	*1	*2	YS *3	TS *3	EL %		
SPEC. MIN.	L	B	M 290	M 415	29		
MAX.	L	B	M -	M 760	-		
HEAT NO. J6K3659	L	B	M 318	M 497	43		

TYPE OF SPECIMEN
STRIP 25mm WIDTH
GAUGE LENGTH
50.0mm
KIND OF YS
0.5% EXTENSION UNDER LOAD
*1 DIRECTION
L:LONGITUDINAL
*2 SAMPLING POSITION
B:BASE METAL
*3 UNIT
M:MPa

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 34
SIGNED BY 17 MAR 2011

FLATTENING TEST:ACCEPTABLE
VISUAL & DIMENSIONS:ACCEPTABLE
HYDROSTATIC TEST 20.7MPa:ACCEPTABLE
EDDY CURRENT EXAMINATION:ACCEPTABLE
EN10204 3.1

NACE MR0175 HARDNESS:GUARANTEED

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH ABOVE STANDARD AND SPECIFICATION AND SATISFIES THE REQUIREMENTS.

Y. Komoto

MANAGER, QUALITY ASSURANCE SECTION

2" CL 300 W/N FLANGE RF
SCH 160 BORE A105N

Heat Number: 921032
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment Seq #: S10 - 1167

Your Item# 4

(15) 8141-02

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

Po # 104586

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7002388(1)-T/A

Certificate No.: SE-2388A
Date: 04/07/2010
Page: 1 OF 2

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09/ASME SA105-09	ASME B16.5-09 CSA Z245.12

Item No.	CUSTOMER P/N	DESCRIPTION	QUANTITY
1		150 WNRF S160 1" A105N	
2		150 WNRF S160 2" A105N	
3		150 WNRF S160 2" A105N	
4		150 WNRF S160 3" A105N	
5		150 WNRF XXS 1 1/2" A105N	
6		150 WNFF STD 2" A105N	
7		150 WNFF STD 2" A105N	
8		300 WNRF S160 1 1/2" A105N	
9		300 WNRF S160 2" A105N ←	
10		300 WNRF XXS 1" A105N	

CHEMICAL COMPOSITION (%)

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
Min	-	0.100	0.600	-	-	-	-	-	-	-	-	-			
Max	0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-			
1	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409
2	0.211	0.240	1.000	0.013	0.014	0.006	0.019	0.054	0.002	0.007	0.005	0.004			0.386
3	0.212	0.260	1.030	0.016	0.009	0.007	0.021	0.054	0.002	0.010	0.005	0.003			0.392
4	0.212	0.260	1.030	0.016	0.009	0.007	0.021	0.054	0.002	0.010	0.005	0.003			0.392
5	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409
6	0.212	0.260	1.030	0.016	0.009	0.007	0.021	0.054	0.002	0.010	0.005	0.003			0.392
7	0.210	0.210	1.160	0.007	0.013	0.040	0.060	0.030	0.009	0.003	0.005	0.011			0.420
8	0.230	0.120	1.020	0.008	0.009	0.070	0.040	0.040	0.005	0.003	0.005	0.010			0.418
9	0.219	0.280	1.020	0.010	0.009	0.009	0.015	0.054	0.002	0.003	0.005	0.006			0.397
10	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: Minimum: Joule 1	2	3	Material Supplier
Min		485.0	250.0	22.0	-	30.0				
Max		-	-	-	187	-				
1	29570	491.3	298.1	35.4	150	65.9				OEMK
2	931272	509.9	319.7	35.2	154	66.0				NTMK
3	931275	509.9	323.6	34.2	155	66.0				NTMK
4	931275	509.9	323.6	34.2	155	66.0				NTMK
5	29570	491.3	298.1	35.4	150	65.9				OEMK
6	931275	509.9	323.6	34.2	155	66.0				NTMK
7	13145	521.7	317.7	34.4	153	67.7				OEMK
8	49187	513.9	296.2	33.4	162	67.7				OEMK
9 →	921032	511.9	347.2	34.0	155	67.0 ←				NTMK
10	29570	491.3	298.1	35.4	150	65.9				OEMK

■ HEAT TREATMENT(*2)
☒ N

■ REMARKS
880 C X3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156-2
CONFORMS WITH Z245.12 CAT I GR 248 SOUR SERVICE 05
TEST SPECIMEN ORIENTATION: TRANSVERSE

*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.=Furance 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.

SAP PROMO NO. 105N
YEAR 2010
JOB 2011-8169-02
ITEM # 37
SIGNED 11 MAR 2011

SAN ENG STEEL FORGING CO., LTD. QUALITY ASSURANCE DEPT

Manager of Quality Assurance Dept

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

CONFORME TO SPEC 333-6
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 38, 41, 42
SIGNED BY 17 MAR 2011

2" sch 160

SIDERCA S.A.I.C.
Dr Jorge A. Simini 250
(B2804MHA) Campana
Buenos Aires, Argentina
(54) 3489 433100 tel.
(54) 3489 433405 fax

Cliente / Customer	Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.	5/3970.20	555152	31/08/2010	1 / 9
Producto / Product	**Orden de Compra/ Purchase Order**	**Item**	**Referencia del Cliente / Customer Reference**	
CARBON STEEL FOR LOW TEMPERATURE SERVICE	E1-675	00032		
Norma / Standard	**Grado / Grade**	**Extremos / Ends**		
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006	1/6/359IISS	BEVELLED AT 30 DEG. ASTM		

Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie / Surface	Cantidades / Quantities
60.30 x 8.74 mm 2 3/8 x 0.344 Inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb

ENSAYOS DE TRACCION / TENSILE TEST

Colada	N° de Ensayo	Condición de la probeta						Temp de Ens	Dimensiones	Sección	Fluencia / Yield Strength					Rotura/U.T.S			Relación F/R		Alargamiento Elongation			Red. de area		Dureza / Hardness Tipo / type: BHN			
											Offset Method		EUL Method									Lo 2"							
Heat	Test N°	Specimen condition						Test Temp	Size	Area	Req. Min 0.2%	V. obt.	EUL	Req. Min	V. obt.	Req. Max	Req. Min	V. obt.	Req. Max	YS/UTS Ratio		Req. Min	V. obt		Area Red.		Req. Min	V. Obt.	Req. Max
		Zona Zone	Estado	Ext.	N° P/T	Tipo Type	Ori																						
								°C	mm	mm2	Mpa		%	Mpa			Mpa			Req. Max	Obt	mm	%		%				
41025	758585	C/B	PRO	E		ST	L	TA/RT	16,89 X 9,10	176,22			0.5	359	390.5		455	466.6	625	0.93	0.80	50.8	35.0	38.8				154		237
41025	758589	C/B	PRO	O		ST	L	TA/RT	16,90 X 8,95	173,38			0.5	359	420.2		455	516.7	625	0.93	0.81	50.8	35.0	35.6				182		237
41025	758584	C/B	PRO	O		ST	L	TA/RT	16,87 X 9,06	175,24			0.5	359	420.4		455	520.3	625	0.93	0.81	50.8	35.0	37.8				159		237
41025	758626	C/B	PRO	E		ST	L	TA/RT	19,06 X 8,50	166,04			0.5	359	432.6		455	517.0	625	0.93	0.84	50.8	35.0	37.0				161		237
41025	758630	C/B	PRO	O		ST	L	TA/RT	19,10 X 8,75	171,35			0.5	359	424.3		455	517.6	625	0.93	0.82	50.8	35.0	36.2				164		237
41025	758678	C/B	PRO	E		ST	L	TA/RT	19,11 X 8,92	174,81			0.5	359	408.9		455	490.2	625	0.93	0.83	50.8	35.0	35.7				142		237
41025	758733	C/B	PRO	O		ST	L	TA/RT	19,05 X 8,81	172,06			0.5	359	433.0		455	523.8	625	0.93	0.83	50.8	35.0	37.1				174		237
41025	758736	C/B	PRO	O		ST	L	TA/RT	19,12 X 9,15	179,47			0.5	359	388.0		455	485.1	625	0.93	0.80	50.8	35.0	38.7				162		237
41025	758738	C/B	PRO	E		ST	L	TA/RT	19,09 X 8,97	175,61			0.5	359	389.2		455	484.6	625	0.93	0.80	50.8	35.0	39.7				159		237
41025	758740	C/B	PRO	E		ST	L	TA/RT	19,07 X 8,88	173,83			0.5	359	403.6		455	500.2	625	0.93	0.81	50.8	35.0	38.2				154		237
41025	758741	C/B	PRO	O		ST	L	TA/RT	19,10 X 9,06	177,49			0.5	359	400.7		455	502.3	625	0.93	0.80	50.8	35.0	38.9				165		237
41025	758743	C/B	PRO	O		ST	L	TA/RT	19,10 X 8,67	169,77			0.5	359	420.9		455	503.0	625	0.93	0.84	50.8	35.0	36.0				161		237

TEST TECNOLOGICO / TECHNOLOGICAL TEST

Aplastamiento Flattening Test	Curvado Bend test	Abocardado Flaring Test	Pestañado Flenge Test	Ens. De anillo expandido Ring expanding Test	Ens. De Tracción de anillo Ring tensile Test
Satisfact.	N.A	N.A	N.A	N.A	N.A

NOTA / NOTE:

Pro = Proceso/ Process PWHT = Post Weld Heat Treatment
N = Normalizada/ Normalized
DIST = Distensionada / Stress Relief
Q & T = Templado y Revenido/ Quenched & Tempered
TA/RT = Temp. Ambiente/ Room Temperature

RE = Rectangular
CI = Cilíndrica/ Cylindrical
ST = Segmento Tubular / Tubular segmen
TU = Transversal

C/B = Cuerpo / Body
R/U = Recalque / Upset
P / A = Promedio / Average
Min = Mínimo / minimum
Max = Máximo / Maximum

L = Longitudinal
T = Transversal
P/T = Tubo/ Pipe
EXT = Extremo/ End
M = Medio/ Middle

V.Obt. = Valor Obtenido / Obtained value
E = Comienzo de marcación/ Stenciling starting
O = Extremo opuesto al E/ Opposite extreme to E
C/H = Ensayos en Caliente / Hot Testing

CALI 17/8/05

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

CONFORMS TO SA 333-6
YEAR 2010 ED
JOB # 2011-8169-02
ITEM # 38, 41, 42
SIGNED BY 17 MAR 2011

SIDERCA S.A.I.C.
Dr Jorge A. Simini 250
(B2804MHA) Campana
Buenos Aires, Argentina
(54) 3489 433100 tel
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Cliente / Customer	Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.	5/3970.20	555152	31/08/2010	2 / 9

Producto / Product	Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference
CARBON STEEL FOR LOW TEMPERATURE SERVICE	E1-675	00032	

Norma / Standard	Grado / Grade	Extremos / Ends
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006	1/6/359IISS	BEVELLED AT 30 DEG. ASTM

Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie / Surface	Cantidades / Quantities
60.30 x 8.74 mm 2 3/8 x 0.344 inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb

ENSAYOS QUIMICOS / CHEMICAL ANALYSES

			% C	% Si	% Mn	% Cr	% Mo	% W	% Cd	% P	% S	% Ni	% V	% Al	% Sn	% Cu	% As	% Nb	% Ti	% Pb	% Sb	% Co	% Zr	% Bi	% Ca	% B	% N	% O	% Mg	% H	% C.e 1	% C.e 2	% Pcm	% Sum 1	% Sum 2	% Sum 3	R 1	R 2	R 3
			x 100							x 1000													x 10000							*	x 100			x 1000					
Colada Heat	Heat	Max	25	50	135					25	25	1000	110					110	110							10					40								
		Min		10	40																																		
Ensayo Test	Prod	Max	25	50	135					25	25	1000	110					110	110							10					40								
		Min		10	40																																		
41025	Heat		8	24	105	5	4	1		8	0	28	3	21	9	54	3	21	4	2	3	7	20	22	6	2	43		4		22							
(758585)	Prod		10	23	103	5	4	1		8	0	26	4	19	9	60	3	21	3	1	1	7	20	22	6	2	46		5		24							
(758589)	Prod		10	24	105	4	4	1		9	1	26	4	19	9	58	3	21	3	1	1	7	20	22	7	2	47		5		24							
(758594)	Prod		10	24	107	4	4	1		9	0	26	4	20	8	61	3	21	3	1	1	7	20	22	6	2	38		4		24							
(758628)	Prod		10	24	105	4	4	1		10	1	25	4	20	8	55	3	19	4	1	1	7	20	22	7	2	43		5		24							
(758630)	Prod		10	24	106	4	4	1		10	1	25	4	21	8	55	3	19	4	1	1	7	20	22	9	2	41		5		24							
(758678)	Prod		10	25	105	4	4	1		10	1	25	4	21	8	54	3	19	4	1	1	7	20	22	8	2	42		5		24							
(758733)	Prod		10	24	106	4	4	1		10	0	26	4	21	9	56	3	19	4	1	1	7	20	22	8	2	43		5		24							
(758736)	Prod		10	24	106	4	4	1		10	0	26	4	21	8	56	3	19	4	1	2	7	20	22	6	2	43		5		24							
(758738)	Prod		10	24	106	4	4	1		10	0	26	4	21	8	56	3	19	4	1	1	7	20	22	8	2	43		5		24							
(758740)	Prod		10	24	107	4	4	1		10	0	26	4	21	9	56	3	19	4	1	1	7	20	22	6	2	43		5		24							
(758741)	Prod		10	24	107	4	4	1		10	0	28	4	21	9	57	3	19	4	1	1	7	20	22	5	2	43		5		24							
(758743)	Prod		10	24	105	5	4	1		10	0	27	4	21	9	57	3	19	4	1	1	7	20	22	6	2	43		5		24							

NOTAS / NOTES: H = Análisis de colada / Heat Analysis. P = Análisis de producto / Product Analysis C.e = Carbono Equivalente/Equivalent Carbon R = Ratio * = PPM / Part per million

CEQ 1 = C+F((MN/6)+(SI/24)+(CU/15)+(NI/20)+(CR+MO+V+NB)/5+(5*B))

CEQ 2 =

PCM =

Sum 1 =

SUM 2 =

SUM 3 =

R 1 =

R 2 =

R 3 =

CALI 17606

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

SIDERCA S.A.I.C.
Dr Jorge A. Simini 250
(B2804MHA) Campana
Buenos Aires, Argentina

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Cliente / Customer			Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.			5/3970.20	555152	31/08/2010	3 / 9
Producto / Product			Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference	
CARBON STEEL FOR LOW TEMPERATURE SERVICE			E1-675	00032		
Norma / Standard			Grado / Grade		Extremos / Ends	
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006			1/6/359IISS		BEVELLED AT 30 DEG. ASTM	
Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie / Surface	Cantidades / Quantities	
60.30 x 8.74 mm 2 3/8 x 0.344 Inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb	

ENSAYOS DE IMPACTO / IMPACT TEST

Colada Heat	Ensayo Test	Condición de la probeta / Specimen condition					Energía Absorbida / Absorbed Energy.									Area ductil / Shear Area (%)						Expansión Lateral/Lateral Exp. (MM)					
		Zona Zone	Metodo Method	Entalla Notch	Dimensiones Size mm	Orient. Orient.	Temper. °C Req.	Temper. °C T/E	Unidad Unit	Req. Min	Req. P/A	V.Obt/Obtained Values Sample N° 1	2	3	Min	P/A	Req. Min	Req. P/A	V.Obt/Obtained Values Sample N° 1	2	3	Min	P/A	Req. Min	Req. P/A	V.Obt/Obtained Values Sample N° 1	2	3	Min	P/A
41025	758565	C/B	CHARPY	V	10,00 x 8,67	L	-50	-50	Joules	9	12	264.3	267.1	264.3	264.3	265.2													
41025	758678	C/B	CHARPY	V	10,00 x 8,67	L	-50	-50	Joules	9	12	263.8	270.9	264.9	263.8	266.5													
41025	758733	C/B	CHARPY	V	10,00 x 8,67	L	-50	-50	Joules	9	12	265.2	268.5	263.7	263.7	265.1													

NOTE: Req = Requisitos / Requirements C/B = Cuerpo / Body R/U = Recalque / Upset Orient = Orientación / Orientation V = Valor / Value P/A = Promedio / Average Min = Mínimo / Minimum T/E = Temp. Ens. / Test Temp.

GAU 174/06

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

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Cliente / Customer	Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.	5/3970.20	555152	31/08/2010	4 / 9

Producto / Product	Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference
CARBON STEEL FOR LOW TEMPERATURE SERVICE	E1-675	00032	

Norma / Standard	Grado / Grade	Extremos / Ends
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006	1/6/359IISS	BEVELLED AT 30 DEG. ASTM

Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie Externa / External Surface	Cantidades / Quantities
60.30 x 8.74 mm 2 3/8 x 0.344 inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb

Valores Requeridos / Required Values	Individuales / Individuals			Promedios / Average			Tipo de dureza / Hardness type
	Max	Min	Var	Max	Min	Var	
				248			VICKERS HV10

ENSAYO DE DUREZA/ HARDNESS TEST

Cuadrante / Quadrant			Obtenidos/ Obtained – Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758585								
1	Tubo/ Pipe	25	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	E / B								
	Diametro Ext./ External Diam.		155	155	152	156	156.0	152.0	154.5	
	Centro/ Mid-wall		151	151	154	154	154.0	151.0	152.5	4.0
	Diametro Int./ Internal Diam.		158	156	158	158	158.0	156.0	156.5	

Cuadrante / Quadrant			Obtenidos/ Obtained – Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758589								
1	Tubo/ Pipe	5	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		170	178	178	179	179.0	170.0	176.3	
	Centro/ Mid-wall		179	179	179	174	178.0	174.0	177.8	9.8
	Diametro Int./ Internal Diam.		174	167	167	164	174.0	164.0	168.0	

Cuadrante / Quadrant			Obtenidos/ Obtained – Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758594								
1	Tubo/ Pipe	50	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		164	162	161	162	164.0	161.0	162.3	
	Centro/ Mid-wall		162	162	165	165	165.0	162.0	163.5	1.2
	Diametro Int./ Internal Diam.		165	165	160	160	165.0	160.0	162.5	

Cuadrante / Quadrant			Obtenidos/ Obtained – Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758626								
1	Tubo/ Pipe	75	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	E / B								
	Diametro Ext./ External Diam.		154	150	150	150	154.0	150.0	151.0	
	Centro/ Mid-wall		156	156	156	149	156.0	149.0	154.3	3.3
	Diametro Int./ Internal Diam.		152	152	155	155	155.0	152.0	153.5	

Ind = Individual Val. = Valor/ Value Min = Mínimo/ Minimum Max = Máximo/ Maximum P/A = Promedio/ Average Var. = Variación/ Variation M = Medio/ Middle
E / B = Stencil starting - Comienzo marcación / Cuerpo - Body
E / U = Stencil starting - Comienzo marcación / Recalque-Upset
E/ VU = Vanishing upset - Desvanecimiento de recalque / Cuerpo - Body
O / B = Opposite extreme to E-Extremo opuesto al E/ Cuerpo - Body
O / U = Opposite extreme to E-Extremo opuesto al E/ Recalque-Upset
O/ VU = Vanishing upset - Desvanecimiento de recalque /.Recalque - Upset

CALI 17&04

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

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Cliente / Customer	Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.	5/3970.20	555152	31/08/2010	5 / 9

Producto / Product	Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference
CARBON STEEL FOR LOW TEMPERATURE SERVICE	E1-675	00032	

Norma / Standard	Grado / Grade	Extremos / Ends
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006	1/6/359IISS	BEVELLED AT 30 DEG. ASTM

Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie Externa / External Surface	Cantidades / Quantities
60.30 x 8.74 mm 2 3/8 x 0.344 inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb

Valores Requeridos / Required Values	Individuales / Individuals			Promedios / Average			Tipo de dureza / Hardness type
	Max	Min	Var	Max	Min	Var	
				248			VICKERS HV10

ENSAYO DE DUREZA/ HARDNESS TEST

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758630								
1	Tubo/ Pipe	95	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		156	159	159	159	159.0	156.0	158.3	
	Centro/ Mid-wall		159	159	156	153	159.0	153.0	156.8	3.3
	Diametro Int./ Internal Diam.		153	153	157	157	157.0	153.0	155.0	

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758678								
1	Tubo/ Pipe	213	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	E / B								
	Diametro Ext./ External Diam.		165	165	170	170	170.0	165.0	167.5	
	Centro/ Mid-wall		155	155	155	155	155.0	155.0	155.0	12.5
	Diametro Int./ Internal Diam.		155	155	155	155	155.0	155.0	155.0	

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758733								
1	Tubo/ Pipe	150	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		157	156	152	157	157.0	152.0	155.5	
	Centro/ Mid-wall		151	151	153	155	155.0	151.0	152.5	3.0
	Diametro Int./ Internal Diam.		155	153	153	156	156.0	153.0	154.3	

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor individual/ Individual Value							
	Colada/ Heat	41025								
	Ensayo/ Test	758736								
1	Tubo/ Pipe	195	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		155	150	149	147	155.0	147.0	150.3	
	Centro/ Mid-wall		148	147	151	153	153.0	147.0	148.8	1.3
	Diametro Int./ Internal Diam.		149	149	150	148	150.0	148.0	149.0	

Ind = Individual Val. = Valor/ Value Min = Mínimo/ Minimum Max = Máximo/ Maximum P/A = Promedio/ Average Var. = Variación/ Variation M = Medio/ Middle
E / B = Stencil starting - Comienzo marcación / Cuerpo - Body
E / U = Stencil starting - Comienzo marcación / Recalque-Upset
E/ VU = Vanishing upset - Desvanecimiento de recalque / Cuerpo - Body
O / B = Opposite extreme to E-Extremo opuesto al E/ Cuerpo - Body
O / U = Opposite extreme to E-Extremo opuesto al E/ Recalque-Upset
O/ VU = Vanishing upset - Desvanecimiento de recalque / Recalque - Upset

CALI 17/5/04

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

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Cliente / Customer	Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.	5/3970.20	555152	31/08/2010	6 / 9

Producto / Product	Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference
CARBON STEEL FOR LOW TEMPERATURE SERVICE	E1-675	00032	

Norma / Standard	Grado / Grade	Extremos / Ends
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006	1/6/359IISS	BEVELLED AT 30 DEG. ASTM

Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie Externa / External Surface	Cantidades / Quantities
60.30 x 8.74 mm 2 3/8 x 0.344 inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb

Valores Requeridos / Required Values	Individuales / Individuals			Promedios / Average			Tipo de dureza / Hardness type
	Max	Min	Var	Max	Min	Var	
				248			VICKERS HV10

ENSAYO DE DUREZA/ HARDNESS TEST

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor Individual/ Individual Value							
1	Colada/ Heat	41025								
	Ensayo/ Test	758738								
	Tubo/ Pipe	125	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	E / B								
	Diametro Ext./ External Diam.		178	181	185	181	185.0	178.0	181.3	
	Centro/ Mid-wall		166	167	169	167	169.0	166.0	167.3	20.8
	Diametro Int./ Internal Diam.		160	161	162	159	162.0	159.0	160.5	

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor Individual/ Individual Value							
1	Colada/ Heat	41025								
	Ensayo/ Test	758740								
	Tubo/ Pipe	175	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	E / B								
	Diametro Ext./ External Diam.		172	167	174	177	177.0	167.0	172.5	
	Centro/ Mid-wall		161	165	164	160	165.0	160.0	162.5	14.7
	Diametro Int./ Internal Diam.		157	158	158	158	158.0	157.0	157.8	

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor Individual/ Individual Value							
1	Colada/ Heat	41025								
	Ensayo/ Test	758741								
	Tubo/ Pipe	105	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		151	150	146	151	151.0	146.0	149.5	
	Centro/ Mid-wall		156	149	150	151	156.0	149.0	151.5	2.0
	Diametro Int./ Internal Diam.		152	150	150	148	152.0	148.0	150.0	

Cuadrante / Quadrant			Obtenidos/ Obtained — Valor Individual/ Individual Value							
1	Colada/ Heat	41025								
	Ensayo/ Test	758743								
	Tubo/ Pipe	205	1	2	3	4	Max	Min	P/A	Var
	Extremo / End	O / B								
	Diametro Ext./ External Diam.		180	180	178	166	180.0	166.0	176.5	
	Centro/ Mid-wall		170	170	168	171	171.0	166.0	169.8	15.5
	Diametro Int./ Internal Diam.		163	160	161	160	163.0	160.0	161.0	

Ind = Individual Val. = Valor/ Value Min = Mínimo/ Minimum Max = Máximo/ Maximum P/A = Promedio/ Average Var. = Variación/ Variation M = Medio/ Middle
E / B = Stencil starting - Comienzo marcación / Cuerpo - Body
E / U = Stencil starting - Comienzo marcación / Recalque-Upset
E/ VU = Vanishing upset - Desvanecimiento de recalque / Cuerpo - Body
O / B = Opposite extreme to E-Extremo opuesto al E/ Cuerpo - Body
O / U = Opposite extreme to E-Extremo opuesto al E/ Recalque-Upset
O/ VU = Vanishing upset - Desvanecimiento de recalque / Recalque - Upset

CALI 17 DIC4

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

SIDERCA S.A.I.C.
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Cliente / Customer COMCO PIPE & SUPPLY CO.			*Expediente/ Manufacturing Order* 5/3970.20	*Número / Number* 555152	*Fecha / Date* 31/08/2010	*Pág./Page* 7 / 9
Producto / Product CARBON STEEL FOR LOW TEMPERATURE SERVICE			*Orden de Compra/ Purchase Order* E1-675	*Item* 00032	*Referencia del Cliente / Customer Reference*	
Norma / Standard ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006			*Grado / Grade* 1/6/359IISS		*Extremo / Ends* BEVELLED AT 30 DEG. ASTM	
Dimensiones / Dimensions 60.30 x 8.74 mm 2 3/8 x 0.344 inches	*Schedule* 160	*Peso Nominal / Nominal Weight* 11.11 KG/MT 7.46 LB/FT	*Longitud / Length* 11.6/11.8 m	*Superficie / Surface* INT BARE /EXT VARNISHED	*Cantidades / Quantities* 200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb	

& = Monograma / Monogram SIDERCA
MM.YY = Mes / Año Month / Year
NNNNN = Número de tubo / Nbr of pipe
Y/T = Año / Trimestre Year / Quarter

Marcas / Marking
LLL = Longitud / length
PPP = Peso / Weight
@ = Monograma / Monogram API
HNXXXXX = Colada / Heat

Prueba Hidráulica / Hydrostatic Test

Presión / Pressure		*Tiempo / Time*	*Resultado / Results*
Unidad / Unit	*Valor / Value*	*Segundos / Seconds*	*Satisfactorio / Satisfactory*
PSI	3000	5,00	

Estarcido (Tubo) / Stenciling (Pipe)

TENARIS SD MM.YY ASTM/ASME A/SA 333 60,3 8,74 11,11 2 SCH160 1/6/359 CATIISS HQ QT M45C LT-45C SEAMLESS 207KPAX100 NDE CSA Z245.1-07 PO E1-675 MADE IN ARGENTINA HNXXXXX NNNNN LLLL PPPPP

FABRICADO POR TENARIS SIDERCA	*MANUFACTURED BY TENARIS SIDERCA*
PROCESO DE ACERACIÓN FABRICACIÓN DE ACERO: FUNDICIÓN POR ARCO ELECTRICO Y COLADO CONTINUO - ACERO CALMADO AL ALUMINIO. -LA PRÁCTICA DE AFINO EN EL HORNO - CUCHARA INCLUYE AGITACION POR ARGON Y UNA INYECCIÓN FINAL DE UNA VARILLA DE SILICIURO DE CALCIO PARA OBTENER UNA FORMA GLOBULAR DE EVENTUALES MICROINCLUSIONES. -MATERIAL LIBRE DE CONTAMINACIÓN DE MERCURIO.	*ACIERAGE PROCESS* STEEL MAKING PROCESS: E.A.F./L.F. AND CONTINUOUS CASTING - FULL ALUMINIUM KILLED AND FINE GRAIN PRACTICE. -THE LF PRACTICE INCLUDES ARGON RINSE AND A FINAL INJECTION OF CALCIUM SILICIDE WIRE FOR MICROINCLUSION SHAPE CONTROL. -MATERIAL FREE FROM MERCURY CONTAMINATION.
PROCESO DE LAMINACIÓN -FABRICACIÓN DE TUBO: LAMINADO EN CALIENTE Y SIN COSTURA.	*ROLLING PROCESS* -MANUFACTURING PROCESS : SEAMLESS HOT ROLLED.
CONTROLES -CONTROL VISUAL Y DIMENSIONAL: SATISFACTORIO.	*CONTROLS* -VISUAL AND DIMENSIONAL INSPECTION : SATISFACTORY.
CONDICIONES DEL MATERIAL -NO REPARADO POR SOLDADURA.	*MATERIAL CONDITIONS* -NOT REPAIRED BY WELDING.
-LA DUREZA CUMPLE CON LA NACE MR-01-75/ISO-15156-2	-HARDNESS ACCORDING TO NACE MR-01-75/ ISO-15156-2.

CAU 17.6.01

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

SIDERCA S.A.I.C.
Dr Jorge A. Simini 250
(B2804MHA) Campana
Buenos Aires, Argentina

(54) 3489 433100 tel.
(54) 3489 433405 fax

Cliente / Customer	Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.	5/3970.20	565152	31/08/2010	8 / 9

Producto / Product	Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference
CARBON STEEL FOR LOW TEMPERATURE SERVICE	E1-675	00032	

Norma / Standard	Grado / Grade	Extremo / Ends
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006	1/6/359IISS	BEVELLED AT 30 DEG. ASTM

Dimensiones / Dimensions	Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie / Surface	Cantidades / Quantities
60.30 x 8.74 mm 2 3/ 8 x 0.344 Inches	160	11.11 KG/MT 7.46 LB/FT	11.6/11.8 m	INT BARE /EXT VARNISHED	200 Pz 2341.52 m 26369 Kg 200 Pcs 7682.15 Ft 58134 Lb

-EL MATERIAL CUMPLE CON LOS REQUERIMIENTOS NACE MR-0103.

NORMAS

-EDICIÓN DE LA NORMA: ASTM A 333-10

-EDICIÓN DE LA NORMA: ASME SA 333/ 2007

-EDICIÓN DE LA NORMA: NACE MR 01-75 - ISO 15156-2 : 2003

- EDICIÓN DE LA NORMA: NACE MR-01-03 EDICION 2007

EDICIÓN DE LA NORMA : CSAZ245: 2007

-MATERIAL COMPLIES WITH NACE MR 0103 .

STANDARDS

-EDITION OF REGULATION: ASTM A 333-10

-EDITION REGULATION: ASME SA 333/ 2007

-EDITION OF REGULATION: NACE MR 01-75 - ISO 15156-2 : 2003

-EDITION OF REGULATION: NACE MR-01.03 EDITION 2007

-EDITION OF REGULATION : CSA Z245 : 2007

Observaciones / Remarks

NON DESTRUCTIVE TEST: SATISFACTORY.

INSPECTION METHODS: U.T. LONG.(EXT.) NOTCH 5 % (INT.) NOTCH 10 % + TRANSV. (EXT./ INT.) NOTCH 10 % + M.P.I. LONG./TRANSV. (EXT./INT.) ON ENDS + W.M.P.I. ON BEVELS.

UT 100% LAMINATIONS CONTROL: SATISFACTORY.

Tratamiento termico (Tubo) Heat treatment (Pipe): QUENCHED AND TEMPERED

Tipo / Type	Temperatura / Temp	Rango / Range (°C)		Duracion / Duration	
QUENCHED	890°C	- 10	+ 10	50	min.
TEMPERED	650°C	- 5	+ 5	84	min.

Método de enfriamiento del tratamiento térmico (Tubos) / Quench media of heat treatment process (Pipes): WATER

Magnetismo remanente/Residual magnetism (max). : 30 GAUSS

Protectores / End Protectors:

NON LIFTABLE CLOSED PLASTIC PROTECTOR FOR FLAT / BEVELED PIPE. SUPPLIER METALCENTRO.

CAU 17.0/05

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

Tenaris

INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

SIDERCA S.A.I.C.
Dr Jorge A. Simini 250
(B2804MHA) Campana
Buenos Aires, Argentina

(54) 3489 433100 tel
(54) 3489 433405 fax

Cliente / Customer					Expediente/ Manufacturing Order	Número / Number	Fecha / Date	Pág./Page
COMCO PIPE & SUPPLY CO.					5/3970.20	655152	31/08/2010	9 / 9
Producto / Product					Orden de Compra/ Purchase Order	Item	Referencia del Cliente / Customer Reference	
CARBON STEEL FOR LOW TEMPERATURE SERVICE					E1-675	00032		
Norma / Standard					Grado / Grade		Extremo / Ends	
ASTM/ASME A/SA 333 + CSA Z245.1-07 + PSP00374/0+NACE MR0175/0103+IPRO LP-006					1/6/359IISS		BEVELLED AT 30 DEG. ASTM	
Dimensiones / Dimensions		Schedule	Peso Nominal / Nominal Weight	Longitud / Length	Superficie / Surface		Cantidades / Quantities	
60.30 x 8.74 mm		160	11.11 KG/MT	11.6/11.8 m	INT BARE /EXT VARNISHED		200 Pz 2341.52 m	26369 Kg
2 3/ 8 x 0.344 inches			7.46 LB/FT				200 Pcs 7682.15 Ft	58134 Lb

Por la presente certificamos que el material aquí descripto ha sido fabricado de acuerdo con las normas y especificaciones solicitadas en vuestra orden y satisfacen los correspondientes requerimientos.	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.	QUALITY CERTIFICATION DEPT. DTO CERTIFICACION DE CALIDAD *EDUARDO A. AYERBE*
Este certificado se emite mediante un sistema computarizado y es valido con firma electrónica.El certificado original presenta el logo Tenaris (verde claro), impreso en la parte inferior de la hoja. En caso que el poseedor del certificado entregue una copia del mismo, deberá garantizar la conformidad con el original, haciéndose responsable por cualquier uso ilegal o indebido.	This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark Tenaris 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.	
Cualquier alteración y / o falsificación estará sujeta a la ley. Si necesita asegurar la autenticidad de este certificado, contactarse con Siderca SAIC, e-mail: aye@siderca.com	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 Siderca SAIC through this e-address:aye@siderca.com	

CALI 17465

Order#: 85872 Seq: 2 PO#: 124923-125-01 Heat#: 41025 Mill: Tenaris - Siderca
Part#: P 2 160 S3 S B Part Desc: Pipe 2 (60.3mm O.D.) SCH 160 SMLS A/SA333-6 SRL BEVELLED END (.344W)

2" SCH 160 LR 90 BW ELLS A234-WPB

Heat Number: 10410604 Trans Am Piping Products Ltd. - Rev'd By: SA
Shipment/Seq #: S10 - 1319 7

erne fittings gmbh
A-6824 Schlins
Hauptstrasse 48
Austria/Europe
Telefon +43/5524 501-0
Telefax +43/5524 501-930
Reg. No. 12 100 3054

Abnahmeprüfzeugnis
Inspection Certificate
EN 10204 - 3.1

Zeugnisnummer *[certificate no.]*	Rev.	Datum *[date]*
025913/10-SD		08/07/2010

Ihre Bestellnummer *[your order no.]*: CI-10-319

Unsere Auftrags.Nr. *[our order no.]*: 121917TD-0030

Ihre Artikelnummer *[your item no.]*:

Schmelze Nr *[heat no.]*: 10410604 | **Ident Nr.** *[ident no.]*:

Menge *[quantity]*	Artikelbezeichnung *[designation]*
	elbows LR-90-S-WPB-2"-S160

Kunde *[customer]*
TRANS AM
Piping Products Ltd.

125-01

PO 4124834

9335 Endeavor Drive S.E.
CDN-T3S 0A1 Calgary, Alberta

Anforderungen *[requirements]*
ASME B16.9-2007 LR,WPB,ASME Sect. II part D table Y-1,ASTM A 234/A 234M-07,ASME SA-234/SA-234M-Ed.07/A08a,NACE MR0175/ISO15156-2:2003A 2,NACE MR0103-2003 2.1 and 4,M08C3-05,EN 10204/3.1,Millstandard,Seamless

Vormaterial *[base material]*: seamless pipe

Analyse *[analysis]* | Schmelze Nr. *[heat no.]* | Erschmelzungsart *[melting process]*: Y | **1 = Schmelzanalyse** *[heat analysis]*

J-Faktor: (Si + Mn) * (P + Sn) * 10000

CEQ *[CEQ]*: C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15

Index		C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	Sn	Ceq	CEQ	J-Fact
1	10410604 ←	0.1610	0.2412	0.9302	0.0142	0.0035	0.0231	0.0025	0.0099	0.0094	0.0030	0.0011	0.0281	0.0001	0.0036	0.0074	0.0007	0.32	0.32	174.54

Mech.-technologische Prüfung *[mech. technological test]*

Proben Nr. *[test no.]*	Zugversuch *[tensile test]*: Pr.-Lage *[pos. of sample]*	Temp.	Dehngr. *[yield str.]* ReH	Rp 0,2	Zugfestigkeit *[tensile str.]* Rm (MPa)	Dehnung *[elongation]* 4D (%)
1923_10	L	+20 °C		361	520	31,5

Kerbschlagbiegeversuch *[notched bar impact test]* Form:	PR-Lage *[pos. of sample]*	Temp.	Querschnitt *[cross sec.]*	Kerbschlagarbeit *[impact values]* (J)

Härteprüfung *[hardness test]*: 153-158 HB

Wärmebehandlung *[heat treatment]*:
formed under normalizing cond.
temperature 840 °C - 890 °C
Cooling in still air

CONFORMS TO: 234 WPB
YEAR: 2010-EP
JOB: 2011-8169-02
ITEM: 24
SIGNED BY: 1 MAR 2011

Kennzeichnung *[marking]*: CE (0S) AUSTRIA / WPB / 10410604 / 2" / S160

Besichtigung und Ausmessung *[visual inspection and dimensional check]*: o.B./o.K.

Bemerkungen *[remarks]*
hot formed over mandrel
Hardness test and stamping acc. to NACE MR-01-75. Stamped with round nosed tools. Hardness test, visual and dimensional test are checked on 10%

Zusatzmarkierung *[add. mark.]*

Die gelieferten Produkte entsprechen den Anforderungen der Bestellung (einschließlich Herstellung, Probennahme, Testen und Prüfen). *[The supplied products comply with the requirements of the order (including manufacturing, sampling, testing and inspections).]*

Der Werksachverständige *[the Works Inspector]*
08/07/10 Scheibenstock Daniel -323

Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. *[The certificate is issued by the computerized system and is valid without signature.]*

Zertifiziert nach DGRL 97/23/EG Anhang I - Absatz 4.3 durch TÜV SÜD Industrie Service. Benannte Stelle 0036,Zertifikat Nr. 129/2002/MUC *[Certified acc. to PED 97/23/EG Annex I, Paragraph 4.3 by TÜV SÜD Industrie Service. Notified Body 0036, Certificate No. 129/2002/MUC]*

P.O.# 122759 Job# STOCK 125-01 Item# 2
Heat Number: 3239 Products Ltd. - Rev'd By: SB
TransAm Piping S10 - 1085 - 50
Shipment Seq #: 3/4" CL 6000 FS SCRD COUPLING A105N

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 :2004 3.1 125-051

CUSTOMER : TRANS AM
CERT. NO : 100529 L/C NO :
ORDER NO : 7002037(CI-09-483) DATE : 02/24/2010 PO#122759
INVOICE NO : BW009812119 PAGE : 19 ORIGIN : TAIWAN

柏龍鐵工股份有限公司
高雄縣仁武鄉烏林村仁心路 303 號
BOTH-WELL STEEL FITTINGS CO., LTD.
NO.303, JEN-HSIN ROAD JEN-WU HSIANG
KAOHSIUNG HSIEN, TAIWAN R.O.C.(81460)
TEL: 886-7-371-0497, 371-1536, 372-0260 FAX: 886-7-371-3864 , 371-3882
web site :http://www.bothwell.com.tw e-mail:bothwell@www.bothwell.com.tw or box@mail.bothwell.com.tw

An ISO 9001:2000 Registered Manufacturer

ITEM	BW HT.CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION FOR MATERIAL	SPECIFICATION FOR FITTING	INSPECTION SURFACE	INSPECTION DIM.
063	3080	305856	RED.TEE 1-1/2"x1" 3000# NPT		ASTM A105N -05 ASME SA105N -A06	ASME B16.11-2005	GOOD	GOOD
064	3209	2C392	RED.TEE 2"x1/2" 3000# NPT					
065	3080	305856	RED.TEE 2"x1-1/4" 3000# NPT					
066	318.	308447	90D ELBOW 1" 6000# NPT					
067	3239	310574	FULL CPLG 3/4" 6000# NPT					

ITEM	BW HT.CD.	CHEMICAL COMPOSITION (%) C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)	N	Al	Ti	Zr		CE	MATERIAL SUPPLIER
Min		-	0.100	0.600	-	-	-	-	-	-	-	-	-						
Max		0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	-	-						
063	3080	0.190	0.190	0.830	0.017	0.018	0.150	0.120	0.050	0.010	0.002	0.001	.						
064	3209	0.210	0.200	0.940	0.016	0.009	0.020	0.020	0.020	0.000	0.003	0.000	.						
065	3080	0.190	0.190	0.830	0.017	0.018	0.150	0.120	0.050	0.010	0.002	0.001	.						
066	3181	0.200	0.190	0.820	0.020	0.010	0.150	0.130	0.060	0.010	0.002	0.001	.						
067	3239	0.200	0.190	0.830	0.017	0.011	0.180	0.110	0.070	0.020	0.003	0.001	.					.32	

ITEM	BW HT.CD.	MECHANICAL PROPERTIES T.S. (KSI)	Y.S. (KSI)	EL. (%)	R of A (%)	Hardness (HB)(AVG)	Charpy Impact °F / 0 °C MIN /AVG / (Joule) 1	2	3	AVG.	HEAT TREATMENT
Min		70.0	36.0	22.0	30.0	-					NORMALIZED
Max		-	-	-	-	187					
063	3080	78.0	52.4	31.6	65.0	145					
064	3209	73.3	46.0	29.6	63.0	140					
065	3080	78.0	52.4	31.6	65.9	145					
066	3181	75.5	54.1	33.0	62.1	143					860°C A.C.
067	3239	77.5	55.8	29.0	64.5	146					

ADDITIONAL TEST / REMARKS
CONFORMS TO NACE MR0175-2003/MR0103
STEEL MAKING PROCESS : ELECTRIC FURNACE

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

C.C. Hsieh
Q.C. MANAGER
CHIN CHENG HSIEH

Y.Y. Chang
INSPECTOR
YUAN YAO CHANG

Ⓔ BW-D0839 REV:1

CONFORMING TO SA 105N
YEAR 2010ED
JOB # 2011-8169-02
ITEM # 46
SHIPPED 11 MAR 2011

OK

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	48" X 16' CONDENSATE CONDITIONER	2011-8169-02
DATE:	**TECHNIQUE # USED:**	**CODE:**
FEB 15 2011	RT P#4 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2010 **ADDENDA:** -
P1	1/2"	ACCEPTANCE: UW-51 UW-11a FULL

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[X] SINGLE WALL EXPOSURE
[ ] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
L1	0-14	6												✔	
	14-28													✔	
	28-42													✔	
	42-56													✔	
	56-70													✔	
	70-84													✔	
	84-98													✔	
	98-112													✔	
	112-END													✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	44 Ci			8" FILM	@
SOD:	29.500"		9	17" FILM	@
OFD:	.500"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1			PIPE	@
FOCAL SPOT SIZE:	12"			PIPE	@
				PIPE	@

COMMENTS: _____ TOTAL EXPOSURES: 5

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN _____ LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	48" X 16' CONDENSATE CONDITIONER	2011-8169-02
DATE:	**TECHNIQUE # USED:**	**CODE:**
FEB 16 2011	RT P#4 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	EDITION: 2010 ADDENDA: -
P1	1/2"	ACCEPTANCE: UW-51 UW-11a FULL

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK; (1) SLIGHT; (2) MEDIUM; (3) SEVERE

[X] SINGLE WALL EXPOSURE
[ ] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJEC
L2	0-14	6													✔	
	14-28														✔	
	28-42														✔	
	42-56														✔	
	56-70														✔	
	70-84														✔	
	84-END														✔	

COSTING

SOURCE TYPE:	IR 192		HRS.	@	
STRENGTH:	44 Ci		8" FILM	@	
SOD:	29.500"	7	17" FILM	@	
OFD:	.500"		PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1		PIPE	@	
FOCAL SPOT SIZE:	12"		PIPE	@	
			PIPE	@	

COMMENTS: _____ TOTAL EXPOSURES: 4

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN _____ LEVEL SNT III CGSB II

ALCO GAS & OIL

PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	48" X 16' CONDENSATE CONDITIONER	2011-8169-02
DATE:	**TECHNIQUE # USED:**	**CODE:**
MAR 7 2011	RT P#7 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2010 **ADDENDA:** -
P1	1.031"	ACCEPTANCE: UW-52 UW-11a-5b SPOT

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[X] SINGLE WALL EXPOSURE
[ ] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
M1	0-8	11												✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	36 Ci		1	8" FILM	@
SOD:	8.969"			17" FILM	@
OFD:	1.031"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1			PIPE	@
FOCAL SPOT SIZE:	.12"			PIPE	@
				PIPE	@

COMMENTS: _____ TOTAL EXPOSURES: 1

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	48" X 16' CONDENSATE CONDITIONER	2011-8169-02
DATE:	**TECHNIQUE # USED:**	**CODE:**
MAR 10 2011	RT P#7 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	EDITION 2010 ADDENDA -
P1	1/2"	ACCEPTANCE UW-52 UW-11a-5b SPOT

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[X] SINGLE WALL EXPOSURE
[ ] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJECT
B1	0-8	26													✓	
C1	0-8	26/7													✓	
C2	0-8	26/7/24													✓	
C3	0-8	26/22/7													✓	

COSTING

SOURCE TYPE:	IR 192		HRS:	@	
STRENGTH:	35 Ci	4	8" FILM	@	
SOD:	4 875"		17" FILM	@	
OFD:	500"		PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1		PIPE	@	
FOCAL SPOT SIZE:	12"		PIPE	@	
			PIPE	@	

COMMENTS: _____ TOTAL EXPOSURES: 4

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-02*

DESCRIPTION: *CONDENSATE CONDITIONER*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *520* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G9 & G18*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

	3/18/2011
QC INSPECTOR/ ALCO GAS & OIL	**DATE**
	3/18/2011
3RD PARTY INSPECTOR	**DATE**
AB245 03-18-11	03-18-11
AUTHORIZED INSPECTOR	**DATE**

Phase # : 2011-8169-03
Phase Title: Feed/Bottoms Heat Exchanger

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports	X	
2. CRN's	X	
3. Nameplate Copy	X	
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT	X	
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

(A) 602815

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada
(Name and address of Manufacturer)

2. Manufactured for Husky Oil Operations Ltd c/o Excelsior Engineering Ltd - 400, 1110 Centre Street NE Calgary AB T2E 2R2
(Name and address of Purchaser)

3. Location of installation MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)
(Name and address)

4. Type: HORIZONTAL (Horiz., vert., or sphere) | FEED/BOTTOMS HEAT EXCHANGER (Tank, separator, jkt. vessel, heat exh., etc.) | 2011-8169-03 (Manufacturer's serial number)

V-3928.2 (CRN) | D-2011-8169-03-001/001 R0 (Drawing number) | N/A (National Board number) | 2011 (Year built)

5. ASME Code, Section VIII, Div. 1 2010 EDITION [Edition and Addenda (date)] | N/A (Code Case No.) | N/A [Special Service per UG-120(d)]

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) Number of course(s): 1 (b) Overall length (ft & in.): 27'-9 3/8" SEAM/SEAM

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter, in.	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	8.625"OD	27-9 3/8"	SA-106 GrB	0.322"	1/16"	S	N/A	100%	7	NONE	100%	N/A	N/A

7. Heads: (a) SEE TUBESHEET (Material spec. number, grade or type) (H.T. — time and temp.) (b) SEE TUBESHEET (Material spec. number, grade or type) (H.T. — time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(b)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

If removable, bolts used (describe other fastening) N/A
(Material spec. number, grade, size, number)

8. Type of jacket N/A Jacket closure N/A
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions N/A If bolted, describe or sketch.

9. MAWP 400 PSI (internal) 0 PSI (external) at max. temp. 500°F (internal) 500°F (external) Min. design metal temp. -20°F at 400 PSI

10. Impact test NO, CHARPY IMPACT TEST EXEMPT PER UG-20(f). FLANGES PER UCS-66(c) at test temperature of N/A
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. Hydrostatic 520 PSIG Proof test N/A

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-516Gr.70MT [Stationary (Mat'l Spec. No.)] | 7 7/8" [Diameter (subject to press.)] | 1.420 (Nominal thickness) | TS/SS 1/16" (Corr. allow.) | Welded [Attachment (welded or bolted)]

N/A [Floating (Mat'l Spec. No.)] | N/A (Diameter) | N/A (Nominal thickness) | N/A (Corr. allow.) | N/A (Attachment)

13. Tubes: SA-179 (Mat'l Spec. No., Grade or Type) | 3/4" (O.D.) | 14 BWG (Nominal thickness) | 44 (Number) | Straight [Type (Straight or U)]

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): 2 (b) Overall length 1'-9 1/2" SM/SM

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
2	8.625"OD	0'-10 3/4"	SA-106 GrB	0.322"	1/16"	S	N/A	100%	1	SPOT	70%	N/A	N/A

15. Heads: (a) SA-105N NPS 8 CL300 RF BLIND (Mat'l Spec. No., Grade or Type) (H.T.-Time & Temp.) (b) SA-105N NPS 8 CL300 RF BLIND (Mat'l Spec. No., Grade or Type) (H.T.-Time & Temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	1.625"	1/16"	N/A	N/A	N/A	N/A	N/A	13"BCD	N/A	N/A	N/A	N/A	N/A
(b)	END	1.625"	1/16"	N/A	N/A	N/A	N/A	N/A	13"BCD	N/A	N/A	N/A	N/A	N/A

If removable, bolts used (describe other fastening) 24pc-7/8"DIA X 5 1/2"LG UNC-2A SA-193-B7 STUDS c/w 2 SA-194-2H HEX NUTS EACH
(Mat'l Spec. No., Grade, size, No.)

FORM U-1 (Back)

16. MAWP 400 PSI (internal) 0 PSI (external) at max. temp. 500°F (internal) 500°F (external) Min. design metal temp. -20°F at 400 PSI

17. Impact test EXEMPT Shells Per UG-20(f) & Flanges UCS-66(c), Tubesheet Per UCS-66(a) & UG-20(f) at test temperature of N/A
(Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb. test press. Hydrostatic 520 PSIG Proof test N/A

19. Nozzles, inspection, and safety valve openings:

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material Nozzle	Material Flange	Nozzle Thickness Nom.	Nozzle Thickness Corr.	Reinforcement Material	How Attached Nozzle	How Attached Flange	Location (Insp.Open)
Channel Cover	2	8"	CL300RFWN	N/A	SA105N	0.322"	1/16"	N/A	N/A	TYPE 1	Channel
COND INLET	1	2"	CL300RFWN	SA-106B	SA105N	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
COND OUT	1	2"	CL300RFWN	SA-106B	SA105N	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
PROD INLET	1	2"	CL300RFWN	SA-106B	SA105N	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	Tube Side
PROD OUT	1	2"	CL300RFWN	SA-106B	SA105N	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	Tube Side
VENT/DRAIN	2	3/4"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	SHELL
VENT/DRAIN	2	3/4"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	Tube Side

20. Supports: Skirt No (Yes or No) Lugs NO (No.) Legs NO (No.) Others SADDLES (Describe) Attached WELDED TO SHELL (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:
(List the name of part, item number, mfg's. name and identifying number):
N/A

22. Remarks: IMPACT TEST EXEMPT STUDS & NUTS PER UCS-66 NOTE(c), TUBES EXEMPT PER UCS-66(d)
HEATING SURFACE 240.1 FT² / VOLUME 9.1 FT³ / MPI TUBESHEETS PER UG-93(d)
AS BUILT DRAWING D-2011-8169-03-001/001 R2 / PSV LOCATED IN PIPING
INSPECTION OPENING OMITTED PER UG 46(a) / RT TUBESIDE PER UW-11(a)5(b), RT SHELLSIDE - NONE

CERTIFICATE OF SHOP 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 Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 14259 Expires OCTOBER 7 , 2013

Date 3/31/2011 Name Alco Gas & Oil Production Equipment LTD. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP INSPECTION

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 of ALBERTA have inspected the pressure vessel described in this Manufacturer's Data Report on MARCH 31 , 2011 , and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 03-31-11 Signed (Authorized Inspector) Commissions NB12897 AB AB245 (Nat'l Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No. Expires

Date Name (Assembler) Signed (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

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 and employed by of have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items , not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 Signed (Authorized Inspector) Commissions (Nat'l Board incl. endorsement, State, Province and No.)

ABSA
the pressure equipment safety authority

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

March 10, 2011

Attention: Magdi Ghobrial
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
5203 75 STREET
EDMONTON, AB T6E 5S5

The design submission, tracking number 2011-00919, originally received on February 14, 2011 was surveyed and accepted for registration as follows:

CRN : V3928.2 **Accepted on:** March 10, 2011

Reg Type: New Design

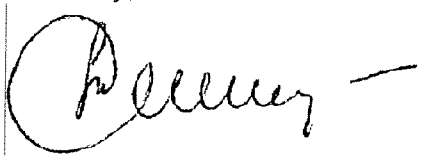
Drawing No. : D-2011-8169-03-001/001 Rev 0

Description	MAWP	Design Temperature	MDMT
SS Internal Pressure	2758 kPa	260°C	-29°C
TS Internal Pressure	2758 kPa	260°C	-29°C

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

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3367 or fax (780) 437-7787 or e-mail Onshchenko@absa.ca.

Sincerely,



ONSHCHENKO, TETYANA, P. Eng.

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

Year Built _____ Serial Number _____

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

2011-8169-50

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

Year Built _____ Serial Number _____

CRN _____ A No. _____

NAME _____ TAG _____

HEAD _____ in C.A. _____ in

SHELL _____ in HYDRO _____ psi

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date 03-08-11

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER : (A)602815		
HUSKY OIL OPERATIONS LTD	2011-8169-03	DRAWING NUMBER		
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	D-2011-8169-03-001/001		
ITEMS: 7-336 NEN FEED / BOTTOMS HEAT EXHANGER NPS 8 X 28'-0" TS/TS	**COMMENTS:**	**INITIALS** HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings	V-3928.2			* R 03-31-11
Material Checked Against Drawing Bill of Material	CHECKED 11 MAR 2011		3/15/11	
Mill Test Checked Ht# SIS+TIS 03-11-11	CHECKED 11 MAR 2011		3/15/11	* V 03-11-11
Impact Test	EXEMPT UG-20(f), UCS-66(c) & CURVE(d)			
Unit Layout	2011/02/22			
Weld Procedure Approved	REVIEWED 14 FEB 2011		3/15/11	
Welder(s) Qualifications	REVIEWED 14 FEB 2011			
Fit-Up: Shell & Heads	TYPE 1 / TYPE 7 11 MAR 2011			
Nozzles & Fittings	11 MAR 2011			
Internals	11 MAR 2011			
Externals	11 MAR			
Connections: Location	11 MAR		3/15/11	
Rating	CL300 CL3000 11 MAR		3/15/11	
ernal Inspection	SIS - 03-08-11 TIS - 03-11-11 11 MAR 2011		3/15/11 (TS)	* H 03-11-11
Internals Installed	11 MAR 2011		3/15/11	
Weld Profile, Sizes & ID	CHECKED 11 MAR 2011		3/15/11	1 03-11-11 QC
Radiographs	UW-11(a)5(b) 28 FEB 2011		3/15/11	* R 03-30-11
Other NDE	MPI TUBESHEETS 11 MAR 2011		3/15/11	R 03-30-11 QC
Stamping	CHECKED 11 MAR 2011		3/15/11	
External Upon Completion of Welding, when PWHT	CHECKED 11 MAR 2011		3/15/11	* H 03-11-11
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart SS	520PSIG GAGE# G8, G10 15 MAR 2011		3/15/11	* H 03-15-11
Hydrostatic Test/Chart TS	520PSIG GAGE# G8, G10 16 MAR 2011			* H 03-16-11
MDR	31 MAR 2011			* H 03-31-11
Name Plate	31 MAR 2011			* H 03-31-11 QC

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA105N RFBL	1.625"	67114	Repads			
Shell	SA-106B	0.322"	1034836V				
				Tubes	SA-179	14 BWG	09-A-52
Tubesheet	SA-516-70MT	1.420"	1618K31202				

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

V. IVANOV FOR HUSKY OIL CA-TIS 00907

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

SERIAL NUMBER: 2011-8169-03
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 11, 2011

MATERIAL CONTROL & NDE LIST

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT	MPI TS AFT MACH	MPI TS AFT WELD		
CHANNEL BLIND	NPS 8 CL300 RF	SA-105N	67114						
CHANNEL FLANGE	NPS 8 CL300 STD	SA-105N	561T0						
CHANNEL SHELL	NPS 8 SMLS PIPE STD	SA-106B	1034836V		✓				
TUBESHEET	8.625"DIA X 1.420" MTAF	SA-516-70MT	1618K-31202			✓	✓		
SHELL	NPS 8 SMLS PIPE STD	SA-106B	1034836V						
TUBESHEET	8.625"DIA X 1.420" MTAF	SA-516-70MT	1618K-31202			✓	✓		
CHANNEL SHELL	NPS 8 SMLS PIPE STD	SA-106B	1034836V						
CHANNEL FLANGE	NPS 8 CL300 STD	SA-105N	561T0		✓				
CHANNEL BLIND	NPS 8 CL300 RF	SA-105N	67114						
N1 RFWN	NPS 2 CL300 XH	SA-105N	920981						
N2 RFWN	NPS 2 CL300 XH	SA-105N	920981						
N3 RFWN	NPS 2 CL300 XH	SA-105N	920981						
N4 RFWN	NPS 2 CL300 XH	SA-105N	920981						

7/15/11
0007

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

SERIAL NUMBER: 2011-8169-03
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 11, 2011

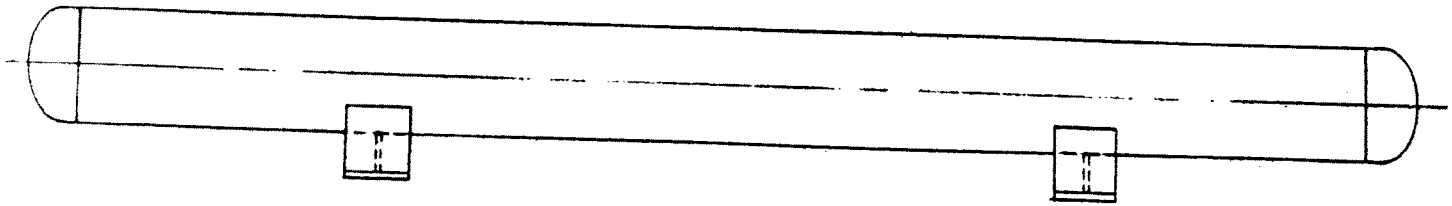
MATERIAL CONTROL & NDE LIST

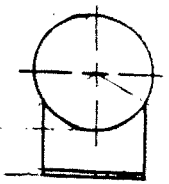
NONDESTRUCTIVE TESTING WHEN REQUIRED

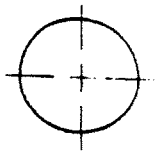
ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR					
C1A COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
C1B COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
C2A COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
C2B COUPLING	NPS 3/4 CL3000	SA-105N	HCL						
NOZZLE NECK	NPS 2 SMLS PIPE XH	SA-106B	0924155V						

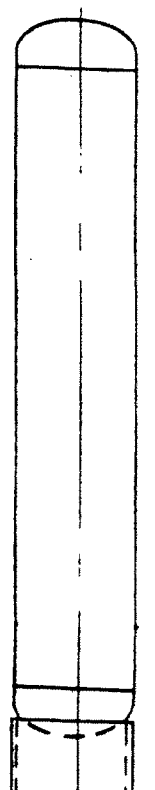
3/15/11
0007

CUSTOMER: Husky Oil
SERIAL No: 2011-8169-03









DATE: Feb. 28, 2011 FILLED BY: KET DRWG. NO:

TYPE OF VESSEL: 8 5/8" O.A. x 28'-0" T/T/S (7-336) NEN EXCHANGER

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:						
	8 5/8	20	1618K ✓	31202	SA-516-70 MT	1/2" → 1.42
SHELL:	8"	1, 2	1034836V ✓		SA-106-B	STD.
	2"	9	0924155V ✓		SA-106-B	XH
	3/4	24	09-A-52 ✓		SA-179	14 ga.
		43	65146 ✓	7326K	SA-516-70 MT	1/4"
PADS:						
SKIRT:						
SADDLES:						

8169-03

Appendix L
REV. 0
DWG. D-2900

MATERIAL REPORT

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

DOUG 7/8/86
NTS

40 105

Contract No.: 2210001926-3
L/C NO.: 0FAHD5-00546
P.O.NO.: PO.SCL-10-0628-2100 (LOT D)
Name of Customer: CE FRANKLIN
DESCRIPTION: SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE.
TOTAL: 204PIECES, 64BUNDLES, 112.721MT, 8165.42FT

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL TEST REPORT

Date: OCT. 21, 2010
Page: 1/1

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

CERTIFICATE NO: 2010-01-08-24

SPEC.: ASTM A53B-2007/A106B-2006, ASME SA53B/SA106B-2010, API 5LB/X42, PSL-2-2008, NACE MR-0175-2005/ ISO 15156-2(REGION 3) / MR-0103/SS (CSA Z245.1 GRADE 290 CATEGORY I)

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	QUANTITY (MT)	ACTUAL WEIGHT(MT)
1	KX4L02150	936267	B/X42/GR.290	6"*0.280"*40FT	4	27	1080.7	9.308	
2	K92L18091	1034836V	B/X42/GR.290	8"*0.322"*40FT	14	42	1681.12	21.798	
	K92L18092	1034836V	B/X42/GR.290	8"*0.322"*40FT	29	84	3362.24	43.596	
3	K91L20060	1034836V	B/X42/GR.290	10"*0.365"*40FT	17	51	2041.36	37.619	

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
1	HOT-ROLLED	OK	N/A	P	0.11	0.26	1.01	0.007	0.0014	0.07	0.03	0.06	0.03	0.0015	0.035	0.0001	0.028	9.182	0.303
				P	0.12	0.27	1.02	0.007	0.0014	0.07	0.03	0.06	0.03	0.0015	0.035	0.0001	0.028	8.5	0.315
				L	0.13	0.29	1.05	0.007	0.0020	0.09	0.03	0.05	0.01	0.0100	0.030	0.0001	0.026	8.077	0.327
2	HOT-ROLLED	OK	N/A	P	0.11	0.27	1.00	0.008	0.0010	0.07	0.03	0.03	0.01	0.0017	0.025	0.0001	0.025	9.091	0.292
				P	0.11	0.26	1.00	0.008	0.0010	0.07	0.03	0.03	0.01	0.0017	0.025	0.0001	0.025	9.091	0.292
				L	0.12	0.23	1.03	0.010	0.0014	0.04	0.02	0.04	0.01	0.0100	0.028	0.0001	0.029	8.583	0.308
2	HOT-ROLLED	OK	N/A	P	0.11	0.27	1.00	0.008	0.0011	0.07	0.03	0.03	0.01	0.0019	0.025	0.0001	0.025	9.091	0.292
				P	0.11	0.26	1.00	0.008	0.0011	0.07	0.03	0.03	0.01	0.0019	0.025	0.0001	0.025	9.091	0.292
				L	0.12	0.23	1.03	0.010	0.0014	0.04	0.02	0.04	0.01	0.0100	0.028	0.0001	0.029	8.583	0.308
3	HOT-ROLLED	OK	N/A	P	0.12	0.19	1.01	0.010	0.0024	0.06	0.03	0.05	0.01	0.0022	0.021	0.0001	0.025	8.417	0.307
				P	0.11	0.19	1.02	0.010	0.0024	0.06	0.03	0.05	0.01	0.0022	0.021	0.0001	0.025	9.273	0.298
				L	0.11	0.25	1.05	0.012	0.0015	0.06	0.02	0.04	0.01	0.0100	0.026	0.0001	0.031	9.545	0.302

NO.	TENSILE STRENGTH	YIELD STRENGTH σs (PSI)	ELONGATION δ (%)	IMPACT TEST					SHEAR FRACTURE			HYDROSTATIC TEST (PSI)	FLATTEN TEST	BEND TEST	SSC TEST	HIC TEST
				Ori/Tem (℃)	Dime(mm)	AKV (J)	% shear area	HARDNESS HRC≤22								
	strip L bo=25mm Lo=50mm															
1	68875	55825	36	N/A	N/A	N/A	N/A	OK	N/A	N/A	N/A	2570	OK	N/A	N/A	N/A
	strip L bo=38mm Lo=50mm															
2	68875	56550	45	T/O	10*6.67*55	V8/192.0/69.0/198.0	N/A	OK	N/A	N/A	N/A	2370	OK	N/A	N/A	N/A
	68875	56550	44.5	T/O	10*6.67*55	V8/186.0/208.0/216.0	N/A	OK	N/A	N/A	N/A	2370	OK	N/A	N/A	N/A
3	68875	55100	39	T/O	10*7.5*55	V8/248.0/260.0/253.0	N/A	OK	N/A	N/A	N/A	2440	OK	N/A	N/A	N/A

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 10204.3.1 AND NACE MR-0175
4. TYPE:P-Product analysis L-Ladle analysis;
5. ORIGIN: MADE IN CHINA
6 *1 =Mn/C

8" STO

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB # 2011-8169-03
ITEM # 1 2
SIGNED BY 07 MAR 2011

QUALITY MANAGER:

3/15/11
0007

Order#: 99448 Seq: 1 PO#: 12... 30 Heat#: 56110 Mill: ULMA
Part#: FL 8 3 R W STD 5 Part Desc: Flanges 8 (219.1mm O.D.) 300# RAISED FACE WELD NECK STD A/SA105N

CLIENTE / Customer / Clien

COMCO PIPE & SUPPLY COMPANY
A DIVISION OF RUSSEL METALS
5910-17 ST. NW PO BOX 457
EDMONTON ALBERTA T5J 2K1 CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA: Date: 26/11/2010

N.º No. 134383

HOJA: Page: 1

SGI 1922164 SGI 6000236 SGI 6009987

ULMA FORJA, S.COOP.
Bº Zubillaga, 3 - Apdo. 1
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781806
E-mail: ulma@ulmapiping.com

80048

PRODUCTO / Article - Produi: FLANGES

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

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualit: ASTMA105N-09 ASME SA105N-09

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

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: E1-1788

DE / of. - de: 11/11/2010

(2) 8169-03

PO #125480

NACE MR0103/03 & MR0175/03
CAN/CSA-Z245.12
Gr.248 CAT 1

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

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No N.ºCoulée	RESISTENCIA T.Strength Resist 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	MEDIA Average Moyenne	°C	DUREZA Hardness Dureté HB
6 F 12 6 R B 5	12	BLIND 12 600LB RF A105N	NE	512A0	516	318	31,00	58,70				150 158
7 F 3 3 R S 5	2	WN 8 300LB STD/40 RF A105N	NE	390A0	516	314	29,70	56,30				150 156
7 F 3 3 R S 5	14	WN 8 300LB STD/40 RF A105N	NE	561T0	519	303	29,00	54,60				152 158

COLADA N.º Heat No N.ºCoulée	COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE														
	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
390A0	0,200	0,240	0,840	0,009	0,001	0,080	0,090	0,040	0,007	0,001	0,280	0,034	0,000	0,000	0,389
512A0	0,210	0,230	0,860	0,009	0,001	0,050	0,070	0,020	0,001	0,001	0,250	0,039	0,000	0,000	0,389
561T0	0,200	0,150	0,870	0,018	0,014	0,070	0,100	0,020	0,004	0,001	0,280	0,000	0,000	0,000	0,389

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

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

EL INSPECTOR
Works Inspector - L'Inspecteu

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

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

CERTIFIED MATERIAL 105A1
YEAR 2010 ED
PO# 2011-8169-03
ITEM 3
SIGNED BY 23 FEB 2011

7/15/11
0007

(2)8169-03

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

R#125480

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7003432(1)-COMCO

Certificate No.: SE3432A
Date: 11/22/2010
Page: 2 OF 2

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09 / ASME SA105-09	ASME B16.5-09 CSA Z245.12

Item No.	CUSTOMER P/N	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%) C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
		Min / Max		- / 0.350	0.100 / 0.350	0.600 / 1.050	- / 0.035	- / 0.040	- / 0.400	- / 0.300	- / 0.400	- / 0.120	- / 0.080	- / 0.020	- / -			
11		300 BL RF 8" A105N	25 PCE	0.190	0.220	0.910	0.021	0.016	0.190	0.150	0.130	0.010	0.001	0.010	0.008			0.395
12		150 SW RF STD 2" A105N	25 PCE	0.200	0.160	1.060	0.010	0.011	0.060	0.070	0.030	0.005	0.003	0.005	0.010			0.398
13		150 SW RF XS 2" A105N	200 PCE	0.207	0.270	1.080	0.011	0.011	0.007	0.049	0.044	0.005	0.042	0.005	0.004			0.401
14		150 WN RF S160 2" A105N	200 PCE	0.198	0.250	1.040	0.014	0.014	0.007	0.048	0.044	0.005	0.044	0.005	0.003			0.385
15		150 WN RF STD 3" A105N	300 PCE	0.214	0.260	1.060	0.014	0.016	0.020	0.050	0.054	0.005	0.032	0.005	0.006			0.407
16		150 WN RF XS 8" A105N	50 PCE	0.213	0.240	1.100	0.017	0.019	0.014	0.013	0.051	0.005	0.011	0.005	0.007			0.404
17		150 SO RF 10" A105N	100 PCE	0.190	0.230	0.790	0.013	0.006	0.007	0.140	0.030	0.005	0.001	0.002	0.001			0.353

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: Minimum: Joule 1	2	3	Material Supplier
Min		485.0	250.0	22.0	-	30.0				
Max		-	-	-	187	-				
11	67114	515.8	342.3	35.0	153	69.0				RED OCTOBER
12	21533	515.8	337.4	34.4	153	68.6				OEMK
13	10984	519.8	348.1	35.2	151	69.5				NTMK
14	10983	503.1	343.2	34.4	147	70.4				NTMK
15	10917	523.7	369.7	35.2	156	68.6				NTMK
16	915537	508.0	343.2	34.0	151	68.6				NTMK
17	0982590	508.0	337.3	34.6	151	66.8				ACOMINAS

■ HEAT TREATMENT(*2)
☒ N

■ REMARKS
880 °C X 3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156.2
CONFORMS WITH Z245.12 CAT I GR.248 SOUR SERVICE-05
TEST SPECIMEN ORIENTATION: TRANSVERSE

*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=Furance Cooled, W.C=Water Cooled, O.C=Oil Cooled.

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

CONFORMS TO SA 105N
YEAR 2010-CN
JOB # 2011-8169-03
ITEM # 4
SIGNED BY 23 FEB 2011

SAN ENG STEEL FORGING CO., LTD. ★ SE 76.0.2 ★ QUALITY ASSURANCE DEP'T

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.

Manager of Quality Assurance Dep't

Order#: 99448 Seq: 2 PO#: 12 ,80 Heat#: 67114 Mill: San Eng Steel
Part#: F 8 3 R B 5 Part Desc: Flanges 8 (219.1mm O.D.) 300# RAISED FACE BLIND A/SA105N

3/15/11
0007

MTR View

8/9/2010

https://gpts.nov.com/MTR/gifvi ...gr.aspx?docIDs=191065

5

QUALIFYING TO: 105N
YEAR: 2010
JOB #: 2011-8169-03
ITEM #: 8
SIGNED BY: 11 MAR 2011

125-001

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

Pur-173864

MILL TEST CERTIFICATE

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

Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7002448(2)-NOV

Certificate No.: SE-2448B
Date: 05/18/2010
Page: 1 OF 4

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09/ASME SA105-09	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	-	0.100	0.600	-	-	-	-	-	-	-	-	-			
			Max	0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-			
1	6222	300 WNRF XS 2" A105N	244 PCE	0.222	0.270	1.040	0.015	0.012	0.005	0.016	0.051	0.002	0.009	0.005	0.003			0.403
2	6222	300 WNRF XS 2" A105N	16 PCE	0.219	0.280	1.020	0.010	0.009	0.009	0.015	0.054	0.002	0.003	0.005	0.006			0.397
3	11445	150 SWRF XS 1" A105N	170 PCE	0.200	0.290	0.940	0.017	0.009	0.170	0.150	0.130	0.020	0.002	0.001	0.012			0.411
4	11443	150 SWRF XS 1/2" A105N	60 PCE	0.210	0.160	1.130	0.007	0.010	0.050	0.060	0.050	0.005	0.003	0.005	0.009			0.418
5	4051	150 THRF 6" A105N	60 PCE	0.220	0.230	1.080	0.013	0.011	0.060	0.040	0.030	0.010	0.003	0.005	0.009			0.416
6	11449	300 SWRF XS 3/4" A105N	50 PCE	0.199	0.290	1.050	0.011	0.013	0.008	0.015	0.049	0.002	0.002	0.001	0.007			0.381
7	16630	150 BLRF 12" A105N	15 PCE	0.209	0.280	1.030	0.018	0.019	0.017	0.024	0.050	0.005	0.022	0.005	0.006			0.391
8	5098	150 WNRF STD 5" A105N	20 PCE	0.210	0.160	1.130	0.007	0.010	0.050	0.060	0.050	0.005	0.003	0.005	0.009			0.418
9	11437	150 SWRF STD 2" A105N	17 PCE	0.200	0.160	1.060	0.010	0.011	0.060	0.070	0.030	0.005	0.003	0.005	0.010			0.398
10	11437	150 SWRF STD 2" A105N	3 PCE	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409

Item No	Heat No	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: Minimum: Joule			Material Supplier
	Min	485.0	250.0	22.0	-	30.0	1	2	3	
	Max	-	-	-	187	-				
1	920981	521.7	337.3	32.2	157	65.0				NTMK
2	921032	511.9	347.2	34.0	155	67.0				NTMK
3	64319	513.9	319.7	33.2	155	65.9				RED OCTOBER
4	21530	519.8	335.4	36.0	154	66.8				OEMK
5	28008	515.8	323.6	40.0	157	61.1				OEMK
6	931202	513.9	372.7	33.2	156	68.0				NTMK
7	915542	509.9	352.1	35.8	149	69.5				NTMK
8	21530	519.8	335.4	36.0	154	66.8				OEMK
9	21533	515.8	337.4	34.4	153	68.6				OEMK
10	29570	491.3	298.1	35.4	150	65.9				OEMK

■ HEAT TREATMENT(*2)
☒ N

■ REMARKS
880°C X3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156.2
CONFORMS WITH Z245.12 CAT I GR.248 SOUR SERVICE-05
TEST SPECIMEN ORIENTATION: TRANSVERSE

*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=Furance 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. SE H.C.J QUALITY ASSURANCE DEPT

Manager of Quality Assurance Dept

110149

3/15/11
0007

Customer: COMMERCIAL METALS COMPANY DBA CMC DALLAS TRADING
6565 N MACARTHUR BLVD.,SUITE 800,IRVING,TX 75039,USA

HENGYANG STEEL TUBE GROUP INTERNATIONAL TRADING INC.

MILL TEST CERTIFICATE

Add: 10 Daitxincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993

Description:
PRIME NEWLY PRODUCED CARBON STEEL SEAMLESS LINE PIPE
LC NO:118572/290836 P.O.NO:62430 LOT NO:1
TOTAL: 4387 PIECES, 130 BUNDLES, 257.754MT

Date: SEP 07,2009
Page: 2/3

P.C. 421001

2" x H

SPEC: ASTM/ASME SA53/A53/A106/SA106/API 5L,PSL-1 GRADE B,CSA Z245.1 GRADE 290

CERTIFICATE NO: 09-02.0905

ITEM NO	BATCH NO	HEAT NO	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)
8	997302502	0911799	X42	2" x 0.344" x SRL	5	145	3045	10.313
9	997202608	0924156	X42	2" x 0.154" x SRL	14	840	17640	29.249
10	997302607	0911794	X42	2" X 0.154" x DRL	2	89	2760	4.576
10	998300129	0923934	X42	2" X 0.154" x DRL	1	20	800	1.326
11	997302609	0814695	X42	2" X 0.218" x DRL	2	50	2000	4.56
12	997102615	0911796	X42	2" X 0.218" x SRL	4	176	3696	8.428
12	997102616	0924155Y	X42	2" X 0.218" x SRL	8	352	7392	16.856
12	997102617	0911794	X42	2" X 0.218" x SRL	7	276	5796	13.217
12	997102618	0911795	X42	2" X 0.218" x SRL	6	264	5544	12.642
13	997302613	0924157	X42	3" X 0.216" x DRL	8	124	4960	17.086
				TOTAL:	57	2316	53633	118.233

CONFORMS TO SA 106-B
YEAR 2010 ED
JOB. 2011-8169-03
ITEM # 9
SIGNED BY 11 MAR 2011

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST ET	NONDESTRUCTIVE TEST MPI	TYPE	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Ti	Nb	CE
8	HOT-ROLLED	OK	N/A	P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
9	HOT-ROLLED	OK	N/A	L	0.15	0.31	1.10	0.012	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				P	0.15	0.32	1.11	0.015	0.002	0.07	0.03	0.06	0.02	0.032	0.01	0.003	0.001	0.35
10	HOT-ROLLED	OK	N/A	P	0.15	0.31	1.12	0.015	0.002	0.07	0.03	0.06	0.02	0.023	0.01	0.003	0.001	0.36
				L	0.14	0.31	1.16	0.016	0.003	0.08	0.04	0.05	0.02	0.023	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.15	0.009	0.005	0.06	0.03	0.05	0.01	0.027	0.01	0.003	0.001	0.36
				P	0.15	0.30	1.15	0.009	0.005	0.06	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
				P	0.15	0.35	1.09	0.015	0.005	0.07	0.02	0.04	0.01	0.029	0.01	0.003	0.001	0.37
11	HOT-ROLLED	OK	N/A	P	0.15	0.36	1.10	0.015	0.005	0.07	0.02	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				L	0.14	0.37	1.14	0.014	0.004	0.06	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.16	0.35	1.12	0.013	0.005	0.08	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				P	0.15	0.35	1.12	0.013	0.005	0.08	0.03	0.03	0.01	0.042	0.01	0.005	0.001	0.36
12	HOT-ROLLED	OK	N/A	L	0.17	0.39	1.15	0.015	0.002	0.06	0.03	0.03	0.01	0.042	0.01	0.006	0.001	0.36
				P	0.15	0.28	1.09	0.010	0.004	0.05	0.02	0.04	0.04	0.040	0.01	0.005	0.001	0.38
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.10	0.010	0.004	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
				L	0.15	0.31	1.20	0.012	0.003	0.06	0.03	0.05	0.01	0.023	0.01	0.003	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.08	0.010	0.003	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
				P	0.15	0.28	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	L	0.13	0.32	1.19	0.012	0.005	0.06	0.03	0.05	0.02	0.026	0.01	0.003	0.001	0.36
				P	0.16	0.29	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.05	0.01	0.029	0.01	0.003	0.001	0.37
13	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.11	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				P	0.16	0.28	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
				L	0.13	0.31	1.14	0.010	0.003	0.06	0.03	0.05	0.01	0.027	0.01	0.003	0.001	0.34
				P	0.13	0.31	1.16	0.009	0.003	0.05	0.02	0.03	0.02	0.023	0.01	0.005	0.001	0.34
				P	0.13	0.31	1.15	0.009	0.003	0.05	0.02	0.03	0.02	0.024	0.01	0.006	0.001	0.34
				L	0.13	0.30	1.15	0.015	0.003	0.07	0.03	0.05	0.02	0.031	0.01	0.002	0.001	0.35

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (Mpa)	ELONGATION δ (%)	IMPACT Ak (J) SIZE	IMPACT Ak (J) AK	IMPACT Ak (J) Ori/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
	strip L,bo=19mm,Lo=50mm									
8	68875	49300	41		N/A		OK	3000	N/A	OK
9	65975	45675	33		N/A		OK	3000	N/A	OK
10	69600	50750	37		N/A		OK	3000	N/A	OK
10	70325	53650	37		N/A		OK	3000	N/A	OK
11	68150	47850	37		N/A		OK	3000	N/A	OK
12	69600	52200	33.5		N/A		OK	3000	N/A	OK
12	68875	50025	31.5		N/A		OK	3000	N/A	OK
12	71050	50750	31		N/A		OK	3000	N/A	OK
12	69600	52200	32.5		N/A		OK	3000	N/A	OK
13	68875	49300	33.5		N/A		OK	3000	N/A	OK
			37		N/A		OK	3000	OK	N/A

REMARKS: 1. We hereby certify that the material has been manufactured, sampled, tested and inspected in accordance with the required standards.
2. Properties compliance to EN10204 3.1.B.
3. BRINELL /Rockwell hardness certified to NACE MR 0175-03 and MR 0103-03.
4. TYPE:P-Product analysis L-Ladle analysis.
5 CHEMICAL,MECHANICAL AND PHYSICAL PROPERTIES ARE IN COMPLIANCE WITH CONTRACTED QUALITY AND TOLERANCES AS PER OMMERCIAL METALS COMPANY-DBA CMC DALLAS TRADING DT PURCHASE ORDER NUMBER 62430
6.MTR AND STENCILING PER CSA 245.1 GRADE 290 LATEST EDITION PSI PER API 5L SPECIFICATION LATEST EDITION ON MTR AND PIPE.

QUALITY MANAGER:

108914

OK

12/16/2009

MTR View

https://gpts.nov.com/MTR/gifviewer.aspx?docIDs=189622

3/15/11
0007

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

OK

Customer ALCO GAS & OIL PRODUCTION PO 123131 Work Order C83973 Date 2010/04/29 CofC# 15729 Page 1 of 1

Item#	Description	Qty	Heat#	Brinell Hardn.
P83973-1	PLATE(S) - 1.5000" NOM X 97" X 240" (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	1618K-31202	151

Brinell Equipment: Newage Calibrated Pin
Brinell Hardness Tester

Material being supplied conforms to the latest ASME Code Section II, Part A, 2007 Edition, Addenda July 1, 2009. All welders and procedures are qualified to ASME Code Section IX.

Supplementary Examination - Items

CONFORMS TO SA 516-70 NT
YEAR 2010 ED
JOB # 2011-8169-03
ITEM # 26
SIGNED BY 07 MAR 2011

3/15/11
0007

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	MILL ORDER
E10706-J1010 ER	2010/02/10	2010/03/13	169101	-	CN -622381	58585

CHARGE TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
5545 - 89TH STREET
EDMONTON, ALBERTA
T6E 5W9

SHIP TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
SWITCH Z057 / EAST EDMONTON
CLOVER BAR, AB

MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN.ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'SRECORD KEEPING PRACTICES

J. JOHNSTON
MANAGING METALLURGIST

CUSTOMER SPECIFICATION
HR PLATE - CARBON - ASME SA516 GR 70 (09B) - CVNL 15/12 FT LBS AT -50 F - ALG-STE7 R12 2010-01-15, PER SA20 - ESP-03R2 - HEAT ANALYSIS INCLUDING CE & %B, PRODUCT ANALYSIS INCLUDING %B, SSC - FINE GRAIN - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NORMALIZED 30 MINUTES MIN. PER INCH @ 1670 F

SUPPLEMENTARY INSTRUCTION TEST CERT 1: WHIEMSTRA@EDMONTONEXCHANGER.COM TEST CERT 2: PLATE TEST COUPON:

INSP/TR TEST REPORTS REQ'D - INCL C.E. & BORON PRODUCT ANALYSIS 2000137882 PF
CUST USE VESSEL FABRICATION 2010/03/23 08:48

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT

MEETS EN 10204 3.1
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM
ALL HEATS FULLY KILLED
HEATS INDICATED WITH (*) FINE GRAINED
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

15393

* * * * * * * * * * * * * * * * * * * PRODUCT SHIPPED * * * * * * * * * * * * * * * * * * *

CUSTOMER ITEM 00001 OUR ITEM 001 DIMENSIONS 1.500 X 97 X 480 "

PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT	PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT
31191	1568K-52	1	19806	31192	1568K-54	1	19806
31200	1618K-04	1	19806	31202	1618K-53	1	19806

* * * * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * * * *

TENSILE TESTS:

HEAT	PLATE NUMBER	SAMPLE SRCE	SAMPLE GAUGE	TEST COND	TEST METH	TEST DIR	YIELD KSI	TENSILE KSI	% ELONG	LAB
1568K	31191	166"	1.5000	N	.2	T	49.0	76.0	36(2")	ALG
1568K	31192	166"	1.5000	N	.2	T	50.0	77.0	36(2")	ALG
1618K	31200	166"	1.5000	N	.2	T	48.1	75.0	36(2")	ALG
1618K	31202	166"	1.5000	N	.2	T	47.3	75.3	37(2")	ALG

CONFORMS TO SA 516-70NT
YEAR 2010 ED
JOB # 2011-8169-03
ITEM # 20
SIGNED BY 07 MAR 2011

3/15/11
0007

IMPACT TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	COND	METH	DIR	SIZE	TEST TEMP	FULLSIZE ENERGY *	FTLB	* AVG*	SPEC	LAB
1568K	31191	166"	1.5000	N	CVN	L	FULL	-50F	73	51	74 66	ASTM	ALG

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ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	MILL ORDER
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CHARGE TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
5545 - 89TH STREET
EDMONTON, ALBERTA
T6E 5W9

SHIP TO CUSTOMER NAME&ADDRESS
EDMONTON STEEL PLATE
SWITCH Z057 / EAST EDMONTON
CLOVER BAR, AB

CUSTOMER SPECIFICATION
HR PLATE - CARBON - ASME SA516 GR 70 (09B) - CVNL 15/12 FT LBS AT -50 F - ALG-STE7 R12 2010-01-15, PER SA20 - ESP-03R2 - HEAT ANALYSIS INCLUDING CE & %B, PRODUCT ANALYSIS INCLUDING %B, SSC - FINE GRAIN - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - NORMALIZED 30 MINUTES MIN. PER INCH @ 1670 F

SUPPLEMENTARY INSTRUCTION TEST CERT 1: WHIEMSTRA@EDMONTONEXCHANGER.COM TEST CERT 2: PLATE TEST COUPON:

INSPTR TEST REPORTS REQ'D - INCL C.E. & BORON PRODUCT ANALYSIS 2000137882 PF
CUST USE VESSEL FABRICATION 2010/03/23 08:48

MILL TEST REPORTS

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J. JOHNSTON
MANAGING METALLURGIST

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* * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * *

HEAT	PLATE NUMBER	SRCE	GAUGE IN	COND	METH	DIR	SIZE	TEMP	* TEST * FTLB	* TEST * FTLB	FULLSIZE ENERGY * AVG*	FULLSIZE ENERGY * AVG*	SPEC	LAB
1568K	31192	166"	1.5000	N	CVN	L	FULL	-50F	74	61	68	68	ASTM	ALG
1618K	31200	166"	1.5000	N	CVN	L	FULL	-50F	79	64	89	77	ASTM	ALG
1618K	31202	166"	1.5000	N	CVN	L	FULL	-50F	74	54	82	70	ASTM	ALG

PRODUCT ANALYSIS TESTS:

HEAT	PLATE NUMBER	COND	C TI	MN SN	P N	S AS	SI ZR	CR PB	NI SB	CU	MO	AL	CB	V	B	DO
1568K	31192		.18 .003	1.10	.017 .0040	.004	.31	.02	.14	.02	.01	.028	.000	.016	.0002	.38
1618K	31200		.18 .003	1.08	.010 .0050	.004	.30	.03	.14	.04	.01	.032	.000	.015	.0003	.38

CONFORMS TO SA 516-70M
YEAR 2010 ED
JOB # 2011-8169-03
ITEM # 20
SIGNED BY 07 MAR 2011

* * * * * * * * * * * * * * * * * CHEMICAL PROPERTIES * * * * * * * * * * * * * * * * *

HEAT (WT %)	C TI	MN SN	P N	S AS	SI ZR	CR PB	NI SB	CU	MO	AL	CB	V	B	DO
1568K*	.20 .003	1.09	.017 .0036	.005	.32	.02	.15	.02	.00	.027	.000	.016		.40
1618K*	.20 .004	1.09	.012 .0052	.004	.32	.02	.14	.04	.00	.032	.000	.015		.40

M.TR. APPROVED EDMONTON EXCHANGER

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Zhangjiagang Huacheng Imp&Exp Co.,Ltd

337 Renmin Road(E),Tangqiao Town,Zhangjiagang City,Jiangsu Province,China

0137-C-09

Mill Test Certificate(EN 10204 Type 3.1)

TO:TUBES CANADA,22 EAST LAKE CRESCENT AIRDRIE,AB T4A 2H3 CANADA P.O.No.:C-1942-01&C-1945-01 &C-1951-01 MTC NO.:TC0901-1 Date:3 Mar,2009

Description: COLD DRWAN SEAMLESS CARBON STEEL TUBE Specification:ASME SA179 Product NO:930422 etc Invoice No:HC0901

Heat No.	Chemical Composition(%)												
	C	Mn	S	P	Si	Cr	Ni	Cu	Mo	Al	V	Ti	Sn
09-A-52	0.11	0.46	0 001	0.006	...	...	...	...	...	...	...	...	...

Size OD X WT X L	Heat No.	Lot.No.	Quantity		Mechanical Properties								Flattening	Flaring	100% Eddy	Surface	Dimension
			Kg	Pc	Yield Stress(Mpa)		Tensile Strength(Mpa)		Elongation(%)		Hardness(HRB)		Test	Test	Current Test	Inspection	Inspection
3/4"x14GAx51'-1"		930422	3978	275	235	250	370	350	51	50	40	42	passed	passed	passed	passed	Ok
1"x10GAx15.25'		930285	3984	450	250	260	360	370	54	52	56	55	passed	passed	passed	passed	Ok
1"x12GAx24'		930286	4086	456	245	255	360	365	53	52	54	52	passed	passed	passed	passed	Ok
1-1/4"x13GAx30'	09-A-52	930357	2860	240	265	270	385	390	53	51	50	51	passed	passed	passed	passed	Ok
1-1/4"x14GAx32'		930358	2770	230	260	275	385	395	50	49	52	53	passed	passed	passed	passed	Ok
1"x14GAx48'		930278	3082	182	260	265	385	390	50	49	48	49	passed	passed	passed	passed	Ok
1"x14GAx38'		930279	3250	192	265	270	390	395	49	48	46	48	passed	passed	passed	passed	Ok
TOTAL		930281	3812	238	265	275	385	395	50	49	43	45	passed	passed	passed	passed	Ok
		930228	3662	192	245	260	355	370	53	52	47	48	passed	passed	passed	passed	Ok
		930229	3776	198	250	260	360	375	52	51	46	48	passed	passed	passed	passed	Ok
		930389	2910	196	250	260	365	375	51	50	42	43	passed	passed	passed	passed	Ok
			38170	**2849**													

Remarking: 1.We hereby certify that this certificate is issued and signed by the manufacturer's Quality Representative

2.Tubes supplied are annealed,seamless & Cold Drawn

3.All of testing conform to ASME/SA450.The certificate shall be original,the copy、fax are not valid.

4.Tubes meet NACE MR0175/NACE MR0103 CE<0.43

Signed by:

Quality Assurance

Seal

CONFORMS TO SA 179
YEAR 2010 ED
JOB # 2011-8169-03
ITEM # 24
SIGNED BY 07 MAR 2011

TUBES CANADA
1403 912 4052
THESE MILL TEST REPORTS APPLY TO:
YOUR P.O. No. 125220
JOB NUMBER 125-01

3/4" 14 BWG Tubing

CTTIC0025 FINANCIAL SERVICES LTD

3/15/11
0007

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 15922

Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.

Purchaser Order No. 119259

Date: 2008-11-12

Distributor:

Distributor Order No:

7878-50

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	5	3/4" X 4" LONG 3000 THRD COUPLING B16.11	A/SA105N	HCL	1-1/2" RD BAR ASTM A105, A350 GR LF2 CL 1, A696 GR C, ASME SA105, SA350 GR LF2 CL 1, SA696 GR C, API 6A, NACE MR01-75-75, EN 10204 3.1B

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
HCL	.167	1.072	.011	.018	.188	.131	.114	.024	.162	.020	.001	-	-	.026		

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	HCL	420 N/mm2	549 N/mm2	30	69	159	123-120-127 @ -46 C. J ULTRASONIC EXAMINATION: 10	NORMZE: 1697 F. 3 HRS A.C. C.E.: .400

CONFORMING TO SA 105N 350LF2CL1
YEAR 2008
JOB # 2011-8169-03
ITEM # 36
SIGNED BY 15 FEB 2011

OK

3/15/11
0007

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y Lee

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	TALLY NUMBER	SHIPPERS NUMBER	CARRIER	MILL ORDER
W31373	2010/08/18	2010/10/14	198784	-	TTPX -811299	66173

CHARGE TO CUSTOMER NAME&ADDRESS
SAMUEL, SON & CO. LIMITED
701 - 15 AVENUE
NISKU, ALBERTA
T9E 7L5

SHIP TO CUSTOMER NAME&ADDRESS
SAMUEL, SON & CO. LIMITED
C/O CPR TRANSFER FACILITY
EDMONTON, ALBERTA

CUSTOMER SPECIFICATION
HR MULTIPLE CERTIFIED PLATE - CARBON - ASTM A516 GR 70/ASME SA516 GR 70 (06) (09B) - CVNL 20/16 FT LBS AT -50 F - PVQ - NORMALIZED - FLATNESS 1/2 A-20 - MEETS NACE MR0175 - BHN 200 MAX FULLY KILLED - FINE GRAIN - NORMALIZED FOR 08 MINUTES MIN. @ 1670 F

MILL TEST REPORTS

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M. MCLEAN
MANAGING METALLURGIST

SUPPLEMENTARY INSTRUCTION TEST CERT 1: JMELOCHE@SAMUEL.COM TEST CERT 2: MTR@SAMUEL.COM PLATE TEST COUPON:

INSP TR TEST REPORTS REQ'D - INCL BHN FOR INFO .
CUST USE RESALE P/N E

2000162631 PF
2010/10/20 13:16

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT.

MEETS EN 10204 3.1
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM
ALL HEATS FULLY KILLED
HEATS INDICATED WITH (*) FINE GRAINED
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

SAMUEL, SON & CO., LTD.
CERTIFIED COPY OF
TEST REPORT
YOUR PO 124709
OUR ORDER 424216
DATE 11/18/10
FILLED BY

* * * * * * * * * * * * * * * * * * * PRODUCT SHIPPED * * * * * * * * * * * * * * * * * * *

CUSTOMER ITEM 00002 OUR ITEM 001 DIMENSIONS .250 X 120 X 480 "

PLATE NUMBER	HEAT-MS	NO. PIECES	WEIGHT
65145	7326K-54	1	4083
65146	7326K-54	2	8167

* * * * * * * * * * * * * * * * * * * MECHANICAL PROPERTIES * * * * * * * * * * * * * * * * * * *

TENSILE TESTS:

HEAT	PLATE NUMBER	SAMPLE SRCE	SAMPLE GAUGE	TEST COND	TEST METH	TEST DIR	YIELD KSI	TENSILE KSI	% ELONG	
7326K	65145	166"	.2500	N	.2	T	55.0	76.3	26(8")	LAB
7326K	65146 ←	166"	.2500	N	.2	T	53.4	75.3	25(8")	ALG
										ALG

CSA - 516-70 MT
YEAR 2010 ED
JC3. 2011-8169-03
CSA # 43
SIGNED BY 07 MAR 2011

HARDNESS TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	TEST COND	TEST METH	HARDNESS	
7326K	65145	166"	.2500	N	BH	156	LAB
7326K	65146	166"	.2500	N	BH	155	ALG
							ALG

1/4" pt

3/15/11

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0007

ESSAR Steel Algoma Inc. 105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

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EDMONTON, ALBERTA

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ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S RECORD KEEPING PRACTICES.

M. MCLEAN
MANAGING METALLURGIST

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL 1-705-945-2024 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF THE DOCUMENT.

MECHANICAL PROPERTIES

IMPACT TESTS:

HEAT	PLATE NUMBER	SRCE	GAUGE IN	COND	METH	DIR	SIZE	TEST TEMP	FULLSIZE ENERGY * FTLB	* AVG*	SPEC
7326K	65145	166"	.2500	N	CVN	L	1/2	-50F	68 83 105	85	LAB
→ 7326K	65146	166"	.2500	N	CVN	L	1/2	-50F	70 70 72	71	ASTM ALG
											ASTM ALG

CHEMICAL PROPERTIES

HEAT	(WT %)	C	MN	P	S	SI	CR	NI	CU	MO	AL	CB	V	B	DO
		TI	SN	N	AS	ZR	PB	SB							
7326K*		.20	1.08	.009	.009	.32	.04	.04	.09	.01	.036	.000	.001		.40
		.003													

1/4" R

CUSTOMER - 516-70 MT
YEAR 2010 ED
JOB # 2011-8169-03
CERT # 43
SIGNED BY 07 MAR 2011

SAMUEL, SON & CO., L.
CERTIFIED COPY OF
TEST REPORT
YOUR P.O. 124709
OUR ORDER 424216
DATE 11 15 10
FILLED BY:

Warning The test results and values reported herein indicate only that (1) the particular steel for which this certificate is issued meets the minimum specified yield strength and (2) the chemical analysis and physical properties of such steel are in conformance with the requirements of the specification indicated. The results or values reported herein cannot be used to qualify the steel for any specification other than the one indicated and cannot be relied upon for any purpose (including design or calculations) as representing the actual strength of such steel.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY OIL OPERATIONS LIMITED	DESCRIPTION: 7-336 NEN FEED/BOTTOMS EXCHANGER	ALCO JOB NUMBER 2011-8169-03
DATE: MAR 11 2011	TECHNIQUE # USED MPT P#1 REV 0	CODE SECTION VIII DIV 1 EDITION 2010 ADDENDA
MATERIAL:	MAT'L THICKNESS: 1.420"	ACCEPTANCE APPENDIX 6

[X]	PRE HEAT TREATMENT	[ ]	POST HEAT TREATMENT	[ ]	POST HYDRO TEST										
TEST EQUIPMENT- Y6 YOKE 43530 TAG#128		[ ]	BLACK LIGHT -	[ ]	B/L METER -										
[ ]	BLACK ON WHITE CONRAST - MAGNAFLUX	[ ]	WCP BATCH #	[ ]	7HF PREPARED BATH #										
[X]	DRY	[ ]	WET	[ ]	FLUORESCENT	[X]	RED	[ ]	GREY	[ ]	B/WHITE	[ ]	OTHER		
[X]	YOKE	[ ]	PROD	[ ]	COIL	[X]	A/C	[ ]	D/C	[X]	CONTINUOUS	[ ]	RESIDUAL		
BASE METAL		[ ]	GROUND	[X]	MACHINED	[ ]	PAINTED	[ ]	SHOT BLASTED	[ ]	NEW CONDITION				
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		[X]	SHOP LIGHTS	[ ]	TROUBLE LIGHT	[X]	FLASHLITE	[X]	W/L METER S/N B100448						

NOTES: MAGNETIC PARTICLE EXAMINATION OF TUBE SHEETS AFTER WELDING.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

TUBE SHEET #1 - ACCEPTED

TUBE SHEET #2 - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN LEVEL III SNT ✓ CGSB

TIME 1 HR

/ HR

TOTAL COST

Date 3/15/11
CA- 0007

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY OIL OPERATIONS LIMITED	DESCRIPTION: 7-336 NEN FEED/BOTTOMS EXCHANGER	ALCO JOB NUMBER 2011-8169-03
DATE: MAR 4 2011	TECHNIQUE # USED: MPT P#1 REV 0	CODE SECTION VIII DIV 1 EDITION: 2010 ADDENDA:
MATERIAL:	MAT'L THICKNESS: 1.420"	ACCEPTANCE APPENDIX 6

[X] PRE HEAT TREATMENT			[ ] POST HEAT TREATMENT				[ ] POST HYDRO TEST		
TEST EQUIPMENT- Y6 YOKE 43530 TAG#128			[ ] BLACK LIGHT -				[ ] B/L METER -		
[ ] BLACK ON WHITE CONRAST - MAGNAFLUX			[ ] WCP BATCH #				[ ] 7HF PREPARED BATH #		
[X] DRY	[ ] WET	[ ] FLUORESCENT	[X] RED	[ ] GREY	[ ] B/WHITE	[ ] OTHER			
[X] YOKE	[ ] PROD	[ ] COIL	[X] A/C	[ ] D/C	[X] CONTINUOUS	[ ] RESIDUAL			
BASE METAL	[ ] GROUND	[X] MACHINED		[ ] PAINTED	[ ] SHOT BLASTED	[ ] NEW CONDITION			
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.	[X] SHOP LIGHTS	[ ] TROUBLE LIGHT			[X] FLASHLITE	[X] W/L METER S/N B100448			

NOTES: MAGNETIC PARTICLE EXAMINATION OF TUBE SHEETS AFTER MACHINING.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

TUBE SHEET #1 - ACCEPTED

TUBE SHEET #2 - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN LEVEL III SNT: ✓ CGSB

TIME: 1 HR

/ HR

TOTAL COST:

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	7-336 NEN FEED/BOTTOMS EXCHANGER	2011-8169-03
DATE:	**TECHNIQUE # USED:**	**CODE:**
FEB 28 2011	RT P#7 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2010 **ADDENDA:** -
P1	.322"	ACCEPTANCE: UW-52 UW-11-5b SPOT

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[X] SINGLE WALL EXPOSURE
[ ] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
CH1	0-8	8												✔	
CH2	0-8	8												✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	40 Ci		2	8" FILM	@
SOD:	3.990"			17" FILM	@
OFD:	.322"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1			PIPE	@
FOCAL SPOT SIZE:	.12"			PIPE	@
				PIPE	@

COMMENTS: _____ TOTAL EXPOSURES: 2

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

3/15/11
0007

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-03 (TUBESIDE)*

DESCRIPTION: *336 NEN FEED / BOTTOMS HEAT EXCHANGER*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *520* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G8 & G10*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

QC INSPECTOR/ ALCO GAS & OIL	*3/16/2011* **DATE**
3RD PARTY INSPECTOR	*3/16/2011* **DATE**
AUTHORIZED INSPECTOR *AB245*	*03-16-11* **DATE**

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-03*

DESCRIPTION: *336 NEN FEED / BOTTOMS HEAT EXCHANGER*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *520* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G8 & G10*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

K. Wh — *3/15/2011*
QC INSPECTOR/ ALCO GAS & OIL — **DATE**

V. IVANOV — MAR 15/11
3RD PARTY INSPECTOR — **DATE**

0007

AB245 — 03-15-11
AUTHORIZED INSPECTOR — **DATE**

Phase # : 2011-8169-04
Phase Title: Stabilizer Column

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports	X	
2. CRN's	X	
3. Nameplate Copy	X	
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT		N/A
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only) (A) 602816

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada
(Name and address of manufacturer)

2. Manufactured for Husky Oil Operations Ltd c/o Excelsior Engineering Ltd. - 400, 1110 Centre Street NE Calgary AB T2E 2R2
(Name and address of purchaser)

3. Location of installation MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)
(Name and address)

4. Type: VERTICAL (Horiz. or vert., tank) | 2011-8169-04 (Mfgrs serial No.) | V-4002.2 (CRN) | D-2011-8169-04-001/1R0 (Drawing No.) | N/A (Nat'l. Bd. No.) | 2011 (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 EDITION
Year

to ----- (Addenda (Date)) | N/A (Code Case Nos.) | N/A (Special Service per UG-120(d))

6. Shell: SA-106Gr.B (Material spec. number, grade) | 3/8" (Nominal thickness) | 1/16" (Corr. allow.) | 15 1/4" (Inner diameter) | 34'-0"SM/SM [Length (overall)]

7. Seams: SEAMLESS (Long. (Welded, Dbl., Sngl., Lap, Butt)) | NONE (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. (%)) | 4 (No. of Courses)

8. Heads: (a) Matl. SA-516Gr.70MT (Spec. No., Grade) (b) Matl. SA-516Gr.70MT (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)	TOP	0.280"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave
(b)	BOTTOM	0.280"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave

If removable, bolts used (describe other fastenings) N/A
(Matl., Spec. No., Gr., Size, No.)

9. MAWP: 400 PSI (internal) | 0 PSI (external) at max. temp. 500°F (internal) | 500°F (external)

Min. design metal temp. -20°F at 400 PSI . Hydro., pneu., or comb. test pressure Hydrostatic 520 PSI

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
COND INLET	1	3"	CL300RFWN	SA106B/105N	0.300"	N/A	UW 16.1(c)	SHELL
GAS OUTLET	1	2"	CL300RFWN	SA106B/105N	0.344"	N/A	UW16.1(c)	TOP HEAD
COND OUT	1	4"	CL300RFWN	SA106B/105N	0.337"	N/A	UW16.1(c)	SHELL
INLET	1	6"	CL300RFWN	SA106B/105N	0.432"	N/A	UW16.1(c)	SHELL
OUT / DRAIN	1	2"	CL300RFWN	SA106B/234WPB*	0.344"	N/A	UW16.1(c)	BOTTOM HD
PSV	1	2"	CL300RFWN	SA106B/234WPB*	0.344"	N/A	UW16.1(c)	SHELL
LC CAGE	2	1 1/2"	COUPLING	SA105N	CL3000	N/A	UW16.1(c)	SHELL
TEMP IND	1	3/4"	COUPLING	SA105N	CL3000	N/A	UW16.1(c)	SHELL

11. Supports: Skirt Yes (Yes or no) Lugs NO (No.) Legs NO (No.) Other ----- (Describe) Attached Welded To Bottom Head (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
(Name of part, item number, Mfgr's. name and identifying stamp)

IMPACT TEST EXEMPT PER UG 20 (f), FLANGES PER UCS-66(c), STUDS & NUTS EXEMPT PER UCS-66 NOTE(c)

STABILIZER COLUMN CAP 44 FT³ / AS BUILT DRAWING D-2011-8169-04-001/001 R1 / RT PER UW-11(a)5(b)

PSV ON VESSEL / SEE ATTACHED U4 DATA REPORT / HYDROTESTED IN HORIZONTAL POSITION

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 Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. 14259 expires October 7 , 2013

Date APR 1 , 2011 Co. name Alco Gas & Oil Production Equipment LTD. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by Alco Gas & Oil Production Equipment LTD. at 5203 75th St., Edmonton, Alberta T6E 5S5 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 ALBERT and employed by ABSA have inspected the component described in this Manufacturer's Data Report on APRIL 1 , 2011 , and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 04-01-11 Signed (Authorized Inspector) Commissions NB12897 AB AB245 [Nat'l Board (incl. endorsements) State, Prov. and No.]

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET (A) 602816

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada
(Name and address of Manufacturer)

2. Manufactured for Husky Oil Operations Ltd c/o Excesior Engineering Ltd. - 400, 1110 Centre Street NE Calgary AB T2E2R2
(Name and address of Purchaser)

3. Location of installation MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)
(Name and address)

4. Type: VERTICAL (Horiz., vert., or sphere) STABILIZER COLUMN (Tank, separator, heat exh., etc.) 2011-8169-04 (Mfg's serial No.)

V-4002.2 (CRN) D-2011-8169-04-001/1R0 (Drawing No.) N/A (National Board Number) 2011 (Year built)

. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
PRESS IND	1	1/2"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	SHELL
INSPECTION	1	1.900"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	TOP HD
INSPECTION	1	1.900"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	SHELL
LSHH	1	2"	COUPLING	SA105N	N/A	CL3000	1/16"	N/A	UW16.1(c)	N/A	SHELL

Data Report Item Number	Remarks
BREAK FLANGES	2pc - NPS 16 CL300 RFWN SA-105N SCH STD
BOLTINGS	20pc - 1 1/4"DIA X 7 1/2"LG 8UN-2A SA-193-B7 STUDS c/w 2 SA-194-2H HEX NUTS EACH
	* FLANGES MATERIAL ARE SA105N

Certificate of Authorization: Type U No. 14259 Expires October 7, 2013

Date 4/1/2011 Name Alco Gas & Oil Production Equipment LTD. (manufacturer) Signed (representative)

Date 04-01-11 Name (Authorized Inspector) Commission NB12897 AB AB245 (Nat'l. Board incl. endorsement, state, province and no.)

ABSA
the pressure equipment safety authority

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

March 20, 2011

Attention: Magdi Ghobrial
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
5203 75 STREET
EDMONTON, AB T6E 5S5

The design submission, tracking number 2011-01149, originally received on February 25, 2011 was surveyed and accepted for registration as follows:

CRN : V4002.2 **Accepted on:** March 20, 2011

Reg Type: New Design

Drawing No. : D-2011-8169-04-001/001 Rev 0

Description	MAWP	Design Temperature	MDMT
Internal Pressure	2758 kPa	260°C	-29°C

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

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3367 or fax (780) 437-7787 or e-mail Onshchenko@absa.ca.

Sincerely,



ONSHCHENKO, TETYANA, P. Eng.

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

400 psi at 500 °F
Max. Allowable Working Pressure

0 psi at 500 °F
Max. Allowable External Working Pressure

-20 °F at 400 psi
Minimum Design Metal Temperature

2011
Year Built

2011-8169-02
Serial Number

CRN V-4002.2

A No. (A) 60260

NAME SADDLED COLUMN

TAG T-400

HEAD SA516-70NC in

C.A. in

SHELL SA106B in

HYDRO 520 psi

2011-8169-50

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date 03-07-11

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER : (A) 602816
HUSKY OIL OPERATIONS LTD	2011-8169-04	DRAWING NUMBER
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	D-2011-8169-04-001/001

ITEMS: STABILIZER COLUMN NPS 16 X 34'-0" S/S

COMMENTS:

		INITIALS HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings	V-4002.2			* R 04-01-11
Material Checked Against Drawing Bill of Material	CHECKED 14 MAR 2011			
Mill Test Checked HT# btm Sec 03-10-11 Top Sec 03-14-11	CHECKED 14 MAR 2011			* V 03-28-11
Impact Test	EXEMPT UG-20(f), UCS-66(c)			
Unit Layout	2011/03/03			
Weld Procedure Approved	REVIEWED 25 FEB 2011			R 03-28-11
Welder(s) Qualifications	REVIEWED 25 FEB 2011			R 03-28-11
Fit-Up: Shell & Heads	TYPE 1 14 MAR 2011			
Nozzles & Fittings	14 MAR 2011			
Internals	14 MAR 2011			
Externals	14 MAR 2011			
Connections: Location	14 MAR 2011			
Rating	CL300 CL3000 14 MAR 2011			
Internal Inspection Top Sec 03-14-11	Course lft 2 in lwt - 03-07-11 btm hd - 03-08-11 btm sec - 03-10-11 Top hd + sis by closing 03-11-11 14 MAR 2011			* H 03-14-11
Internals Installed				
Weld Profile, Sizes & ID	CHECKED 14 MAR 2011			1 03-14-11
Radiographs	UW-11(a)5(b) 13 MAR 2011			* R 03-28-11
Other NDE				
Stamping	CHECKED 14 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED btm Sec - 03-10-11 Top Sec 03-14-11 14 MAR 2011			* H 03-14-11
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart	520PSIG GAGE# G10,615 28 MAR 2011		MAR. 28-11	* H 03-28-11
MDR	01 APR 2011			* H 04-01-11
Name Plate	01 APR 2011			* H 04-01-11

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-516-70MT	0.280"	SA49712 PC6918060 3	Repads			
Shell	SA-106B	0.375"	903216				
Tubesheet							

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

MATERIAL CONTROL & NDE LIST

SERIAL NUMBER: 2011-8169-04
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 14, 2011

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT				
TOP HEAD	16.000"OD X 0.280" MTAF	SA-516-70MT	SA49752-PC69180603						
SHELL	NPS 16 SMLS PIPE STD	SA-106B	903216		✓				
SHELL	NPS 16 SMLS PIPE STD	SA-106B	903216		✓				
BREAK FLANGE	NPS 16 CL300 RFWN STD	SA-105N	187210		✓				
BREAK FLANGE	NPS 16 CL300 RFWN STD	SA-105N	187210						
SHELL	NPS 16 SMLS PIPE STD	SA-106B	903216		✓				
SHELL	NPS 16 SMLS PIPE STD	SA-106B	903216		✓				
BOTTOM HEAD	16.000"OD X 0.280" MTAF	SA-516-70MT	SA49752-PC69180603		✓				
N1 RFWN	NPS 3 CL300 XS	SA-105N	34124						
N2 RFWN	NPS 2 CL300 S160	SA-105N	921032						
N3 RFWN	NPS 4 CL300 XS	SA-105N	35720						
N4 RFWN	NPS 6 CL300 XS	SA-105N	10/39821						
N5 RFWN	NPS 2 CL300 S160	SA-105N	921032						
N6 RFWN	NPS 2 CL300 S160	SA-105N	921032						

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

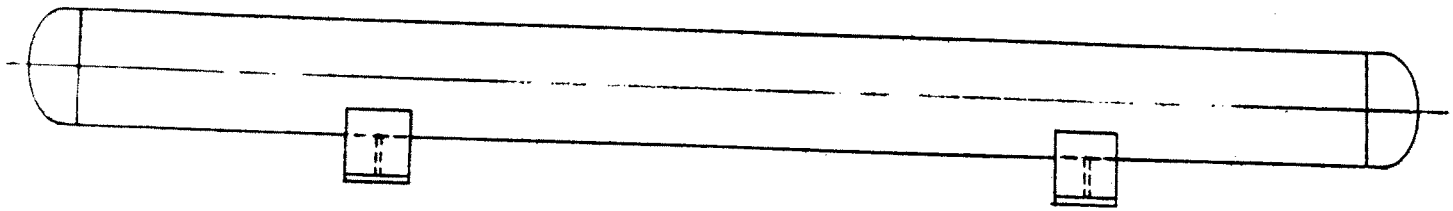
MATERIAL CONTROL & NDE LIST

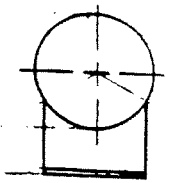
SERIAL NUMBER: 2011-8169-04
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 14, 2011

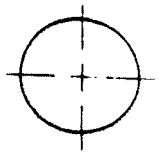
NONDESTRUCTIVE TESTING WHEN REQUIRED

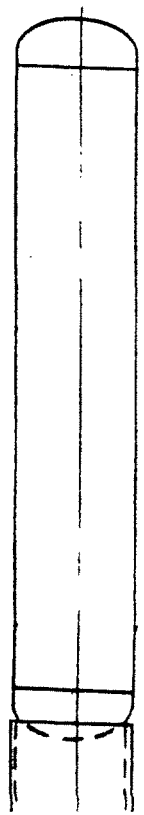
ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR					
C1A COUPLING	NPS $1^{1}/_{2}$ CL3000	SA-105N	81156						
C1B COUPLING	NPS $1^{1}/_{2}$ CL3000	SA-105N	81156						
C2 COUPLING	NPS $^{3}/_{4}$ CL3000	SA-105N	HLZ						
C3 COUPLING	NPS $^{1}/_{2}$ CL3000	SA-105N	HCJ						
C4A COUPLING	NPS $1^{1}/_{2}$ CL3000	SA-105N	81156						
C4B COUPLING	NPS $1^{1}/_{2}$ CL3000	SA-105N	81156						
C5 COUPLING	NPS 2 CL3000	SA-105N	G2664						
NOZZLE NECKS	NPS 6 SMLS PIPE XS	SA-106B	1033247						
	NPS 4 SMLS PIPE XS	SA-106B	Y705-680						
	NPS 3 SMLS PIPE XS	SA-106B	WB8-2262						
	NPS 2 SMLS PIE S160	SA-106B	0911799						
#54 SMLS PIPE	NPS 2 S160	SA-106B	091179						
#55 90° LR ELBOW	NPS 2 S160	SA-234 WPB	10410604						

CUSTOMER: Husky Oil
SERIAL No: 2011 8169-04









DATE: Mar 7/11 FILLED BY: TREVOR DRWG. NO:

TYPE OF VESSEL: 16" O.D x 34' STABILIZER TOWER

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:	16"	1	SA49752 ✓	PC691 80603	SA 516 70	3/8"
SHELL:	16"	3,4,5,6	903216 ✓			
	6"	32	1033247 ✓		SA 106 B	STD.
	4"	37	X705680 ✓		SA 106 B	XH
	3"	41,42	WB82262 ✓		SA 106 B	XH
	1"	43,44	1011976 ✓		SA 106 B	XH
	2"	51,53,54,57	0911799 ✓		SA 106 B	XH
PADS:					SA 106 B	Sch 160
SKIRT:						
SADDLES:						

8169-04

Appendix L
REV. 0
DWG. D-2900

MATERIAL REPORT

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

DOUG 7/8/86
NTS

AO 105

CERTIFICATE OF COMPLIANCE

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 ALCO GAS & OIL PRODUCTION PO 125275 Work Order C88128 Date 2011/01/31 CofC# 22171

Item#	Description	Qty	Heat#	Brinell Hardn.	Required Min Thk	Recorded Min Thk	Form. Proc.
H88128-1	HEAD(S) - Semi-Elliptical 2:1 - 0.3750" NOM (0.2800"_MIN) X 16" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	2	SA49752-PC69180603	153	0.2800"	0.3450"	1
H88128-2	HEAD(S) - Semi-Elliptical 2:1 - 0.3750" NOM (0.2800"_MIN) X 16" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	2	SA49752-PC69180603	154	0.2800"	0.3450"	1
H88128-3	HEAD(S) - Semi-Elliptical 2:1 - 0.6250" NOM (0.5800"_MIN) X 48" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	313509-11655	MTR	0.5800"	0.5950"	1
H88128-4	HEAD(S) - Semi-Elliptical 2:1 - 0.7500" NOM (0.6800"_MIN) X 48" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	G6637-581630206	MTR	0.6800"	0.7160"	1
H88128-5	HEAD(S) - Semi-Elliptical 2:1 - 0.5000" NOM (0.3800"_MIN) X 12.75" OD (Material Spec: SA 516-70 Normalized) **Conforms to NACE MR0175 / ISO 15156-2 2003 Annex A**	1	G5291-771910538	MTR	0.3800"	0.4470"	1

CONFORMING TO SA 516-70MT
YEAR 2010 ED
QW # 2011-8169-04
ITEM # 1
SIGNED BY 01 FEB 2011 BK

CERTIFICATE OF COMPLIANCE

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 ALCO GAS & OIL PRODUCTION PO 125275 Work Order C88128 Date 2011/01/31 CofC# 22171

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, 2010.

Supplementary Examination - Items

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:100818-PPSA-004-001
Date of Issue/발행일자:Aug., 20, 2010

Order No./계약번호:0004291917
PO No./주문번호:4291917
(ASME2007EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2007EDITION)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	Position	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	Division	Chemical Composition/화학성분(%) C	Si	Mn	P	S	Cr	Ni	B	Cu	Mo	Nb	Ti	V	Sol-Al
												-4	-3	-3	-4	-4	-2	-2	-4	-3	-2	-3	-3	-3	-3
0.375"x120.5"x480"	PC69180601-0603	3	8,370	SA49752	T	57.1	80.4	26	1:83		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:108		P	1864	345	1173	73	16	4	23		112	2	7	2	15	24
									3:85																
									A:91																
0.375"x120.5"x480"	PC69179701-9703	3	8,370	SA49752	T	56.7	81.5	26	1:105		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:97		P	1855	353	1176	69	17	3	24		101	1	4	2	20	24
									3:99																
									A:100																
0.375"x120.5"x480"	PC69180701-0703	3	8,370	SA49752	T	55.3	81.2	26	1:94		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:100		P	1839	352	1180	72	19	2	24		100	1	3	2	21	24
									3:89																
									A:94																
0.375"x120.5"x480"	PC69179801-9803	3	8,370	SA49752	T	55.3	81.1	24	1:97		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:88		P	1841	351	1159	61	15	2	24		96	Tr	3	2	21	24
									3:103																
									A:96																
0.375"x120.5"x480"	PC69180801-0803	3	8,370	SA49752	T	54.7	78.8	26	1:80		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:117		P	1846	354	1185	78	18	2	24		100	Tr	3	2	21	24
									3:90																

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : 1/4T Longitudinal, Sub-Size : 10㎜X7.5㎜ T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis, P:Products Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

CONFORMING TO SA 516-70MT
YEAR 2010 ED
2011-8169-04
ITEM #
01 FEB 2011

A) This material was producted under a quality system manual Rev.7 dated Sept.12,2008 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
This material is fine grained steel.
* This Mill Test Certificate cannot be copied for any purpose.

Surveyor To:

OK

M.S. JANG

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:100818-PPSA-004-002
Date of Issue/발행일자:Aug., 20, 2010

Order No./계약번호:0004291917
PO No./주문번호:4291917
(ASME2007EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2007EDITION)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSi)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
									A:96																
0.375"x120.5"x480"	PC69179901-9903	3	8,370	SA49752	T	56.6	81.5	26	1:105		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:124		P	1899	352	1159	77	15	2	26		95	Tr	Tr	2	21	23
									3:127																
									A:119																
0.375"x120.5"x480"	PC69180901-0903	3	8,370	SA49752	T	55.0	78.8	26	1:86		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:104		P	1895	358	1179	74	14	2	26		92	1	Tr	2	22	22
									3:119																
									A:103																
0.375"x120.5"x480"	PC69180001-0003	3	8,370	SA49752	T	56.1	81.5	26	1:75		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:92		P	1787	346	1165	67	18	2	24		96	Tr	2	2	21	24
									3:87																
									A:85																
0.375"x120.5"x480"	PC69180501-0503	3	8,370	SA49752	T	54.5	78.9	24	1:95		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:101		P	1936	345	1184	80	15	2	27		74	1	Tr	1	20	19
									3:130																
									A:108																
0.375"x120.5"x480"	PC69180401-0403	3	8,370	SA49752	T	54.1	78.3	28	1:86		L	1889	347	1158	72	14	2	25	Tr	101	1	Tr	1	21	21
			18,453						2:114		P	1866	343	1162	70	15	3	26		90	Tr	Tr	2	20	22

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test. Direction : 1/4T Longitudinal, Sub-Size : 10㎜X7.5㎜, T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis, P:Products Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000.
* Tr : It is within the standard range and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.7 dated Sept.12,2008 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material
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* This Mill Test Certificate cannot be copied for any purpose.

Surveyor To:

M. S. JANG

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:100818-PPSA-004-003
Date of Issue/발행일자:Aug., 20, 2010

Order No./계약번호:0004291917
PO No./주문번호:4291917
(ASME2007EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2007EDITION)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
									3:81																
									A:94																
0.375"x120.5"x480"	PC69268401-8403	3	8,370	SA49754	T	55.0	78.6	26	1:91		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			18,453						2:100		P	1834	343	1149	58	14	2	25		95	Tr	Tr	2	19	25
									3:105																
									A:99																
0.375"x120.5"x480"	PC69268601-8603	3	8,370	SA49754	T	54.2	80.2	26	1:95		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			18,453						2:118		P	1895	341	1165	65	19	2	26		96	Tr	Tr	2	19	25
									3:74																
									A:96																
0.375"x120.5"x480"	PC69180201	1	2,790	SA49754	T	54.8	80.5	28	1:119		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			6,151						2:97		P	1810	350	1171	60	15	2	24		94	Tr	2	2	19	26
									3:87																
									A:101																
0.375"x120.5"x480"	PC69180203	1	2,790	SA49754	T	54.8	80.5	28	1:119		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			6,151						2:97		P	1810	350	1171	60	15	2	24		94	Tr	2	2	19	26
									3:87																
									A:101																
0.375"x120.5"x480"	PC69268501-8503	3	8,370	SA49754	T	53.7	78.3	26	1:105		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : 1/4T Longitudinal, Sub-Size : 10㎜X7.5㎜, T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis, P:Products Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.7 dated Sept.12,2008 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material
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Surveyor To:

M.S. JANG

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:100818-PPSA-004-004
Date of Issue/발행일자:Aug., 20, 2010

Order No./계약번호:0004291917
PO No./주문번호:4291917
(ASME2007EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2007EDITION)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격시험 V Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
			18,453						2:113		P	1882	339	1160	66	14	2	25		96	Tr	Tr	2	19	26
									3:100																
									A:106																
0.375"x120.5"x480"	PC69180101-0103	3	8,370	SA49754	T	54.2	80.4	28	1:106		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			18,453						2:117		P	1892	345	1160	74	17	2	26		94	Tr	Tr	2	19	26
									3:99																
									A:107																
0.375"x120.5"x480"	PC69268701-8703	3	8,370	SA49754	T	54.5	80.5	23	1:91		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			18,453						2:88		P	1896	338	1155	64	17	2	25		96	Tr	Tr	2	18	25
									3:117																
									A:99																
0.375"x120.5"x480"	PC69180301-0303	3	8,370	SA49754	T	53.8	78.0	27	1:114		L	1899	343	1162	69	16	2	25	Tr	100	Tr	Tr	1	20	23
			18,453						2:91		P	1873	341	1152	62	16	2	25		88	Tr	Tr	2	20	24
									3:78																
									A:94																
*** Sub Total	(010) ***	50	139,500 (kg)			307,540 (LBS)																			
*** HEAT TREATMENT ===> Normalized : 891℃ 20min. ***																									

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test Direction : 1/4T Longitudinal, Sub-Size : 10㎜X7.5㎜, T.L R(Trans Longitude Ratio)
* Division - L:Ladle Analysis, P:Products Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.7 dated Sept.12,2008 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
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Surveyor To:

M. S. JANG

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:100819-PPSA-002-001
Date of Issue/발행일자:Aug., 20, 2010

Order No./계약번호:0004291917
PO No./주문번호:4291917
(ASME2007EDITION)
Supplier/주문자:DAE WOO INTERNATIONAL CORP.
Commodity/품명:HR STEEL PLATE (EN10204 3.1)
Customer/고객사:EDMONTON EXCHANGER
Spec & Type/규격:ASME SA516-70 AND SA 20(ASME2007EDITION)

Size/치수	Product No. 제품번호	Qua-ntity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP (KSI)	TS	EL (%)	Impact/ 충격사험 V-Notch -50°F Energy (FT-LBS)	SF (%)	DIVISION	Chemical Composition/화학성분(%) C -4	Si -3	Mn -3	P -4	S -4	Cr -2	Ni -2	B -4	Cu -3	Mo -2	Nb -3	Ti -3	V -3	Sol-Al -3
0.5"x96.5"x480"	PB92498901-8903	3	8,937 19,701	SB81442	T	51.8	77.7	27	1:105 2:126 3:174 A:135		L	1754	370	1142	93	22	3	24	Tr	88	Tr	2	2	.16	34
											P	1774	366	1146	90	22	2	24		78	Tr	1	2	17	35
*** Sub Total	(020) ***	3	8,937 (kg)			19,702 (LBS)																			
*** HEAT TREATMENT ===> Normalized : 891℃ 22min. ***																									
*** Lot Total ***		198	867,788 (kg)			1,913,117 (LBS)																			
*** Grade Total ***		198	867,788 (kg)			1,913,117 (LBS)																			
*** Grand Total ***		198	867,788 (kg)			1,913,117 (LBS)			=== Last Item ===																

* LOT NO ==> VACUUM DEGASSED
CEQ (G) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5

MTR APPROVED EDMONTON EXCHANGER

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200㎜(Rectangular), YP Method : 0.2% off-set
* Impact Test. Direction : 1/4T Longitudinal, T.L.R(Trans Longitude Ratio)
* Division - L:Ladle Analysis, P:Products Analysis
* Chemical Composition Unit: -2:x1/100, -3:x1/1000, -4:x1/10000, -5:x1/100000
* Tr : It is within the standard range and include trace element.
* Supply Condition : As-Rolled unless otherwise Heat Treated.

A) This material was producted under a quality system manual Rev.7 dated Sept.12,2008 and PQG01 Rev.0 dated JUL.01.2006 audited and approved by customer as conforming to the requirements of ASME Sec. III NCA-3800 and(or) KEPIC MNA/ SNA4300.
B) No repair welding was performed to the products.
C) The product numbers listed on this test report identifies the material
- We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
This material is fine grained steel.
* This Mill Test Certificate cannot be copied for any purpose.

Surveyor To:

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Chief of material testing section Man Soo, Jang

posco
소리없이 세상을 움직입니다
www.posco.co.kr

(135-777) POSCO Center 892, Daechi 4-dong, Gangnam-gu, Seoul, Korea, Gangnam P.O. Box 777
Tel (82-2) 3457 - 0783 / Fax (82-2) 3457 - 1980 / Sender : Jae. Hak. Ok

To : EDMONTON EXCHANGER GROUP OF COMPANIES
(5545 89 STREET EDMONTON ALBERTA CANADA T6E 5W9)
Attn.: MR. ERNEST REIMER
Cc :
Subject : Confirmation letter for Nb, Mo, B composition with Order No 0004242127, 0004291917

This letter is to certify that the Chemical composition of Nb, Mo, B marked as "Tr" on the Mill Test Certificates for steel plates supplied to Edmonton Exchanger with order No 0004242127-080 , 0004291917-010 ~ 070 means the following

Order No	Heat No	C (%)	Nb (%)	B (ppm)	Mo (%)
0004242127-080 0004291917-010 ~ 070	SA49752	0.1889	0	0	0.01
	SA49754	0.1899	0	0	0
	SB78539	0.1804	0.002	1	0.01
	SB78542	0.1761	0.001	0	0.01
	SB78545	0.1807	0.002	0	0
	SB81442	0.1754	0.002	0	0

If you have any further problems in this project, please do not hesitate and contact us.

Tel : 82-2-3457-0783, M.P:82-80-11-9377-6336
Thanks in advance with best regards
Yours sincerely,,

Date : 29th . Sept . 2010

POSCO

CEO Joon Yang - Chung

Joon-Yang Chung
CEO
POSCO
#1, Goedong, Pohang-City,
Gyong Sang Buk-Do, Korea

PO 4500134O

16" STD

CONFORMS TO SA 1068
YEAR 2007 E0 - 2007 E0
JOB # 2011-8169-04
ITEM # 3-6
SIGNED BY [signature] 04 FEB 2011

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1.B)

Number / Numero:	Page / Pagina:
10/10090	1 / 5

Date / Data: 06 August 2010

Dalmine S.p.A.
Piazza Caduti 6 Luglio 1944, 4
24044 Dalmine (BG) - Italy
+39 035 560 111 tel
+39 035 560 1827 fax

Customer / Cliente: **VAN LEEUWEN PIPE & TUBE (CANADA) INC.**	Customer's Order Item / Rifer. Ordine Cliente - Item: **H102010PC002136**	Customer's Reference / Posizione Cliente: **744**	Manufacturer's Works Order N° / Conferma-Posizione: **1213811/001**
Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: **See note nr.1** / **Vedi nota nr.1**		Surface / Superficie: **See note nr.2** / **Vedi nota nr.2**
Standard or Specification / Norme o specifica: **See note nr.3** / **Vedi nota nr.3**		Steel Grade / Grado dell'Acciaio: **See note nr.4** / **Vedi nota nr.4**	Ends / Estremità: **BEVELLED AS PER ASTM A 106 CT4 - 8395** / **SMUSSATI SECONDO ASTM A 106 CT4 - 8395**
Dimensions / Dimensioni: **ø 406.4mm O.D. x 9.5mm W.T.**	Schedule / Schedula:	Length / Lunghezza: **11590 mm ÷ 11800 mm**	Quantity / Quantità: **50Pcs/Pz** **1918,70 ft** **124283,2 lb** **584.82 mt** **56374 kg**
			Nominal Weight / Peso nominale:

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes / Avvisi di spedizione	Delivery Notes / Avvisi di spedizione
Job number: E/497699/1	Town: T2B 3J CALGARY
Shipping note: 00002482 - 06/08/2010	Country: CDN
Address: 4646 - 32 ST. S.E.	

TENSILE TEST / PROVA DI TRAZIONE

Heat N° / Colata N°	Sample N° / Prova N°	Specimen condition / Condizioni della provetta: Ls	Sc	Type / Tipo	Ori	Specimen dimensions / Dimensioni della provetta: Size / Dimensioni	Area / Area	Test temp / Temp. di prova	Y.S. EUL 0.5%	U.T.S. Req.	Y.S./U.T.S	Elongation / Allungamento: Lo	Lo	Min.	Obt.
						mm	mm2	°C	KSI*10	KSI*10	Req. Max. 0.93	psi.	mm	%	%
903218	R2553	B	AM	Ss	L	38.10 x 9.80	373.40	+20	561.00	735.00	0.76	2"	50.8	28.0%	45.0%
903217	R2554	B	AM	Ss	L	38.20 x 9.90	378.20	+20	533.00	731.00	0.73	2"	50.8	28.0%	44.0%

Min: Minimum / Minimo
Obt: Obtained / Ottenuto
Req: Required / Richiesto
Sc: Specimen condition / Condizioni Provetta
Ss: Strip specimen / Spezzone
U.T.S: Ultimate Tensile Strength / Rottura
Y.S: Yield Strength / Snervamento

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Standard or Specification / Norma o specifica: **See note nr.3** / **Vedi nota nr.3**		Steel Grade / Grado dell'Acciaio: **See note nr.4** / **Vedi nota nr.4**	Ends / Estremità: **BEVELLED AS PER ASTM A 106 GT4 - 8395** / **SMUSSATI SECONDO ASTM A 106 GT4 - 8395**
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			Nominal Weight / Peso nominale:

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

Composition % / Composizione %

Heat N° / Colata N°	Sample N° / Prova N°			C (X 100)	Mn (X 100)	Si (X 100)	Ni (X 100)	Cr (X 100)	Mo (X 100)	Cu (X 100)	F1 (X 100)	CC (X 100)	P (X 1000)	S (X 1000)	Ti (X 1000)	Nb (X 1000)	V (X 1000)	B (X 10000)
		H	Max	25	135	50	40	40	15	40	100	40	30	35	110	110	80	10
			Min	–	29	10	–	–	–	–	–	–	–	–	–	–	–	–
		P	Max	25	135	50	40	40	15	40	100	40	30	35	110	110	80	10
			Min	–	29	10	–	–	–	–	–	–	–	–	–	–	–	–
903216	R2553	H		10	107	22	10	12	4	15	45	26.1	12	2	2	2	40	1
903216		P		10	102	20	10	12	4	16	46	25.5	11	2	1	1	30	2
903217	R2554	H		10	104	21	10	13	4	16	46	25.7	11	2	1	1	30	1
903217		P		10	100	19	10	13	4	16	46	25.3	11	2	1	1	30	2

16 STD

CONFORMS TO SA 106-B
YEAR 2007&D-2007&M&D
JOB # 2010-8169-04
ITEM # 3-6
SIGNED BY 04 FEB 2011

CC: C +Pic*(Si/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5*B)

F1: (V +Ni+Cr+Mo+Cu)

H: Heat / Colata

Max: Maximum / Massimo

Min: Minimum / Minimo

P: Product / Prodotto

FLATTENING TEST / PROVA DI SCHIACCIAMENTO

Standard / Norma:

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Test Frequency / Frequenza prova	Result / Esito
903216	R2553	E1	1 pipe of the lot	Good / Buono

Standard / Norma:

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Test Frequency / Frequenza prova	Result / Esito
903217	R2554	E1	1 pipe of the lot	Good / Buono

E1 / E2: Ends of Sampling / Estremità della provetta

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Customer / Cliente: VAN LEEUWEN PIPE & TUBE (CANADA) INC.	Customer's Order Item / Rifer. Ordine Cliente - Item: H102010PC002136	Customer's Reference / Posizione Cliente: 744	Manufacturer's Works Order N° / Conferma Posizione: 1213811/001
Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: See note nr.1 / Vedi nota nr.1		Surface / Superficie: See note nr.2 / Vedi nota nr.2
Standard or Specification / Norme o specifica: See note nr.3 / Vedi nota nr.3		Steel Grade / Grado dell'Acciaio: See note nr.4 / Vedi nota nr.4	Ends / Estremità: BEVELLED AS PER ASTM A 106 CT4 - 8395 / SMUSSATI SECONDO ASTM A 106 CT4 - 8395
Dimensions / Dimensioni: ø 406.4mm O.D. x 9.5mm W.T.	Schedule / Schedula:	Length / Lunghezza: 11590 mm ÷ 11800 mm	Quantity / Quantità: 50Pcs/Pz 1918,70 ft 124283,2 lb 584.82 mt 56374 kg
			Nominal Weight / Peso nominale:

HYDROSTATIC TEST / PROVA IDRAULICA

Pressure / Pressione		Time / Tempo	Results / Risultato
Unit / Unità	Value / Valore	Seconds / Secondi	
PSI	1,669	5	Satisfactory / Soddisfacente

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

STANDARD EDITIONS / EDIZIONI NORME	
Standard:CSA Z245.1 Year:2007	Norma:CSA Z245.1 Anno:2007
Standard:ASTM A 106 Year:2008	Norma:ASTM A 106 Anno:2008
Standard:ASME SA 106 Year:2007	Norma:ASME SA 106 Anno:2007
Standard:NACE MR0175/ISO 15156 Year:2003	Norma:NACE MR0175/ISO 15156 Anno:2003
Standard:NACE MR0103 Year:2005	Norma:NACE MR0103 Anno:2005

PRODUCT DESCRIPTION NOTES / NOTE DI DESCRIZIONE DEL PRODOTTO	
Note 1 is the full description of the 'Product type'	La nota 1 è la descrizione completa del 'Tipo prodotto'
SEAMLESS HOT FINISHED PIPES FOR HIGH TEMPERATURE USES (WITH EXTRA REQUIREMENTS)	TUBI S.S. DI QUALITA' FINITI A CALDO PER IMPIEGHI AD ALTA TEMPERATURA (FUORI STANDARD)
Note 2 is the full description of the 'Surface'	La nota 2 è la descrizione completa della 'Superficie'
INTERNALLY BARE, EXTERNALLY VARNISHED WITH PT1 (FILM DRY- TRANSPARENT) ND 602 ,	GREZZI INTERNAMENTE , OLEATI ESTERNAMENTE CON PT1 (PELLICOLA ASCIUTTA-TRASPARENTE) ND 602 ,
Note 3 is the full description of the 'Standard or specification'	La nota 3 è la descrizione completa delle 'Norme o specifiche'
ACC.TO ASTM A 106 , ASME SA 106 SECT.II PART A ,CSA Z245.1-07 APR-07, PSP00373 REV.0 + TEMPLATE LP	NORMA ASTM A 106 , ASME SA 106 SEZ.II PARTE A ,CSA Z245.1-07 APR-07, PSP00373 REV.0 + TEMPLATE LP
Note 4 is the full description of the 'Steel grade'	La nota 4 è la descrizione completa del 'Grado acciaio'

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Tenaris

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Number / Numero:	Page / Pagina:
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Date / Data: **06 August 2010**

Dalmine S.p.A. - Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) Italy
+39 035 560 111 tel
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Customer / Cliente: **VAN LEEUWEN PIPE & TUBE (CANADA) INC.**		Customer's Order Item / Rifer. Ordine Cliente - Item: **H102010PC002136**	Customer's Reference / Posizione Cliente: **744**
Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: **See note nr.1** **Vedi nota nr.1**		Manufacturer's Works Order N° / Conferma-Posizione: **1213811/001**
Standard or Specification / Norme o specifica: **See note nr.3** **Vedi nota nr.3**		Steel Grade / Grado dell'Acciaio: **See note nr.4** **Vedi nota nr.4**	Surface / Superficie: **See note nr.2** **Vedi nota nr.2**
Dimensions / Dimensioni: **ø 406.4mm O.D. x 9.5mm W.T.**	Schedule / Schedula:	Length / Lunghezza: **11590 mm ÷ 11800 mm**	Ends / Estremità: **BEVELLED AS PER ASTM A 106 CT4 - 8395** **SMUSSATI SECONDO ASTM A 106 CT4 - 8395**
		Quantity / Quantità: **50Pcs/Pz** **1918,70 ft** **124283,2 lb** **584.82 mt** **56374 kg**	Nominal Weight / Peso nominale:

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

PRODUCT DESCRIPTION NOTES
NOTE DI DESCRIZIONE DEL PRODOTTO

STEEL GR. B ASTM A 106 /SA 106/290 SS CSA Z245.1 CAT.I

ACCIAIO GR. B ASTM A 106 /SA 106/290 SS CSA Z245.1 CAT.I

Supplementary Information
Informazioni supplementari

AFTER INSPECTION OPERATION, THE MATERIAL HAS NOT A RESIDUAL MAGNETISM GREATER THAN 20 GAUSS
HARDNESS HRC 22 MAX, ACCORDING TO NACE MR-01-75/ISO 15156
HARDNESS ACCORDING TO NACE MR-01-03
ALL PIPES HAVE BEEN TESTED BY ELETROMAGNETIC TEST ACCORDING TO SPEC. E 570 WITH SATISFACTORY RESULT
ALL PIPES HAVE BEEN TESTED FOR LAMINATION DETECTION BY U.T., WITH SATISFACTORY RESULT
THE ENDS (FOR 300 mm) HAVE BEEN TESTED WITH WET FLUORESCENT MAGNETIC PARTICLES, WITH SATISFACTORY RESULT
THE UNCONTROLLED ENDS HAVE BEEN EXAMINED BY MANUAL U.T. FOR DEFECTS, LAMINATION, LONGITUDINAL/TRANSVERSAL INSIDE/OUTSIDE (NOTCH 10,0 %) . WITH SATISFACTORY RESULT
ALL PIPES HAVE BEEN TESTED BY ULTRASONIC INSPECTION FOR TRASVERSAL/LONGITUDINAL INSIDE/OUTSIDE DEFECTS (NOTCH 10,0 %), WITH SATISFACTORY RESULT
SEAMLESS HOT FINISHED PIPES
VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT

DOPO LE OPERAZIONI DI CONTROLLO, IL MATERIALE NON PRESENTA UN MAGNETISMO RESIDUO SUPERIORE A 20 GAUSS
DUREZZA HRC 22 MAX, IN ACCORDO ALLA SPEC. NACE MR-01-75/ISO 15156
DUREZZA IN ACCORDO ALLA SPEC. NACE MR-01-03
I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO ELETTROMAGNETICO IN ACCORDO ALLA SPEC. E 570 CON ESITO SODDISFACENTE
I TUBI SONO STATI CONTROLLATI PER LA RICERCA DI DOPPI SPESSORI CON ULTRASUONI, CON ESITO POSITIVO
LE ESTREMITA' DEI TUBI SONO STATE CONTROLLATE (PER 300 mm) CON PARTICELLE MAGNETICHE FLUORESCENTI, CON ESITO SODDISFACENTE
LE ESTREMITA' NON CONTROLLATE IN AUTOMATICO SONO STATE CONTROLLATE CON U.S. MANUALI PER RICERCA DIFETTI LONG./TRASV. INTERNO/ESTERNO (TARATURA 10,0 %), DOPPI SPESSORI, CON ESITO SODDISFACENTE
TUTTI I TUBI SONO STATI CONTROLLATI CON U.S. PER LA RICERCA DI DIFETTI TRASVERSALI/LONGITUDINALI INTERNI/ESTERNI (TARATURA 10,0 %), CON ESITO SODDISFACENTE
TUBI SENZA SALDATURA FINITI A CALDO
IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE

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Tenaris

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Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: **See note nr.1** **Vedi nota nr.1**		Surface / Superficie: **See note nr.2** **Vedi nota nr.2**
Standard or Specification / Norme o specifica: **See note nr.3** **Vedi nota nr.3**		Steel Grade / Grado dell'Acciaio: **See note nr.4** **Vedi nota nr.4**	Ends / Estremità: **BEVELLED AS PER ASTM A 106 CT4 - 8395** **SMUSSATI SECONDO ASTM A 106 CT4 - 8395**
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SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARI

Supplementary Information	Informazioni supplementari
STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER. MANUFACTURED BY TENARIS DALMINE NO WELD REPAIR, MERCURY AND RADIATION FREE	L'ACCIAIO E' DI TIPO CALMATO, A GRANO [illegible] FORNO ELETTRICO IL MATERIALE FORNITO E' IN ACCORDO AI [illegible] ORDINE. FABBRICATO DA TENARIS DALMINE NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance with purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Si certifica che il prodotto descritto è stato prodotto, provato, testato e controllato in conformità ai requisiti dell'ordine del cliente. Questo certificato non è una dichiarazione d'origine e non può essere usato come tale.

LLOYD'S REGISTER QUALITY ASSURANCE ISO9001

Quality System Certified
n.110950/001

CUSTOMER , THIRD PARTY

INSPECTION COMPANY
COMPAGNIA D'ISPEZIONE

TENARIS QUALITY DEPARTMENT SIGNATURE

QUALITY CERTIFICATION DEPT.
UFFICIO CERTIFICAZIONE QUALITA'
BONAITA Paolo

CHIEF OF QUALITY CERTIFICATION DEPT
RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA'
BERTINO Sergio

This certificate is issued by a computerised system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original 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 subjected to the law.

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Tenaris

HARDNESS CERTIFICATE
CERTIFICATO DI DUREZZA

Number / Numero:	Page / Pagina:
10/10090	1 / 3

Date / Data: **06 August 2010**

Dalmine S.p.A. - Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) - Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: **VAN LEEUWEN PIPE & TUBE (CANADA) INC.**	Customer's Order Item / Rifer. Ordine Cliente - Item: **H102010PC002136**	Customer's Reference / Posizione Cliente: **744**	Manufacturer's Works Order N° / Conferma-Posizione: **1213811/001**
Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: **See note nr.1** / **Vedi nota nr.1**		Surface / Superficie: **See note nr.2** / **Vedi nota nr.2**
Standard or Specification / Norme o specifica: **See note nr.3** / **Vedi nota nr.3**		Steel Grade / Grado dell'Acciaio: **See note nr.4** / **Vedi nota nr.4**	Ends / Estremità: **BEVELLED AS PER ASTM A 106 CT4 - 8395** / **SMUSSATI SECONDO ASTM A 106 CT4 - 8395**
Dimensions / Dimensioni: **ø 406.4mm O.D. x 9.5mm W.T.**	Schedule / Schedula:	Length / Lunghezza: **11590 mm ÷ 11800 mm**	Quantity / Quantità: **50Pcs/Pz** **1918,70 ft** **124283,2 lb** **584.82 mt** **56374 kg**	Nominal Weight / Peso nominale:

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes / Avvisi di spedizione	Delivery Notes / Avvisi di spedizione
Job number: E/497899/1	Town: T2B 3J CALGARY
Shipping note: 00002482 - 06/08/2010	Country: CDN
Address: 4646 - 32 ST. S.E.	

THROUGH WALL HARDNESS / DUREZZA ATTRAVERSO LO SPESSORE

		Required values / Valori richiesti		Individuals / Individuali Min: –		Max: 248.0		Var: –	Average / Media Min: –		Max: –		Var: –	Hardness type vickers / Tipo di durezza														
Heat N° / Colata N°	Sample N° / Prova N°	Specimen condition		Quad.	Scale / Scala	OD						MW						ID						Var.				
		Ls	Sc			1	2	3	4	Dist. (mm)	Avg.	1	2	3	4	Avg.	1	2	3	4	Dist. (mm)	Avg.							
903216	R2553	B	AM	1	HV10	151.0	152.0	151.0	148.0	-1.5	150.5	148.0	155.0	152.0	151.0	151.5	159.0	157.0	152.0	157.0	1.5	156.3	5.8							
903217	R2554	B	AM	1	HV10	146.0	149.0	143.0	147.0	-1.5	146.3	153.0	151.0	148.0	152.0	151.0	146.0	144.0	148.0	151.0	1.5	147.5	4.7							

AM: As manufactured / Come laminato
Avg: Average / Media
B: Body / Corpo
Dist: Distance from outer diameter / Distanza dal diametro esterno
ID: Internal Diameter / Diametro interno
Ls: Location of sample / Ubicazione provetta
Max: Maximum / Massimo
Min: Minimum / Minimo
MW: Middle Wall / Centro da espessura
OD: Outside Diameter / Diametro esterno
Quad: Quadrant / Quadrante
Sc: Specimen condition / Condizioni Provetta
Var: Variation / Variazione

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Tenaris

HARDNESS CERTIFICATE
CERTIFICATO DI DUREZZA

Number / Numero:	Page / Pagina:
10/10090	2 / 3

Date / Data: 06 August 2010

Dalmine S.p.A. - Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) - Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: VAN LEEUWEN PIPE & TUBE (CANADA) INC.	Customer's Order Item / Rifer. Ordine Cliente - Item: H102010PC002136	Customer's Reference / Posizione Cliente: 744	Manufacturer's Works Order N° / Conferma-Posizione: 1213811/001
Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: See note nr.1 / Vedi nota nr.1		Surface / Superficie: See note nr.2 / Vedi nota nr.2
Standard or Specification / Norme o specifica: See note nr.3 / Vedi nota nr.3		Steel Grade / Grado dell'Acciaio: See note nr.4 / Vedi nota nr.4	Ends / Estremità: BEVELLED AS PER ASTM A 106 CT4 - 8395 / SMUSSATI SECONDO ASTM A 106 CT4 - 8395
Dimensions / Dimensioni: ø 406.4mm O.D. x 9.5mm W.T.	Schedule / Schedula:	Length / Lunghezza: 11590 mm + 11800 mm	Quantity / Quantità: 50Pcs/Pz; 1918,70 ft; 584.82 mt; 124283,2 lb; 56374 kg
			Nominal Weight / Peso nominale:

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

PRODUCT DESCRIPTION NOTES NOTE DI DESCRIZIONE DEL PRODOTTO	
Note 1 is the full description of the 'Product type'	La nota 1 è la descrizione completa del 'Tipo prodotto'
SEAMLESS HOT FINISHED PIPES FOR HIGH TEMPERATURE USES (WITH EXTRA REQUIREMENTS)	TUBI S.S. DI QUALITA' FINITI A CALDO PER IMPIEGHI AD ALTA TEMPERATURA (FUORI STANDARD)
Note 2 is the full description of the 'Surface'	La nota 2 è la descrizione completa della 'Superficie'
INTERNALLY BARE, EXTERNALLY VARNISHED WITH PT1 (FILM DRY- TRANSPARENT) ND 602 ,	GREZZI INTERNAMENTE , OLEATI ESTERNAMENTE CON PT1 (PELLICOLA ASCIUTTA-TRASPARENTE) ND 602 ,
Note 3 is the full description of the 'Standard or specification'	La nota 3 è la descrizione completa delle 'Norme e specifiche'
ACC.TO ASTM A 106 , ASME SA 106 SECT.II PART A ,CSA Z245.1-07 APR-07, PSP00373 REV.0 + TEMPLATE LP	NORMA ASTM A 106 , ASME SA 106 SEZ.II PARTE A ,CSA Z245.1-07 APR-07, PSP00373 REV.0 + TEMPLATE LP
Note 4 is the full description of the 'Steel grade'	La nota 4 è la descrizione completa del 'Grado acciaio'
STEEL GR. B ASTM A 106 /SA 106/290 SS CSA Z245.1 CAT.I	ACCIAIO GR. B ASTM A 106 /SA 106/290 SS CSA Z245.1 CAT.I

Supplementary information Informazioni supplementari	
SEAMLESS HOT FINISHED PIPES	TUBI SENZA SALDATURA FINITI A CALDO
VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT	IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE
STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE	L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO
THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER.	IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE.
MANUFACTURED BY TENARIS DALMINE	FABBRICATO DA TENARIS DALMINE
NO WELD REPAIR, MERCURY AND RADIATION FREE	NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI

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Tenaris

HARDNESS CERTIFICATE
CERTIFICATO DI DUREZZA

Number / Numero:	Page / Pagina:
10/10090	3 / 3

Date / Data: **06 August 2010**

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3627 fax

Customer / Cliente: **VAN LEEUWEN PIPE & TUBE (CANADA) INC.**	Customer's Order Item / Rifer. Ordine Cliente - Item: **H102010PC002136**	Customer's Reference / Posizione Cliente: **744**	Manufacturer's Works Order N° / Conferma-Posizione: **1213811/001**
Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto: **See note nr.1** **Vedi nota nr.1**		Surface / Superficie: **See note nr.2** **Vedi nota nr.2**
Standard or Specification / Norme o specifica: **See note nr.3** **Vedi nota nr.3**		Steel Grade / Grado dell'Acciaio: **See note nr.4** **Vedi nota nr.4**	Ends / Estremità: **BEVELLED AS PER ASTM A 106 CT4 - 8395** **SMUSSATI SECONDO ASTM A 106 CT4 - 8395**
Dimensions / Dimensioni: **ø 406.4mm O.D. x 9.5mm W.T.**	Schedule / Schedula:	Length / Lunghezza: **11590 mm + 11800 mm**	Quantity / Quantità: **50Pcs/Pz** **1918,70 ft** **124283,2 lb** **584.82 mt** **56374 kg**	Nominal Weight / Peso nominale:

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance with purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

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LLOYD'S REGISTER QUALITY ASSURANCE R ISO9001

Quality System Certified
n.110950/001

CUSTOMER , THIRD PARTY

INSPECTION COMPANY
COMPAGNIA D'ISPEZIONE

TENARIS QUALITY DEPARTMENT SIGNATURE

QUALITY CERTIFICATION DEPT.
UFFICIO CERTIFICAZIONE QUALITA'
BONAITA Paolo

CHIEF OF QUALITY CERTIFICATION DEPT.
RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA'
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Order#: 95849 Seq: 5 PO#: 125366 Heat#: 187210.V/21 Mill: Nicola Galperti
Part#: FL 16 3 R W STD 5 Part Desc: Flanges 16 (406.4mm O.D.) 300# RAISED FACE WELD NECK STD A/SA105N

Capitale Sociale € 2.682.500,00 interamente versato
Sede Legale e Amministrativa: 23824 DERVIO (LC) - Via Enrico Fermi, 46
C.C.I.A.A. Lecco n.00206890138 - R.E.A. 76815 - C.F. e P.IVA IT00206890138
Stabilimento - Uffici Amministrativi / Workshop - Warehouse - Offices - Mailing address:
22010 GERA LARIO (CO) - Località S.Agata - Tel. 0344-97200 - Fax 0344-97210
E-mail galperti@galperti.com - www.galperti.com

CERTIFICATO DI COLLAUDO EN 10204
TEST CERTIFICATE EN 10204

3.1

NS.ORDINE / INTERNAL JOB
100233

COMCO PIPE & SUPPLY CO.LTD A DIVISION OF

RUSSEL METALS INC. 5910- 17TH STREET
EDMONTON, ALBERTA T5J 2K1 (CDN)

(2) 9169-04

CERTIFICATO / M.T.CERTIFICATE N.	DATA / DATE	VS.ORDINE / YOUR	DATA / DATE
025460/1	22/09/2010	E1-503 B#125366	10/02/2010

POS / ITEM	DESCRIZIONE / DESCRIPTION	QUANTITA' QUANTITY	S/A	MATERIALE / MATERIAL	N° COLATA / PROVA HEAT N°/TEST N°	ACCIAIERIA STEEL MILL	#
065/065	16" 300 WN RF STD - SA105 B1 FSF4	5	S	ASME SA 105 N Ed.05	187210.V/21	VENETE SPA	A

ANALISI CHIMICA / CHEMICAL ANALYSIS

#		C %	MN %	SI %	P %	S %	CR %	NI %	MO %	CU %	V %	SN %	AL %	NB %	TI %	N %	CO%	B %	O %
A		0,157	1,176	0,232	0,012	0,009	0,090	0,143	0,038	0,198	0,020	0,010	0,028	0,003	0,014		0,012	0,0002	0,001
A	C	0,155	1,180	0,230	0,010	0,005	0,085	0,140	0,040	0,195	0,015	0,010	0,030	0,003	0,014		0,012	0,0002	0,001

#		AS%	CA%	04%	03%	FC%	FL%
A		0,009	0,0007	0,489	0,128	0,353	0,405
A	C	0,009	0,0007	0,475	0,125	0,351	0,402

NOTE / NOTES

04=Copper+Nickel+Chromium+Molybd.+Vanadium CU+NI+CR+MO+V
03=Chromium + Molybdenum CR+MO
FC=Carbon Equivalent Short Formula C+(MN/6)
FL=Carbon Equivalent Long Formula C+(MN/6)+((CR+MO+V)/5)+((NI+CU)/15)

C = ANALISI DI PRODOTTO / CHECK ANALISYS

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

#		TRAZIONE / TENSILE: TIPO TYPE	DIAMETRO PROVETTA DIAMETER mm.	SEZIONE AREA mmq.	LUNGHEZZA LENGHT mm.	TEMP. TEMPERATURE C	ROTTURA TENSILE Mpa	SNERVAMENTO YIELD Mpa	ALL. ELONG %	CONTR. REDUCT. %	RESILIENZA / CHARPY TEST: TIPO TYPE KV	TEMP. TEMPERATURE C	VALORI / VALUES Joule	DUREZZA HB HARDNESS (AVERAGE)
A	S		12,50	122,70	50,00	20	485	250	22,0	30,0		20	Min. 27 Med. 27	187
A	O		12,50	122,70	50,00	20	528	335	27,0	66,4		20	57 - 59 - 64	156

CONFORMS TO SA 105 N
YEAR 2007 E.D 2009 bA
JOB # 2011-8169-04
ITEM # 9
SIGNED BY Feb 4/11

NOTE / NOTES

O = OTTENUTE / OBTAINED
S = STANDARD

#	TRATTAMENTI TERMICI / HEAT TREATMENTS
A	Normalized at 900 dgr.C for 2.1/2 h.-Cooling from 900 dgr.C in still air
A	

NOTE GENERALI / GENERAL NOTES

FINITURE / ROUGHNESS
FSF4=Ra 3,2 - Ra 6,3

STANDARD
B1 = ASME B16.5 Ed.2003

NOTE / NOTES
Material according to ASME SEC.II Part A Edition 01 plus Addenda 2002.

MARCHIO DI FABBRICA TRADE MARK	DATA COLLAUDO INT INT. INSPECT DATE	COLLAUDATORE INT INT. INSPECTOR
	22/09/2010	E. SBATTELLA

ENTE UFFICIALE DI COLLAUDO
INSPECTION AUTHORITY

6A - 0388
16A - 0097
17D - 0018

Certified acc. PED 97/23/EC
By LLOYD'S Register
No. LRC 180212

Order#: 95849 Seq: 5 PO#: 125036 Heat#: 187210.V/21 Mill: Nicola Galperti
Part#: FL 16 3 R W STD 5 Part Desc: Flanges 16 (406.4mm O.D.) 300# RAISED FACE WELD NECK STD A/SA105N

The Original

Capitale Sociale €2.582.500 interamente versato
Sede Legale e Amministrativa:
23824 DERVIO (LC) – Via Enrico Fermi, 46
C.C.I.A.A. Lecco n.00205990138 - R.E.A. n. 79815 C.F. e P.IVA IT00205990138
Stabilimento - Uffici Amministrativi / Workshop - Warehouse - Offices - Mailing address:
22010 GERA LARIO (CO) – Località S.Agata – Tel. (0344) 97200
Telefax (0344) 97210 – E-MAIL ADDRESS: galperti@galperti.com
WEB SITE : galperti.com

Dimensional & Visual Inspection Report	
Page 1 of 1	Date 22/09/2010

CLIENT : **COMCO & PIPE**		SUPPLIER :	**OFFICINE NICOLA GALPERTI E FIGLIO**
CLIENT ORDER No. : **E1-503**		SUPPLIER'S Ref.No. :	**100233**
ITEMS: *ALL ITEMS*	ATTACHED CERTIFICATES : 025416/1 to 025470/1		

THE FOLLOWING OPERATION HAVE BEEN WITNESSED BY : *INTERNAL INSPECTOR*

- v DIMENSIONAL AND VISUAL INSPECTION
- v EXTERNAL VISUAL CHECK
- v VISUAL ROUGHNESS CONTROL ON FACING
- v MARKING
- v HARDNESS TEST CHECK

RESULTS : **SATISFACTORY ACCORDING TO:** ASME B16.5 & P.O. Requirements

S.AGATA : 22/09/2010

p.Off. NICOLA GALPERTI & FIGLIO S.p.A.

E.Sbattella
(Quality control deparmtent)

Order#: 95849 Seq: 5 PO#: 12[illegible]86 Heat#: 187210.V/21 Mill: Nicola Galperti
Part#: FL 16 3 R W STD 5 Part Desc: Flanges 16 (406.4mm O.D.) 300# RAISED FACE WELD NECK STD A/SA105N

The Original

Capitale Sociale € 2.582.500 interamente versato
Sede Legale e Amministrativa:
23824 DERVIO (LC) – Via Enrico Fermi, 46
C.C.I.A.A. Lecco n.00205990138 - R.E.A. n. 79815 C.F. e P.IVA IT00205990138
Stabilimento - Uffici Amministrativi / Workshop - Warehouse - Offices - Mailing address:
22010 GERA LARIO (CO) – Località S.Agata – Tel. (0344) 97200
Telefax (0344) 97210 – E-MAIL ADDRESS: galperti@galperti.com
WEB SITE : galperti.com

Certificate of Material Compliance	
Page 1 of 1	Date 22/09/2010

CLIENT :	**COMCO & PIPE**	SUPPLIER :	**OFFICINE NICOLA GALPERTI E FIGLIO**
CLIENT ORDER No. :	**E1-503**	SUPPLIER'S Ref.No. :	**100233**
ITEMS: *ALL ITEMS*		ATTACHED CERTIFICATES :	025416/1 to 025470/1

We hereby certify that all items supplied for the above purchase order meet all requirements of the applicable specifications of manufacture, the purchase order item descriptions, purchase specifications and purchase order requirements.We certify that all applicable heat treatments, chemical analysis, mechanical tests, non destructive examinations, welding procedures, etc., as required in the purchase order, were performed and that the results were in accordance with the requirements of the purchase order. We certify that all required analysis and tests were performed on final production parts, or on specimens which were representative in all respects, of the final production part.We certify that all the instruments used for all the mesurements are properly calibrated in according to our internal procedure P011.

MATERIAL ACCORDING TO : ***Nace MR-01-75 / ISO 15156***

CONFORMS TO SA 105 N
YEAR 2007 ED 2009bA
JOB # 2011-8169-04
ITEM #
SIGNED BY 22 Feb 4/11

S.AGATA : 22/09/2010

p.Off. NICOLA GALPERTI & FIGLIO S.p.A.

E.Sbattella
(Quality control deparmtent)

6" CL 300 W/N FLANGE RF XH
BORE A105N

P.O.# 125574 Job# 8169-02/04/8146-50 Item# 2
Heat Number: 10/39821
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1606 - 5

(1) 125-001
(1) 8169-04

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@farmas.com

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

B# 125574

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 4587 Del/Dated 11.11.2010
Fattura / Invoice N. Del/Dated
DDT / Del Note N. Del/Dated
Ns.Ord. / Our ref. N. Del/Dated

COD COL COLATA POS VS.ORDINE
HEAT CODE HEAT ITEM YOUR REFERENCE
10/72682

DESCRIZIONE
DESCRIPTION
W/N 150 RF 2" XS A105

DIM.IN ACC. A
DIM. ACCORDANCE TO
ASME/ANSI B16.5

VISIVO E DIMENS.
VIS. & DIMENS.
SATISFACTORY

MATERIALE / MATERIAL
ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,180	0,230	1,080	0,010	0,015	0,100	0,050	0,020	0,017	0,170	0,003	0,001	0,000	0,025	0,399

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	336,0	542,0	33,0	58,0	164,0 - 166,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	90	87	90	0,0

Ns.Rif. OUR REF.

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO
ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT
NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE
ELECTRIC FURNACE

ORIGINE / ORIGIN
EUROPE

COD COL COLATA POS VS ORDINE
HEAT CODE HEAT ITEM YOUR REFERENCE
10/39821

DESCRIZIONE
DESCRIPTION
W/N 300 RF 6" XS A105

DIM.IN ACC. A
DIM. ACCORDANCE TO
ASME/ANSI B16.5

VISIVO E DIMENS.
VIS. & DIMENS.
SATISFACTORY

MATERIALE / MATERIAL
ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,190	0,210	1,100	0,008	0,008	0,070	0,040	0,010	0,020	0,100	0,002	0,002	0,000	0,000	0,399

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	360,0	529,0	30,0	59,0	159,0 - 163,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	86	84	84	0,0

Ns.Rif. OUR REF.

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO
ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT
NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE
ELECTRIC FURNACE

ORIGINE / ORIGIN
EUROPE

COD COL COLATA POS. VS ORDINE
HEAT CODE HEAT ITEM YOUR REFERENCE
09/33645

DESCRIZIONE
DESCRIPTION
W/N 300 RF 12" XS A105

DIM.IN ACC. A
DIM. ACCORDANCE TO
ASME/ANSI B16.5

VISIVO E DIMENS
VIS & DIMENS
SATISFACTORY

MATERIALE / MATERIAL
ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,195	0,240	1,160	0,012	0,010	0,100	0,060	0,010	0,016	0,190	0,020	0,001	0,000	0,028	0,430

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	335,0	538,0	30,0	58,0	163,0 - 165,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	85	83	87	0,0

Ns.Rif. OUR REF.

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO
ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT
NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE
ELECTRIC FURNACE

ORIGINE / ORIGIN
EUROPE

NOTE MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

CONFORMING TO SA 105N
YEAR 2010-ED
JOB # 2011-8169-04
ITEM # 3/
SIGNED BY 04 MAR 2011

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT
S. Corti

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY

MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
MFF

Contract No: 2210001844
P.O.NO.CNF10217A
Customer: CHINA INDUSTRIAL METAL CO LTD

DESCRIPTION: SEAMLESS CARBON STEEL PIPES
TOTAL: 348PIECES,60BUNDLES,81.684MT

HENGYANG VALIN STEEL TUBE CO., LTD

MILL TEST CERTIFICATE

Date: AUG 02,2010
Page: 1/1

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

SPEC: ASTM/ASME SA53/A53-2007,106/SA106-2006,API 5LB/X42-2007,CSA Z245.1 GRADE 290,NACE MR0175-2003/ISO15156.2/NACE MR 0103

CERTIFICATE NO: 2010-03-0805

NO	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)	part code
1	K74L24150	1034119	B/290/X42	10"*0.365"*21FT	8	24	504	9.264	N/A
2	K71L14150	1030867	B/290/X42	12"*0.375"*21FT	5	16	336	7.558	N/A
3.1	K73L05091	1033247	B/290/X42	6"*0.432"*21FT	9	57	1197	15.528	N/A
3.2	K73L05092	1033247	B/290/X42	6"*0.432"*21FT	6	38	798	10.352	N/A
3.3	K73L05112	1033246	B/290/X42	6"*0.432"*21FT	1	5	105	1.362	N/A
4.1	K64L30081	1033246	B/290/X42	6"*0.28"*21FT	8	53	1113	9.586	N/A
4.2	K64L30082	1033246	B/290/X42	6"*0.28"*21FT	9	60	1260	10.852	N/A
4.3	K64L30090	1033246	B/290/X42	6"*0.28"*21FT	14	95	1995	17.182	N/A
Total					60	348	7308	81.684	N/A

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST FLT	NONDESTRUCTIVE TEST UT	TYPE	C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	Mn/C	CE
1	HOT-ROLLED	OK	N/A	P	0.16	0.33	1.06	0.012	0.006	0.09	0.03	0.03	0.01	0.01	0.002	0.0002	0.001	6.63	0.35
				P	0.16	0.34	1.07	0.012	0.005	0.09	0.03	0.03	0.01	0.01	0.002	0.0002	0.001	6.69	0.36
2	HOT-ROLLED	OK	N/A	L	0.13	0.3	1.08	0.014	0.005	0.1	0.03	0.03	0.01	0.01	0.001	0.0002	0.001	8.31	0.33
				P	0.14	0.28	1.12	0.017	0.003	0.06	0.03	0.03	0.01	0.01	0.002	0.0002	0.003	8.00	0.34
3.1	HOT-ROLLED	OK	N/A	P	0.14	0.28	1.11	0.017	0.003	0.06	0.03	0.03	0.01	0.01	0.002	0.0002	0.003	7.93	0.34
				L	0.13	0.29	1.11	0.018	0.003	0.06	0.03	0.03	0.01	0.01	0.002	0.0002	0.003	7.93	0.34
3.2	HOT-ROLLED	OK	N/A	P	0.14	0.32	1.08	0.011	0.002	0.07	0.02	0.06	0.02	0.01	0.002	0.0001	0.001	8.54	0.34
				P	0.14	0.33	1.09	0.011	0.002	0.07	0.02	0.06	0.02	0.01	0.002	0.0001	0.001	7.71	0.34
3.3	HOT-ROLLED	OK	N/A	L	0.15	0.32	1.12	0.012	0.005	0.08	0.03	0.05	0.01	0.01	0.002	0.0001	0.001	7.79	0.35
				P	0.14	0.32	1.07	0.01	0.002	0.07	0.02	0.06	0.02	0.01	0.003	0.0001	0.001	7.47	0.35
4.1	HOT-ROLLED	OK	N/A	P	0.15	0.33	1.08	0.01	0.002	0.07	0.02	0.06	0.02	0.01	0.002	0.0001	0.001	7.64	0.34
				L	0.15	0.32	1.12	0.012	0.005	0.08	0.03	0.03	0.01	0.01	0.002	0.0001	0.001	7.20	0.35
4.2	HOT-ROLLED	OK	N/A	P	0.15	0.27	1.07	0.011	0.005	0.07	0.02	0.02	0.02	0.01	0.002	0.0001	0.001	7.47	0.35
				P	0.14	0.28	1.08	0.011	0.005	0.07	0.02	0.02	0.02	0.01	0.002	0.0001	0.001	7.13	0.34
4.3	HOT-ROLLED	OK	N/A	L	0.13	0.27	1.09	0.013	0.005	0.07	0.03	0.03	0.01	0.01	0.002	0.0001	0.001	7.71	0.34
				P	0.14	0.3	1.07	0.013	0.009	0.07	0.02	0.02	0.01	0.01	0.002	0.0001	0.001	8.38	0.33
				P	0.15	0.29	1.06	0.013	0.009	0.07	0.02	0.02	0.01	0.01	0.002	0.0001	0.001	7.64	0.33
				L	0.13	0.27	1.09	0.013	0.005	0.07	0.03	0.03	0.01	0.01	0.002	0.0001	0.001	8.38	0.33
				P	0.13	0.29	1.07	0.013	0.009	0.07	0.02	0.02	0.01	0.01	0.002	0.0001	0.001	8.23	0.32
				P	0.14	0.29	1.06	0.013	0.009	0.07	0.02	0.02	0.01	0.01	0.002	0.0001	0.001	7.57	0.33
				L	0.13	0.27	1.09	0.013	0.005	0.07	0.03	0.03	0.01	0.01	0.002	0.0001	0.001	8.38	0.33
				P	0.14	0.28	1.06	0.013	0.009	0.07	0.02	0.02	0.01	0.01	0.002	0.0001	0.001	7.57	0.33
				P	0.14	0.29	1.07	0.013	0.009	0.07	0.02	0.02	0.01	0.01	0.002	0.0001	0.001	7.64	0.33
				L	0.13	0.27	1.09	0.013	0.005	0.07	0.03	0.03	0.01	0.01	0.002	0.0001	0.001	8.38	0.33

NO	TENSILE STRENGTH σb (Psi)	YIELD STRENGTH σs (Psi)	ELONGATION δ (%)	IMPACT SIZE	IMPACT AK (J)	IMPACT Or/Tem	HARDNESS (HRC≤22)	HYDROSTATIC TEST (PSI/6s)	FLATTEN TEST	BEND TEST
	strip L,bo=38mm,Lo=50mm									
1	71050	48575	34	N/A	N/A	N/A	OK	2450	OK	N/A
2	69600	48575	47	N/A	N/A	N/A	OK	2110	OK	N/A
	strip L,bo=25mm,Lo=50mm									
3.1	73950	53650	45	N/A	N/A	N/A	OK	3000	OK	N/A
3.2	73225	53650	46	N/A	N/A	N/A	OK	3000	OK	N/A
3.3	71050	52200	40.5	N/A	N/A	N/A	OK	3000	OK	N/A
4.1	71775	54375	41	N/A	N/A	N/A	OK	2670	OK	N/A
4.2	72500	55825	40	N/A	N/A	N/A	OK	2670	OK	N/A
4.3	71050	52925	38.5	N/A	N/A	N/A	OK	2670	OK	N/A

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 specification
3. We hereby certify that this certificate is issued accordance with EN10204 3.1B/NACE MR0175/ISO15156/NACE MR0103 .
4 Type: P-Product analysis, L-Ladle analysis;

QUALITY MANAGER:

6" X H

QUESTIONS - 106-B
YEAR 2010 ED
JOB 2011-816 0847
SEQ # 32
SCANNED 14 MAR 2011

https://mtr.cnn.com/MTR/officiewer.aspx?docID=1786604 182772 101622 1000071
11/18/2010

4" CL 300 W/N FLANGE RF XH
BORE A105N

HEAT NUMBER : 35720
TRANS AM PIPING PRODUCTS - REV'D BY: 7
Shipment/Seq #: S 7 T580

METALFAR

PRODOTTI INDUSTRIALI S.P.A.
23861 CESANA BRIANZA (LC) ITALY
Tel. 031.855441 - Fax 031.855149
MATERIAL TEST DEPARTMENT
SALA PROVE ED ANALISI MATERIALI

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001 : 2000 =

INSPECTION CERTIFICATE EN 10204/3.1 — *CERTIFICATO DI COLLAUDO*

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY-ALBERTA T3S 0 A1

N.: 4301/ 05/12/2007
INVOICE / FATTURA: 3809/ 04/12/2007
S 52390
DEL. NOTE / BOLLA: 6353/ 04/12/2007
PAG.: 1

CODE COLATA	HEAT COLATA	ITEM POS.	YOUR P.O. VS. ORDINE	OUR REFERENCE NS. ORDINE	QUANTITY QUANTITÀ	DESCRIPTION DESCRIZIONE	DIM. ACCORDANCE TO DIM. IN ACCORDO A	VISUAL & DIMENSIONAL VISIVO E DIMENSIONALE
	672952	0002	CI07-558	07003188 0012		W/N 150 RF 3" STD A105	ASME/ANSI B16.5	SATISFACTORY
	673237.	0002	CI07-509	07002863 0009		W/N 150 RF 6" STD LF2CL1	ASME/ANSI B16.5	SATISFACTORY
	36553.	0012	CI07-509	07002863 0019		W/N 300 RF 3"XXS SO.CUT LF2CL1	ASME/ANSI B16.5	SATISFACTORY
	35720	0034	CI07-558	07003188 0043		W/N 300 RF 4" XS A105	ASME/ANSI B16.5	SATISFACTORY
	660958.	0013	CI07-606	07003577 0022		W/N 300 RF 6" XS LF2CL1	ASME/ANSI B16.5	SATISFACTORY
	35787.	0006	CI05-470	05002514 0013		W/N 1500 RF 2" STD LF2CL1	ASME/ANSI B16.5	SATISFACTORY

CODE COLATA	HEAT COLATA	ITEM POS.	MATERIAL MATERIALE	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Nb %	N %	Al %	C.E. %	ORIGIN ORIGINE
	672952	0002	ASTM A 105	0.183	0.235	1.100	0.015	0.017	0.085	0.036	0.014	0.001	0.033	0.001	0.001	0.000	0.035	0.390	EUROPE
	673237.	0002	ASTM A350 LF2 CL1/2	0.181	0.228	1.108	0.018	0.015	0.083	0.051	0.014	0.001	0.041	0.005	0.001	0.000	0.024	0.392	EUROPE
	36553.	0012	ASTM A350 LF2 CL1/2	0.190	0.230	1.110	0.011	0.011	0.100	0.050	0.010	0.016	0.130	0.022	0.001	0.000	0.025	0.413	EUROPE
	35720	0034	ASTM A 105	0.200	0.230	1.090	0.013	0.013	0.110	0.060	0.010	0.015	0.180	0.023	0.002	0.000	0.026	0.426	EUROPE
	660958.	0013	ASTM A350 LF2 CL1/2	0.180	0.237	1.110	0.019	0.011	0.088	0.047	0.024	0.002	0.065	0.003	0.001	0.000	0.027	0.395	EUROPE
	35787.	0006	ASTM A350 LF2 CL1/2	0.185	0.230	1.130	0.015	0.015	0.120	0.070	0.020	0.016	0.190	0.023	0.001	0.000	0.025	0.423	EUROPE

CODE COLATA	HEAT COLATA	ITEM POS.	TEST SPECIMEN cod. PROVETTA SECTION Sezione	TEST SPECIMEN cod. PROVETTA LENGHT Lunghezza	YIELD POINT Snervamento N/mm² R 0,2 %	TENSILE STRENGHT Rottura N/mm² R	ELONGATION Allungamento %	REDUCTION OF AREA Contrazione % Z	HARDNESS Durezza Hb	BEND TEST Piega	FLATTENING TEST Schiacciam.	IMPACT TEST - Resilienza Joule / cm² U.M.	TYPE TIPO (ø 10 mm)	°C	1	2	3	SHAPE FORMA (1 = ø 2 = □)	S	W	X	YIELD POINT SNERVAMENTO N/mm² R 1,0 %	OUR.
	672952	0002	126.60	50.80	330.0	531	30.0	59.0	163-165	0.0	0.0		KV	20	83	88	85	1				0.0	
	673237.	0002	126.60	50.80	327.0	534	32.0	63.0	163-165	0.0	0.0		KV	-50	65	60	68	1				0.0	
	36553.	0012	126.60	50.80	373.0	533	31.0	60.0	163-165	0.0	0.0		KV	-50	66	66	63	1				0.0	
	35720	0034	126.60	50.80	377.0	540	31.0	58.0	164-166	0.0	0.0		KV	20	86	80	80	1				0.0	
	660958.	0013	126.60	50.80	319.0	536	31.0	63.0	163-165	0.0	0.0		KV	-50	67	66	66	1				0.0	
	35787.	0006	126.60	50.80	374.0	531	31.0	58.0	163-165	0.0	0.0		KV	-50	66	63	65	1				0.0	

CODE COLATA	HEAT COLATA	ITEM POS.	MATERIAL IN ACCORDANCE TO MATERIALE IN ACCORDO A	HEAT TREATMENT TRATTAMENTO TERMICO
	672952	0002	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	673237.	0002	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR ELECTRIC FURNACE
	36553.	0012	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR ELECTRIC FURNACE
	35720	0034	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE
	660958.	0013	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR ELECTRIC FURNACE
	35787.	0006	ASTM/ASME A 350/SA 350 M - 04a	NORMALIZED AT 930 C - COOLED IN STILL AIR ELECTRIC FURNACE

COMPONENTS TO CL 105N
YEAR 2010 ED
JOB # 2011-8169-04
ITEM # 36

MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003

SIGNED BY [signature] 2011 MAR

QUALITY CONTROL DEPARTMENT *UFFICIO CONTROLLO QUALITÀ*: BRACCHI FLAVIO

INSPECTION AUTHORITY *ENTE UFFICIALE COLLAUDO*

MANUFACTURER'S SYMBOL *MARCHIO PRODUZIONE*: MFF

https://apps.nov.com/MIR/eiviewer.aspx?docIDs=178694,184772,191622,190971. 11/18/2010

WUXI DINGYUAN PRECISION COLD-DRAWN STEEL PIPE CO.,LTD

Add: Qianqiao Industrial Area, Wux City, Jiangsu Province, 214151, P.R.China
Tel: 0086-510-83231334
Fax: 0086-510-83213987

CONTRACT NO: 1000038 (6)
NAME OF CUSTOMER: WEIFANG STEEL CANADA LTD.
DESCRIPTION: SEAMLESS STEEL PIPE
TOTAL: 780 pieces, 209 bundles, 209.384 MT
DATE: 23-Aug-07

SPECIFICATION: ASTM/ASME A106B/SA106B -2004 NACE MRO-175-2003

CERTIFICATE NO: 07082301

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	QUANTITY BUNDLES	PIECES	FEET	WEIGHT(MT)
1	92070527-1	Y704-682	GR.B	4 STD SRL	5	50	1,050	5.144
2	7071183321	07C2675		6 STD SRL	53	106	2,226	25.864
3	4707183342	0742131		10 STD SRL	38	77	1,617	29.710
4	92070608-4	Y0703768		3 XH SRL	15	210	4,410	20.527
5	92070613-1	Y705-680		4 XH SRL	9	88	1,848	12.571
6	92070514-2	Y0705070		3 S160 SRL	4	39	819	5.316
7	9107061 0-3	Y611-491		4 STD DRL	2	20	800	3.920
8	92070610-2	Y702-020		4 STD ORL	3	30	1,200	5.879
9	7071183331	07C2688		6 STD DRL	66	132	5,280	68.472
10	H0070641?	0741667		10 STD DRL	14	28	1,120	20.581

NO.	DELIVERY CONDITION	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Cr	Ni	Mo	Ti	W	V	NONDESTRUCTIVE TEST EDDY CURRENT TEST	ULTRASONIC TEST
1	COLD-DRAWN	0.19	0.22	0.57	0.013	0.008	0.06	0.04	0.01	0.010	/	/	0.003	OK	/
2	COLD-DRAWN	0.18	0.24	0.56	0.011	0.010	0.098	0.034	0.035	0.006	/	/	0.002	OK	/
3	COLD-DRAWN	0.18	0.21	0.48	0.010	0.012	0.09	0.04	0.03	0.010	/	/	0.001	OK	/
4	COLD-DRAWN	0.18	0.21	0.52	0.009	0.009	0.12	0.06	0.04	0.012	/	/	0.001	OK	/
5	COLD-DRAWN	0.18	0.20	0.58	0.011	0.007	0.03	0.03	0.01	0.012	/	/	0.003	OK	/
6	COLD-DRAWN	0.19	0.20	0.51	0.012	0.010	0.10	0.05	0.04	0.015	/	/	0.001	OK	/
7	COLD-DRAWN	0.18	0.19	0.52	0.009	0.007	0.13	0.05	0.07	0.008	/	/	0.002	OK	/
8	COLD-DRAWN	0.18	0.20	0.58	0.011	0.007	0.03	0.02	0.01	0.014	/	/	0.002	OK	/
9	COLD-DRAWN	0.20	0.25	0.59	0.007	0.007	0.124	0.036	0.049	0.009	/	/	0.002	OK	/
10	COLD-DRAWN	0.18	0.22	0.50	0.008	0.011	0.09	0.03	0.03	0.010	/	/	0.001	OK	/

NO.	YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	ELONGATION GL=50mm %	FLATTEN TEST	CHARPY IMPACT TEST Temp	Dime(mm)		HARDNESS HRB	HYDROSTATIC TEST (PSI)	HEAT TREATMENT
1	46005 / 46005	65450 / 67630	33.5/33.0	OK	/	/	/	/	2200	
2	45000 / 49455	67630 / 69825	33.5/31.5	OK	/	/	/	/	1600	
3	48755 / 49450	68365 / 69820	33.5/32.0	OK	/	/	/	/	1400	
4	49450 / 50185	68360 / 69095	33.0/32.0	OK	/	/	/	/	2500	
5	50910 / 51645	69090 / 70540	34.0/32.5	OK	/	/	/	/	2800	Normalized 880℃ 20min
6	50910 / 52360	66185 / 67635	37.5/36.0	OK	/	/	/	/	2500	
7	42180 / 42910	64730 / 65450	39.0/38.5	OK	/	/	/	/	2200	
8	41455 / 42180	65450 / 66180	40.5/40.0	OK	/	/	/	/	2200	
9	46540 / 47270	66910 / 68365	34.0/33.0	OK	/	/	/	/	1600	
10	48730 / 47270	69820 / 69090	38.5/37.0	OK	/	/	/	/	1400	

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 EN10204 3.1.B
4. Origin: Made in China

4" XH

ISSUED BY: QUALITY MANAGER:

DOCUMENTS: 106-B
YEAR: 2010 ED
JOB: 2011-8169-04
PO #: 37
SIGNED BY: 14 MAR 2011

3" CL 300 W/N FLANGE RF XH
BORE A105N

P.O.# 123094-125-01 Item# 17
Heat Number: 09/34124
Trans AM Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10-1137 - 8

OK

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23851 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
Quality.mf@fantinas.com

PS-001
PO# 123094

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD 9035 ENDEAVOR DRIVE S E T3S 0A1 CALGARY, ALBERTA CA	Certif. N. 1256 Fattura / Invoice N. 888 DDT / Del Note N 1707 Ns.Ord. / Our ref. N.	Del/Dated 30.03.2010 Del/Dated 29.03.2010 Del/Dated 29.03.2010 Del/Dated

COD. COL. / HEAT CODE: 74612 | COLATA / HEAT: | POS. / ITEM: 022 | VS ORDINE / YOUR REFERENCE: CI-10-189 | Q.TA' / Q.TY | DESCRIZIONE / DESCRIPTION: W/N 150 FF 2" STD A105 | DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5 | VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,190	0,210	0,980	0,011	0,011	0,110	0,050	0,010	0,006	0,170	0,001	0,000	0,000	0,022	0,392

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. mm / LENGHT mm	FORMA / SHAPE 1=○ 2=□	SNERVAMENTO / YIELD POINT N/mm2 >=0,2%	ROTTURA / TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO / ELONGATION %>=	CONTRAZIONE / REDUCTION OF AREA %>=	DUREZZA / HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO / YIELD POINT N/mm2 >=1,0%	Ns.Rif. / OUR REF.
126,60	50,80	1	332,0	535,0	33,0	58,0	163,0 - 165,0	KV	20	88	80	86	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. / HEAT CODE: 09/34124 | COLATA / HEAT: | POS. / ITEM: 035 | VS ORDINE / YOUR REFERENCE: CI-10-189 | Q.TA' / Q.TY | DESCRIZIONE / DESCRIPTION: W/N 300 RF 3" XS A106 | DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5 | VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,196	0,230	1,010	0,015	0,014	0,140	0,070	0,020	0,007	0,180	0,003	0,000	0,000	0,009	0,412

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. mm / LENGHT mm	FORMA / SHAPE 1=○ 2=□	SNERVAMENTO / YIELD POINT N/mm2 >=0,2%	ROTTURA / TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO / ELONGATION %>=	CONTRAZIONE / REDUCTION OF AREA %>=	DUREZZA / HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO / YIELD POINT N/mm2 >=1,0%	Ns.Rif. / OUR REF.
126,60	50,80	1	370,0	527,0	30,0	59,0	159,0 - 163,0	KV	20	89	81	83	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. / HEAT CODE: 09/34124 | COLATA / HEAT: | POS. / ITEM: 035 | VS ORDINE / YOUR REFERENCE: CI-10-189 | Q.TA' / Q.TY | DESCRIZIONE / DESCRIPTION: W/N 300 RF 3" XS A105 | DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5 | VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,195	0,230	1,010	0,015	0,014	0,140	0,070	0,020	0,007	0,180	0,003	0,000	0,000	0,009	0,412

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. mm / LENGHT mm	FORMA / SHAPE 1=○ 2=□	SNERVAMENTO / YIELD POINT N/mm2 >=0,2%	ROTTURA / TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO / ELONGATION %>=	CONTRAZIONE / REDUCTION OF AREA %>=	DUREZZA / HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO / YIELD POINT N/mm2 >=1,0%	Ns.Rif. / OUR REF.
126,60	50,80	1	370,0	527,0	30,0	59,0	159,0 - 163,0	KV	20	89	81	83	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

NOTE / NOTES: MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156

CONFORMS TO SA 105N
YEAR 2010
JOB # 2011-8169-04
ITEM # 40
SIGNED BY 02 MAR 2011

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
S. Corti		MFF

3" XH BLK SEAMLESS STEEL PIPE
A106 GR B B.E. (S.R.L.)

P.O.# 122371-8054-01 Item# 2
Heat Number: WB8-2262
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S08-1596 5

Contract No : CI-08-439
PO NO. CI-08-439
Name of Customer: TRANS AM PIPING PRODUCTS LTD.,
L/C NO : DC HCV027379
Description PIPE
TOTAL: 2091 PCS, 118 BUNDLES ,194.672MT

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL INSPECTION CERTIFICATE

Date NOV 14,2008
Page: 1/1

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C 421001

SPEC:ASTM A106-B-2006 ,ASME SA106-B-2007 ,API 5L B-2007,CSA Z245.1-2007 Gr.241 Cat I,NACE MR0175-2003/ISO 15156

CERTIFICATE NO 08-1-11-15

NO	BATCH NO.	HEAT NO	STEEL GRADE	SIZE	BUNDLES	PIECES	FEETS	QUANTITY (MT)	ACTUAL WEIGHT(MT)
1	08-A990	WB8-2420	B	88.9 3 X 5.49 A106 GR B B.E STD					
2	08-A992	WB8-2260	B	88.9 3 X 7.62 A106 GR B B.E XS					
3	08-A994	WB8-2261	B	88.9 3 X 7.62 A106 GR B B.E XS					
4	08-A995	WB8-2262	B	88.9 3 X 7.62 A106 GR B B.E XS					
5	08-A996	00832059	B	88.9 3 X 11.13 A106 GR B P.E 160					

NO	DELIVERY CONDITION(≥650℃)	NONDESTRUCTIVE TEST ET	NONDESTRUCTIVE TEST UT	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	CE
1	NORMALIZED	OK		0.19	0.21	0.51	0.015	0.008	0.01	0.01	0.05	0.01	0.01	0.001	0	0.001	0.29
2	NORMALIZED	OK		0.19	0.21	0.49	0.018	0.004	0.02	0.01	0.02	0.01	0.01	0.002	0.0001	0.001	0.28
3	NORMALIZED	OK		0.21	0.22	0.49	0.016	0.005	0.01	0.02	0.05	0.01	0.01	0.001	0.0002	0.001	0.31
4	NORMALIZED	OK		0.19	0.21	0.51	0.015	0.004	0.01	0.01	0.05	0.01	0.01	0.002	0.0001	0.001	0.29
5	NORMALIZED	OK		0.22	0.26	0.50	0.011	0.007	0.10	0.04	0.05	0.01	0.01	0	0	0.001	0.33

NO.	T.S. (MPA)	Y.S. (MPA)	E.L. (%)	Ak (J) IMPACT SIZE	AK	Ori/Te	HARDNESS BRINNEL (HB)	HYDROSTATIC TEST (MPA)	FLATTEN TEST	BEND TEST
	Full, L, Lo=50mm									
1	485/480	305/300	26.0/26.5				163/162	17.0	OK	OK
2	495/510	305/315	28.5/32.5				161/161	17.0	OK	OK
3	490/495	305/305	25.5/25.0				163/164	17.0	OK	OK
4	525/500	330/310	31.0/30.0				163/165	17.0	OK	OK
5	475/470	295/295	26.0/22.5				162/162	17.0	OK	OK

REMARKS 1.We hereby certify that this certificate of quality is issued and signed by the manufacture.
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. SPECIMEN SIZE (Pipe end Longitudinal, Gauge Length=2")
A.For pipes ≤ 1" full length specimen were used,
B.For pipes > 1" longitudinal strip specimen were used; the width of the gauge length portion is 3/4"
5.NORMALIZED:900°C
6.DIMENSION STANDARD ASME B36.10
7.MANUFACTURE METHOD:COLD DRAWN

QUALITY MANAGER:

HENGYANG VALIN STEEL TUBE CO. HUNAN CHINA

CONFORMING TO SA 106B
YEAR 2010 ED
JOB # 2011-8169-04
ITEM # 41, 42
SIGNED BY 14 MAR 2011

DK

CONFORMS TO SA 106B
YEAR 2010 ED
JOB # 2011-8169-04
ITEM # 43, 44
SIGNED BY 14 MAR 2011

1" XH

OK

Contract No: 2110001528
P.O.NO.CNF10217A
Customer: CHINA INDUSTRIAL METAL CO LTD

HENGYANG VALIN STEEL TUBE CO., LTD

MILL TEST CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

DESCRIPTION: SEAMLESS CARBON STEEL PIPES
TOTAL: 874 PIECES,11 BUNDLES,19.26 MT

Date: JUL 28 ,2010
Page: 1/1

SPEC: ASTM/ASME SA53/A53-2007,106/SA106-2006,API 5LB/X42-2007,CSA Z245.1 GRADE 290,NACE MR0175-2003/ISO15156.2/NACE MR 0103

CERTIFICATE NO: 2010-02-0701

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)	ACTUAL WEIGHT(MT)
1	510661650	1011977	B/X42/290	1"*0.25"*21FT	2	116	2436	3.147	N/A
2	510661665	1011976	B/X42/290	1"*0.179"*21FT	4	455	9555	9.433	N/A
3	510661698	1010763	B/X42/290	3/4"*0.154"*21FT	1	149	3129	2.098	N/A
5	510661658	1010764	B/X42/290	1-1/2"*0.2"*21FT	3	96	2016	3.324	N/A
6	510661699	1011984	B/X42/290	1-1/4"*0.14"*21FT	1	58	1218	1.258	N/A
		Total			11	874	18354	19.26	N/A

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST ET	UT	TYPE	CHEMICAL COMPOSITION (%) C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	Mn/C	CE(IIW)
1	NORMALIZED	OK		P	0.13	0.25	1.06	0.011	0.002	0.06	0.03	0.05	0.02	0.01	0.003	0.0002	0.001	8.15	0.33
				P	0.13	0.25	1.06	0.011	0.002	0.06	0.03	0.05	0.02	0.01	0.003	0.0002	0.001	8.15	0.33
2	NORMALIZED	OK		L	0.17	0.27	1.09	0.015	0.004	0.05	0.02	0.02	0.01	0.01	0.003	0.0001	0.001	6.41	0.36
				P	0.14	0.32	1.06	0.016	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.57	0.33
3	NORMALIZED	OK		P	0.14	0.32	1.05	0.016	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
				L	0.15	0.28	1.13	0.012	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.53	0.35
				P	0.15	0.35	1.14	0.018	0.010	0.08	0.03	0.04	0.01	0.01	0.005	0.0001	0.001	7.60	0.36
5	NORMALIZED	OK		P	0.15	0.34	1.15	0.018	0.010	0.08	0.03	0.04	0.01	0.01	0.003	0.0005	0.001	7.67	0.36
				L	0.14	0.34	1.08	0.015	0.004	0.07	0.03	0.04	0.01	0.01	0.003	0.0001	0.001	7.71	0.34
				P	0.14	0.32	1.05	0.016	0.004	0.08	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
6	NORMALIZED	OK		P	0.14	0.31	1.05	0.016	0.004	0.08	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
				L	0.13	0.33	1.1	0.018	0.007	0.08	0.03	0.04	0.01	0.01	0.003	0.0002	0.001	8.46	0.33
				P	0.16	0.3	1.06	0.009	0.001	0.07	0.03	0.02	0.01	0.01	0.003	0.0001	0.001	6.63	0.35
				P	0.16	0.29	1.06	0.009	0.001	0.07	0.03	0.02	0.01	0.01	0.003	0.0001	0.001	6.63	0.35
				L	0.14	0.3	1.13	0.012	0.002	0.06	0.03	0.03	0.01	0.01	0.003	0.0001	0.001	8.07	0.34

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (PSI)	ELONGATION δ (%)	IMPACT SIZE	IMPACT AK (J)	IMPACT Ori/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi)	FLATTEN TEST	BEND TEST
	full-section ,L,Lo=50mm									
1	73225	50025	45.5	N/A	N/A	N/A	OK	3000	N/A	OK
2	71050	47125	48.5	N/A	N/A	N/A	OK	3000	N/A	OK
3	67425	48575	39.5	N/A	N/A	N/A	OK	3000	N/A	OK
	strip ,L,bo=12.5mm,Lo=50mm									
5	89900	67425	31.5	N/A	N/A	N/A	OK	3000	N/A	OK
6	79025	66700	29.5	N/A	N/A	N/A	OK	3000	N/A	OK

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 EN10204 3.1B.
4 hardness to NACE MR-0175/ISO 15156.2/MR0103.
5. TYPE:P-Product analysis L-Ladle analysis.

QUALITY MANAGER:

110604

MTR View

9/30/2010

https://gpts.nov.com/MTR/gifviewer.aspx?docIDs=191619

(13) 81141-02

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

P/O 104582

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7002388(1)-T/A

Certificate No.: SE-2388A
Date: 04/07/2010
Page: 1 OF 2

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09/ASME SA105-09	ASME B16.5-09 CSA Z245.12

Item No.	CUSTOMER P/N	DESCRIPTION	QUANTITY
1		150 WNRF S160 1" A105N	
2		150 WNRF S160 2" A105N	
3		150 WNRF S160 2" A105N	
4		150 WNRF S160 3" A105N	
5		150 WNRF XXS 1 1/2" A105N	
6		150 WNFF STD 2" A105N	
7		150 WNFF STD 2" A105N	
8		300 WNRF S160 1 1/2" A105N	
9		300 WNRF S160 2" A105N	
10		300 WNRF XXS 1" A105N	

CHEMICAL COMPOSITION (%)

Item No.	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
Min	-	0.100	0.600	-	-	-	-	-	-	-	-	-			
Max	0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-			
1	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409
2	0.211	0.240	1.000	0.013	0.014	0.006	0.019	0.054	0.002	0.007	0.005	0.004			0.386
3	0.212	0.260	1.030	0.016	0.009	0.007	0.021	0.054	0.002	0.010	0.005	0.003			0.392
4	0.212	0.260	1.030	0.016	0.009	0.007	0.021	0.054	0.002	0.010	0.005	0.003			0.392
5	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409
6	0.212	0.260	1.030	0.016	0.009	0.007	0.021	0.054	0.002	0.010	0.005	0.003			0.392
7	0.210	0.210	1.150	0.007	0.013	0.040	0.060	0.030	0.009	0.003	0.005	0.011			0.420
8	0.230	0.120	1.020	0.008	0.009	0.070	0.040	0.040	0.005	0.003	0.005	0.010			0.416
9	0.219	0.280	1.020	0.010	0.009	0.009	0.015	0.054	0.002	0.003	0.005	0.006			0.397
10	0.190	0.200	1.140	0.008	0.011	0.110	0.080	0.070	0.005	0.003	0.005	0.009			0.409

Item No.	Heat No.	T.S.(*1) (MPA)	Y.S.(*1) (MPA)	E.L.(*1) (%)	Hardness (HB)	R.A.(*1) (%)	Impact Test Temp: Minimum: Joule 1	2	3	Material Supplier
Min		485.0	250.0	22.0	-	30.0				
Max		-	-	-	187	-				
1	29570	491.3	298.1	35.4	150	65.9				OEMK
2	931272	509.9	319.7	35.2	154	66.0				NTMK
3	931275	509.9	323.6	34.2	155	66.0				NTMK
4	931275	509.9	323.6	34.2	155	66.0				NTMK
5	29570	491.3	298.1	35.4	150	65.9				OEMK
6	931275	509.9	323.6	34.2	155	66.0				NTMK
7	13145	521.7	317.7	34.4	153	67.7				OEMK
8	49187	513.9	296.2	33.4	162	67.7				OEMK
9 →	921032	511.9	347.2	34.0	155	67.0				NTMK
10	29570	491.3	298.1	35.4	150	65.9				OEMK

■ HEAT TREATMENT(*2)
☒ N

■ REMARKS
880°C X3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156.2
CONFORMS WITH Z245.12 CAT I GR.248 SOUR SERVICE-05
TEST SPECIMEN ORIENTATION: TRANSVERSE

*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=Furance 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.

105N
YEAR 2010 ED
JOB 2011-8169-04
ITEM # 10
SIGNED BY 10 MAR 2011

SAN ENG STEEL FORGING CO., LTD. DBP'T

Management Quality Assurance Dept

2" CL 300 W/N FLANGE RF
SCH 160 BORE A105N

Heat Number: 921032 Item# 4
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment / Seq #: S 10 - 1167 19

Customer: COMMERCIAL METALS COMPANY DBA CMC DALLAS TRADING
6565 N MACARTHUR BLVD.,SUITE 800,IRVING,TX 75039,USA
Description:
PRIME NEWLY PRODUCED CARBON STEEL SEAMLESS LINE PIPE
LC NO:1185172/290836 P.O.NO:62430 LOT NO:1
TOTAL: 4387 PIECES, 130 BUNDLES, 257.754MT

HENGYANG STEEL TUBE GROUP INTERNATIONAL TRADING INC.
MILL TEST CERTIFICATE

Date: SEP 07,2009
Page: 2/3

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993

P.C. 421001

OK

2" Sch 160

SPEC: ASTM/ASME SA53/A53/A106/SA106/API 5L,PSL-1 GRADE B,CSA Z245.1 GRADE 290

CERTIFICATE NO: 09-02-0905

ITEM NO	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)
8	997302502	0911799	X42	2" x 0.344" x SRL	5	145	3045	10.313
9	997202608	0924156	X42	2" x 0.154" x SRL	14	840	17640	29.249
10	997302607	0911794	X42	2" X 0.154" x DRL	2	69	2760	4.576
10	998300129	0923934	X42	2" X 0.154" x DRL	1	20	800	1.326
11	997302609	0814695	X42	2" X 0.218" x DRL	2	50	2000	4.56
12	997102615	0911796	X42	2" X 0.218" x SRL	4	176	3696	8.428
12	997102616	0924155V	X42	2" X 0.218" x SRL	8	352	7392	16.856
12	997102617	0911794	X42	2" X 0.218" x SRL	7	276	5796	13.217
12	997102618	0911796	X42	2" X 0.218" x SRL	6	264	5544	12.642
13	997302613	0924157	X42	3" X 0.216" x DRL	8	124	4960	17.086
		TOTAL:			57	2316	53633	118.233

~~CONFORMS TO~~ ASTM A 106-B
2010 ED
YEAR
JOB # 2011-8169-04
ITEM # 51,53,54,V7A
~~SIGNED BY~~ 14 MAR 2011

NO	DELIVERY CONDITION	NONDESTRUCTIVE TEST ET	NONDESTRUCTIVE TEST MPI	TYPE	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Ti	Nb	Ca
8	HOT-ROLLED	OK	N/A	P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				P	0.16	0.30	1.10	0.010	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
9	HOT-ROLLED	OK	N/A	L	0.15	0.31	1.10	0.012	0.004	0.06	0.02	0.04	0.01	0.030	0.01	0.003	0.001	0.36
				P	0.15	0.32	1.11	0.015	0.002	0.07	0.03	0.06	0.02	0.032	0.01	0.003	0.001	0.35
10	HOT-ROLLED	OK	N/A	P	0.15	0.31	1.12	0.015	0.002	0.07	0.03	0.05	0.02	0.023	0.01	0.003	0.001	0.36
				L	0.14	0.31	1.16	0.016	0.003	0.08	0.04	0.06	0.02	0.023	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.15	0.009	0.005	0.06	0.03	0.05	0.01	0.027	0.01	0.003	0.001	0.36
				P	0.15	0.30	1.15	0.009	0.005	0.06	0.03	0.05	0.01	0.025	0.01	0.003	0.001	0.36
10	HOT-ROLLED	OK	N/A	L	0.16	0.32	1.20	0.012	0.005	0.06	0.03	0.06	0.01	0.025	0.01	0.003	0.001	0.36
				P	0.15	0.35	1.09	0.015	0.005	0.06	0.03	0.05	0.01	0.029	0.01	0.003	0.001	0.37
11	HOT-ROLLED	OK	N/A	P	0.15	0.36	1.10	0.015	0.005	0.07	0.02	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				L	0.14	0.37	1.14	0.014	0.004	0.06	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.16	0.35	1.12	0.013	0.006	0.08	0.03	0.04	0.01	0.032	0.01	0.003	0.001	0.35
				P	0.16	0.35	1.12	0.013	0.005	0.08	0.03	0.03	0.01	0.042	0.01	0.005	0.001	0.36
12	HOT-ROLLED	OK	N/A	L	0.17	0.39	1.15	0.015	0.002	0.06	0.03	0.03	0.01	0.042	0.01	0.005	0.001	0.36
				P	0.15	0.28	1.09	0.010	0.004	0.05	0.02	0.04	0.04	0.040	0.01	0.005	0.001	0.38
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.10	0.010	0.004	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
				L	0.15	0.31	1.20	0.012	0.003	0.06	0.03	0.04	0.01	0.020	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.08	0.010	0.003	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
				P	0.15	0.28	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.020	0.01	0.002	0.001	0.35
12	HOT-ROLLED	OK	N/A	L	0.13	0.32	1.19	0.012	0.005	0.06	0.03	0.05	0.02	0.026	0.01	0.003	0.001	0.35
				P	0.16	0.29	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.36
12	HOT-ROLLED	OK	N/A	P	0.15	0.29	1.09	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				L	0.15	0.32	1.20	0.012	0.005	0.06	0.03	0.05	0.01	0.029	0.01	0.003	0.001	0.37
13	HOT-ROLLED	OK	N/A	P	0.15	0.28	1.11	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				P	0.16	0.28	1.10	0.010	0.003	0.05	0.02	0.04	0.01	0.021	0.01	0.002	0.001	0.35
				L	0.13	0.31	1.14	0.010	0.003	0.06	0.03	0.05	0.01	0.027	0.01	0.003	0.001	0.34
				P	0.13	0.31	1.16	0.009	0.003	0.05	0.02	0.03	0.02	0.023	0.01	0.005	0.001	0.34
				P	0.13	0.31	1.15	0.009	0.003	0.05	0.02	0.03	0.02	0.024	0.01	0.005	0.001	0.34
				L	0.13	0.30	1.16	0.015	0.003	0.07	0.03	0.05	0.02	0.031	0.01	0.002	0.001	0.35

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σb (Mpa) strip L,bo=19mm,Lo=50mm	ELONGATION δ (%)	IMPACT Ak (J) SIZE	AK	On/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
8	68875	49400			N/A		OK	3000	N/A	OK
9	65975	45875	41		N/A		OK	3000	N/A	OK
10	69600	50750	33		N/A		OK	3000	N/A	OK
10	70325	53650	37		N/A		OK	3000	N/A	OK
11	68150	47850	37		N/A		OK	3000	N/A	OK
12	69600	52200	33.5		N/A		OK	3000	N/A	OK
12	68875	50025	34.5		N/A		OK	3000	N/A	OK
12	71050	50750	30		N/A		OK	3000	N/A	OK
12	69600	52200	32.5		N/A		OK	3000	N/A	OK
13	68875	49300	33.5		N/A		OK	3000	N/A	OK
			37		N/A		OK	3000	OK	N/A

REMARKS: 1. We hereby certify that the material has been manufactured, sampled, tested and inspected in accordance with the required standards.
2. Properties compliance to EN10204 3.1.B.
3 BRINELL /Rockwell hardness certified to NACE MR 0175-03 and MR 0103-03.
4 TYPE :P-Product analysis L-Ladle analysis.
5 CHEMICAL,MECHANICAL AND PHYSICAL PROPERTIES ARE IN COMPLIANCE WITH CONTRACTED QUALITY AND TOLERANCES AS PER OMMERCIAL METALS COMPANY-DBA CMC DALLAS TRADING DT PURCHASE ORDER NUMBER 62430
6 MTR AND STENCILING PER CSA 245.1 GRADE 290 LATEST EDITION,PSI PER API 5L SPECIFICATION LATEST EDITION ON MTR AND PIPE.

QUALITY MANAGER:

108914

MTR View

1/11/2010

https://gpts.nov.com/MTR/gifviewer.aspx?docIDs=189622

2" SCH 160 LR 90 BW ELLS A234-WPB

Heat Number: 10410604 Item# 24
Trans Am Piping Products Ltd. - Rev'd By: SA
Shipment / Seq # S10 - 1319 - 7

ernefittings

erne fittings gmbh
A-6824 Schlins
Hauptstrasse 46
Austria/Europe
Telefon +43/5524 501-0
Telefax +43/5524 501-930

Reg. No. 12 100 3054

Abnahmeprüfzeugnis
Inspection Certificate
EN 10204 - 3.1

Zeugnisnummer *[certificate no.]*: 025913/10-SD | Rev. | Datum *[date]*: 08/07/2010

Ihre Bestellnummer *[your order no.]*: CI-10-319

Unsere Auftrags.Nr. *[our order no.]*: 121917TD-0030

Ihre Artikelnummer *[your item no.]*:

Schmelze Nr *[heat no.]*: 10410604 | **Ident Nr.** *[ident no.]*:

Kunde *[customer]*
TRANS AM
Piping Products Ltd.
9335 Endeavor Drive S.E.
CDN-T3S 0A1 Calgary, Alberta

125-001
PO #124834

Menge *[quantity]*	**Artikelbezeichnung** *[designation]*
	elbows LR-90-S-WPB-2"-S160

Anforderungen *[requirements]*
ASME B16.9-2007 LR,WPB ASME Sect. II part D table Y-1,ASTM A 234/A 234M-07,ASME SA-234/SA-234M-Ed.07/A08a,NACE MR0175/ISO15156-2:2003A 2,NACE MR0103-2003 2.1 and 4,M08C3-05,EN 10204/3.1,Millstandard,Seamless

Vormaterial *[base material]*: seamless pipe

Analyse *[analysis]*

Index	Schmelze Nr. *[heat no.]*	Erschmelzungsart *[melting process]*	1 = **Schmelzanalyse** *[heat analysis]*	J-Faktor	(Si + Mn) * (P + Sn) * 10000
		Y		CEQ *[CEQ]*:	C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15

Index	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	Sn	Ceq	CEQ	J-Fact
1	0.1610	0.2412	0.9302	0.0142	0.0035	0.0231	0.0025	0.0099	0.0094	0.0030	0.0011	0.0281	0.0001	0.0036	0.0074	0.0007	0.32	0.32	174.54

Mech.-technologische Prüfung *[mech. technological test]*

Proben Nr. *[test no.]*	Zugversuch *[tensile test]* Pr.-Lage *[pos. of sample]*	Temp.	Dehngr. *[yield str.]* ReH	Rp 0.2	Zugfestigkeit *[tensile str.]* Rm (MPa)	Dehnung *[elongation]* 4D (%)	Kerbschlagbiegeversuch *[notched bar impact test]* Form: PR-Lage *[pos. of sample]*	Temp.	Querschnitt *[cross sec.]*	Kerbschlagarbeit *[impact values]* (J)	Härteprüfung *[hardness test]*
1923_10	L	+20 °C		361	520	31.5					153-158 HB

SPEC: A 234 WPB
YEAR: 2010 ED
PO: 2011-8169-04
ITEM: 55
SIGNED BY: 12 MAR 2011

Wärmebehandlung *[heat treatment]*
formed under normalizing cond.
temperature 840 °C - 890 °C
Cooling in still air

Kennzeichnung *[marking]*: CE QS AUSTRIA / WPB / 10410604 / 2" / S160

Besichtigung und Ausmessung *[visual inspection and dimensional check]*: o.B./o.K.

Bemerkungen *[remarks]*
hot formed over mandrel
Hardness test and stamping acc. to NACE MR-01-75. Stamped with round nosed tools. Hardness test, visual and dimensional test are checked on 10%

Zusatzmarkierung *[add. mark.]*

Die gelieferten Produkte entsprechen den Anforderungen der Bestellung (einschließlich Herstellung, Probennahme, Testen und Prüfen). *[The supplied products comply with the requirements of the order (including manufacturing, sampling, testing and inspections).]*

Der Werksachverständige *[the Works Inspector]*
08/07/10 Scheibenstock Daniel -323

Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. *[The certificate is issued by the computerized system and is valid without signature.]*

Zertifiziert nach DGRL 97/23/EG Anhang I - Absatz 4.3 durch TÜV SÜD Industrie Service. Benannte Stelle 0036,Zertifikat Nr. 129/2002/MUC *[Certified acc. to PED 97/23/EG Annex I, Paragraph 4.3 by TÜV SÜD Industrie Service. Notified Body 0036. Certificate No. 129/2002/MUC]*

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 19305
Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.
Purchaser Order No. 124193

Date: 2010-09-14
Distributor:
Distributor Order No: 125-001

OK

PO#124193

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	25	2" X 6" LONG 3000 THRD COUPLING B16.11	A/SA350 LF2	G2664	3" OD RD BAR ASTM A105, A350 LF2 CL 1, A696GR C, ASME SA105, SA350 LF2 CL 1, SA696 GR C, API 6A 45K, NACE MR01-75, DIN/EN 10204 3.1, NACE MR01-03-2003

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti	CE
G2664	.165	1.225	.012	.011	.244	.125	.095	.028	.131	.012	.000	-	-	.024	-	-	.41

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	G2664	50,431 PSI	75,835 PSI	33.9	75	185	96.9-90.4-91.6 @ - 50 F. FT/LBS CHARPY V NOTCH UL	NORMZE: 1652 F. 1.5 HRS A.C.

105N

CONFORMS TO SA 350-LF2 CL1
YEAR 2010 ED
JOB # 2011-8169-04
ITEM # 60
SIGNED BY 2 MAR 2011

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y. Lee

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

08137-05

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 19779
Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.
Purchaser Order No. 125048

Date: 2010-12-16
Distributor:
Distributor Order No:

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	1	1-1/2" X 8" LONG 3000 THRD HALF COUPLING B16.11	A/SA350 LF2	81156	2-1/2" RD BAR ASTM A105, A350 GR LF2 CL 1, A696 GR C. ASME SA105, SA350 GR LF2 CL 1, SA696 GR C, API 6A, NACE MR01-75, NACE MR01-03-2003, EN 10204 3.1B

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
81156	.164	1.103	.008	.017	.177	.118	.118	.030	.116	.020	.0020	-	-	.022	-	-

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	81156	348 N/mm2	492 N/mm2	30.0	65.0	140	131-133-127 @ -46 C. J KV	NORMZE: 1697F. 3 HRS A.C. C.E.: .397

105N

CONFORMS TO: 350 LF2 CL1
YEAR: 2010 ED
JOB: 2011-8169-04
63
STAMPED BY: 2 MAR 201

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y Lee

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 17587
Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.
Purchaser Order No. 121656-125-01

Date: 2009-10-14
Distributor:
Distributor Order No:

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	50	3/4" X 6" LONG THRD COUPLING B16.11	A/SA350 LF2	HLZ	1-3/4" RD BAR ASTM A350 GR LF2 CL 1, ASTM A105, ASTM A675 GR 70, ASTM A696 GR C, ASME SA350 GR LF2 CL 1, ASME SA105, ASME SA675 GR 70, ASME SA696 GR C, NACE MR01-75, API 6A SUPPL 6S6 & S1, EN 10204 3.1B
2	50	1/2" X 6" LONG 3000 THRD COUPLING B16.11	A/SA350 LF2	HCJ	1-1/4" RD BAR ASTM A105-95B, A350 GR LF2 CL 1, A696 GR C, ASME SA350 LF2 CL 1, SA105, SA696 GR C, CONFORMES TO API 6A, ULTRASONIC EXAMINATION 100% MADE, NACE MR01-75, EN 10204 3.1B

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
HLZ	.20	.90	.004	.014	.25	.10	.08	.030	.15	.002	.001	-	.009	.022	.010	.001
HCJ	.174	1.075	.007	.017	.171	.121	.127	.040	.141	.015	.001	-	-	.021	-	-

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	HLZ	49,900 PSI	73,100 PSI	35	61	131	47-57-25 @ -50 F. FT/LBS	NORMZE: 1700 F. 105 MIN C.E.: .39
2	HCJ	341 N/mm2	496 N/mm2	33	69	135/143	117-110-119 @ -46 C.JOULE	NORMZE: 1697 F. 3 HRS A.C. C.E.:.407

105N

CONFORMS TO SA 350-LF2 CL1
YEAR 2010 ED
JOB 2011-8169-04
ITEM # 65+67
SIGNED BY 2 MAR 2011

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y. Lee

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	16" X 34' STABILIZER COLUMN	2011-8169-04
DATE:	**TECHNIQUE # USED:**	**CODE:**
MAR 9 2011	RT P#7 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2010 **ADDENDA:** -
P1	.375"	ACCEPTANCE: UW-52 UW-11-5b SPOT

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- [X] SINGLE WALL EXPOSURE
- [ ] DOUBLE WALL EXPOSURE
- [X] SINGLE WALL VIEWING
- [ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJEC
C1	0-8	2												✔	
C2	0-8	2												✔	
C3	0-8	2												✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	36 Ci		2	8" FILM	@
SOD:	7.625"			17" FILM	@
OFD:	.375"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1			PIPE	@
FOCAL SPOT SIZE:	.12"			PIPE	@
				PIPE	@

COMMENTS: _____ TOTAL EXPOSURES: 2

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN _____ LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	16" X 34' STABILIZER COLUMN	2011-8169-04
DATE:	**TECHNIQUE # USED:**	**CODE:**
MAR 13 2011	RT P#7 REV # 0	SECTION VIII DIV 1
MATERIAL:	**MAT'L THICKNESS:**	**EDITION:** 2010 **ADDENDA:** -
P1	.375"	ACCEPTANCE: UW-52 UW-11-5b SPOT

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[X] SINGLE WALL EXPOSURE
[ ] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJEC
C4	0-8	20													✔	
C5	0-8	20													✔	
C6	0-8	20													✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@
STRENGTH:	34 Ci		3	8" FILM	@
SOD:	7.625"			17" FILM	@
OFD:	.375"			PIPE	@
FILM TYPE:	AGFA D4 CLASS 1			PIPE	@
FOCAL SPOT SIZE:	.12"			PIPE	@
				PIPE	@

COMMENTS: _____ TOTAL EXPOSURES: 3

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-04*

DESCRIPTION: *STABILIZER COLUMN*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST: HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *520* psig

POSITION OF THE UNIT TESTED HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G10 & G15*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

	3/28/2011
QC INSPECTOR/ALCO GAS & OIL	**DATE**
	3/28/2011
3RD PARTY INSPECTOR	**DATE**
AB245	03-28-11
AUTHORIZED INSPECTOR	**DATE**

Phase # : 2011-8169-05
Phase Title: Indirect Fired Stabilizer Reboiler/Reboiler Exp. Tank

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports		N/A
2. CRN's		N/A
3. Nameplate Copy	X	
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control		N/A
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT	X	
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC	X	
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

_____ psi at _____ °F
Max. Allowable Working Pressure

_____ psi at _____ °F
Max. Allowable External Working Pressure

_____ °F at _____ psi
Minimum Design Metal Temperature

2011
Year Built

2011-8169-09
Serial Number

CRN _____

A No. _____

NAME INDIRECT FIRED STABILIZER REBOILER

TAG H-402

HEAD SA36 0.375/0.250 in

C.A. _____ in

SHELL SA36 0.250 in

HYDRO WATER FILL FOR STATIC HEAD OR TEST _____ psi

2011-8169-50

TRAVEL SHEET

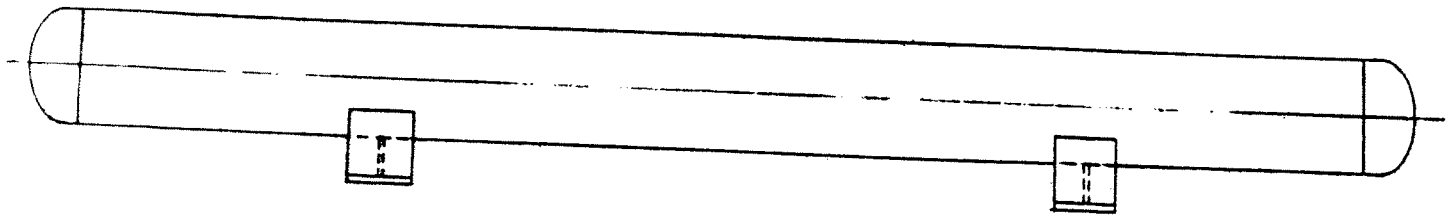
Authorized Inspector (Signature) _____ Date _____

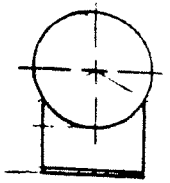
CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER :		
HUSKY OIL OPERATIONS LTD	2011-8169-05	DRAWING NUMBER		
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	C-2011-8169-06-001/001		
ITEMS: 1,000,000BTU/HR INDIRECT FIRED STABILIZER REBOILER 42"OD X 22'-0"LG REBOILER 30"OD X 8'-0"LG EXP TANK	COMMENTS:	INITIALS HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings				
Material Checked Against Drawing Bill of Material				
Mill Test Checked				
Impact Test				
Unit Layout	2011/03/23			
Weld Procedure Approved	REVIEWED 21 FEB 2011			
Welder(s) Qualifications	REVIEWED 21 FEB 2011			
Fit-Up: Shell & Heads	TYPE 1 / TYPE 7 29 MAR 2011			
Nozzles & Fittings	30 MAR 2011			
Internals	29 MAR 2011			
Externals	30 MAR 2011			
Connections: Location	30 MAR 2011			
Rating	CL3000 30 MAR 2011			
Internal Inspection	29 MAR 2011			
Internals Installed	29 MAR 2011			
Weld Profile, Sizes & ID	CHECKED 30 MAR 2011			
Radiographs	FGP COIL 10% TO ASME B31 27 MAR 2011 10% FIRETUBE WELDS			
Other NDE	FIRETUBE: MPI ALL FILLET WELDS 24 MAR 2011			
Stamping	CHECKED 30 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED 30 MAR 2011			
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart FGP	2000PSIG GAGE# K18, K21 29 MAR 2011	MS MAR 29/11		
Hydrostatic Test/Chart FIRE TUBE	15PSIG GAGE# A2, A5 24 MAR 2011	MS MAR 24/11		
Hydrostatic Test/Chart	ATMOSPHERIC 30 MAR 2011	MS MAR 24/11		
Name Plate	31 MAR 2011			

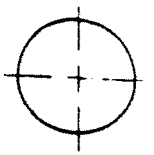
PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-36	0.375"		Repads			
	SA-36	0.250"					
Shell	SA-36	0.250"					
				Tubes			
Tubesheet							

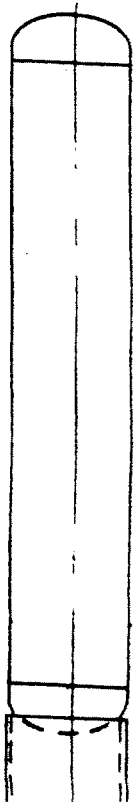
* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

CUSTOMER: HUSKY OIL OPERATIONS
SERIAL No: 2011 8169 05









DATE: APR 20/11 FILLED BY: B.H DRWG. NO:
TYPE OF VESSEL:

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:						
	1"	33,34	1011976	✓	SA 106 B	XH
	12"	48	123664 V	✓	SA 106 B	STD
SHELL:	12"	49	091166	✓	SA 106 B	.250
	4"	83	0814410	✓	SA 106 B	STD
PADS:						
SKIRT:						
SADDLES:						

2011-8169-05

Appendix L
REV. 0
DWG. D-2900
MATERIAL REPORT
ALCO PIPE & OIL PRODUCTION EQUIPMENT LTD.
DOUG 7/8/86
NTS
N
40 105

CONFORMS TO SA 106B
YEAR 2010ED
JOB # 2011-8169-05
ITEM # 33,34
SIGNED BY 25 APR 2011

1" XH

OK

Contract No: 2110001528
P.O.NO CNF10217A
Customer: CHINA INDUSTRIAL METAL CO LTD

HENGYANG VALIN STEEL TUBE CO., LTD

MILL TEST CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

DESCRIPTION: SEAMLESS CARBON STEEL PIPES
TOTAL: 874 PIECES,11 BUNDLES,19.26 MT

Date: JUL 28,2010
Page: 1/1

SPEC: ASTM/ASME SA53/A53-2007,106/SA106-2006,API 5LB/X42-2007,CSA Z245.1 GRADE 290,NACE MR0175-2003/ISO15156.2/NACE MR 0103

CERTIFICATE NO: 2010-02-0701

NO.	BATCH NO	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)	ACTUAL WEIGHT(MT)
1	510661650	1011977	B/X42/290	1"*0.25"*21FT	2	116	2436	3.147	N/A
2	510661665	1011976	B/X42/290	1"*0.179"*21FT	4	455	9555	9.433	N/A
3	510661698	1010763	B/X42/290	3/4"*0.154"*21FT	1	149	3129	2.098	N/A
5	510661658	1010764	B/X42/290	1-1/2"*0.2"*21FT	3	96	2016	3.324	N/A
6	510661699	1011984	B/X42/290	1-1/4"*0.14"*21FT	1	58	1218	1.258	N/A
		Total			11	874	18354	19.26	N/A

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST		TYPE	CHEMICAL COMPOSITION (%)															
		ET	UT		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	Mn/C	CE(IIW)
1	NORMALIZED	OK		P	0.13	0.25	1.06	0.011	0.002	0.06	0.03	0.05	0.02	0.01	0.003	0.0002	0.001	8.15	0.33
				P	0.13	0.25	1.06	0.011	0.002	0.06	0.03	0.05	0.02	0.01	0.003	0.0002	0.001	8.15	0.33
2	NORMALIZED	OK		L	0.17	0.27	1.09	0.015	0.004	0.05	0.02	0.02	0.01	0.01	0.003	0.0001	0.001	6.41	0.36
				P	0.14	0.32	1.06	0.016	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.57	0.33
3	NORMALIZED	OK		P	0.14	0.32	1.05	0.016	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
				L	0.15	0.28	1.13	0.012	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.53	0.35
				P	0.15	0.35	1.14	0.018	0.010	0.08	0.03	0.04	0.01	0.01	0.005	0.0001	0.001	7.60	0.36
5	NORMALIZED	OK		P	0.15	0.34	1.15	0.018	0.010	0.08	0.03	0.04	0.01	0.01	0.003	0.0005	0.001	7.67	0.36
				L	0.14	0.34	1.08	0.015	0.004	0.07	0.03	0.04	0.01	0.01	0.003	0.0005	0.001	7.71	0.34
				P	0.14	0.32	1.05	0.016	0.004	0.08	0.03	0.03	0.01	0.01	0.003	0.0001	0.001	7.50	0.33
6	NORMALIZED	OK		P	0.14	0.31	1.05	0.016	0.004	0.08	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
				L	0.13	0.33	1.1	0.018	0.007	0.08	0.03	0.04	0.01	0.01	0.003	0.0002	0.001	8.46	0.33
				P	0.16	0.3	1.06	0.009	0.001	0.07	0.03	0.02	0.01	0.01	0.003	0.0001	0.001	6.63	0.35
				P	0.16	0.29	1.06	0.009	0.001	0.07	0.03	0.02	0.01	0.01	0.003	0.0001	0.001	6.63	0.35
				L	0.14	0.3	1.13	0.012	0.002	0.06	0.03	0.03	0.01	0.01	0.003	0.0001	0.001	8.07	0.34

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (PSI)	ELONGATION δ (%)	IMPACT			HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi)	FLATTEN TEST	BEND TEST
				SIZE	AK (J)	Ori/Tem				
	full-section ,L,Lo=50mm									
1	73225	50025	45.5	N/A	N/A	N/A	OK	3000	N/A	OK
2	71050	47125	48.5	N/A	N/A	N/A	OK	3000	N/A	OK
3	67425	48575	39.5	N/A	N/A	N/A	OK	3000	N/A	OK
	strip ,L,bo=12.5mm,Lo=50mm									
5	89900	67425	31.5	N/A	N/A	N/A	OK	3000	N/A	OK
6	79025	66700	29.5	N/A	N/A	N/A	OK	3000	N/A	OK

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 EN10204 3.1B.
4 hardness to NACE MR-0175/ISO 15156.2/MR0103.
5. TYPE: P-Product analysis L-Ladle analysis.

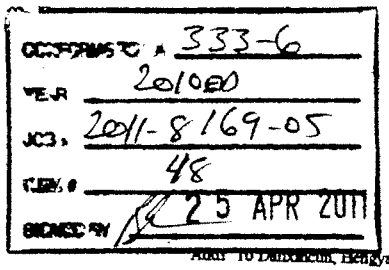
QUALITY MANAGER:

110604

MTR View

https://gpis.nov.com/MTR/gifvi)pr.aspx?docIDs=191619

9/30/2010



12" STD

Contract No.: 2210002084
L/C NO.: 0FAHDS-00887
P.O.NO.: PO.2615057-OR-2100-B (LOT A)
Name of Customer: CE FRANKLIN
DESCRIPTION: SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE.
TOTAL: 98PIECES, 64BUNDLES, 114.248MT, 3922.57FT

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL TEST REPORT

Date: DEC. 21, 2010

Addr: 16 Dahongchun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
P.C. 421001

SPEC.: ASTM A333-6-2005, ASME SA333-6-2007, NACE MR-0175-2005/ISO 15156-2(REGION 3)/MR-0103/3S
(CSA Z245.1 GRADE 290 CATEGORY II)

CERTIFICATE NO: 2010-01-1217-2

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	QUANTITY (MT)	ACTUAL WEIGHT(MT)
10	KY2L20110	1036674V	SA333-6/GR290	12"*0.375"*40FT	20	39	1561.020	35.1	
11	KY3L20060	1036674V	SA333-6/GR290	12"*0.406"*40FT	6	11	440.290	10.692	
12	KY3L20280	1036672V	SA333-6/GR290	12"*0.500"*40FT	11	21	840.550	24.959	
13	KY4019160	1036673V	SA333-6/GR290	12"*0.688"*40FT	27	27	1080.710	43.497	

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
10	HOT-ROLLED	OK	OK	P	0.12	0.27	1.04	0.012	0.0016	0.05	0.02	0.04	0.01	0.0030	0.023	0.0002	0.030	8.67	0.309
				P	0.12	0.26	1.05	0.012	0.0016	0.05	0.02	0.04	0.01	0.0030	0.023	0.0002	0.030	8.75	0.310
				L	0.14	0.19	1.00	0.011	0.0018	0.03	0.02	0.05	0.03	0.0023	0.024	0.0001	0.026	7.14	0.326
11	HOT-ROLLED	OK	OK	P	0.13	0.21	1.05	0.011	0.0013	0.04	0.02	0.06	0.03	0.0023	0.028	0.0001	0.029	8.08	0.327
				P	0.14	0.22	1.08	0.011	0.0013	0.04	0.02	0.06	0.03	0.0023	0.028	0.0001	0.029	7.71	0.342
				L	0.14	0.19	1.00	0.011	0.0018	0.03	0.02	0.05	0.03	0.0023	0.024	0.0001	0.026	7.14	0.326
12	HOT-ROLLED	OK	OK	P	0.12	0.23	1.01	0.009	0.0018	0.07	0.03	0.04	0.01	0.0023	0.025	0.0001	0.025	8.42	0.305
				P	0.12	0.23	1.00	0.009	0.0016	0.07	0.03	0.04	0.01	0.0023	0.025	0.0001	0.025	8.33	0.304
				L	0.14	0.19	1.00	0.011	0.0018	0.03	0.02	0.05	0.03	0.0023	0.024	0.0001	0.025	7.14	0.326
13	HOT-ROLLED	OK	OK	P	0.13	0.26	1.07	0.013	0.0015	0.04	0.02	0.06	0.02	0.0021	0.022	0.0003	0.032	8.23	0.329
				P	0.13	0.25	1.06	0.013	0.0015	0.04	0.02	0.06	0.02	0.0020	0.022	0.0003	0.032	8.15	0.327
				L	0.12	0.25	1.02	0.012	0.0010	0.03	0.02	0.05	0.02	0.0025	0.021	0.0003	0.028	8.5	0.308

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (PSI)	δ (%) ELONGATION	IMPACT TEST				HARDNESS HRC≤22	SHEAR FRACTURE			HYDROSTATIC TEST (PSI)	FLATTEN TEST	BEND TEST	SSC EST	HIC TEST
	strip,L,b₀=12.5mm,L₀=50mm			Ori/Tem (℃)	Dime(mm)	AKV (J)	Average									
10	70325/71050	55825/56550	39.5/39.0	T/-45	10*7.5*55	V8/134.0/120.0/166.0	140	OK	80	75	90	2100	OK	N/A		
11	70325/69600	52925/52200	42.0/43.0	T/-45	10*7.5*55	V8/126.0/190.0/170.0	162	OK	85	87	85	2300	OK	N/A		
12	71050/70325	54375/53650	42.0/40.0	T/-45	10*10*55	V8/170.0/160.0/152.0	161	OK	80	75	70	2500	OK	N/A		
	bar,L,d₀=12.5mm,L₀=50mm															
13	71050/69600	53650/52925	34.0/34.5	T/-45	10*10*55	V8/230.0/222.0/206.0	219	OK	89	88	87	3000	OK	N/A		

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 10204.3.1 AND NACE MR-0175/MR-0103
4. TYPE:P-Product analysis L-Ladle analysis;
5. ORIGIN: MADE IN CHINA
6 *1 =Mn/C

QUALITY MANAGER:

12 STD 4106

OK

V&M VALLOUREC & MANNESMANN TUBES
V & M do BRASIL S.A
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - P.O BOX: 1453

EcoTube

INSPECTION CERTIFICATE (According to EN 10204 / DIN 50049 3.1.B) N°.: 0050284101 A Sheet: 1 / 2

Customer: VALLOUREC TUBES CANADA INC
Customer Order: VM1877
Inspection: V & M do BRASIL S.A.

Country: Canada
Work Order: 209938 / 000010
Customer Material Number:
Material Number: 378542

DIMENSION: 323,90 mm X 9,50 mm GRADE: GR X42 /GRADE 290 /GR B
METALLURGICAL STANDARD: API SPEC 5L 01.03.2004 # PSL 1 # DIMENSIONAL STANDARD: API SPEC 5L 01.03.2004
IN ACCORDANCE ALSO TO THE STANDARDS: CSA-Z245.1 / 2002 # A 106 / 2006 # ASME SA-106 / 2004 #
PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. # AS ROLLED # SUPERFICIAL PROTECTION: LACQUER #
TOLERANCES: OUTSIDE DIAMETER: - 0,800 mm / + 2,400 mm WALL THICKNESS: - 1,188 mm / + 1,425 mm
CUT LENGTH: RANDOM 11.512,00 mm - 12.802,00 mm #
STANDARD MARKING: 202236/10 VMB SL-015&4 MONOGRAMA API "MXUAA" 323,90 X 9,50 X42 /B PSL1 S .. M CSA-Z245.1 290 "ANOMES" SS ASTM A/ASME SA-106 - B 14500 KPA KG
SHIPPING MARKING: MADE IN BRAZIL * VM1877 / P.O # 4879830-00 * EDMONTON VIA HOUSTON

Batch	Heat N.	Inspection Lot	Pieces
000736B235	09166	030001333932	26
000736B405	09167	030001333936	8
000737110I	09242	030001334315	17
TOTAL			51

25220039

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # HYDROSTATIC TEST: 14.500,0 KPA 5 s #
ELECTROMAGNETIC TEST ACCORDING TO CSA Z245.1 #

CHEMICAL COMPOSITION(%)

	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	Sn	V	Nb	B	Ti	Pb	As	Zr	Bi	W	O	N	H	Ca	Zn	Sb	CEq	PB	DI Pcm
Required: Min		0,29			0,10																						CEq according: CSA-Z245.1-CE11		DI according: Unit: Pcm:
Max	0,26	1,20	0,025	0,025	0,50	0,40	0,40	0,15		0,400		0,080	0,110	0,0010	0,040												0,400		
Heat N./ Batch:																													
09166/000736B235	0,11	0,91	0,013	0,002	0,18	0,01	0,05	0,01																					
Check1	0,11	0,91	0,013	0,002	0,18	0,01	0,04	0,01		0,010		0,000	0,024	0,0003	0,001												0,280		
Check2	0,11	0,90	0,013	0,002	0,18	0,01	0,04	0,01		0,014		0,000	0,024	0,0000	0,001												0,273		
09167/000736B405	0,10	0,91	0,011	0,001	0,15	0,01	0,03	0,01		0,015		0,000	0,024	0,0000	0,000												0,272		
Check1	0,10	0,90	0,012	0,001	0,17	0,01	0,03	0,01		0,010		0,000	0,021	0,0000	0,004												0,280		
Check2	0,11	0,90	0,013	0,001	0,18	0,01	0,03	0,01		0,011		0,000	0,020	0,0000	0,001												0,260		
09242/000737110I	0,10	0,92	0,011	0,002	0,17	0,01	0,04	0,02		0,010		0,000	0,021	0,0000	0,000												0,274		
Check1	0,11	0,93	0,011	0,002	0,17	0,01	0,05	0,01		0,007		0,000	0,021	0,0002	0,002												0,218		
Check2	0,11	0,94	0,012	0,002	0,17	0,01	0,05	0,01		0,008		0,000	0,020	0,0003	0,001												0,279		
																											0,281		

CONFORMS TO SA 106-B
YEAR 2010 EV
JOB # 2011-8169-05
ITEM # 49
SIGNED BY 25 APR 2011

12" STD

MAY-28-08 14:08 FROM +7804830528 T-783 P 006/008 F-136

V&M TALLOUREC & MANNESMANN TUBES

EcoTube

INSPECTION CERTIFICATE (According to EN 10204 / DIN 50049 3.1.B) N°.: 0050284101 A Sheet: 2 / 2

MECHANICAL TESTS

Tensile	Area(MM2)	Ys(MPA)	S.Direction: Longitudinal Ts(MPA)	E(%)	Temperature: Room Temperature R.A.0	Gage Length: L0= 2" Ys/Ts
Required: Min.:		290	415	28		
Max.:		495	625			
Heat N./ Batch						
09166 / 0007368235	248,0	532 367	678 468	38		
09167 / 0007368405	248,0	374	464	36		
09242 / 0007371101	270,7	332	473	38		

Hardness	HV
Required: Min.:	
Max.:	
Heat N./ Batch	
09166 / 0007368235	246
09167 / 0007368405	
09242 / 0007371101	160
	152
	141

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175 PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1.
2. "MATERIAL SOUR SERVICE ACCORDING § 16 OF CSAZ245.1.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX:(55-31) 3328-2617

e-mail:jrsilva@vmtubes.com.br

DATE 28.06.2007

DR. JOSÉ ROBERTO SILVEIRA E SILVA - CREA/MG 34.820/D
TECHNICAL RESPONSIBLE

Eco Tubes: The tubes from V&M do BRASIL are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 140.000 ha of forest planted by V&M Florestal. With the acquisition of 48,0 ton(s) of steel tubes from V&M do BRASIL, your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 86,4 ton(s) of Carbon Dioxide CO2 in the atmosphere.

MAY-29-08 14:09 FROM- +7504830528 T-751 P.006/008 F-135

Contract No: 2110000847

HENGYANG VALIN STEEL TUBE CO., LTD
INSPECTION AND TEST CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

OK

Name of Customer: IMEX CANADA INC.
DESCRIPTION: SEAMLESS STEEL PIPE
TOTAL: 2149PIECES, 75 BUNDLES, 153.894MT

Date: DEC 09,2008
Page: 2/2

P.O#9114747-00

SPEC: ASTM A53B-2002/A106B-2002a ,ASME SA53B-2004/SA106B-2004,API 5LB , CSA Z245.1 GR. 290 CAT 1-07 NACE MR-01-75-2004

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	CERTIFICATE NO: 08-03-1206 THEORETICAL WEIGHT (MT)	SKU#
8	98Z100118	0814409	B/290	4" STD BE DRL 2860017	8	75	3000	14.685	2860017
8	98Z200101	0814409	B/290	4" STD BE DRL	2	20	800	3.916	2860017
8	98Z200102	0814410	B/290	4" STD BE DRL	8	80	3200	15.664	2860017
8	98Z200103	0826607	B/290	4" STD BE DRL	10	92	3680	18.014	2860017

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST		CHEMICAL COMPOSITION %													
		E T	U. T	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	CE
8	HOT-ROLLED	OK		0.19	0.42	0.82	0.012	0.004	0.07	0.03	0.03	0.01	0.01	0.005	0.0002	0.001	0.34
8	HOT-ROLLED	OK		0.19	0.42	0.82	0.012	0.004	0.07	0.03	0.03	0.01	0.01	0.005	0.0002	0.001	0.34
8	HOT-ROLLED	OK		0.17	0.47	0.85	0.018	0.005	0.10	0.03	0.03	0.01	0.01	0.005	0.0003	0.001	0.33
8	HOT-ROLLED	OK		0.19	0.47	0.84	0.012	0.006	0.08	0.03	0.04	0.01	0.01	0.005	0.0002	0.001	0.35

NO	σb (PSI) TENSILE STRENGTH strip ,L,bo=25mm,Lo=50mm	σs (PSI) YIELD	δ (%) ELONGATION	Ak (J) IMPACT SIZE	AK	Ori/Tem	HARDNESS	HYDROSTATIC TEST (Psi / 6s)	FLATTEN TEST	BEND TEST
8	74675	50025	40				HB 160	2650	OK	N/A
8	73950	49300	41				HB 158	2650	OK	N/A
8	73225	49300	42.5				HB 155	2650	OK	N/A
8	75400	51475	39				HB 161	2650	OK	N/A

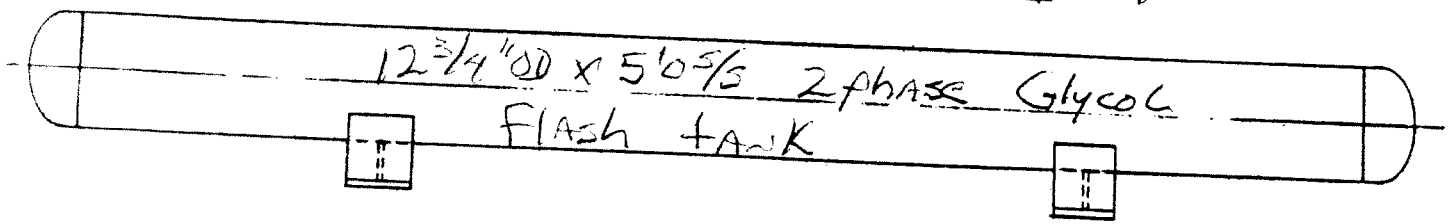
REMARKS: 1. We hereby certify that the material has been manufactured, sampled, tested and inspected in accordance with the required standards.
2. Properties compliance to EN10204 3.1B.
3. BRINELL /Rockwell hardness certified to NACE MR-0175-2004.
4. Origin: Made in China.
5. ALL ELEMENTS TO BE LISTED
6. MATERIALS CONFIRM TO ANSI B36.10

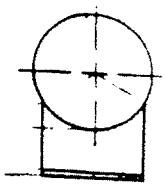
CONFORMS TO QA 106-B
YEAR 2010ED
JOB 2011-8169-05
ITEM # 83
SIGNED BY 25 APR 2011

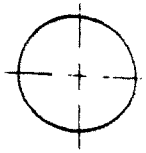
QUALITY MANAGER:

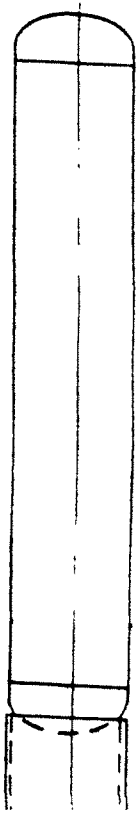
VERIFIED BY
WESTLUND

CUSTOMER: Crescent Point Energy Corp.
SERIAL No: D-2011-8186-07-001









DATE: Apr 19/2011 FILLED BY: Scott DRWG. NO: 8186-07

TYPE OF VESSEL:

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:						
Head	12 3/4 OD	1	1357K	29972	SA516-70	Std
	12 3/4 OD	1	1357K	29962	SA516-70	Std
SHELL:						
Pipe	12 3/4" OD	2	1036674V	✓	SA106B	Std
	1"	9	1011976	✓	SA106B	Sch 80
PADS:						
SKIRT:	12 3/4" OD	3	02-03389	✓	SA53B	.250 WALL
SADDLES:						

8186-07

Appendix L
REV 0
DWG. D-2900
MATERIAL REPORT
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
DOUG 7/8/86
NTS

12"SL10

S J P

INSPECTION CERTIFICATE

TIANJIN SHUANGJIE PIPE MANUFACTURING CO., LTD.
EAST RAILWAY,NORTH YINHE BRIDGE
BEICHEN DISTRICT TIANJIN,300400 P.R.CHINA

CUSTOMER	
CONTRACT NO.	WS2010C/9003
PO NO.	402501
PRODUCT	ERW STEEL PIPE
SPECIFICATION	API 5L B PSL1/ASTM A53 GR.B/CSA G40.21 GR.B
SIZE	12"X0.250"X40'

CERTIFICATE NO.	INV2010WS0015
DATE OF ISSUE	JUN.26TH,2010
API LICENSE NO.:	0615
PAGE	1
QUANTITY	84 PACKAGES
WEIGHT	50904KG

NO.	HEAT NO.	PIECES	CHEMICAL COMPOSITION %												MECHANICAL PROPERTIES							
															BASE METAL				WELD JOINT			
			C	Si	Mn	P	S	Nb	V	Ti	Cu	Cr	Ni	Mo	R_m (MPa)	$R_{t0.5}$ (MPa)	A_f %	CVN (J)	R_m (MPa)	FLATTENING	BENDING	CVN(J)
1	02-03389	83	0.18	0.22	0.41	0.022	0.012	0.003	0.002	0.001	0.010	0.018	0.006	0.001	465	320	37		460	G		
2	02-03391	1	0.19	0.20	0.40	0.012	0.012	0.001	0.002	0.002	0.010	0.018	0.008	0.002	480	320	37		505	G		

CONFORMS TO SA 53 B
YEAR 2010
JOB # 2011-8786-07
ITEM # 3
SIGNED BY 25 APR 2011

VISUAL INSPECTION	DIMENSIONS	HYDROSTATIC TEST	NDT
ACCEPTABLE	ACCEPTABLE	5.7MPa,5s	UT
		ACCEPTABLE	ACCEPTABLE

NOTE

WE HEREBY CERTIFY THAT THE PRODUCTS DESCRIBED HEREIN HAVE BEEN MADE AND TESTED IN ACCORDANCE WITH THE SPECIFICATION.

天津双街钢管制造有限公司
TIANJIN SHUANGJIE PIPE MANUFACTURING CO., LTD.

SIGNATURE

MANAGER OF QUALITY INSPECTION

GENERAL MANAGER

CONFORMS TO SA 106B
YEAR 2010EM
JOB # 2011-8186-07
ITEM # 9
SIGNED BY 25 APR 2011

1" XH

OK

Contract No: 2110001528
P.O.NO CNF10217A
Customer: CHINA INDUSTRIAL METAL CO LTD

HENGYANG VALIN STEEL TUBE CO., LTD

MILL TEST CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
Cable: 6993
P.C. 421001

DESCRIPTION: SEAMLESS CARBON STEEL PIPES
TOTAL: 874 PIECES,11 BUNDLES,19.26 MT
Date: JUL 28,2010
Page: 1/1

SPEC: ASTM/ASME SA53/A53-2007,106/SA106-2006,API 5LB/X42-2007,CSA Z245.1 GRADE 290,NACE MR0175-2003/ISO15156.2/NACE MR 0103

NO.	BATCH NO	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	THEORETICAL WEIGHT(MT)	CERTIFICATE NO: 2010-02-0701 ACTUAL WEIGHT(MT)
1	510661650	1011977	B/X42/290	1"*0.25"*21FT	2	116	2436	3.147	N/A
2	510661665	1011976	B/X42/290	1"*0.179"*21FT	4	455	9555	9.433	N/A
3	510661698	1010763	B/X42/290	3/4"*0.154"*21FT	1	149	3129	2.098	N/A
5	510661658	1010764	B/X42/290	1-1/2"*0.2"*21FT	3	96	2016	3.324	N/A
6	510661699	1011984	B/X42/290	1-1/4"*0.14"*21FT	1	58	1218	1.258	N/A
		Total			11	874	18354	19.26	N/A

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST ET	UT	TYPE	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	Mn/C	CE(IIW)
1	NORMALIZED	OK		P	0.13	0.25	1.06	0.011	0.002	0.06	0.03	0.05	0.02	0.01	0.003	0.0002	0.001	8.15	0.33
				P	0.13	0.25	1.06	0.011	0.002	0.06	0.03	0.05	0.02	0.01	0.003	0.0002	0.001	8.15	0.33
2	NORMALIZED	OK		L	0.17	0.27	1.09	0.015	0.004	0.05	0.02	0.02	0.01	0.01	0.003	0.0001	0.001	6.41	0.36
				P	0.14	0.32	1.06	0.016	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.57	0.33
3	NORMALIZED	OK		P	0.14	0.32	1.05	0.016	0.003	0.06	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
				L	0.15	0.28	1.13	0.012	0.003	0.06	0.03	0.03	0.01	0.01	0.005	0.0001	0.001	7.53	0.35
				P	0.15	0.35	1.14	0.018	0.010	0.08	0.03	0.04	0.01	0.01	0.003	0.0005	0.001	7.60	0.36
5	NORMALIZED	OK		P	0.15	0.34	1.15	0.018	0.010	0.08	0.03	0.04	0.01	0.01	0.003	0.0005	0.001	7.67	0.36
				L	0.14	0.34	1.08	0.015	0.004	0.07	0.03	0.04	0.01	0.01	0.003	0.0001	0.001	7.71	0.34
				P	0.14	0.32	1.05	0.016	0.004	0.08	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
6	NORMALIZED	OK		P	0.14	0.31	1.05	0.016	0.004	0.08	0.03	0.03	0.01	0.01	0.003	0.0002	0.001	7.50	0.33
				L	0.13	0.33	1.1	0.018	0.007	0.08	0.03	0.04	0.01	0.01	0.003	0.0002	0.001	8.46	0.33
				P	0.16	0.3	1.06	0.009	0.001	0.07	0.03	0.02	0.01	0.01	0.003	0.0001	0.001	6.63	0.35
				P	0.16	0.29	1.06	0.009	0.001	0.07	0.03	0.02	0.01	0.01	0.003	0.0001	0.001	6.63	0.35
				L	0.14	0.3	1.13	0.012	0.002	0.06	0.03	0.03	0.01	0.01	0.003	0.0001	0.001	8.07	0.34

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (PSI)	ELONGATION δ (%)	IMPACT SIZE	IMPACT AK (J)	IMPACT Ori/Tem	HARDNESS (HRC ≤22)	HYDROSTATIC TEST (Psi)	FLATTEN TEST	BEND TEST
	full-section L,Lo=50mm									
1	73225	50025	45.5	N/A	N/A	N/A	OK	3000	N/A	OK
2	71050	47125	48.5	N/A	N/A	N/A	OK	3000	N/A	OK
3	67425	48575	39.5	N/A	N/A	N/A	OK	3000	N/A	OK
	strip ,L,bo=12.5mm,Lo=50mm									
5	89900	67425	31.5	N/A	N/A	N/A	OK	3000	N/A	OK
6	79025	66700	29.5	N/A	N/A	N/A	OK	3000	N/A	OK

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 EN10204 3.1B.
4 hardness to NACE MR-0175/ISO 15156.2/MR0103.
5. TYPE: P-Product analysis L-Ladle analysis.

QUALITY MANAGER:

110604

MTR View
9/30/2010
https://gpts.nov.com/MTR/gifvi...pr.aspx?docIDs=191619

[illegible]	333-6
YEAR	2010
JC3:	2011-8186-07
[illegible]	2
[illegible]	25 APR 2011

12" STD

Contract No.: 2210002084
L/C NO.: 0FAHD5-00887
P.O.NO.: PO.2615057-OR-2100-B (LOT A)
Name of Customer: CE FRANKLIN
DESCRIPTION: SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE.
TOTAL: 98PIECES, 64BUNDLES, 114.248MT, 3922.57FT

HENGYANG VALIN STEEL TUBE CO.,LTD

MILL TEST REPORT

Addr: 16 Dahongchun, Hengyang City, Hunan, China
Tel and Fax: +86 734 8873739 8872942
P.C. 421001

Date: DEC. 21, 2010

SPEC.: ASTM A333-6-2005, ASME SA333-6-2007, NACE MR-0175-2005/ISO 15156-2(REGION 3)/MR-0103/3S
(CSA Z245.1 GRADE 290 CATEGORY II)

CERTIFICATE NO: 2010-01-1217-2

NO.	BATCH NO.	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEET	QUANTITY (MT)	ACTUAL WEIGHT(MT)
10	KY2L20110	1036674V	SA333-6/GR290	12"*0.375"*40FT	20	39	1561.020	35.1	
11	KY3L20060	1036674V	SA333-6/GR290	12"*0.406"*40FT	6	11	440.290	10.692	
12	KY3L20280	1036672V	SA333-6/GR290	12"*0.500"*40FT	11	21	840.550	24.959	
13	KY4019160	1036673V	SA333-6/GR290	12"*0.688"*40FT	27	27	1080.710	43.497	

NO.	DELIVERY CONDITION	NONDESTRUCTIVE TEST		TYPE	CHEMICAL COMPOSITION %													
		PIPE BODY EMI	PIPE END MPI		C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	B	Nb	*1	CE
10	HOT-ROLLED	OK	OK	P	0.12	0.27	1.04	0.012	0.0016	0.05	0.02	0.04	0.01	0.0030	0.023	0.0002	0.030	8.67	0.309
				P	0.12	0.26	1.05	0.012	0.0016	0.05	0.02	0.04	0.01	0.0030	0.023	0.0002	0.030	8.75	0.310
				L	0.14	0.19	1.00	0.011	0.0018	0.03	0.02	0.05	0.03	0.0023	0.024	0.0001	0.026	7.14	0.326
11	HOT-ROLLED	OK	OK	P	0.13	0.21	1.05	0.011	0.0013	0.04	0.02	0.06	0.03	0.0023	0.028	0.0001	0.029	8.08	0.327
				P	0.14	0.22	1.08	0.011	0.0013	0.04	0.02	0.06	0.03	0.0023	0.028	0.0001	0.029	7.71	0.342
				L	0.14	0.19	1.00	0.011	0.0018	0.03	0.02	0.05	0.03	0.0023	0.024	0.0001	0.026	7.14	0.326
12	HOT-ROLLED	OK	OK	P	0.12	0.23	1.01	0.009	0.0018	0.07	0.03	0.04	0.01	0.0023	0.025	0.0001	0.025	8.42	0.305
				P	0.12	0.23	1.00	0.009	0.0016	0.07	0.03	0.04	0.01	0.0023	0.025	0.0001	0.025	8.33	0.304
				L	0.14	0.19	1.00	0.011	0.0018	0.03	0.02	0.05	0.03	0.0023	0.024	0.0001	0.025	7.14	0.326
13	HOT-ROLLED	OK	OK	P	0.13	0.26	1.07	0.013	0.0015	0.04	0.02	0.06	0.02	0.0021	0.022	0.0003	0.032	8.23	0.329
				P	0.13	0.25	1.06	0.013	0.0015	0.04	0.02	0.06	0.02	0.0020	0.022	0.0003	0.032	8.15	0.327
				L	0.12	0.25	1.02	0.012	0.0010	0.03	0.02	0.05	0.02	0.0025	0.021	0.0003	0.028	8.5	0.308

NO	TENSILE STRENGTH σb (PSI)	YIELD STRENGTH σs (PSI)	δ (%) ELONGATION	IMPACT TEST				HARDNESS HRC≤22	SHEAR FRACTURE			HYDROSTATIC TEST (PSI)	FLATTEN TEST	BEND TEST	SSC EST	HIC TEST
				Ori/Tem (℃)	Dime(mm)	AKV (J)	Average									
	strip,L,bo=12.5mm,Lo=50mm															
10	70325/71050	55825/56550	39.5/39.0	T/-45	10*7.5*55	V8/134.0/120.0/166.0	140	OK	80	75	90	2100	OK	N/A		
11	70325/69600	52925/52200	42.0/43.0	T/-45	10*7.5*55	V8/126.0/190.0/170.0	162	OK	85	87	85	2300	OK	N/A		
12	71050/70325	54375/53650	42.0/40.0	T/-45	10*10*55	V8/170.0/160.0/152.0	161	OK	80	75	70	2800	OK	N/A		
	bar,L,do=12.5mm,Lo=50mm															
13	71050/69600	53650/52925	34.0/34.5	T/-45	10*10*55	V8/230.0/222.0/206.0	219	OK	89	88	87	3000	OK	N/A		

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 10204.3.1 AND NACE MR-0175/MR-0103
4. TYPE:P-Product analysis L-Ladle analysis;
5. ORIGIN: MADE IN CHINA
6 *1 =Mn/C

QUALITY MANAGER:

HEAT NUMBER : 296A7
TRANS AM PIPING PRODUCTS - REV'D BY:
Shipment/Seq #: S 7 - 1435 24

10" CL 600 W/N FLANGE RF
SCH 80 BORE A105N
(0.594" WT)

CLIENTE / Customer / Client

TRANS AM PIPING PRODUCTS LTD.
233061 ENDEAVOR DRIVE S.E.
CALGARY, ALBERTA T2P 2G6
CANADA

CERTIFICADO DE INSPECCION

Works Certificate - Certificat d'Usine

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA / Date: 04/09/2007
N.º / No.: 116075
HOJA / Page: 1

N.º: SGI 1922164

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

61606

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No / Votre Cde. N.º: PO# CI-07-439

DE / of. - de: 24/07/2007

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-96

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

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASTMA105N-05 / ASME SA105N-05

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier: NACE MR-01-75/03

E = Elec. Y = Oxigeno básico

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

DEPARTAMENTO / Section / Department: QUALITY ASSURANCE

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.ºCoulée	RESISTENCIA / T.Strength / Resist Rupt N/mm2	LIMITE ELAST / Y.Strength / Limite Elast N/mm2	ALARGAM / Elongation / Allongement Lo: 4 d %	ESTRICCION / Red. Area / Striction %	RESILENCIA / Impact test / Resilience Joules	MEDIA / Average / Moyenne	°C	DUREZA / Hardness / Dureté HB
4		WN 6 300LB S40 RF A105N	NE	255A7	521	299	32,70	60,00				151
4		WN 6 300LB S40 RF A105N	NE	273A7	521	310	31,70	58,60				152
6		WN 8 300LB S120 RF A105N	NE	304A7	520	319	32,70	60,60				151
8		WN 10 300LB S160 RF A105N V01 S/CHAF	NE	47A6	512	317	31,70	63,80				148
9		WN 10 600LB S80 RF A105N	NE	296A7	515	318	31,00	58,60				147
12		WN 4 900LB S80 RF A105N	NE	256A7	516	318	31,50	60,30				150
12		WN 4 900LB S80 RF A105N	NE	270A7	519	320	31,70	62,00				150
15		WN 8 1500LB S160 RF A105N V01 S/CHAF	NE	368R5	521	337	34,10	68,30				152
19		SO 8 150LB RF A105N V05 S/AG.CENT.	NE	383A4	520	326	32,00	66,10				152

COMPOSICION QUIMICA - STEEL MARKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º / Heat No / N.ºCoulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	CEQ %
255A7	0.210	0.210	0.860	0.015	0.006	0.080	0.110	0.010	0,000	0.005	0.250	0.396
256A7	0.190	0.250	0.850	0.009	0.002	0.060	0.070	0.020	0,007	0.001	0.240	0.370
270A7	0.200	0.230	0.840	0.009	0.001	0.070	0.080	0.020	0,007	0.001	0.250	0.380
273A7	0.210	0.230	0.870	0.014	0.005	0.090	0.120	0.010	0,000	0.005	0.240	0.400
296A7	0.180	0.240	0.820	0.007	0.003	0.060	0.070	0.010	0,007	0.001	0.220	0.350
304A7	0.190	0.250	0.820	0.011	0.001	0.130	0.120	0.040	0,008	0.001	0.270	0.387
368R5	0.170	0.210	1.130	0.011	0.003	0.110	0.110	0.030	0,007	0.001	0.250	0.411
383A4	0.180	0.250	0.850	0.027	0.005	0.100	0.120	0.030	0,007	0.002	0.330	0.378
47A6	0.190	0.220	0.830	0.014	0.004	0.060	0.080	0.010	0,007	0.002	0.180	0.360

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

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

EL INSPECTOR
Works Inspector - L'Inspecteur

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

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

CONFORMING TO SA 105N
YEAR 2007 ED 096A
JOB # 2010-8154-02
ITEM # 22
SIGNED BY 21 APR 2011 OK

1808925

M.E.G.A.

CERTIFICATO DI COLLAUDO
TEST CERTIFICATE
CERTIFICAT DE CONTROLE

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV ISO 9001

CLIENTE / Customer / Client: CE FRANKLIN LTD.
1900 - 300 - 5th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 3C4

ORDINE / Purchase order / Commande: 2442458-OR-2100

CERTIFICATO n. / Certificate N. / Certificat N.: 569178 FOGLIO / Sheet / Feuille: 5
DATA / Date: 22/03/10
COMMESSA / Job N. / Confirmation de commande: 90958

PROVA Test Epreuve	MATERIALE Material / Matière	COLATA Heat / Coulée	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Al %	CE %
~~KNAB~~	~~ASTM A105/05~~	~~08/76306~~	~~0.185~~	~~0.230~~	~~0.870~~	~~0.009~~	~~0.011~~	~~00.09~~	~~00.05~~	~~0.010~~	~~0.015~~	~~0.120~~	~~0.025~~	~~0.026~~	~~0.366~~
			--->	Nb%= 0.000		B %= 0.000		Sn%= 0.008							CEs= 0.330
KNAA	ASTM A105/05	0746490/07	0.185	0.255	1.050	0.007	0.015	00.11	00.04	0.007	0.000	0.040	0.003	0.028	0.390
			--->	Nb%=0.0023		B %=0.0004									
PBCN	ASTM A105/05	47853	0.140	0.210	0.950	0.002	0.011	00.09	00.04	0.010	0.000	0.050	0.003	0.000	0.324
		KRCF	--->	B %= 0.000											CEs= 0.298
FTAC	ASTM A105N/02	946324	0.200	0.240	0.950	0.003	0.017	00.12	00.11	0.080	0.000	0.200	0.010	0.000	0.420
		NUUD	--->	Nb%= 0.000											CEs=0.3583
PBCD	ASTM A105/05	V02145	0.170	0.210	1.340	0.011	0.017	00.04	00.04	0.014	0.000	0.170	0.000	0.000	0.419
			--->	Nb%= 0.000											CEs= 0.393
BCDX	ASTM A105N/01	62452	0.180	0.210	1.050	0.002	0.014	00.20	00.09	0.030	0.003	0.180	0.002	0.022	0.419
			--->	B %= 0.000		Nb%= 0.001		Ca%=0.0055							CEs= 0.355

PROVA Test Epreuve	PROVETTA Test specimen / Eprouvette		SNERVAMENTO MPa Yield strength Limite d'elasticité	ROTTURA MPa Tensile strength Rupture	ALLUNGAMENTO % Elongation Allongement	CONTRAZIONE % Reduction of area Striction	DUREZZA HB Hardness Dureté	PIEGA Bend test Pliage	SCHIACC. Flatt. test Aplatiss.	RESILIENZA Impact test / Résilience			
	*	SEZIONE Section / Sect.	LUNGHEZZA Length / Longeur							UNITÀ MIS. UM	TIPO Type	T. °C Test temp	VALORE / Value / Données
~~KNAB~~	~~1~~	~~121.3~~	~~50.0~~	~~382.9~~	~~542.7~~	~~28.6~~	~~76.2~~	~~143-146~~			J	KV	0 ~~118-126-134~~
KNAA	1	60.1	35.0	335.7	529.4	29.3	59.4	152-156			J	KV	0 160-142-156
PBCN	1	30.0	25.0	462.8	600.7	28.8	74.8	163-168			J	KV	0 138-152-166
FTAC	1	218.9	50.0	340.0	560.0	37.0	69.2	140-150			J	KV	0 87-86-93
PBCD	1	29.9	25.0	433.5	571.1	32.4	71.3	170-174			J	KV	0 140-156-168
BCDX	1	121.3	50.0	334.0	527.6	29.6	68.7	140-143			J	KV	0 80-70-72

PROVA Test Epreuve	NOTE / Remarks / Notes	EN10204/3.1
~~KNAB~~	~~ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.~~	~~/CERT.39177.RIVA*554450MEGA*~~
KNAA	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.07812.LUCCHINI*550367MEGA*
PBCN	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.23059MU07.V&M.*558761MEGA*
FTAC	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.26767.04 TENARIS*
PBCD	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.09/02/000623.VALCOVNA*558761MEGA*
BCDX	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/46315.01 A.B.S.*209559 MEGA

FORMA / Shape / Forme : 1 = Ø 2 = □

PROVA Test Epreuve	POS. Item Pos	QUANTITÀ Quantity Quantité	CODICE CLIENTE Customer code Code client	DESCRIZIONE / Description / Description		VISUAL AND DIMENSIONAL
~~KNAB~~	~~036~~	~~1500~~	~~1095961~~	~~COUPLING S. 3000 NPT A/SA105N 3/4~~		
KNAA	037	2310	1095347	COUPLING S. 3000 NPT A/SA105N 1	GALVANIZED	OK
PBCN	038	198	1095152	COUPLING S. 3000 NPT A/SA105N 1.1/2		OK
FTAC	041	195	1092630	HALF COUPLING S. 3000 NPT A/SA105N 2		OK
PBCD	041	205	1092630	HALF COUPLING S. 3000 NPT A/SA105N 2		OK
BCDX	042	25	1094088	COUPLING S. 3000 NPT A/SA105N 3/4x1/4		OK

CONFORME TO S: 105N
YEAR 2010 ED
JOB # 2011-8169-05
ITEM # 28
SIGNED BY 14 MAR 2011

NOTE / Remarks / Notes
~~MATERIAL ACCORDING TO~~
NACE MR0175/MR 0103 Ed.2003
AND ASME SA SPECIFICATIONS.

ENTE UFFICIALE DI COLLAUDO / Inspection Authority / Service Inspection Officiel

CAPO COLLAUDO / Chief Inspection Dpt / Responsable assurance qualité

DOC CERT. M.E.G.A.

Heat Number : K49
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment / Seq #: S11 - 1037 38

2" CL 3000 FS SCRD COUPLING
A105N

I.M.L.

INDUSTRIA MECCANICA LIGURE SPA

16030 CASARZA LIGURE - Genova - Italy - Via Giancarlo Farina 25 - Tel.0185.467661 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

TRANS AM PIPING PRODUCTS LTD.

9335 Endeavor Drive S.E.
Calgary Alberta T3S CA1

CA

Certificate Nr 21489 Dated 13.01.2011
Invoice Nr 8 Dated 13.01.2011
Del. Note Nr 11 Dated 13.01.2011

CONFORMS TO SA 105N
YEAR 2010 ED
JOB # 2011-8169-05
ITEM # 29
SIGNED BY [signature] March 3/11

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
K67	77168	007	665	2010-2E201-0001248-0007		FITTING COUPLING THRD NPT 3M 1 1/2" A105N	SEE NOTE	SATISFACTORY
56A	09/75755	006	656	2010-2E201-0001178-0006		FITTING 90 ELB. THRD NPT 3M 3" A350/LF2	SEE NOTE	SATISFACTORY
MN9L	73040	039	656	2010-2E201-0001178-0039		FITTING CAP THRD NPT 3M 3/4" A350/LF2	SEE NOTE	SATISFACTORY
EX7	72147	050	656	2010-2E201-0001178-0050		FITTING 90 ELB. SW 3M 1/2" A350/LF2	SEE NOTE	SATISFACTORY
35T	76229	063	656	2010-2E201-0001178-0063		FITTING TEE SW 3M 2" A350/LF2	SEE NOTE	SATISFACTORY
	75076	063	656	2010-2E201-0001178-0063		FITTING TEE SW 3M 2" A350/LF2	SEE NOTE	SATISFACTORY
9U7	73434	069	656	2010-2E201-0001178-0069		FITTING UNION F/F SW 3M 1.1/2" A350/LF2	SEE NOTE	SATISFACTORY
UX3	74795	069	656	2010-2E201-0001178-0069		FITTING UNION F/F SW 3M 1.1/2" A350/LF2	SEE NOTE	SATISFACTORY
→ K49	73041	008	665	2010-2E201-0001248-0008		FITTING COUPLING THRD NPT 3M 2" A105N	SEE NOTE	SATISFACTORY
MP5	78995	001	665	2010-2E201-0001248-0001		FITTING COUPLING THRD NPT 3M 1/8" A105N	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
K67	77168	007	ASTM A105	0,200	0,250	1,000	0,010	0,009	0,080	0,050	0,010	0,007	0,180	0,001	0,001	0,000	0,029	0,400	
56A	09/75755	006	ASTM A350 LF2 cl 1	0,200	0,210	1,070	0,015	0,012	0,070	0,050	0,010	0,018	0,160	0,022	0,002	0,000	0,026	0,413	
MN9L	73040	039	ASTM A350 LF2 cl 1	0,185	0,190	1,100	0,010	0,010	0,100	0,010	0,010	0,023	0,170	0,002	0,002	0,000	0,027	0,403	
EX7	72147	050	ASTM A350 LF2 cl 1	0,180	0,200	1,170	0,010	0,011	0,080	0,050	0,010	0,020	0,150	0,002	0,002	0,000	0,029	0,407	
35T	76229	063	ASTM A350 LF2 cl 1	0,180	0,240	1,040	0,015	0,015	0,160	0,060	0,010	0,009	0,250	0,001	0,001	0,000	0,031	0,410	
	75076	063	ASTM A350 LF2 cl 1	0,180	0,150	1,020	0,012	0,010	0,150	0,070	0,010	0,021	0,200	0,021	0,000	0,000	0,026	0,404	
9U7	73434	069	ASTM A350 LF2 cl.1	0,185	0,220	1,080	0,009	0,014	0,110	0,060	0,020	0,020	0,200	0,003	0,002	0,000	0,029	0,409	
UX3	74795	069	ASTM A350 LF2 cl 1	0,205	0,210	0,930	0,023	0,015	0,110	0,060	0,010	0,005	0,200	0,001	0,001	0,000	0,023	0,402	
K49	73041	008	ASTM A105	0,190	0,210	1,050	0,010	0,014	0,120	0,060	0,010	0,021	0,190	0,002	0,002	0,000	0,031	0,408	
MP5	78995	001	ASTM A105	0,195	0,190	0,850	0,005	0,018	0,140	0,060	0,010	0,000	0,190	0,002	0,000	0,000	0,005	0,384	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
K67	77168	007	122,65	50,00	321,0	536,0	33,0	52,0	155,0 - 162,0	0,0	0,0	KV	-10	65	61	63	1	0,0
56A	09/75755	006	122,65	50,00	382,0	570,0	30,0	58,0	170,0 - 174,0	0,0	0,0	KV	-46	52	47	47	1	0,0
MN9L	73040	039	122,65	50,00	318,0	526,0	32,0	54,0	160,0 - 164,0	0,0	0,0	KV	-46	51	48	45	1	0,0
EX7	72147	050	122,65	50,00	344,0	531,0	32,3	55,0	161,0 - 168,0	0,0	0,0	KV	-46	51	52	52	1	0,0
35T	76229	063	122,65	50,00	310,0	522,0	33,2	55,6	152,0 - 158,0	0,0	0,0	KV	-46	41	45	47	1	0,0
	75076	063	122,65	50,00	333,0	535,0	31,0	57,0	163,0 - 165,0	0,0	0,0	KV	-46	49	49	52	1	0,0
9U7	73434	069	122,65	50,00	316,0	521,0	32,0	56,0	162,0 - 166,0	0,0	0,0	KV	-46	51	50	49	1	0,0
UX3	74795	069	122,65	50,00	321,0	585,0	32,5	55,0	166,0 - 171,0	0,0	0,0	KV	-46	59	63	64	1	0,0
K49	73041	008	122,65	50,00	320,0	528,0	33,0	56,0	160,0 - 164,0	0,0	0,0	KV	-10	61	60	60	1	0,0
MP5	78995	001	122,65	50,00	314,0	526,0	31,0	57,0	160,0 - 164,0	0,0	0,0	KV	-10	66	70	70	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	ORIGIN	Our Ref.
K67	77168	007	ASME SA ASTM A105-09	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	091066
56A	09/75755	006	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	092069
MN9L	73040	039	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	N10356
EX7	72147	050	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	101152
35T	76229	063	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	081456
	75076	063	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	082146
9U7	73434	069	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	101260
UX3	74795	069	ASME SA ASTM A350-07 Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	EUROPE	071087
K49	73041	008	ASME SA ASTM A105-09	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	101283
MP5	78995	001	ASME SA ASTM A105-09	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	N10137

NOTES ASME B16.11/09 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY	QUALITY CONTROL DEPARTMENT	MANUFACTURER'S SYMBOL	MANUFACTURER'S SYMBOL
	B. FIZZOTTI [signature]	FITTINGS IML	STUDBOLTS

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 18531 125-001

Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.

Purchaser Order No. 123034-12501 P.O 123034

Date: 2010-04-28

Distributor:

Distributor Order No:

OK

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	11	1" X 6" LONG 3000 THRD COUPLING B16.11	A/SA350 LF2	HLZ	1-3/4" RD BAR ASTM A350 GR LF2 CL 1, ASTM A105, ASTM A675 GR 70, ASTM A696 GR C, ASME SA350 GR LF2 CL 1, ASME SA105, ASME SA675 GR 70, ASME SA696 GR C, NACE MR01-75, API 6A SUPPL 6S6 & S1, EN 10204 3.1B
2	4	1" X 6" LONG 3000 THRD COUPLING B16.11	A/SA350 LF2	FMN	1-3/4" RD BAR ASTM A105, A350 GR LF2 CL 1, AND A696 GR C, ASME SA350 CL 1, CONFORMS TO API 6A, NACE MR01-75, DIN/EN 10204 3.1B

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
HLZ	.20	.90	.004	.014	.25	.10	.08	.030	.15	.002	.001	-	.009	.022	.010	.001
FMN	.171	1.069	.007	.017	.177	.117	.114	.030	.180	.020	.000	-	-	.023	-	-

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	HLZ	49,900 PSI	73,100 PSI	35	61	131	47-57-25 @ -50 F. FT/LBS	NORMZE: 1700 F. 105 MIN C.E.: .39
2	FMN	414 N/mm2	538 N/mm2	30	67	153<187	107-101-111 @ -46 C. GRAIN: 7 MICRO ETCH: GOOD	NORMZE:1697 F. 3 HRS A.C. C.E.: .403 ULTRASONIC EXAMINATION: 100% MADE

CONFORMS TO SA 350 - LF2
YEAR 2010 ED
JOB # 2011-8169-05
ITEM # 32, 38, 41
SIGNED BY [illegible] March 3/11

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y. Lee

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8 MEI-CHUNG RD NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL 886-77310527~8
FAX 886-77316887

PURCHASER: SEYBOLD
STANDARD: ASTM A234 WPB-07 / ASME SA234 WPB-04

DATE: 2009 - 05 - 06
ORDER NO: 7000909/0909169
P I NO: 9C01-1
CERTIFI NO: 212

MATERIALS: ASTM A106 Gr B (SEAMLESS PIPE)
INSP SPEC: ASME B16 9 - 03

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO	PRODUCT & SIZE		QUANTITY PCS	MFG NO	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
16	ELL 90 LR 1"	XH		8J3482 (BI)	GOOD	139 - 146	A	*	
17	ELL 90 LR 1 1/2"	STD		8A5832 (BA)	GOOD	140 - 141	A	ACCEPTANCE AS 234 WPB	
18	ELL 90 LR 3"	XH		782360	GOOD	120 - 139	A	YEAR 2010 ED	
19	ELL 90 LR 4"	XH		7G6037	GOOD	137 - 138	A	JOB. 2011 - 8169-05	
20	ELL LR REDAXS"	XH		4G3803	GOOD	139 - 148	N	ITEM # 35	
21	CON-RED 2X1"	XH		9G2122	GOOD	132 - 136	N	SIGNED BY DA March 3/11	
22	CON-RED 3X2"	STD		8J3540	GOOD	145 - 145	N		
23	CON-RED 3X2"	XH		8A3189	GOOD	139 - 144	N		
24	CON-RED 3X2 1/2	STD		8J3440	GOOD	146 - 149	N		
25	CON-RED 4X2"	STD		BI4746	GOOD	147 - 152	N		

ITEM NO	MATERIAL CHARGE NO	CHEMICAL COMPOSITION %											PHYSICAL TEST				
		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y S KSI	T S KSI	E %	C E x100
	STANDARD MIN		10	29	-	-							35 0	60 0		
	MAX	30		135	50	50	40	40	40	15	8	20		95 0		50
16	J5L3662	11	22	134	6	5	3	2	12	1	<1	<1	50 0	69 6	47 0	(36)
17	503032	20	21	53	15	12	12	8	5	1	<1	<1	48 6	71 8	35 0	31
18	Y611-460	20	18	56	10	7	6	1	2	1	<1	<1	49 3	65 3	31 0	30
19	0721837	17	22	65	14	7	7	3	4	2	1	<1	51 5	72 6	30 5	29
20	J3K9303	10	25	129	10	3	3	3	9	1	<1	<1	45 5	69 9	43 5	33
21	0711822	15	21	67	9	5	6	4	2	3	1	<1	47 9	74 0	38 0	28
22	329040	12	19	77	11	2	6	3	3	1	<1	1	44 7	64 0	40 0	26
23	0813289	13	26	69	14	4	11	4	3	1	1	<1	46 4	70 3	36 0	26
24	329040	12	19	77	11	2	6	3	3	1	<1	1	44 7	64 0	40 0	26
25	585246	19	24	49	8	4	10	3	6	3	<1	<1	47 9	72 6	36 0	29

(NOTE) A HOT FORMED WITH FINAL TEMPERATURE BETWEEN 820℃-880℃ AIR COOLING
N NORMALIZING AT TEMPERATURE 880℃/0.5HR AIR COOLING
NACE MR-01-75-03/MSG115156 2 & NACE MR 0103-03 : SATISFACTORY
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

Ou C Lan

MANAGER OF Q A DEPT

1" XH LR 90 BW ELLS A234 WPB

AT NUMBER : 81
ANS AM PIPING PRODUCTS - REV'D BY:
ipment/seq #: S 9 1295 38

:chaser : COMCO PIPE AND SUPPLY COMPANY

INSPECTION CERTIFICATE

TO EN10204 3.1

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

Purchase Order No. P5-201 Job No. A0+119073 D M Y Certificate No.

E1007896 Rev.8 01/08/2008 T - 2008020944

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
MB-203	ASTM A420-08/ASME SA420-04 WPL6 CSA Z245.11 GR.241 CAT.II M45C SS	ASME B16.9-2003	Good	Good

FG. No. (Heat Identification No.)	Product & Size (T:*1)	Quantity	Hardness Actual Data
50N01050	180 EL WPL6 1 XS	15	HB : 115 - 145

Material Manufacturer	Material Heat No.	Chemical Composition%(Note1)		
	J2K8396	TI = 1		

ecifi-ion	Chemical Composition %													*2 Tension Test			Hardness Max 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J)	
	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.		%	10 X 2.5 X 2V AT -45 °C	
lin.		15	50											240	415	30	33	
lax.	30	40	135	35	40	40	40	30	12		80	20	40		655		28	AVE. 29
	11	24	130	15	2	3	3	7	1		0	0	35	46.41 320	67.15 463	49	27	

)RMALIZING 910 C X 0.6 HR. AIR COOLING

te 1) : Specification of TI Composition (%) : Max 11 (TI x 100)

terial according to NACE MR0175/ISO 15156-2-2003 & MR0103-07 The results of the tests and inspections meet the requirements.

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

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

"T" symbolized wall thickness in mm. *2 : YS Yield strength TS = Tensile strength E = Elongation
TZ 6C/2

CONFORMS TO CA 420-02 CL 6
YEAR 2010 ED
... 2011-8169-05
... 36
SIGNED BY March 3/11

Quality Assurance Manager
Thai Benkan Co., Ltd.

PO#: 119072-125-001 Item#: 1 ValueAdd Prod: WF 1 XS 6 CustProd: WF 1 XS LB L6 SO# 444432 Heat# 50N01050

Phone (780) 466-4122
Fax (780) 463-5587

KS Manufacturing Enterprises Ltd.

5203-76 Avenue
Edmonton, Alberta T6B 0A7

MATERIAL TEST REPORT 17587

Purchaser: ALCO GAS OIL PRODUCTION EQUIPMENT LTD.

Purchaser Order No. 121656-125-01

Date: 2009-10-14

Distributor:

Distributor Order No:

Products

Item No.	Qty.	Product	Specification	Heat No	Description
1	50	3/4" X 6" LONG THRD COUPLING B16.11 6000#	A/SA350 LF2	HLZ	1-3/4" RD BAR ASTM A350 GR LF2 CL 1, ASTM A105, ASTM A675 GR 70, ASTM A696 GR C, ASME SA350 GR LF2 CL 1, ASME SA105, ASME SA675 GR 70, ASME SA696 GR C, NACE MR01-75, API 6A SUPPL 6S6 & S1, EN 10204 3.1B
2	50	1/2" X 6" LONG 3000 THRD COUPLING B16.11	A/SA350 LF2	HCJ	1-1/4" RD BAR ASTM A105-95B, A350 GR LF2 CL 1, A696 GR C, ASME SA350 LF2 CL 1, SA105, SA696 GR C, CONFORMES TO API 6A, ULTRASONIC EXAMINATION 100% MADE, NACE MR01-75, EN 10204 3.1B

Chemical Properties

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
HLZ	.20	.90	.004	.014	.25	.10	.08	.030	.15	.002	.001	-	.009	.022	.010	.001
HCJ	.174	1.075	.007	.017	.171	.121	.127	.040	.141	.015	.001	-	-	.021	-	-

Mechanical Properties

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT LB	Remarks
1	HLZ	49,900 PSI	73,100 PSI	35	61	131	47-57-25 @ -50 F. FT/LBS	NORMZE: 1700 F. 105 MIN C.E.: .39
2	HCJ	341 N/mm2	496 N/mm2	33	69	135/143	117-110-119 @ -46 C.JOULE	NORMZE: 1697 F. 3 HRS A.C. C.E.:.407

CONFORMS TO SA 350-LF2 CL1
YEAR 2010 ED
JOB # 2011-8169-08
ITEM # 44
SIGNED BY KA March 3/11

We hereby certify the above results to be correct as contained in the records of the company.

Kwang Y. Lee

S J P

INSPECTION CERTIFICATE

TIANJIN SHUANGJIE PIPE MANUFACTURING CO., LTD.
EAST RAILWAY,NORTH YINHE BRIDGE
BEICHEN DISTRICT TIANJIN,300400 P.R.CHINA

CUSTOMER	
CONTRACT NO.	WS2010C/9003
PO NO.	402501
PRODUCT	ERW STEEL PIPE
SPECIFICATION	API 5L B PSL1/ASTM A53 B/ASME SA53 B
SIZE	12"X0.250"X40'

CERTIFICATE NO.	INV2010WS0015
DATE OF ISSUE	JUN.26TH,2010
API LICENSE NO.:	0615
PAGE	1
QUANTITY	84 PACKAGES
WEIGHT	50904KG

NO.	HEAT NO.	PIECES	CHEMICAL COMPOSITION %												MECHANICAL PROPERTIES							
															BASE METAL				WELD JOINT			
			C	Si	Mn	P	S	Nb	V	Ti	Cu	Cr	Ni	Mo	R_m (MPa)	$R_{t0.5}$ (MPa)	A_f %	CVN (J)	R_m (MPa)	FLATTENING	BENDING	CVN(J)
1	02-03389	83	0.18	0.22	0.41	0.022	0.012	0.003	0.002	0.001	0.010	0.016	0.006	0.001	465	320	37		480	G		
2	02-03391	1	0.19	0.20	0.40	0.012	0.012	0.001	0.002	0.002	0.010	0.018	0.006	0.002	480	320	37		505	G		

CONFORMS TO SA 53 B
YEAR 2010 ED
JOB # 2011-8169-05
ITEM # 49
SIGNED BY March 7/11
12" Sch20

VISUAL INSPECTION	DIMENSIONS	HYDROSTATIC TEST	NDT
ACCEPTABLE	ACCEPTABLE	5.7MPa,5s	UT
		ACCEPTABLE	ACCEPTABLE

NOTE

WE HEREBY CERTIFY THAT THE PRODUCTS DESCRIBED HEREIN HAVE BEEN MADE AND TESTED IN ACCORDANCE WITH THE SPECIFICATION.

天津双街制管有限公司
TIANJIN SHUANGJIE PIPE MANUFACTURING CO., LTD.

SIGNATURE

MANAGER OF QUALITY INSPECTION

GENERAL MANAGER

EXPANSION JOINTS

LORTZ

838610
NOTICE OF SHIPMENT/ PACKING LIST

CLSA240G316L-48W-022-027

ATI Allegheny Ludlum
Allegheny Technologies

832326
CERTIFICATE OF TEST

LORTZ

01/16/22	04/08/10	110977	VANDERGRIFT, PA.	465064	130201020600(09	150 060 150	08/09/..

QTY	SHIP VIA	SHIP WT	REQUEST ORDER	ON DATE	PRI SHIP	MATL	SHIP TO LOCATION	ACCT
			81936-3	26		.237	VANDERGRIFT PA	650677

SOLD TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

PRIME DSO 584 SEC DSO

SHIP TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

(1) 8169-05
(1) 8163-11

PO A125380

GRADE AND SPECIFICATIONS
ALLEGHENY STAINLESS STEEL TYPE 316-L SHEET C R COILS ANNEALED 2B FIN 3 EDGE (AMS 5524L) (AMS 5507F) (ASTM-A 262-10 PRA E/SCREEN PRA A) (ASTM-A 240-10) (ASME-SA-240 07) (UNS S31600) (UPM 316L/316) 11/11/09 EXCEPTIONS UPM 316L/316) (UNS S31603) (S-2000 DATED 1/2/08) (S-400 DTD 10/10/2008) (UPM QRS-001) IF 14, P-17, P-22, P-23, P MASTER) (PWA 300 REV BJ) (CONTROLLED TO PWA LCS REQUIRMENTS) (EN 10028-7:2007-1.4404-2B)

CARRIER GROSS, RONALD, INC.

ITEM	PCS	DIMENSIONS W/G/L	HEAT #	COIL #	TEST #	GROSS	TARE	NET	TREC	TAG #/ CD SKID #
001	1	48./.025/46B8	832325	07090N126	8773145	19740	50	19690		722547
C CUST IDENTITY 11781										
1 SKID						19740	50	19690		

CONFORMS TO SA 240/316L
YEAR 2010-ED
JOB # 2011-8169-05
ITEM # 80
SIGNED BY 1 MAR 2011

UNITED PERFORMANCE METALS
This is to certify that in accordance with the records of the Syndicate of the above named Company

TYPE HEAT/TEST	C	MN	P	S	SI	CR	NI	MO	CU	N
HEAT 832325	.020	1.82	.029	.0002	.41	16.74	10.19	2.09	.37	.05
TEST LOCATION	BN	BN	BN	BN	BN	BN	BN	BN	BN	BN
CHECK 8773145	.020	1.83	.028	.0002	.43	16.70	10.17	2.07	.37	.04
TEST LOCATION	TC	BN	BN	TC	BN	BN	BN	BN	BN	TC

ITEM TEST NO	YIELD PSI *	TENSILE PSI	% ELONG IN 2"	% R/A	HARDNESS	BEND A 262 PR E	CORROSION GRAIN SIZE	HARDENABILITY
001 8773145				NR	65.HR30TW	T PASS	PASS 9.	NR
	T 47700.	95000.	72.		62.HR30TW			
TEST LOCATION	TC	TC	TC		TC	TC	TC	TC

* Y.S. BY 0.2% OFFSET METHOD

ITEM TEST NO	CORROSION ISO 3651-2	MELT SOURCE	T-YIELD 1%	P&W E-25 TRAN BEND
001 8773145	PASS	1.	47300.	2.
TEST LOCATION	TC		TC	TC

PAGE 01 CONTINUED ON PAGE 02

REVIEWED BY Q.C. 8/10/12 BY

08/09/10 09:31:43

Authorized Signature
Lynne Harper

CONSIGNEE ... WARNING ... Tony Mitchell

LORTZ

838610

NOTICE OF SHIPMENT/
PACKING LIST

CLSA240G316L-48W-022-027

ATI Allegheny Ludlum
Allegheny Technologies

832325

CERTIFICATE OF TEST

LORTZ

01014527	06/08/10	10977	VANDERGRIFT, PA	465064	1302016706G0000	30 000 LBS	08/09/10

SLS	1	SPC	SPC	181936	26			
				PRIME	SEC.			
				DSO	DSO			
				584				

SOLD TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

237	VANDERGRIFT	PA	165067

SHIP TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

GRADE AND SPECIFICATIONS
ALLEGHENY STAINLESS STEEL TYPE 316/316L SHEET C R COILS ANNEALED 2B FIN 3 EDGE (AMS 5524L) (AMS 5507F) (ASTM A 262-10 PRA E/SCREEN PRA A) (ASTM-A-240-10) (ASME-SA-240-07) (UNS S31600) (UPM 316L/316) (11/11/08 EXCEPTIONS UPM 316L/316) (UNS S31603) (S-1000 DATED 1/2/08) (S-400 DTD 10/10/2008) (UPM-QRS-001) (P 14, P 17, P 22, P 23, P-MASTER) (PWA 300 REV BJ) (CONTROLLED TO PWA LCS REQUIRMENTS) (EN 10028-7:2007-1.4404-2B) (EN 10028-7:2007-1.4404-2B)

CARRIER GROSS, RONALD, INC.

NR - DATA NOT REQUIRED
METALLOGRAPHIC MAGNIFICATION: 100X ETCHANT USED: OXALIC ACID

GRADE VERIFICATION WAS CARRIED OUT SPECTROSCOPICALLY

AUSTENITIC STAINLESS STEELS ARE SOLUTION ANNEALED AT 1900 DEGREES FAHRENHEIT MINIMUM (1038 C) AND RAPIDLY COOLED WITH AIR AND WATER TO DEVELOP THE SPECIFIED PROPERTIES. EVIDENCE OF CONFORMANCE IS PROVIDED BY THE ABILITY OF THE MATERIAL TO MEET THESE SPECIFIED MECHANICAL AND CORROSION REQUIREMENTS.

ALLEGHENY LUDLUM DOES NOT USE MERCURY IN THE TESTING OR PRODUCTION OF ITS PRODUCTS. TO THE BEST OF ALLEGHENY LUDLUMS KNOWLEDGE, UNDERSTANDING, AND BELIEF, THIS MATERIAL WAS NOT CONTAMINATED BY MERCURY WHILE IT WAS BEING PRODUCED IN OUR FACILITIES.

NO WELDS/WELD REPAIRS PERFORMED.

DIN EN 10204:2005 - 3.1 ALLEGHENY LUDLUM IS APPROVED AS A MANUFACTURER ACCORDING TO AD 2000 MERKBLATT AND THE PRESSURE EQUIPMENT DIRECTIVE PED 97/23/EC

THE NUMERIC CODES SHOWN UNDER MELT SOURCE CAN BE INTERPRETED AS FOLLOWS:
1 - MATERIAL MELTED, ROLLED AND TESTED IN THE UNITED STATES.
2 FOREIGN MELT, ROLLED AND TESTED IN THE UNITED STATES

PAGE 02 CONTINUED ON PAGE 03

06/09/10 09:30:43

CONSUMER ... WARNING ... 724-226-6577 ...

UNITED PERFORMANCE METALS
3475 Symmes Road Hamilton, OH 45015

Authorized Signature
Lynne Harper

LORTZ

838610

NOTICE OF SHIPMENT/
PACKING LIST

CLSA240G316L-48W-022-027

ATI Allegheny Ludlum
Allegheny Technologies

832325

CERTIFICATE OF TEST

LORTZ

0101612	06/25/10	110427	VANDERGRIFT, PA.	465064	1102010206000	30 OF 0 150	08/09/10

SOLD TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

REPEAT ORDER	NO. OF PCS.	PRIME OR SEC.
81936	26	
PRIME	SEC.	
DSO	DSO	
584		

MAT'L			
1237	VANDERGRIFT	PA	650677

SHIP TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

GRADE AND SPECIFICATIONS
CARRIER GROSS, RONALD, INC.
ALLEGHENY STAINLESS STEEL TYPE 316-L SHEET C R COILS ANNEALED 2B FIN 3 EDGE (AMS 5524L) (AMS 5507S) (ASTM A-262-10 PRA B/SCREEN PRA A) (ASTM-A 240-10) (ASME-SA-240-07) (UNS S31600) (UPM 316L/316) (11/1/08 EXCEPTIONS UPM 316L/316) (UNS S31603) (S 1000 DATED 1/2/08) (S-400 DTD 10/10/2008) (UPM QRS-002) (P 14, P-17, P-22, P-23, P-MASTER) (PWA 300 REV BJ) (CONTROLLED TO PWA ICS REQUIRMENTS) (EN 10028-7:2007-1 4401-2B) (EN 10028-7:2007-1.4404-2B)

THIS DIN EN 10204:2005 - 3.1 CERTIFICATE OF TEST SHALL NOT BE REPRODUCED EXCEPT IN FULL. FEDERAL LAW PROHIBITS THE RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THE CERTIFICATE AND MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL LAW. MATERIAL WAS MANUFACTURED IN ACCORDANCE WITH THE ALC QUALITY MANUAL REVISION 19 DATED 06/09/2010. ALC HOLDS SEVERAL QUALITY CERTIFICATIONS THAT INCLUDE ISO-9001 AND AS9100. TESTING WAS PERFORMED AT ALC NADCAP AND ISO/IEC 17025 APPROVED LABORATORIES LOCATED AT THE NATRONA HEIGHTS, BRACKENRIDGE, LATROBE, AND MIDLAND, PA FACILITIES OR AT A NADCAP AND ISO/IEC 17025 ACCREDITED COMMERCIAL LABORATORY.

ATI-ALLEGHENY LUDLUM HOLDS SEVERAL QUALITY AND LABORATORY CERTIFICATIONS THAT INCLUDE ISO-9001:2000, AS9100, AQ 2000-MERKBLATT W0, AND EU PRESSURE EQUIPMENT DIRECTIVE 97/23/EC, NADCAP MATERIALS TESTING, ISO/IEC 17025, GEAE S400, GEAE S-1000. REFER TO WWW.ALLEGHENYLUDLUM.COM TO ACCESS THE CURRENT ATI-AL QUALITY CERTIFICATIONS.

ALLEGHENY LUDLUM WORKS TO THE ROLLS ROYCE RR9000:SABRE REQUIREMENTS.

FLAT NON-WELDED TEST PIECE WAS USED FOR ISO 3651-2 INTERGRANULAR CORROSION TEST. TI SENSITIZATION HEAT TREATMENT WAS PERFORMED ON LOW CARBON AND STABILIZED GRADES.

MATERIAL TESTED AT ALLEGHENY LUDLUM GEAE S400 (DATED 10/31/07) APPROVED FACILITIES (T1225): NATRONA HEIGHTS TECHNICAL CENTER AND BRACKENRIDGE, PA.

PAGE 03 CONTINUED ON PAGE 04

08/09/10 09:30 13

CONFIDENCE ... WARNING ...

UNITED PERFORMANCE METALS
3475 Symmes Road Hamilton OH 45015

Authorized Signature
Lynne Harper

LORTZ

838610

NOTICE OF SHIPMENT/
PACKING LIST

CLSA240G316L-48W-022-027

ATI Allegheny Ludlum
Allegheny Technologies

832325

CERTIFICATE OF TEST

LORTZ

310.6.27	06/08/10	10977	VANDERGRIFT, PA.	465064	10020 020600B 316 060-150		08/09/10
					MAT		
					1237	VANDERGRIFT PA	650677

REPEAT ORDER	DO	DRAWING ONLY
81936	26	

PRIME DSO 584 SEC. DSO

SOLD TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

SHIP TO
UNITED PERFORMANCE METALS
3475 SYMMES ROAD
HAMILTON OH 45015

GRADE AND SPECIFICATIONS

CARRIER GROSS,RONALD,INC.

ALLEGHENY STAINLESS STEEL TYPE 316-L SHEET C R COILS ANNEALED 2B PIN 3 EDGE (AMS 5524L) (AMS 5507F) (ASTM-A-262-10 PRA E/SCREEN PRA A) (ASTM-A-240-10) (ASME-SA-240-07) (UNS S31600) (UPM 316L/316: 12/11/08 EXCEPTIONS UPM 316L/316) (UNS S31603) (S-1000 DATED 1/2/08) (S-400 DTD 10/10/2008) (UPM-QRS 003) (F 14, F-17, F 22, F-23, F-MASTER) (PWA 300 REV BJ) (CONTROLLED TO PWA LCS REQUIRMENTS) (EN 10028-7:2007-1.4404-2B) (EN 10028-7:2007-1.4404-2B)

ALLEGHENY LUDLUM PERFORMS CHEMICAL ANALYSIS BY THE FOLLOWING TECHNIQUES:
C, S BY COMBUSTION/INFRARED
N, O, H BY INERT FUSION/THERMAL CONDUCTIVITY
MN, P, SI, CR, NI, MO, CU, CB, CO, V BY WDXRF
B BY OES
AL AND TI (>=0.10%) BY WDXRF, OTHERWISE BY OES
PB, BI, AG BY GFAA

FINAL MECHANICAL TESTING PERFORMED BY WESTMORELAND MECHANICAL TESTING & RESEARCH, YOUNGSTOWN, PA. (17025: GEAE S400 AND ISO/IEC 17025 APPROVED FACILITY.

TESTING WAS PERFORMED AT THE FOLLOWING LOCATIONS:
BN - ATI ALLEGHENY LUDLUM, 100 RIVER ROAD; BRACKENRIDGE, PA 15014
TC - ATI ALLEGHENY LUDLUM, 1300 PACIFIC AVENUE; NATRONA HEIGHTS, PA 15065

<<<<<<<< FOR ACCESS TO ONLINE CERTIFICATES OF TEST >>>>>>>>
<<<<<<<< REGISTER AT WWW.ALCEXTRA.COM >>>>>>>>

PAGE 04 - FINAL PAGE.

08/09/10 09:30:43

CONSIGNEE

WARNING

UNITED PERFORMANCE METALS
This is to certify that to the best of our knowledge the information contained in this certificate is accurate and complies with the requirements of the contract, except as noted.
3475 Symmes Road Hamilton OH 45015
Authorized Signature
Lynne Harper

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY OIL OPERATIONS	DESCRIPTION: FIRETUBE ONLY 1,000,000 BTU INDIRECT FIRED STABILIZER REBOILER	ALCO JOB NUMBER: 2011-8169-05
DATE: MAR 24 2011	TECHNIQUE # USED: MPT P#1 REV#0	CODE: SECTION VIII DIV 1 EDITION: 2007 ADDENDA: 2009b
MATERIAL: P1	MAT'L THICKNESS: STD	ACCEPTANCE: APPENDIX 6
[X] PRE HEAT TREATMENT	[ ] POST HEAT TREATMENT	[X] POST HYDRO TEST
TEST EQUIPMENT- Y6 YOKE 43530 TAG#128	[ ] BLACK LIGHT -	[ ] B/L METER -
[ ] BLACK ON WHITE CONRAST - MAGNAFLUX	[ ] WCP BATCH #	[ ] 7HF PREPARED BATH #

[X] DRY	[ ] WET	[ ] FLUORESCENT	[X] RED	[ ] GREY	[ ] B/WHITE	[ ] OTHER			
[X] YOKE	[ ] PROD	[ ] COIL	[X] A/C	[ ] D/C	[X] CONTINUOUS	[ ] RESIDUAL			
BASE METAL	[ ] GROUND	[ ] MACHINED		[ ] PAINTED	[ ] SHOT BLASTED	[X] NEW CONDITION			
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC	[X] SHOP LIGHTS	[ ] TROUBLE LIGHT		[X] FLASHLITE	[X] W/L METER S/N 100448				

NOTES: MAGNETIC PARTICLE EXAMINATION OF ALL FITTING WELDS AT COMPLETION OF WELDING.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

ALL FILET WELDS - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN LEVEL III SNT ✓ CGSB

TIME: 1 HR

/ HR

TOTAL COST

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	42" X 22' STABILIZER REBOILER	2011-8169-05
DATE:	TECHNIQUE # USED:	CODE:
MAR 27 2011	RT P#13 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	SCH 80	ACCEPTANCE: 10% RANDOM

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[ ] SINGLE WALL EXPOSURE
[X] DOUBLE WALL EXPOSURE
[ ] SINGLE WALL VIEWING
[X] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJEC
XR1	1" SCH 80	2													✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@	
STRENGTH:	30 Ci			8" FILM	@	
SOD:	2.157"			17" FILM	@	
OFD:	.216"			PIPE	@	
FILM TYPE:	AGFA D4 CLASS 1	1	1" SCH 80	PIPE	@	
FOCAL SPOT SIZE:	.12"			PIPE	@	
				PIPE	@	

COMMENTS: _____ TOTAL EXPOSURES: 2

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

T.H. Consulting Services
109 Grand Meadow Crescent
Edmonton, Alberta T6L 1X1
Telephone: (780) 909-5470
gord@thcs.net

Report - GU3681

ULTRASONIC INSPECTION REPORT

Client Alco Gas & Oil
5203 - 75 St.
Edmonton, Alberta

Page 1-1
Time 11:00 AM
Date Mar 17, 2011
P.O. No.
Job No. 2011-8169-05

Test Method ASME V
Acceptance Criteria ASME VIII DIV 1 APP 12
Object

Procedure UT- General and UT- 8 Rev. 3 **Calibration Standards** ASME 1/2" T 1/16" N **Couplant** Light oil

Instrument Panametrics Epoch 4 S/No. 011031806 **Calibration Due - 12 Dec 2011** **Reference Gain - 56 dB**

☒ Panametrics 12.5 S/N 170279 ☐ Panametrics 25 S/N 665084 ☒ Pana-wedges 45/60/70 ABWM-5T ☐ Other

☐ Panametrics 12.5 S/N 174928 ☐ Panametrics 12.5 S/N 579307 ☐ Panametrics 5x5xD S/N 505065 ☐ Panametrics .25" S/N 97250

☐ DAC Block S/N 22539 thru 22548 ☐ ASME V Block S/N 22608 ☒ IIW Block S/N 11091 ☐ Step Block S/N A03412

Material - P1 **Thickness -** **Temp -** **Surface Condition - Clean / As welded**

Transducer	Frequency	Size	FSH or %	Scan	Range	Cable Type
0	2.25	12.5	80	+6	25	Coaxial BCM6'
60	2.25	12.5	80	+6	125	"
70	2.25	12.5	80	+6	200	"

A better than 10% of the welds On the FireTube were scanned

0° Lamination scan
60° Full and Half skip as available
70° Full and Half skip as available

No relevant indications were found.

CGSB # 11841
Operator Gord Sieben

		St	OT	KM	Client Representative
	ASNT II CGSB II	1			

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-05*

DESCRIPTION: *FIRETUBE*

NAME OF AUTHORIZED INSPECTION AGENCY: *N A*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *15* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *A2 & A5*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

3/24/2011

QC INSPECTOR/ ALCO GAS & OIL **DATE**

3RD PARTY INSPECTOR 3/24/2011 **DATE**

AUTHORIZED INSPECTOR **DATE**

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

CERTIFICATE OF HYDROSTATIC TEST

UNIT SERIAL NUMBER: **2011-8169-05**

PART DESCRIPTION: **INDIRECT FIRED STABILIZER REBOILER**

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS FILLED WITH WATER AND CHECKED FOR LEAKS AND HELD FOR A PERIOD OF **ONE** HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
QUALITY CONTROL INSPECTOR

MARCH 30, 2011
DATE

CUSTOMER REPRESENTATIVE

mar. 30, 11
DATE

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-05*

DESCRIPTION: *FUEL GAS PREHEAT COIL*

NAME OF AUTHORIZED INSPECTION AGENCY: *N/A*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *2000* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *K18 & K21*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

3/29/2011

QC INSPECTOR/ALCO GAS & OIL **DATE**

3/29/11

3RD PARTY INSPECTOR **DATE**

AUTHORIZED INSPECTOR **DATE**

Phase # : 2011-8169-06
Phase Title: Stabilizer Reboiler Process Coil

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports	X	
2. CRN's	X	
3. Nameplate Copy	X	
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT		N/A
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

ABSA
the pressure equipment safety authority

MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2006-02

PARTIAL ☐

A# A6-02817

Manufactured By: ALCO GAS & OIL PRODUCTION EQUIPMENT LTD 5203-75th Street, Edmonton, Alberta

Manufactured For: HUSKY OIL OPERATIONS LTD c/o EXCELSIOR ENGINEERING LTD - 400, 1110 CENTRE STREET NE CALGARY AB T2E 2R2

Ultimate Owner: HUSKY OIL OPERATIONS LTD

Location of Installation: MINEHEAD COMPRESSOR STATION (LSD: 03-06-049-18 W5M)

Manufacturer's Serial No.	Construction Drawing No.	CODE: ASME B31.3				Year Built
2011-8169-06	C-2011-8169-06-001/001 R0	Edition	2008	Addenda		2011

CONSTRUCTION

	Coil ID/Purpose	Design Pressure	Design Temp	Design Minimum Temp	Corrosion Allowance	Registered Drawing No.	CRN
a	PROCESS COIL	400 PSIG	500 F	-20 F	0 0625"	C-2011-8169-06-001/001 R0	V-3991.2
b							
c							
d							
e							

COIL

	Tubes			End Closures				Openings		
				Return Bend		Flanges				
	Mat'l Spec.	Diameter	Thickness	Mat'l Spec.	Thickness	Mat'l Spec.	Rating	Mat'l Spec.	Size/Type	Rating
a	SA-106 Gr.B	NPS 3	0.216"	SA-234 WPB	0.216"	SA-150N	CL300			
b										
c										
d										
e										

HEADERS/MANIFOLDS

	Purpose	Size	Shell		Ends			Openings		
			Mat'l Spec.	Thickness	Mat'l Spec.	Thickness	No	Mat'l Spec	Size/Type	Rating
f	INLET	NPS 6 X 4	SA-106B / SA-234 WPB	0.237" / 0.280"	SA-234 WPB CAP	0.280"		SA-105N CPLG	NPS 1	CL3000
g	OUTLET	NPS 6 X 3	SA-234 WPB	0.216" / 0.280"	SA-234 WPB CAP	0.280"		N/A		

TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

	Hydrostatic Test Pressure	Radiography (100% or % Random)	Other NDE (MT) (PT) (UT)	Postweld Heat Treatment		Overall Length	Heating Surface	Volume
				Temp.	Time			
a	635 PSIG	10%		NONE	N/A	130'-6"	116.6 sq. FT	6.84 cu. FT
b								
c								
d								
e								
f								
g								

IMPACT TESTING: EXEMPT PER FIG 323.2.2A

REMARKS: SAFETY VALVE SUPPLIED BY OTHERS

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date APRIL 1, 2011 Signed _____ For ALCO GAS & OIL PRODUCTION EQUIPMENT LTD

(Representative) (Manufacturer)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, a duly authorized Safety Codes Officer employed by ABSA has inspected the above Heater Coils and state that, to the best of my knowledge and belief, the construction is in accordance with the Alberta Safety Codes Act and Regulations.

Date 04-01-11 Signed _____ NB12897 AB AB245

ABSA
the pressure equipment safety authority

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

March 18, 2011

Attention: Magdi Ghobrial
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD
5203 75 STREET
EDMONTON, AB T6E 5S5

The design submission, tracking number 2011-01089, originally received on February 22, 2011 was surveyed and accepted for registration as follows:

CRN : V3991.2 **Accepted on:** March 18, 2011

Reg Type: New Design

Drawing No. : C-2011-8169-06-001/001 Rev 0

Description	MAWP	Design Temperature	MDMT
Internal Pressure	2758 kPa	260°C	-29°C

The registration is conditional on your compliance with the following notes:

Acceptance is given based on the understanding that the 4" nozzles shall have an outside weld fillet of 0.3" minimum.

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

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3367 or fax (780) 437-7787 or e-mail Onshchenko@absa.ca.

Sincerely,

ONSHCHENKO, TETYANA, P. Eng.

Certified By

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.
*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP
Edmonton, Alberta, Canada

400 psi at 500 °F
Max. Allowable Working Pressure

0 psi at 500 °F
Max. Allowable External Working Pressure

-20 °F at 400 psi
Minimum Design Metal Temperature

2011
Year Built

2011-0159-06
Serial Number

CRN V-3991.2

A No. A60281.7

NAME PROCESS COIL

TAG E-402

HEAD SA234 WPB 0.280 in

C.A. 0.0625 in

SHELL SA106B 0.216 in

HYDRO 634 psi

2011-8169-50

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date 03-04-11

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER : (A) 602817		
HUSKY OIL OPERATIONS LTD	2011-8169-06	DRAWING NUMBER		
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	C-2011-8169-06-001/001		
ITEMS: STABILIZER REBOILER PROCESS COIL NPS 3 X 20'-6"	COMMENTS:	INITIALS HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings	V-3991.2			* 04-04-11
Material Checked Against Drawing Bill of Material	CHECKED 04 MAR 2011			
Mill Test Checked Mill verified 03-04-11	CHECKED 04 MAR 2011			
Impact Test	EXEMPT PER FIG 323.2.2A			
Unit Layout				
Weld Procedure Approved	REVIEWED 18 FEB 2011			
Welder(s) Qualifications	REVIEWED 18 FEB 2011			
Fit-Up: Shell & Heads	TYPE 1 04 MAR 2011			
Nozzles & Fittings	04 MAR 2011			
Internals				
Externals	04 MAR 2011			
Connections: Location	04 MAR 2011			
Rating	CL300 CL3000 04 MAR 2011			
Internal Inspection				*
Internals Installed				
Weld Profile, Sizes & ID	CHECKED 04 MAR 2011			1 03-04-4
Radiographs	10% TO ASME B31.3 03 MAR 2011			* 04-04-11
Other NDE				
Stamping	CHECKED 04 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED 04 MAR 2011			* 03-04-4
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart	635PSIG GAGE# G11, G16 08 MAR 2011			* 03-08-11
MDR	01 APR 2011			* 04-01-11
Name Plate	01 APR 2011			* 04-04-11

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA105N RFWN	0.280"		Repads			
	SA105N RFWN	0.237"					
Shell	SA-106B	0.237"					
	SA-106B	0.216"					
				Tubes			
Tubesheet							

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

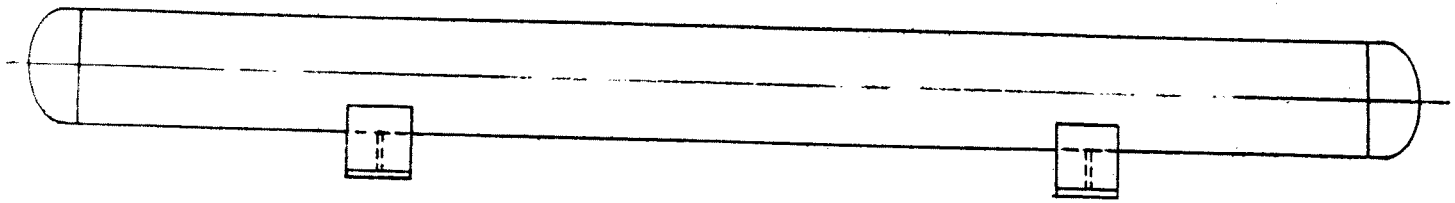
MATERIAL CONTROL & NDE LIST

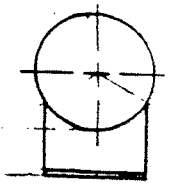
SERIAL NUMBER: 2011-8169-09
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: FEBRUARY 18, 2011

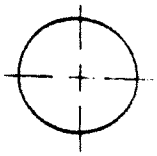
NONDESTRUCTIVE TESTING WHEN REQUIRED

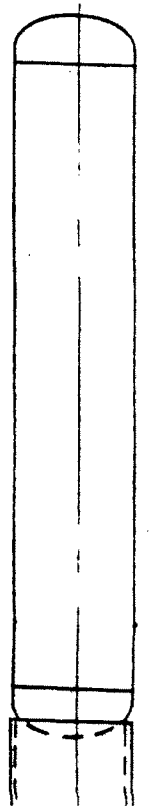
ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT	✓			
#6 RFWN (N1)	NPS 4 CL300 STD	SA-105N	09/36013						
#7 90° LR ELBOW	NPS 4 STD	SA-234 WPB	0010						
#8 CONC RED	NPS 6 X 4 STD	SA-234 WPB	09244-1						
#10 SMLS PIPE	NPS 4 STD	SA-106B	00930909						
#14 RFWN (N2)	NPS 6 CL300 STD	SA-105N	09/35264						
#15 90° SR ELBOW	NPS 6 STD	SA-234 WPB	5673						
#16 RED TEE	NPS 6 X 3 X 6 STD	SA-234 WPB	10K10820						
#17 WELD CAP	NPS 6 STD	SA-234 WPB	0D7334						
#25 SMLS PIPE	NPS 3 STD	SA-106B	208100759						
#26 RETURN BEND	NPS 3 STD	SA-234 WPB	9052						
C1 COUPLING	NPS 1 CL3000	SA-105N	KNAA						

CUSTOMER: HUSKY OIL
SERIAL No: 8169-06









DATE: Feb. 24. 2011 FILLED BY: M. Budd DRWG. NO: 8169-06

TYPE OF VESSEL: REBOILER COIL

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:	4"	10	00930909 ✓		SA-106-B	SCH STD.
	3"	25	208100759 ✓		SA-106-B	SCH STD.
SHELL:						
PADS:						
SKIRT:						
SADDLES:						

8169-06

Appendix L
REV. 0
DWG. D-2900

MATERIAL REPORT

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

N | DOUG 7/8/86 | NTS

40 105

LINE 6

METALFAR
PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Panni, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@farmas.com

PS-001

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001:2008 =

POH 13865

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

GLOBAL GAEL SERVICE LTD
Unit 1E. Block 71. The Plaza Nangor Road
DUBLIN 12 IE

Certif. N. 1678 Del/Dated 27 04 2010
Fattura / Invoice N. 1221 Del/Dated 26 04 2010
DDT / Del Note N. 2273 Del/Dated 26 04 2010
Ns.Ord. / Our ref. N. Del/Dated

COD COL HEAT CODE HEAT: 76682 | COLATA HEAT: 006 | POS ITEM: 006 | VS ORDINE YOUR REFERENCE: 527/FR rev.1 | Q.TA' Q.TY: 45,00 | DESCRIZIONE DESCRIPTION: BLIND 150 RF 10" A105

DIM IN ACC A / DIM ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS / VIS & DIMENS: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C E %	B %
0,190	0,220	1,050	0,014	0,015	0,050	0,070	0,020	0,002	0,170	0,003	0,001	0,000	0,031	0,395	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns Rif OUR REF
126,60	50,80	1	358,0	542,0	31,0	63,0	163,0 - 165,0	KV	20	82	86	84	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD COL HEAT CODE HEAT: → 09/36013 | COLATA HEAT: 078 | VS.ORDINE YOUR REFERENCE: 527/FR rev.1 | Q.TA' Q.TY: 150,00 | DESCRIZIONE DESCRIPTION: W/N 300 RF 4" STD A105

DIM IN ACC A / DIM ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS / VIS & DIMENS: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C E %	B %
0,190	0,200	1,000	0,013	0,016	0,130	0,060	0,020	0,009	0,130	0,000	0,000	0,000	0,005	0,399	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns Rif OUR REF
126,60	50,80	1	343,0	522,0	32,0	60,0	159,0 - 163,0	KV	20	88	88	85	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD COL HEAT CODE HEAT: 09/34665 | COLATA HEAT: 098 | VS.ORDINE YOUR REFERENCE: 527/FR rev.1 | Q.TA' Q.TY: 34,00 | DESCRIZIONE DESCRIPTION: W/N 900 RF 3" XS A105

DIM IN ACC A / DIM ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS / VIS & DIMENS: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C E %	B %
0,185	0,250	0,990	0,015	0,009	0,100	0,060	0,010	0,009	0,130	0,000	0,000	0,000	0,005	0,384	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns Rif OUR REF
126,60	50,80	1	343,0	517,0	32,0	61,0	156,0 - 159,0	KV	20	83	90	89	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

CONFORMS TO SA 105N

YEAR 2010 - ED

NOTE MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156 - SOUR SERVICE
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007 - SOUR SERVICE

JOB 2011-8169-06

ITEM # 6

SIGNED BY 24 FEB 2011 S. Corti

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY

MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL

MFF

P5-a1

P.O.#125182

INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.
17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL:(07)831-9157
FAX:(07)831-2942, 821-7500

Customer: TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS
Spec : ASME SA/ASTM A234 WPB-05a
CSA Z245.11-96 Gr241 CAT.1, NACE MR 0175-03

Certificate No : O9900065-0101
Order No : CI-10-325
Date : 2010/11/25

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASTM A106 GR.B	ASME B16.9-2003	GOOD	GOOD

Item	Description	Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO
6	90 E L/R STD SEAMLESS	4	0010	310010	BAOSHAN	1008110001300
8	90 E L/R STD SEAMLESS	8	A266	310266	BAOSHAN	1008110001400
9	90 E L/R STD SEAMLESS	10	B320	004320	TIANJIN	10080911
15	45 E L/R STD SEAMLESS	3	9052	309052	BAOSHAN	1006280005600

Specification	Chemical Composition %												Tension Test			HARDNESS TEST	Heat Treatment	Magnetic Particle Exam	Remark
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	V ×1000	Nb ×1000	C.E. ×100	Y.S P.S.I	T.S P.S.I	E %	HB			
MIN		10	29										35000	60000	30				
MAX	30		106	50	58	40	40	40	15	80	20	50		95000		197			
6	19	23	54	8	5	5	3	3	1	<1	<1	28	41499	66300	34	138	620°C TO 980°C HOT FORMED		[DIN 50049/3.1B] EN10204 3.1
8	18	22	56	9	10	4	3	5	1	<1	<1	28	48463	69400	40	136			
9	16	24	95	13	6	7	3	3	1	10	2	33	45707	73300	40	134			
15	18	24	55	7	1	11	5	7	1	<1	<1	29	43820	69213	33	138			

234 WPB
2010-ED
2011-S169-06
7
24 FEB 2011

C.E.=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of above specifications and purchaser's order.

L.S.Tsai

Chief of Quality Assurance Section

4" STD LR 90 BW ELBOW A234-WPB

P.O.# 125182 Item# 2
Heat Number: 0010
Trans Am Piping Products Ltd - Rev'd By: SB
Shipment/Seq #: S10-1619

(1) 8169-06

PO #125494

6X4 STD BW CONC REDUCER A234-WPB

P.O./Seq #: EL-10-13495 - 1 - Rev'd By: CJ
Trans Am Piping Products Ltd.
Heat Number: 09244-1
P.O.# 125494 Item# 4

INSPECTION CERTIFICATE

AWAJI MATERIA (THAILAND) CO.,LTD.

81,MOO4, PRAKASA ROAD, TAMBOL BANGMUANG, AMPHUR MUANG
SAMUTPRAKARN THAILAND 10270, Tel : (662)701-5226

MADE FROM SEAMLESS STEEL PIPE

Purchaser : ALLIED FITTING CANADA

Date : OCTOBER 5, 2010

Certificate No. T10-X394

Order No.	Job No.	Product	Raw Material Pipe Maker
42B10AAW/WPB/5	-	CARBON STEEL BUTT WELDING FITTINGS	SUMITOMO METAL INDUSTRIES, LTD.

Inspection Standard	Material Standard						
ASME B16.9-07 ASTM A960-08a NACE MR-0175-03, MR 0103-05	ASTM A234-07 WPB ASME SA234-07 WPB except nuclear usage CSA Z245.11-09, GR.241 CAT.I	Appearance	GOOD	Dimension	GOOD		*3

Manufacturing No.	Product code	Material	Article & Size	Quantity	Note.
09244-1		WPB	STD REDUCERS CONCENTRIC 6" x 4"	100 Pcs.	"ALL FITTING MANUFACTURED BY AWAJI MATERIA (THAILAND) CO.,LTD. ARE PRODUCED FROM A106 GR.B SEAMLESS PIPE"

	Chemical Composition (%)																	*1 Mechanical Test			Hardness
Specification	C	Si	*2Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	N	Al	C.E.	Y.S.	T.S.	E	
Min.	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X100	X100	X100	X10000	X10000	X1000	X1000	X100	MPa		%	HB
Max.	-	10	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	415	27	-
Pipe Charge No.	30	-	106	50	58	40	40	40	15	8	2	2	5	65	8	-	-	-	655	-	197
J0L6763	21	22	68	13	5	1	2	3	1	0	0	0	1	10	4	20	34	318	474	39.4	135

$$C.E. = C + \frac{Mn}{8} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

Inspection Certificate : ACCORDING TO EN 10204. 3.1 : 2004

ISO 9001: 2008 Manufacturing Company
Certified by BV. Certificate No. TH10000101

*1 Y.S.= Yield Strength, T.S. = Tensile Strength, E = Elongation,

*3 UT = Ultrasonic thickness inspection,

*2 For each reduction of 0.01% below the specified carbon(C) Maximum, an increase of 0.06% manganese(Mn) above specified maximum will be permitted, up to a maximum of 1.35% as per foot note D of ASTM A234/A234M-07 Table 1.

ELBOW / Forming temperature 780℃ – 930℃ and cooled in still air

TEE, REDUCER & CAP / Normalizing : 900℃

"We hereby certify that the material described herein has been duly inspected and conforms to the standard as specified above.

AT-24(2)12

Surveyor to

Chief of Inspection Section S.MAEKAWA

CONFORMS TO SA 234-WPB
YEAR 2010 ED
JOB # 2011-8169-06
ITEM # 8
SIGNED BY 24 FEB 2011

P.O.# 121797 Job# 125-01 Item# 1
Heat Number: 00930909
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S9 - 1459 - 1

4" STD SEAMLESS STEEL PIPE
A106 GR B B.E. D.R.L.

CONFORMS TO SA 106B
YEAR 2010 ED
JOB # 2011-8169-06
ITEM # 10
SIGNED BY 04 MAR 2011

4" STD

OK

YANTAI LUBAO STEEL PIPE CO., LTD. MILL TEST CERTIFICATE

NO. 185 XINGFU MIDDLE ROAD, YANTAI, CHINA
TEL: 0086 535-6843940/6854750 FAX: (0535)6842245
HTTP://WWW.LUBAOSTEEL-TUBE.COM

(EN10204 3.1)

PURCHASER	TRANS AM PIPING PRODUCTS LTD.	DESCRIPTION OF GOODS	PIPE
DIMENSION STANDARD	ASME B36.10	CUSTOMER'S NO.	L00109 / CERTIFICATE NO: NGTYG0907280012600
MATERIAL SPECIFICATION	ASTM A106-B-2006, ASME SA106-B-2007, API 5L B-2007 CSA Z245.1-2007 Gr.241 Cat. I NACE MR0175-2003/ISO 15156	DATE OF DELIVERY	20090728 / SUB_CONTRACT NO.: G9C6913105
		P.O.NO.:	CL09-5.6 / DATE OF ISSUE: 20090728
		STAMP OF MILL INSPECTOR	LICENSE NO.

O.D. 114.3mm 4" STD W.T. 6.02mm Length 11-11.8M Total Length

Total Pieces Total Weight Delivery Condition As-Rolled Total Bundles Order Quantity Making Method Hot Finished Seamless

Chemical Composition

No.	Heat No.	* 1 * 2	C	Si	Mn	P	S	Cu	Ni	Cr	V	Mo	Ti	B	Nb	CE	Lot No.
	MIN		0	0.1	0.29	0	0	0	0	0	0	0	0	0	0		
	MAX		0.22	9.9	1.06	0.035	0.035	0.10	0.40	0.40	0.08	0.15	0.01	0.001	0.01		
	00930909	H	0.2	0.26	0.61	0.010	0.005	0.13	0.05	0.05	0.01	0.01	0	0	0.001	0.34	9207217

Tensile Test G.L.=4d

* 3	* 4	* 5	Y.S.	T.S.	E.L.	EXT.
			Mpa		%	
			240	415	22.0	
			999	999		
P	1	2	305	485	28.0	
P	1	2	315	505	28.5	

Impact Test

* 3	* 4	* 5	* 6	* 7	1	2	3	AVG

Hardness Brinell (HB)	Pieces	Weight MT
161 165	228	42.757

U.T.	P.M.T	U.T.	M.P.I.	Visual & Dimensions	Coating	Drift Test	Hydrostatic Pressure
—	GOOD	—	—	Good	Good	—	15.50MPa
Expansion	Ring Expansion	Ring Tensile	Flattening	Bending	Flanging	SSCC	Macrostructure
—	—	—	Good	—	—	—	Heat Treatment

Burst on end Time			
5s			

NOTES: 2* Chemical Composition H:Heat (Ladle) Analysis 3* P= Pipe Body;4* 1=Longtudinal 5* 2=Script T×20mm, G.L.=Gauge Length L1=S.65SQRT(FC)

Remark: *** L/C NO. LPCHCV925905

SURVEYOR: WE HERE CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF ABOVE SPECIFICATIONS AND PURCHASE ORDER, AND MET THE REQUIREMENTS.

CHIEF OF QUALITY CONTROL DEPT.

(1) 8169-06

Po # 125494

6" CL 300 W/N FLANGE RF STD
BORE A105N

P.O.# 125494 Item# 5
Heat Number: 09/35264
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1300

METALFAR
PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23891 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655544
Fax +39 031.655149
quality.mf@farmas.com

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 2618 Del/Dated 23.06.2010
Fattura / Invoice N. 1878 Del/Dated 23.06.2010
DDT / Del Note N. 3470 Del/Dated 23.06.2010
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM.IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS. VIS. & DIMENS.
09/35264	022	CI-10-293		W/N 300 RF 6" STD A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,195	0,250	0,980	0,015	0,016	0,160	0,050	0,040	0,006	0,160	0,001	0,001	0,000	0,007	0,413

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif OUR REF.
126,60	50,80	1	345,0	524,0	32,0	59,0	159,0 - 163,0	KV	20	86	90	83	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM.IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS. VIS. & DIMENS.
09/35264	022	CI-10-293		W/N 300 RF 6" STD A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,195	0,250	0,980	0,015	0,016	0,160	0,050	0,040	0,006	0,160	0,001	0,001	0,000	0,007	0,413

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif OUR REF.
126,60	50,80	1	345,0	524,0	32,0	59,0	159,0 - 163,0	KV	20	86	90	83	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM	VS.ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM.IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS. VIS. & DIMENS.
09/35264	022	CI-10-293	88,00	W/N 300 RF 6" STD A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,195	0,250	0,980	0,015	0,016	0,160	0,050	0,040	0,006	0,160	0,001	0,001	0,000	0,007	0,413

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif OUR REF.
126,60	50,80	1	345,0	524,0	32,0	59,0	159,0 - 163,0	KV	20	86	90	83	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

NOTE MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
NOTES

CONFORMS TO SA 105N
YEAR 2010-ED
JOB # 2011-8169-06
ITEM # 14
SIGNED BY 24 FEB 2011

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
S. Corti		MFF

P.O.# 125494 Job# 8169-06 Item# 1
Heat Number: 5673
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment / Seq #: S 10 - 1619 - 96

6" STD SR 90 BW ELLS A234-WPB

D 8169-06

A04125494

INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.

17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL:(07)831-9157
FAX:(07)831-2942, 821-7500

Customer: TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS
Spec : ASME SA/ASTM A234 WPB-05a
CSA Z245.11-96 Gr241 CAT.1, NACE MR 0175-03

Certificate No : O9900065-0103
Order No : CI-10-325
Date : 2010/11/26

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASTM A106 GR.B	ASME B16.9-2003	GOOD	GOOD

Item	Description		Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.
38	90 E S/R STD SEAMLESS	6		5673	J8L5673	SUMITOMO	BYYK3201
40	90 E S/R STD SEAMLESS	14		A459	J9K1459	SUMITOMO	WYYK1741
41	90 E S/R STD SEAMLESS	16		0815	J9K0815	SUMITOMO	WYYK1740
42	180 E L/R STD SEAMLESS	1 1/4		125A	J9L2125	SUMITOMO	BYYM2052
45	180 E S/R STD SEAMLESS	3		174A	J8L1174	SUMITOMO	BYYK3224

Specification	Chemical Composition %												Tension Test			HARDNESS TEST	Heat Treatment	Magnetic Particle Exam.	Remark
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	Y.S	T.S	E				
	×100	×100	×100	×1000	×1000	×100	×100	×100	×100	×1000	×1000	×100	P.S.I	P.S.I	%	HB			
MIN		10	29										35000	60000	30				
MAX	30		106	50	58	40	40	40	15	80	20	50		95000		197			
38	12	19	81	11	6	10	4	3	1	0	0	25	40400	62600	40	135	620°C TO 980°C		[DIN 50049/3.1B]
40	19	25	68	15	7	8	3	2	1	0	0	30	41400	69600	45	135	HOT FORMED		EN10204 3.1
41	17	26	94	9	3	9	3	8	5	0	0	34	46400	74000	43	134			
42	19	25	43	16	9	2	5	1	0	0	0	26	41400	65300	40	138			
45	21	29	52	17	9	2	1	1	1	0	0	29	43400	70000	40	142			

C.E.=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of above specifications and purchaser's order.

CONFORMS TO SA 234-WPB
YEAR 2010-09
JOB # 2011-8169-06
ITEM # 1K
SIGNED BY 2 MAR 2011

L. S. Tsai

Chief of Quality Assurance Section

(6) 8169-06

P O # 125494

INSPECTION CERTIFICATE

TO EN10204 3.1

Purchaser: TRANS-AM PIPING PRODUCTS LTD.

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

E-No.	Purchase Order No.	Job No.	D M Y	Certificate No.
MC-092	CI-10-322		27/12/2010	T- 2010330943

No.		MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe: ASTM A234-10/ASME SA234-07 Gr.WPB, CSA Z245.11 Gr.241 CAT I NACE MR0175/ISO 15156-2 : 2003	Specification for Inspection: ASME B16.9-2007	Visual Examination	Dimensional Inspection
			Product & Size (T.*1)	Quantity / Heat Treatment (Note 1)	Good	Good
					Hardness Actual Data	
1		10M10880	T WPB 6 S40	N	HB : 120 - 150	
2		10N10815	T WPB 6 S40	N	HB : 120 - 150	
3		10N10821	T WPB 10 S40	N	HB : 120 - 150	
4		10N10822	T WPB 10 S40	N	HB : 120 - 150	
5		10K10820	T WPB 6 X 3 S40	N	HB : 120 - 140	

CONFORMS TO SA 234-WPB
YEAR 2010 ED
JOB # 2011-8169-06
ITEM # 16
SIGNED BY 24 FEB 2011

Specification		Chemical Composition %												Tension Test *2			
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
Min.		x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 100	x 100	x 1000	x 1000	x 100	MPa.		%	HARDNESS MAX
Max.			10	29										240	415	30	197 HB : GOOD
Material Heat No.		30		106	50	58	40	40	40	15	80	20			585		RAW MATERIAL SUPPLIER
1	1-81185	19	23	84	15	3	<1	1	3	<1	<1	<1	34	286	478	39	JFE Steel Corp.
2	J9KA913	18	17	84	17	4	1	2	7	2	0	0	34	323	470	41	Sumitomo Metal industries, Ltd.
3	1-81185	19	23	84	15	3	<1	1	3	<1	<1	<1	34	306	486	41	JFE Steel Corp.
4	1-81185	19	23	84	15	3	<1	1	3	<1	<1	<1	34	286	478	39	JFE Steel Corp.
5	15683K	17	21	70	11	4	6	2	4	0.5	<3	<3	30	300	417	41	ArcelorMittal

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S : Stress Relieving 675° Cx0.5 HR. Air Cooling

The fittings was manufactured,sampled,tested,and inspected in accordance with the specification,and was found to meet the requirements.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY : GOOD

ORIGINAL

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.

Quality Assurance Manager
Thai Benkan Co., Ltd.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form TZ-6A/2

P.O.# 125494 Item# 7
Heat Number: 10K10820
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1725 6

6 X 3 STD BW RED TEE A234-WPB

6" STD BW CAPS A234-WPB

Rev'd By: SB
Item# 20
Products Ltd. - 18
S10 - 1532

PURCHASER : SEYBOLD 125-001

STANDARD : ASTM A234 WPB-07
ASME SA234 WPB-04
PO# D4834

MATERIALS : JIS G3103 SB410/ASTM A515 Gr.65

INSP. SPEC. : ASME B16.9 - 03

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8, MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

ACCORDING TO EN10204/DIN50049/3.1

DATE: 2010 - 10 - 14

ORDER NO: 7002875/CI10320

P.I. NO: 0G01-1

CERTIFI. NO: 424

ITEM NO	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
21	CAP 6" STD		0D7334 ←	GOOD	141 — 145	N	QC FORMS # : 234 WPB YEAR 2010-EN JOB : 2011-8169-06 ITEM # 17 SIGNED BY 24 FEB 2011	

ITEM NO	MATERIAL CHARGE NO.		CHEMICAL COMPOSITION %											PHYSICAL TEST			
			C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y.S	T.S	E	C.E
	STANDARD	MIN		10	29									KSI	KSI	%	X100
		MAX	30		135	50	58	40	40	40	15	8	20	35.0	60.0		
21	1T234		21	25	80	21	4	1	1	3	1	<1	<1	41.7	64.3	34.8	34
															95.0		50

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620℃-980℃,AIR COOLING
N: NORMALIZING AT TEMPERATURE 880℃X0.5HR,AIR COOLING
NACE MR-01-75-03/ISO15156.2 & NACE MR 0103-03 : SATISFACTORY

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.

Ou C Lan

MANAGER OF Q.A. DEPT

1808925

M.E.G.A.

CERTIFICATO DI COLLAUDO
TEST CERTIFICATE
CERTIFICAT DE CONTROLE

COMPLIANT WITH QUALITY SYSTEM CERTIFIED BY DNV ISO 9001

CLIENTE / Customer / Client: CE FRANKLIN LTD.
1900 - 300 - 5th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 3C4

ORDINE / Purchase order / Commande: 2442458-OR-2100

CERTIFICATO n. / Certificate N / Certificat N: 569178 FOGLIO / Sheet / Feuille: 5
DATA / Date: 22/03/10
COMMESSA / Job N / Confirmation de commande: 90958

PROVA Test Epreuve	MATERIALE Material / Matière	COLATA Heat / Coulée	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Al %	CE
~~KWAB~~	~~ASTM A105/05~~	~~08/76306~~	~~0.185~~	~~0.230~~	~~0.870~~	~~0.009~~	~~0.011~~	~~00.09~~	~~00.05~~	~~0.010~~	~~0.015~~	~~0.120~~	~~0.025~~	~~0.026~~	~~0.366~~
			~~--->~~	~~Nb%=~~	~~0.000~~	~~B %=~~	~~0.000~~	~~Sn%=~~	~~0.008~~						~~CEs=~~ ~~0.330~~
KNAA	ASTM A105/05	0746490/07	0.185	0.255	1.050	0.007	0.015	00.11	00.04	0.007	0.000	0.040	0.003	0.028	0.390
			--->	Nb%=	0.0023	B %=	0.0004								
PBCN	ASTM A105/05	47853	0.140	0.210	0.950	0.002	0.011	00.09	00.04	0.010	0.000	0.050	0.003	0.000	0.324
		KRCF	--->	B %=	0.000										CEs= 0.298
FTAC	ASTM A105N/02	946324	0.200	0.240	0.950	0.003	0.017	00.12	00.11	0.080	0.000	0.200	0.010	0.000	0.420
		NUUO	--->	Nb%=	0.000										CEs=0.3583
PBCD	ASTN A105/05	V02145	0.170	0.210	1.340	0.011	0.017	00.04	00.04	0.014	0.000	0.170	0.000	0.000	0.419
			--->	Nb%=	0.000										CEs= 0.393
BCDX	ASTM A105N/01	62452	0.180	0.210	1.050	0.002	0.014	00.20	00.09	0.030	0.003	0.180	0.002	0.022	0.419
			--->	B %=	0.000	Nb%=	0.001	Ca%=	0.0055						CEs= 0.355

PROVA Test Epreuve	PROVETTA Test specimen / Eprouvette		SNERVAMENTO MPa ≥ Yield strength Limite d'elasticité	ROTTURA MPa ≥ Tensile strength Rupture	ALLUNGAMENTO % ≥ Elongation Allongement	CONTRAZIONE % ≥ Reduction of area Striction	DUREZZA HB Hardness Dureté	PIEGA Bend test Pliage	SCHIACC. Flatt. test Aplatissa	RESILIENZA Impact test / Résilience			
	SEZIONE Section / Sect.	LUNGHEZZA Length / Longeur								UNITÀ MISURA UM	TIPO Type	T. °C Test temp	VALORE / Value / Données
~~KWAB~~	~~1 121.3~~	~~50.0~~	~~382.9~~	~~542.7~~	~~28.6~~	~~76.2~~	~~143-146~~			J	KV	0	~~118-126-134~~
KNAA	1 60.1	35.0	335.7	529.4	29.3	59.4	152-156			J	KV	0	160-142-156
PBCN	1 30.0	25.0	462.8	600.7	28.8	74.8	163-168			J	KV	0	138-152-166
FTAC	1 218.9	50.0	340.0	560.0	37.0	69.2	140-150			J	KV	0	87-86-93
PBCD	1 29.9	25.0	433.5	571.1	32.4	71.3	170-174			J	KV	0	140-156-168
BCDX	1 121.3	50.0	334.0	527.6	29.6	68.7	140-143			J	KV	0	80-70-72

PROVA Test Epreuve	NOTE / Remarks / Notes	EN10204/3.1
~~KWAB~~	~~ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.~~	~~/CERT.39177.RIVA*554450MEGA*~~
KNAA	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.07812.LUCCHINI*550367MEGA*
PBCN	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.23059Mu07.V&M.*558761MEGA*
FTAC	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.26767.04 TENARIS*
PBCD	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/CERT.09/02/000623.VALCOVNA*558761MEGA*
BCDX	ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	/46315.01 A.B.S.*209559 MEGA

FORMA / Shape / Forme: 1 = Ø 2 = □

PROVA Test Epreuve	POS. Item Pos.	QUANTITÀ Quantity Quantité	CODICE CLIENTE Customer code Code client	DESCRIZIONE / Description / Description		VISUAL AND DIMENSIONAL
~~KWAB~~	~~036~~	~~1500~~	~~1095961~~	~~COUPLING S. 3000 NPT A/SA105N 3/4~~		
KNAA	037	2310	1095347	COUPLING S. 3000 NPT A/SA105N 1	GALVANIZED	OK
PBCN	038	198	1095152	COUPLING S. 3000 NPT A/SA105N 1.1/2		OK
FTAC	041	195	1092630	HALF COUPLING S. 3000 NPT A/SA105N 2		OK
PBCD	041	205	1092630	HALF COUPLING S. 3000 NPT A/SA105N 2		OK
BCDX	042	25	1094088	COUPLING S. 3000 NPT A/SA105N 3/4x1/4		OK

CONFORME TO S/ 105N
YEAR 2010-ED
JOB # 2011-8169-06
ITEM # 20
SIGNED BY 24 FEB 2011

NOTE / Remarks / Notes:
MATERIAL ACCORDING TO
NACE MR0175/MR 0103 Ed.2003
AND ASME SA SPECIFICATIONS.

ENTE UFFICIALE DI COLLAUDO / Inspection Authority / Service Inspection Officiel

CAPO COLLAUDO / Chief Inspection Dpt / Responsable assurance qualité

DOC / CERT. M.E.G.A.

WUXI FASTUBE DINGYUAN PRECISION STEEL PIPE CO.,LTD

Add: Qianqiao Industrial Area, Wux City, Jiangsu Province, 214151, P.R.China
Tel: 0086-510-83231334
Fax: 0086-510-83218987

OK

CONTRACT NO: FO100283
NAME OF CUSTOMER: BRI-CHEM STEEL CORPORATION
DESCRIPTION: SEAMLESS STEEL PIPE
TOTAL 1181 pieces 34 bundles, 46 799 MT
DATE: 14-Jul-10

SPECIFICATION:API 5L B PSL 1/ ASTM/ASME A106B/SA106B A/SA53B -2004 NACE MRO-175-2003

CERTIFICATE NO:100714PO10028303

NO.	BATCH NO.	HEAT NO	STEEL GRADE	SIZE	QUANTITY BUNDLES	PIECES	FEET	WEIGHT(MT)
1	R100600114-1	008050277	GR.B	2" XH SA.A106B Seamless SRL	1	1	18.86	0.043
2	R100600120-1	208100759		3" STD A106B SMLS PIPE DRL	10	100	4000.00	13.768
3	R100600115-1	008050277		1-1/2" S160 BLK A/SA 106B PIPE SRL	1	24	504.00	1.113
4	R100600110-1	008030531		1" S160 BLK A/SA 106B PIPE SRL	6	366	18711.00	9.923
5	R100600110-2	008030531			6	366		9.823
6	R100600110-3	008030531			3	159		4.311
7	R100600116-1	008050307		1-1/4" S160 BLK A/SA 106B PIPE SRL	2	54	1134.00	1.941
8	R100600117-1	D08-2-3470		3-1/2" XH BLK A/SA 106B PIPE SRL	2	26	546.00	3.101
9	R100600118-1	008050307		2" STD BLK A/SA 106B PIPE SRL	3	85	1615.00	2.676
10								

NO.	DELIVERY CONDITION	CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cu	Cr	Ni	Mo	Ti	W	V
1	COLD-DRAWN	0.19	0.19	0.49	0.011	0.013	0.10	0.06	0.04	/	/	/	/
2	COLD-DRAWN	0.20	0.23	0.44	0.008	0.007	0.02	0.02	0.01	/	/	/	/
3	COLD-DRAWN	0.19	0.19	0.49	0.011	0.013	0.10	0.06	0.04	/	/	/	/
4	COLD-DRAWN	0.18	0.21	0.49	0.010	0.009	0.11	0.04	0.05	/	/	/	/
5	COLD-DRAWN	0.18	0.21	0.49	0.010	0.009	0.11	0.04	0.05	/	/	/	/
6	COLD-DRAWN	0.18	0.21	0.49	0.010	0.009	0.11	0.04	0.05	/	/	/	/
7	COLD-DRAWN	0.18	0.19	0.48	0.011	0.005	0.11	0.05	0.05	/	/	/	/
8	COLD-DRAWN	0.21	0.22	0.53	0.016	0.010	0.03	0.03	0.01	/	/	/	/
9	COLD-DRAWN	0.18	0.19	0.48	0.011	0.005	0.11	0.06	0.05	/	/	/	/
10													

NONDESTRUCTIVE TEST

	EDDY CURRENT TEST	ULTRASONIC TEST
	OK	10# - B
	OK	3" Std.
	OK	2010 ED1
	OK	2011-8169-06
	OK	25
	OK	
	OK	04 MAR 2011

NO.	YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	ELONGATION GL=50mm %	BEND TEST	FLATTEN TEST	CHARPY IMPACT TEST Temp	Dime(mm)	J	HARDNESS HRB	HYDROSTATIC TEST (PSI)	HEAT TREATMENT
1	49450	70540	40.0	OK	/	/	/	/	74/74/76	2470	Normalized 880 ℃: 20min
2	49450	69090	40.5	/	OK	/	/	/	68/69/70	2470	
3	50915	69820	41.5	OK	/	/	/	/	68/69/70	2470	
4	48000	68360	45.0	OK	/	/	/	/	71/71/71	2470	
5	51635	70545	41.0	OK	/	/	/	/	70/72/70	2470	
6	48000	67630	44.5	OK	/	/	/	/	72/74/74	2470	
7	48000	68360	44.0	OK	/	/	/	/	70/71/71	2470	
8	53095	71270	39.5	/	OK	/	/	/	70/71/71	2760	
9	51630	70545	39.5	OK	/	/	/	/	73/73/75	2470	
10											

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 EN10204 3.1.B.
4. Origin: Made in China

ISSUED BY:

QUALITY MANAGER:

10 Jul '22
BRI-CHEM STEEL CORPORATION
MTR APPROVED
Kenton Dechant, PEng.

(3) 8169-06

Po# 125494

3" STD LR 180 BW RETURN BENDS A234-WPB

P.O.# 125494 Item# 8
Heat Number: 9052
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 - 1619 - 100

INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.

17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL:(07)831-9157
FAX:(07)831-2942, 821-7500

Customer: TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS
Spec : ASME SA/ASTM A234 WPB-05a
CSA Z245.11-96 Gr241 CAT.1, NACE MR 0175-03

Certificate No : O9900065-0103
Order No : CI-10-325
Date : 2010/11/25

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASTM A106 GR.B	ASME B16.9-2003	GOOD	GOOD

Item	Description		Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.
43	180 E L/R STD SEAMLESS	3		9052	309052	BAOSHAN	1006280005600
44	180 E L/R STD SEAMLESS	6		9463	309463	BAOSHAN	1007300002100

Specification	Chemical Composition %												Tension Test			HARDNESS TEST	Heat Treatment	Magnetic Particle Exam.	Remark
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	V ×1000	Nb ×1000	C.E. ×100	Y.S P.S.I	T.S P.S.I	E %	HB			
MIN		10	29										35000	60000	30				
MAX	30		106	50	58	40	40	40	15	80	20	50		95000		197			
43	18	24	55	7	1	11	5	7	1	<1	<1	29	43820	69213	33	138	620°C TO 980°C		[DIN 50049/3.1B]
44	19	25	57	7	3	7	3	3	1	<1	<1	28	46142	68500	39	136	HOT FORMED		EN10204 3.1

CONFORMS TO SA 234-WPB
YEAR 2010-ED
JOB # 2011-8169-06
ITEM # 26
SIGNED BY 24 FEB 2011

C.E.=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of above specifications and purchaser's order.

L. S. Tsai

Chief of Quality Assurance Section

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION	ALCO JOB NUMBER
HUSKY ENERGY	NPS 3 CL300 X 20'-6" STABILIZER REBOILER COIL	2011-8169-06
DATE:	TECHNIQUE # USED	CODE
MAR 3 2011	RT P#2 REV # 0	B31 3
MATERIAL:	MAT'L THICKNESS	EDITION 2008a ADDENDA
P1	STD	ACCEPTANCE 10% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

- [ ] SINGLE WALL EXPOSURE
- [X] DOUBLE WALL EXPOSURE
- [X] SINGLE WALL VIEWING
- [ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJECT
XR1	3" SCH 40	11													✔	
XR2	3" SCH 40	11													✔	
XR3	6" SCH 40	11													✔	

COSTING

SOURCE TYPE:	IR 192			HRS	@		
STRENGTH:	38 Ci			8" FILM	@		
SOD:	2 157"			17" FILM	@		
OFD:	216"			PIPE	@		
FILM TYPE:	AGFA D4 CLASS 1	2	3" SCH 40	PIPE	@		
FOCAL SPOT SIZE:	12"	1	6" SCH 40	PIPE	@		
				PIPE	@		

COMMENTS: _____ TOTAL EXPOSURES: 9

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-06*

DESCRIPTION: *PROCESS COIL*

NAME OF AUTHORIZED INSPECTION AGENCY: *ABSA*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *635* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G11 & G16*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 **HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.**

R. Wht — *3/8/2011*

QC INSPECTOR/ ALCO GAS & OIL — **DATE**

3RD PARTY INSPECTOR — **DATE**

cdw AB 245 — 03-08-11

AUTHORIZED INSPECTOR — **DATE**

Phase # : 2011-8169-07
Phase Title: Vertical LLC Cage/Level Controller

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports		N/A
2. CRN's		N/A
3. Nameplate Copy		N/A
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT		N/A
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date _____

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER :		
HUSKY OIL OPERATIONS LTD	2011-8169-07	DRAWING NUMBER		
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	C-2011-8169-07-001/001		
ITEMS: VERTICAL LLC CAGE FOR FISHER L2 LEVEL CONTROLLER NPS 4 CL300 STD	**COMMENTS:**	**INITIALS** HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings				
Material Checked Against Drawing Bill of Material	CHECKED 18 MAR 2011			
Mill Test Checked	CHECKED 18 MAR 2011			
Impact Test	EXEMPT PER FIG 323.2.2A			
Unit Layout	2011/03/14			
Weld Procedure Approved	REVIEWED 02 FEB 2011			
Welder(s) Qualifications	REVIEWED 02 FEB 2011			
Fit-Up: Shell & Heads	TYPE 1 18 MAR 2011			
Nozzles & Fittings	18 MAR 2011			
Internals				
Externals	18 MAR 2011			
Connections: Location	18 MAR 2011			
Rating	CL300 CL3000 18 MAR 2011			
Internal Inspection				
Internals Installed				
Weld Profile, Sizes & ID	CHECKED 18 MAR 2011			
Radiographs	5% TO ASME B31.3 17 MAR 2011			
Other NDE				
Stamping	CHECKED 18 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED 18 MAR 2011			
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart	600PSIG GAGE# G3, G12 18 MAR 2011		MAR. 18/2011	
MDR				
Name Plate				

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-234WPB	0.237"NOM	W921	Repads			
Shell	SA-106B	0.237"	15963				
				Tubes			
Tubesheet							

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

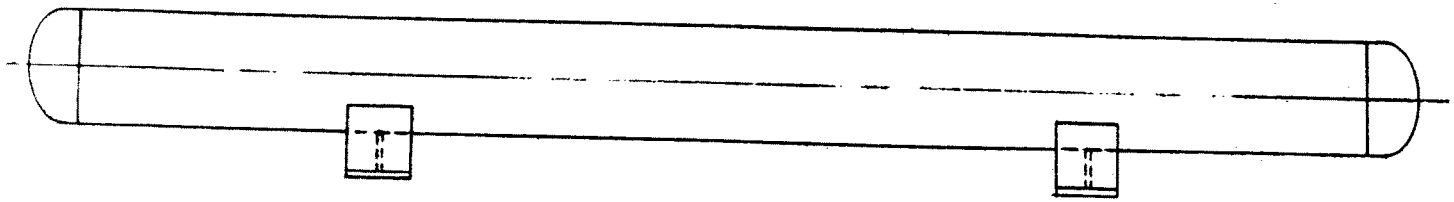
MATERIAL CONTROL & NDE LIST

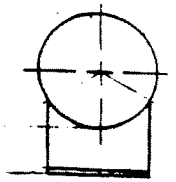
SERIAL NUMBER: 2011-8169-07
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 18, 2011

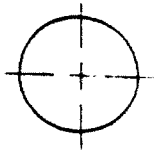
NONDESTRUCTIVE TESTING WHEN REQUIRED

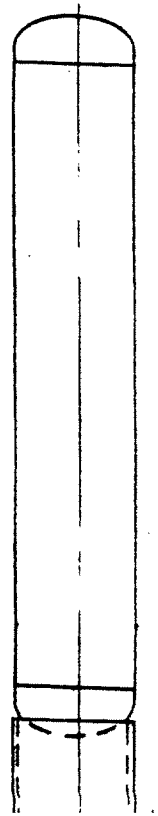
ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT				
#1 RFWN	NPS 4 CL300 STD	SA-105N	09/36013						
#2 RF BLIND	NPS 4 CL300	SA-105N	09/33595						
#6 WELD CAP	NPS 4 STD	SA-234 WPB	W921		✓				
#7 SMLS PIPE	NPS 4 STD	SA-106B	15963						
C1A TOL	NPS $1^{1}/_{2}$ CL3000	SA-105N	KBAT						
C1B TOL	NPS $1^{1}/_{2}$ CL3000	SA-105N	KBAT						
C3 TOL	NPS $^{3}/_{4}$ CL3000	SA-105N	58010						
C4 DRILLLED & TAP	NPT $^{1}/_{2}$	----------	----------						
C5A TOL	NPS $^{3}/_{4}$ CL3000	SA-105N	58010						
C5B TOL	NPS $^{3}/_{4}$ CL3000	SA-105N	58010						

CUSTOMER: Husky
SERIAL No: 2011-8169-07









DATE: MAR 10 2011 FILLED BY: G. MOORE DRWG. NO:

TYPE OF VESSEL: VERT. LLC CAGE

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:	4"	6	W921		SA-234 WPB	sch std
SHELL:	4"	7	~~081110~~ 15963 ⚠		SA ~~106B~~ 333-6	sch std
			E 9			
PADS:						
SKIRT:						
SADDLES:						

8169-07

Appendix L
REV. 0
DWG. D-2900

MATERIAL REPORT

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

DOUG 7/8/86
NTS

LINE 6

METALFAR
PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@farmas.com

PS-001

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

PO# 23665

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

GLOBAL GAEL SERVICE LTD Unit 1E. Block 71, The Plaza Nangor Road DUBLIN 12 IE	Certif. N. 1678	Del/Dated 27 04 2010
	Fattura / Invoice N. 1221	Del/Dated 26 04 2010
	DDT / Del Note N. 2273	Del/Dated 26 04 2010
	Ns.Ord. / Our ref. N.	Del/Dated

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS VIS. & DIMENS
	76682	006	527/FR rev.1	45,00	BLIND 150 RF 10" A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C E %	B %
ASTM A105	0,190	0,220	1,050	0,014	0,015	0,050	0,070	0,020	0,002	0,170	0,003	0,001	0,000	0,031	0,395	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. mm / LENGHT mm	FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns Rif. OUR REF.
126,60	50,80	1	358,0	542,0	31,0	63,0	163,0 - 165,0	KV	20	82	86	84	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS VIS. & DIMENS
→	09/36013	078	527/FR rev.1	150,00	W/N 300 RF 4" STD A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C E %	B %
ASTM A105	0,190	0,200	1,000	0,013	0,016	0,130	0,060	0,020	0,009	0,130	0,000	0,000	0,000	0,005	0,399	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. mm / LENGHT mm	FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns Rif. OUR REF.
126,60	50,80	1	343,0	522,0	32,0	60,0	159,0 - 163,0	KV	20	88	88	85	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS VIS. & DIMENS
	09/34665	098	527/FR rev.1	34,00	W/N 900 RF 3" XS A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C E %	B %
ASTM A105	0,185	0,260	0,990	0,015	0,009	0,100	0,060	0,010	0,009	0,130	0,000	0,000	0,000	0,005	0,384	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 / SECT. mm2	LUNG. mm / LENGHT mm	FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns Rif. OUR REF.
126,60	50,80	1	343,0	517,0	32,0	61,0	156,0 - 159,0	KV	20	83	90	89	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05 CSA CAN3 Z-245.12-05 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

NOTE MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156 - SOUR SERVICE
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007 - SOUR SERVICE

QUALITY ASTM/ASME SA 105N
YEAR 2010 ED
JOB # 2011 - 8169-07
ITEM # 1
SIGNED BY 28 March 7/11 S. Corti

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTEMENT

ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY

MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL

MFF

4" CL 300 BLIND FLANGE RF A105N

Heat number 09/33595-09/33741 Item# 6
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment / Seq # S10 - 1527 - 6

125-001

METALFAR

PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI SPECIALI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO
20861 CESANA BRIANZA (LC) - Italy
Via G. Pianni, 20
Tel. +39 031 655441
Fax +39 031 655149
quality.mf@metalfar.com

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

P0124934

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 4110 Del/Dated 13.10.2010
Fatture / Invoice N. Del/Dated
DDT / Del Note N. Del/Dated
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA / HEAT CODE HEAT: 10/38101 | POS ITEM | VS.ORDINE YOUR REFERENCE

DESCRIZIONE / DESCRIPTION: W/N 300 RF 6" STD A105

DIM IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,200	0,220	1,030	0,018	0,016	0,160	0,060	0,020	0,008	0,190	0,003	0,001	0,000	0,010	0,425

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	337,0	541,0	31,0	58,0	164,0 - 166,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	90	86	85	0,0

Ns.Rif. OUR REF.

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: → 09/33595 | POS ITEM | VS ORDINE YOUR REFERENCE

DESCRIZIONE / DESCRIPTION: BLIND 300 RF 4" A105

DIM IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,190	0,220	1,200	0,010	0,010	0,110	0,080	0,010	0,000	0,170	0,020	0,000	0,000	0,025	0,430

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	332,0	534,0	31,0	59,0	163,0 - 165,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	86	84	88	0,0

Ns.Rif. OUR REF.

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 09/33741 | POS ITEM | VS ORDINE YOUR REFERENCE

DESCRIZIONE / DESCRIPTION: S/O 150 RF 8" A105

DIM IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,200	0,230	1,030	0,015	0,010	0,080	0,050	0,010	0,007	0,150	0,006	0,001	0,000	0,010	0,404

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	326,0	543,0	31,0	57,0	163,0 - 165,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%
KV	20	89	90	90	0,0

Ns.Rif. OUR REF.

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

CONFORME A / CONFORMS TO: 105N

EDIZIONE / YEAR: 2010 ED

NOTE / NOTES: MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

OC3: 2011 - 8169 - 07

FOGLIO / SHEET: 2

SIGNED BY: 28 March 7/11 S. Corti

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY

MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL: MFF

125-001

po#125174

INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.

17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL:(07)831-9157
FAX:(07)831-2942, 821-7500

Customer : TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS
Spec : ASME SA/ASTM A234 WPB-05a
CSA Z245.11-96 Gr241 CAT.I NACE MR 0175-03

Certificate No : 09700099-0101
Order No : CI-05-523
Date : 2010/4/28

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASME SA516 GR.70	ASME B16.9-2003	GOOD	GOOD

Item	Description	Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.
8	CAP STD 4		W921	5W921	C.S.C.	970302H0077
9	CAP STD 10		Z536	4Z536	C.S.C.	910718H0087
10	CAP STD 12		Z536	4Z536	C.S.C.	910718H0087
11	CAP STD 16		Z536	4Z536	C.S.C.	910718H0087

Specification	Chemical Composition %												Tension Test			HARDNESS TEST	Heat Treatment	Magnetic Particle Exam.	Remark
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	V ×1000	Nb ×1000	C.E ×100	Y.S P.S.I	T.S P.S.I	E %	HB			
MIN		10	29										35000	60000	17				
MAX	30		106	50	58	20	40	40	15	80	20	50		95000		197			
8	17	10	85	18	8	3	2	3	2	2	3	33	47248	68342	23	138	S.R. 650°C×0.5		CAP ELONGATION
9	16	11	79	19	8	<1	3	3	<1	<1	<2	30	53252	69358	26	130	HR		MIN 17%
10	16	11	79	19	8	<1	3	3	<1	<1	<2	30	53252	69358	26	130			(DIN 50049/3.1B(EN)
11	16	11	79	19	8	<1	3	3	<1	<1	<2	30	53252	69358	26	130			10204 3.1

C.E.=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of above specifications and purchaser's order.

234-WPB
2010 ED
2011-8169-07
6
08 March 7/11

L. S. Tsai
Chief of Quality Assurance Section

Heat Number : W921
Trans Am Piping Products Ltd.
Shipment Seq # : S9 - 1158

4" STD BW CAPS A234-WPB

Rev'd By SB 21

Item# 5

4" STD SEAMLESS STEEL PIPE
A333 GR 6 B.E.(S.R.L.)

SAT NUMBER : 15963
TRANS AM PIPING PRODUCTS - REV'D BY:
Shipment/Seq #: S 8 - 1525 1

Производитель: Никопольский завод стальных труб "ЮТиСТ" (Украина)
Producer: Nikopol steel pipe plant YUTIST, CJSCo (Ukraine)

56, пр. Трубников
г. Никополь
Днепропетровская обл.
Украина, 53201
tel:+38-05662-25062, -22147
E-MAIL: UTST@UTIST.COM.UA

56, Trubnikov av.,
Nikopol city,
Dnlepropetrovsk region,
Ukraine, p.o. ind. 53201
fax:+38-0562-25062
WWW.STEELPROM.COM

СЕРТИФИКАТ ПРИЕМОЧНЫХ ИСПЫТАНИЙ / CERTIFICATE OF CHECK TESTS No 2368-A от / dd. 29.10.2008

в соответствии с / in acc. with EN10204/3.1B

Автомобиль № / Truck No BC7894AH/BC4037XX
Вид груз. мест / Type of cargo places: пакеты / packages
Кол-во груз мест / Q-ty of packages: 11
Грузополучатель / Consignee: Trans Am Piping Products Ltd.
Страна назначения / Destination country: Канада / Canada
Контракт № / Contract No: 270
Дата / Date: 19.11.2007

Наименование продукции / Description of goods	Стандарт / Standard	неразрушающие испытания пройдены	Марка стали / Steel grade	термообработка / heat treatment
трубы стальные бесшовные / seamless steel pipes	ASTM A 333-04/ ASME SA 333-04	NDE	Gr. 6	нормализация / normalization

Дополнительные требования: согласно Контракта № 270 от 19.11.2007
Additional remarks: according to Contract No 270 dd. 19.11.2007

Маркировка: согласно Контракта № 270 от 19.11.2007
Marking: according to Contract No 270 dd. 19.11.2007

№ п/п Item No	№ заводской партии / Set for testing	№ плавки / Heat No	Размеры, мм / Sizes, mm	Номинальный размер x толщина стенки (дюйм) x длина (фут) / NPS x W.T. (inch) x Length (foot)	№ режима / SCH	Класс веса / Weight Class	Способ изготовления / Method of manufacture	Кол-во брутто, тн / Quantity G.W., M.Tons	Кол-во нетто, тн / Quantity N.W., M.Tons	Кол-во футов / Quantity of feet	Кол-во, метров / Quantity, meters	Кол-во, шт. труб / PCS of pipes	Лот / Lot	№ места / Bndl #
1	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	1,050	1,040	209,9	64,00	10	1	58
2	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	2,410	2,400	482,9	147,20	23	1	59
3	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	1,990	1,980	398,9	121,60	19	1	55
4	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	2,010	2,000	398,9	121,60	19	1	61
5	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	2,000	1,990	398,9	121,60	19	1	62
6	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	2,010	2,000	398,9	121,60	19	1	56
7	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	1,990	1,980	398,9	121,60	19	1	63
8	501	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	2,000	1,990	398,9	121,60	19	1	57
9	502	15963	114,3x6,02x6400	4 " x 0.237" x 21'	40		гор.деф./hot fin.	1,470	1,460	293,9	89,60	14	1	54
							Итого/Total (9)	**16,930**	**16,840**	**3380,1**	**1030,40**	**161**		
10	299	303915	168,3x7,11x6400	6 " x 0.280" x 21'	40		гор.деф./hot fin.	1,850	1,840	209,9	64,00	10	1	46
11	299	303915	168,3x7,11x6400	6 " x 0.280" x 21'	40		гор.деф./hot fin.	1,850	1,840	209,9	64,00	10	1	45
							Итого/Total (2)	**3,700**	**3,680**	**419,8**	**128,00**	**20**		
							Итого/Total (11)	**20,630**	**20,520**	**3799,9**	**1158,40**	**181**		

CONFORMS TO SA 333-6
YEAR 2010
JOB # 2011-8169-07
ITEM # 7
SIGNED BY 18 MAR 2011

4" STD

Лист 1 Листов 3
Sheet 1 Sheets 3

CONFORMS TO SA 333-6
YEAR 2010 ED
JOB 2011-8169-07
ITEM # 7
SIGNED 18 MAR 2011

СЕРТИФИКАТ ПРИЕМОЧНЫХ ИСПЫТАНИЙ / CERTIFICATE OF CHECK TESTS No 2370-A

РЕЗУЛЬТАТЫ ИСПЫТАНИЙ / TEST RESULTS

№ плавки Heat No	Химический состав стали / Chemical composition of steel Массовая доля элементов,% Element fraction of total mass,%										CE=%C+%Mn/6+(%Cr+%Mo+%V)/5	%Cr+%Cu+%Mo+%Ni+%V	%Mn/%C
	C	Si	Mn	S	P	Cr	Ni	Cu	Mo	V			
15963	0,19	0,31	0,50	0,012	0,009	0,04	0,03	0,06	<0,01	<0,01	0,28	0,13	2,63
303915	0,20	0,23	0,49	0,017	0,014	0,09	0,12	0,22	<0,01	<0,01	0,30	0,43	2,45
11298-1	0,19	0,22	0,53	0,013	0,009	0,05	0,03	0,07	<0,01	<0,01	0,29	0,15	2,79

№ п/п Item No	Номер заводской партии Set for testing	№ плавки Heat No	Механические свойства / Mechanical properties Предел прочности Tensile strength, Rm		Предел текучести Yield strength, Rp		Удлинение Elongation	Испытание на удар по Шарпи, образцы в V-разрезом Charpy impact test, V-notch размер образца,мм specimen size, mm	фут х фунт / ftxlb				Температура испытания Test temperature
			MPa	PSI	MPa	PSI	A,%		1	2	3	среднее average	°C
1	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
2	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
3	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
4	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
5	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
6	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
7	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
8	481	11298-1	452	65500	289	41900	31,0	10x6,67	35	44	25	35,3	- 45
			478	69500	298	43200	33,0						
9	502	15963	493	71500	348	50500	28,0	10x3,33	10	9	8	9,0	- 56
			482	70000	357	52000	27,0						
10	493	303915	506	73500	326	47300	32,0	10x5	20	21	7	16,0	- 52
			510	74000	328	47600	30,0						
11	493	303915	506	73500	326	47300	32,0	10x5	20	21	7	16,0	- 52
			510	74000	328	47600	30,0						

СЕРТИФИКАТ ПРИЕМОЧНЫХ ИСПЫТАНИЙ / CERTIFICATE OF CHECK TESTS No 2370-A

Примечание: Order. P.O. # CI-8-459
Note
Поз.1-8:Проведены гидроиспытания при давлении 2500 PSI продолжительность гидростатических испытаний 7сек -удовлетворительно
Items 1-8:Hydrostatic tests are performed with pressure 2500 PSI, duration of hydrostatic testing 7 sec.-satisfactorily
Поз.9 Проведены гидроиспытания при давлении 2210 PSI продолжительность гидростатических испытаний 7сек -удовлетворительно
Item 9:Hydrostatic tests are performed with pressure 2210 PSI, duration of hydrostatic testing 7 sec.-satisfactorily
Поз.10-11:Проведены гидроиспытания при давлении 1780 PSI продолжительность гидростатических испытаний 7сек -удовлетворительно
Items 10-11:Hydrostatic tests are performed with pressure 1780 PSI, duration of hydrostatic testing 7 sec -satisfactorily
Максимальная твердость не превышает 22HRC в соответствии с NACE MR 0175.
Maximum hardness does not exceed 22HRC in acc. with NACE MR 0175.
Трубы испытаны на сплющивание - удовлетворительно.
Pipes are tested with flattening test - satisfactorily.
Номинальный размер продольного полосового образца для испытания на растяжение
Ширина, мм 12,5 ± 0,25
Расчетная длина,мм: 50
Nominal size of longitudinal strip specimen for tension test:
Width, mm: 12,5 ± 0,25
Calculated length, mm: 50
Допуск по длине: ± 25 мм
Length tolerance: ± 25 mm
Трубы изготовлены с фаской.
Pipes are made with bevel.
Концы труб защищены полиэтиленовыми пробками.
The ends of pipes are protected with polyethylene caps.
Наружная поверхность труб покрыта грунт-эмалью "АКРОКОР" в два слоя.
The outside surface of pipes is covered with priming-enamel "AKROKOR" in two layers
Проведен 100% визуальный контроль и контроль геометрических параметров - удовлетворительно
100% visual control and control of geometric sizes is effected - satisfactorily.

Сертификатор
Prepared by

Старший контрольный мастер отдела технического контроля
Senior control foreman of quality control department

ОТК

Освидетельствовано экспертом
Witnessed by expert

A. Esaulov

M.E.G.A.

CERTIFICATO DI COLLAUDO
TEST CERTIFICATE
CERTIFICAT DE CONTROLE

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV ISO 9001

CLIENTE / Customer / Client: CE FRANKLIN LTD.

1900 - 300 - 5th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 3C4

CERTIFICATO N. / Certificate N / Certificat N: 554227 FOGLIO / Sheet / Feuille: 8

DATA / Date: 05/11/08

ORDINE / Purchase order / Commande: 2038335-OR-2100

COMMESSA / Job N. / Commission de commande: 86184

PROVA Test Epreuve	MATERIALE Steel quality / Matière	COLATA Heat / Coulée	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Al %	CE %
KBAT	ASTM A105/05	07779500	0.190	0.190	0.890	0.008	0.008	00.06	00.04	0.010	0.000	0.120	0.000	0.021	0.362
			--->	Nb%=	0.000	B %=	0.000								
KBAX	ASTM A105/05	73435	0.180	0.210	0.910	0.008	0.013	00.10	00.08	0.020	0.016	0.230	0.003	CEs=	0.338
			--->	Nb%=	0.001	N %=	0.000	Sn%=	0.009	B %=	0.0005			0.025	0.376
RCLX	ASTM A105/05	06/74167	0.190	0.150	0.910	0.010	0.010	00.08	00.05	0.010	0.000	0.170	0.000	0.023	0.374
			--->	Nb%=	0.000	N %=	0.000	B %=	0.000						
KBAX	ASTM A105/05	73435	0.180	0.210	0.910	0.008	0.013	00.10	00.08	0.020	0.016	0.230	0.003	CEs=	0.341
			--->	Nb%=	0.001	N %=	0.000	Sn%=	0.009	B %=	0.0005			0.025	0.376
KBAX	ASTM A105/05	73435	0.180	0.210	0.910	0.008	0.013	00.10	00.08	0.020	0.016	0.230	0.003	0.025	0.376
			--->	Nb%=	0.001	N %=	0.000	Sn%=	0.009	B %=	0.0005				
KNDL	ASTM A105/05	08/72388	0.185	0.180	0.930	0.010	0.008	00.08	00.05	0.010	0.021	0.120	0.017	0.022	0.372
			--->	Nb%=	0.000	Sn%=	0.007								

PROVA Test Epreuve	PROVETTA Test specimen / Eprouvette ·	SEZIONE Section / Sect.	LUNGHEZZA Length / Longeur	SNERVAMENTO N/mm² ≥ Yield point Limite d'elasticité	ROTTURA N/mm² ≥ Tensile strenght Rupture	ALLUNGAMENTO % ≥ Elongation Allongement	CONTRAZIONE % ≥ Reduction of area Striction	DUREZZA HB Hardness Dureté	PIEGA Bend test Pliage	SCHIACC. Flatt. test Aplatiss.	RESILIENZA Impact test / Résilience UNITÀ MIS Unit system	TIPO Type	T. °C Test tmp	VALORE / Value / Données
KBAT	1	30.6	25.0	298.6	512.4	31.0	68.2	142-145			J	KV	0	44-48-50
KBAX	1	60.1	35.0	341.0	540.0	28.0	63.0	161-168			J	KV	0	48-52-54
RCLX	1	122.7	50.0	310.0	531.0	28.9	66.4	152-158			J	KV	0	54-52-48
KBAX	1	60.1	35.0	341.0	540.0	28.0	63.0	161-168			J	KV	0	48-52-54
KBAX	1	60.1	35.0	341.0	540.0	28.0	63.0	161-168			J	KV	0	48-52-54
KNDL	1	30.6	25.0	338.4	544.6	28.8	63.2	160-166			J	KV	0	48-50-56

FORMA Shape / Forme : 1 = ø 2 = □

PROVA Test Epreuve	NOTE / Remarks / Notes
	EN10204/3.1
KBAT	ELECT. FURNACE - NORMALIZED AT 920 C COOLED IN STILL AIR. /CERT.05.EVASI*547165MEGA*
KBAX	ELECT. FURNACE - NORMALIZED AT 900 C COOLED IN STILL AIR. /CERT.38/45.EVASI*547659MEGA*
RCLX	ELECT. FURNACE - NORMALIZED AT 920 C COOLED IN STILL AIR. /CERT.27.EVASI*538941 MEGA*
KBAX	ELECT. FURNACE - NORMALIZED AT 900 C COOLED IN STILL AIR. /CERT.38/45.EVASI*547659MEGA*
KNDL	ELECT. FURNACE - NORMALIZED AT 900 C COOLED IN STILL AIR. /CERT.38/45.EVASI*547659MEGA*
	ELECT. FURNACE - NORMALIZED AT 900 C COOLED IN STILL AIR. /CERT.208.EVASI*551050MEGA*

PROVA Test Epreuve	POS. Item Pos.	QUANTITÀ Quantity Quantité	CODICE CLIENTE Customer code Code client	DESCRIZIONE / Description / Description	VISUAL AND DIMENSIONAL
→ KBAT	165	75	1552923	MEGALET S. 3000 NPT A/SA105N 1.1/2 X6-10	OK
KBAX	166	54	1125737	MEGALET S. 3000 NPT A/SA105N 2x3	OK
RCLX	166	51	1125737	MEGALET S. 3000 NPT A/SA105N 2x3	OK
KBAX	167	105	1552931	MEGALET S. 3000 NPT A/SA105N 2x3.1/2-4	OK
KBAX	168	64	1552940	MEGALET S. 3000 NPT A/SA105N 2x5-6	OK
KNDL	168	11	1552940	MEGALET S. 3000 NPT A/SA105N 2x5-6	OK

CONFORMS TO SA 105N
YEAR 2010 ED
JOB 2011-8169-07
ITEM # 10
SIGNED BY 29 March 7/11

NOTE / Remarks / Notes: MATERIAL ACCORDING TO NACE MR0175/ 2003.

ENTE UFFICIALE DI COLLAUDO / Inspection Authority / Service Inspection Officiel

CAPO COLLAUDO / Chief Inspection DPT / Responsable assurance qualité

DOC CERT. M.E.G.A.

M.E.G.A.

CERTIFICATO DI COLLAUDO
TEST CERTIFICATE
CERTIFICAT DE CONTROLE

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV ISO 9001

CLIENTE Customer Client: CE FRANKLIN LTD.

1900 - 300 - 5th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 3C4

ORDINE Purchase order Commande: 2038335-OR-2100

CERTIFICATO N. Certificate N. Certificat N.: 554227 FOGLIO Sheet Feuille: 11

DATA / Date: 05/11/08

COMMESSA Job N Commission de commande: 86184

PROVA Test Epreuve	MATERIALE Steel quality / Matière	COLATA Heat / Coulée	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Al %	CE %

PROVA Test Epreuve	PROVETTA Test specimen / Eprouvette		SNERVAMENTO N/mm2 ≥ Yield point Limite d'elasticité	ROTTURA N/mm2 ≥ Tensile strenght Rupture	ALLUNGAMENTO % ≥ Elongation Allongement	CONTRAZIONE % ≥ Reduction of area Striction	DUREZZA HB Hardness Dureté	PIEGA Bend test Pliage	SCHIACC. Flatt. test Aplatiss.	RESILIENZA Impact test / Résilience			
	SEZIONE Section / Sect.	LUNGHEZZA Langin / Longeur								UNITÀ MIS. Unit system	TIPO Type	T. °C Test tmp	VALORE / Value / Données

PROVA Test Epreuve

NOTE / Remarks / Notes: THIS CERTIFICATE INCLUDES N. 11 SHEETS.

FORMA Shape / Forme: 1 = ø 2 = □

PROVA Test Epreuve	POS. Item Pos.	QUANTITÀ Quantity Quantité	CODICE CLIENTE Customer code Code client	DESCRIZIONE / Description / Description
				Dimensional check for 45 and 90 deg elbows-tees-crosses-full and half couplings-caps-square-hexagonal and round plugs-hexagonal and flush bushings according to ASME B.16.11 (Threads according to ANSI/ASME B1.20.1) Oulets: ASME B.31.1 & B.31.3 Seamless swage nipples: BS3799-74 or MSS SP95-86 Unions: BS 3799 or MSS-SP-83 Seamless pipe nipples : B36.10-95 or 36.19-85 Material according to : ASTM last Edition (2007 Books) ASME II Ed. 2007 The chemical and mechanical properties are a true and correct copy of mill test certificate issued by the steel mill, or by the laboratory which has determined it. Material: A182 F304L accord to A182 F304 / A182 F316L accord to A182 F316. Alloy verification carried out by vacuum emission analyzer on base material. Manufacturer approved with certificate n.75/2003/MUC by TUV (certification BODY N.0036) to issue certificate of specific product control in accordance with "PRESSURE EQUIPMENT DIRECTIVE" 97/23/EC (PED) annex 1, paragraph 4.3.

NOTE / Remarks / Notes: MATERIAL ACCORDING TO NACE MR0175/ 2003.

ENTE UFFICIALE DI COLLAUDO
Inspection Authority
Service Inspection Officiel

CAPO COLLAUDO
Chief Inspection DPT
Responsable assurance qualité

DOC. CERT. M.E.G.A.
Luca Mancini

P.O.# 124834 Job# 125-001 Item# 15
Heat Number: 58010
Trans Am Piping Products Ltd. - Rev'd By: SB 3/4X11/2-36 CL 3000 FS THREADED PIPET
Shipment/Seq #: S 10 - 1390 17 A105N

INTERNATIONAL
WFI
NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St. - Houston, TX 77022
Phone 713-695-3633 Fax 713-695-3528
A Bromley Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9535 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

Mtr #: 192826
PO #: CL10-355
Sales Order #: C001008457 Date: 08/03/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58010 ←

125-001

PO # 124834

Material: A/SA105N 09

Item	Quantity	Description
17		36 - 1 1/2 X 3/4 3M THP A/SA105N
36		36 - 1 1/2 X 3/4 3M SWP A/SA105N

105N
2010 ED
2011-8169-07
12, 14
09 March 7/11

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.040	1.02	0.000	0.013	0.02	0.007
	S	SI	V					
	0.024	0.22	0.003					

Carbon Equivalency: Ladle 0.39

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	75,500	51,000	29.00	66.00	149 BHN	149 BHN

Normalized

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

Marie Dehmer
Quality Assurance Representative

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	NPS 4 CL300 LEVEL CONTROL CAGE	2011-8169-07
DATE:	TECHNIQUE # USED:	CODE:
MAR 17 2011	RT P#2 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	STD	ACCEPTANCE: 10% RANDOM

1 NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK; (1) SLIGHT; (2) MEDIUM; (3) SEVERE

- ☐ SINGLE WALL EXPOSURE
- ☒ DOUBLE WALL EXPOSURE
- ☒ SINGLE WALL VIEWING
- ☐ DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJEC
XR1	4" SCH 40	33													✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	@		
STRENGTH:	33 Ci			8" FILM	@		
SOD:	4.163"			17" FILM	@		
OFD:	237"			PIPE	@		
FILM TYPE:	AGFA D4 CLASS 1	1	4" SCH 40	PIPE	@		
FOCAL SPOT SIZE:	.12"			PIPE	@		
				PIPE	@		

COMMENTS: _____ TOTAL EXPOSURES: 3

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-07*

DESCRIPTION: *LEVEL CONTROL CAGE*

NAME OF AUTHORIZED INSPECTION AGENCY: *N/A*

TYPE OF TEST: HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *690* psig

POSITION OF THE UNIT TESTED HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G3 & G12*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

3/18/2011

QC INSPECTOR/ALCO GAS & OIL **DATE**

3/18/2011

3RD PARTY INSPECTOR **DATE**

AUTHORIZED INSPECTOR **DATE**

Phase # : 2011-8169-09
Phase Title: Level Control Cage

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports		N/A
2. CRN's		N/A
3. Nameplate Copy		N/A
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control	X	
7. Material Reports	X	
8. MTR's	X	
9. NDE MPT		N/A
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

TRAVEL SHEET

Authorized Inspector (Signature) _____ Date _____

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER :		
HUSKY OIL OPERATIONS LTD	2011-8169-09	DRAWING NUMBER		
MINEHEAD COMPRESSOR STN	LSD: 03-06-049-18 W5M	C-2011-8169-09-001/001		
ITEMS: LEVEL CONTROL CAGE FOR CONDENSATE CONDITIONER NPS 4 CL300 STD	COMMENTS:	INITIALS HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved				
Approved Drawings				
Material Checked Against Drawing Bill of Material	CHECKED 23 MAR 2011			
Mill Test Checked	CHECKED 23 MAR 2011			
Impact Test	EXEMPT PER FIG 323.2.2A			
Unit Layout				
Weld Procedure Approved	REVIEWED 16 MAR 2011			
Welder(s) Qualifications	REVIEWED 16 MAR 2011			
Fit-Up: Shell & Heads	TYPE 1 23 MAR 2011			
Nozzles & Fittings	23 MAR 2011			
Internals				
Externals	23 MAR 2011			
Connections: Location	23 MAR 2011			
Rating	CL300 CL3000 CL6000 23 MAR 2011			
Internal Inspection				
Internals Installed				
Weld Profile, Sizes & ID	CHECKED 23 MAR 2011			
Radiographs	5% TO ASME B31.3 22 MAR 2011			
Other NDE				
Stamping	CHECKED 23 MAR 2011			
External Upon Completion of Welding, when PWHT	CHECKED 23 MAR 2011			
Alternative Test				
PWHT Charts Checked	NONE			
Hydrostatic Test/Chart	600PSIG GAGE#G5,610 23 MAR 2011		ms 3/23/11	
MDR				
Name Plate				

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-234WPB	0.237"NOM	W921	Repads			
Shell	333-6 SA-~~106B~~	0.237"	606168				
	SA-106B	0.337"	10603130				
				Tubes			
Tubesheet							

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

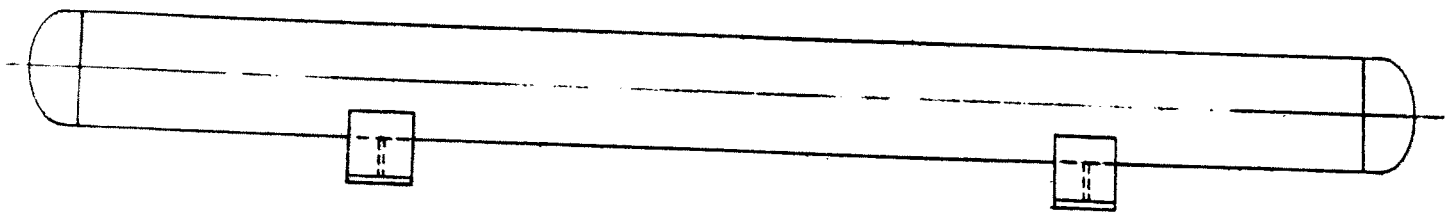
MATERIAL CONTROL & NDE LIST

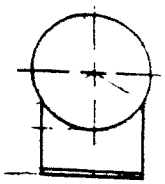
SERIAL NUMBER: 2011-8169-09
CUSTOMER: HUSKY OIL OPERATIONS LTD
DATE: MARCH 23, 2011

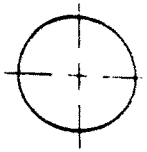
NONDESTRUCTIVE TESTING WHEN REQUIRED

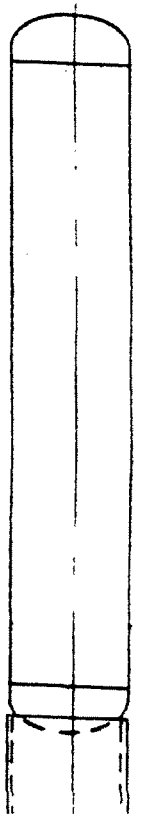
ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT				
#1 RFWN	NPS 4 CL300 S40	SA-105N	09/34166						
#2 RF BLIND	NPS 4 CL300	SA-105N	09/33595						
#5 STRAIGHT TEE	NPS 4 STD	SA-234 WPB	8L1729						
#6 WELD CAP	NPS 4 STD	SA-234 WPB	W921		✓				
#7 SMLS PIPE	NPS 4 STD	SA-333-6	606168						
#8 SMLS PIPE	NPS 4 XH	SA-106B	10603130						
N1A RFWN	NPS 2 CL300 STD	SA-105N	931272						
N1B RFWN	NPS 2 CL300 STD	SA-105N	931272						
C1 COUPLING	NPS 2 CL6000	SA-105N	KXX						
C2 TOL	NPS $^{1}/_{2}$ CL3000	SA-105N	57984						
C3 DRILL & TAPPED	NPT $^{1}/_{2}$	----------	----------	–					
C4A TOL	NPS $^{3}/_{4}$ CL3000	SA-105N	58010						
C4B TOL	NPS $^{3}/_{4}$ CL3000	SA-105N	58010						

CUSTOMER: HUSKY OIL
SERIAL No: 8169-09









DATE: Mar. 18. 2011 FILLED BY: M. Butt DRWG. NO: 8169-09.

TYPE OF VESSEL:

TITLE	DIA.	ITEM NO:	HEAT NO:	SLAB NO:	MAT'L. SPEC.	MIN.
HEAD:	4"	5	841729 ✓		SA-234-WPB	SCH 40
	4"	6	W921 ✓		SA-234-WPB	SCH 40
	4"	7	10603130 ✓		SA-106-B	SCH 40
	4"	8	606168 ✓		SA-106-B	SCH 80
SHELL:						
PADS:						
SKIRT:						
SADDLES:						

8169-09

Appendix L
REV 0
DWG. D-2900
MATERIAL REPORT
ALCO & OIL PRODUCTION EQUIPMENT LTD
DOUG 7/8/86
NTS

Order#: 35424 Seq: 1 PO#: 122943-125-001 Heat#: 09/34166 Mill: Metalfar
Part#: FL 4 3 R W STD 5 Part Desc: Flanges 4 (114.3mm O.D.) 300# RAISED FACE WELD NECK STD A/SA105N

CONFORMS TO SA 105N
YEAR 2010 EDITION
JOB. 2011-P169-09
ITEM # 1
SIGNED BY 17 MAR 2011

125-001

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@farmas.com

COMPANY
WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001 : 2000 =

PO# 122943

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

SILBO INDUSTRIES
50 CHESTNUT RIDGE ROAD SUITE 204
07645 MONTVALE N.J. US

Certif. N. 923 Del/Dated 09.03.2010
Fattura / Invoice N. 657 Del/Dated 08.03.2010
DDT / Del Note N. 1232 Del/Dated 08.03.2010
Ns.Ord. / Our ref. N. Del/Dated

Certificato generato da un sistema informatico secondo la norma EN10204, valido senza firma / This certificate has been generated by computer and need not to be signed for validity acc. to EN10204

COD. COL / HEAT CODE	COLATA / HEAT	POS. / ITEM	VS.ORDINE / YOUR REFERENCE	Q.TA' / Q.TY	DESCRIZIONE / DESCRIPTION	DIM.IN ACC. A / DIM. ACCORDANCE TO	VISIVO E DIMENS / VIS. & DIMENS
→ 09/34166	09/34166	0035	60141/B	150,00	W/N 300 RF 4" STD A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B %
0,185	0,250	0,990	0,011	0,012	0,130	0,070	0,010	0,007	0,150	0,003	0,000	0,000	0,007	0,393	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif OUR REF.
126,60	50,80	1	361,0	516,0	30,0	59,0	156,0 - 159,0	KV	20	86	86	81	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL / HEAT CODE	COLATA / HEAT	POS. / ITEM	VS.ORDINE / YOUR REFERENCE	Q.TA' / Q.TY	DESCRIZIONE / DESCRIPTION	DIM.IN ACC. A / DIM. ACCORDANCE TO	VISIVO E DIMENS / VIS. & DIMENS
09/34166	09/34166	0035	60141/B	50,00	W/N 300 RF 4" STD A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B %
0,185	0,250	0,990	0,011	0,012	0,130	0,070	0,010	0,007	0,150	0,003	0,000	0,000	0,007	0,393	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif OUR REF.
126,60	50,80	1	361,0	516,0	30,0	59,0	156,0 - 159,0	KV	20	86	86	81	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 05

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL / HEAT CODE	COLATA / HEAT	POS. / ITEM	VS.ORDINE / YOUR REFERENCE	Q.TA' / Q.TY	DESCRIZIONE / DESCRIPTION	DIM.IN ACC. A / DIM. ACCORDANCE TO	VISIVO E DIMENS / VIS. & DIMENS
697780	697780	0001	60142/B	4,00	BLIND 150 RF 4" LF2CL1	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL: ASTM A350 LF2 CL1/2

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B %
0,192	0,231	1,100	0,013	0,013	0,056	0,028	0,008	0,001	0,020	0,002	0,001	0,000	0,028	0,391	0,000

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif OUR REF.
126,60	50,80	1	338,0	542,0	30,0	59,0	163,0 - 165,0	KV	-50	62	60	64	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 350/SA 350 M - 07

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 930 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

NOTE MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
S. Corti		MFF

4" CL 300 BLIND FLANGE RF
A105N

Heat Number 09/33598-out item# 6
Trans Am piping Products Ltd. - Rev'd By: SB
Shipment / Seq # S10 - 1527 - 6

125-ex1

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO
20881 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031 655441
Fax +39 031 655149
quality.mf@dnet.it

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 4110 Del/Dated 13.10.2010
Fattura / Invoice N. Del/Dated
DDT / Del Note N. Del/Dated
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA / HEAT CODE HEAT: 10/38101 | POS. ITEM | VS.ORDINE / YOUR REFERENCE

DESCRIZIONE / DESCRIPTION: W/N 300 RF 6" STD A105

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,200	0,220	1,030	0,018	0,016	0,160	0,060	0,020	0,008	0,190	0,003	0,001	0,000	0,010	0,425

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	337,0	541,0	31,0	58,0	164,0 - 166,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
KV	20	90	86	85	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 09/33595 | POS. ITEM | VS.ORDINE / YOUR REFERENCE

DESCRIZIONE / DESCRIPTION: BLIND 300 RF 4" A105

DIM IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,190	0,220	1,200	0,010	0,010	0,110	0,080	0,010	0,000	0,170	0,020	0,000	0,000	0,025	0,430

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	332,0	534,0	31,0	59,0	163,0 - 165,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
KV	20	86	84	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 09/33741 | POS. ITEM | VS ORDINE / YOUR REFERENCE

DESCRIZIONE / DESCRIPTION: S/O 150 RF 8" A105

DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5

VISIVO E DIMENS. / VIS. & DIMENS: SATISFACTORY

MATERIALE / MATERIAL: ASTM A105

C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
0,200	0,230	1,030	0,015	0,010	0,080	0,050	0,010	0,007	0,150	0,006	0,001	0,000	0,010	0,404

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB
126,60	50,80	1	326,0	543,0	31,0	57,0	163,0 - 165,0

RESILIENZA / IMPACT TEST - JOULE/cm2

TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
KV	20	89	90	90	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I

TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR

FORNO / FURNACE: ELECTRIC FURNACE

ORIGINE / ORIGIN: EUROPE

CUSTOMS C. - 105N
2010 ED

NOTE MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

JCS 2011-8169-09
2

SIGNED BY 17 MAR 2011

S. Corti

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
		MF

Heat Number : 8L1729
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment / Seq #: S 10 - 1532 15

4" STD BW TEES A234-WPB

PURCHASER : SEYBOLD

STANDARD : ASTM A234 WPB-07
ASME SA234 WPB-04

MATERIALS : ASTM A106 Gr.B (SEAMLESS PIPE)

INSP. SPEC. : ASME B16.9 - 03

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8, MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

DATE: 2010 - 10 - 14

ORDER NO: 7002875/CI10320

P.I. NO: 0G01-1

CERTIFI. NO: 424

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE			QUANTITY PCS	MFG NO.	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
1	TEE	2"	STD		0A5108	GOOD	146 - 151	N	GOOD	
2	TEE	4"	STD		8L1729	GOOD	146 - 163	N	GOOD	
3	TEE	4"	STD		8J4704	GOOD	151 - 155	N	GOOD	
4	TEE	10"	STD		0B3785	GOOD	150 - 154	N	GOOD	
5	RED-TEE	2X1 1/2"	STD		8E1579	GOOD	145 - 146	N	GOOD	
6	RED-TEE	4X2"	STD		0C3961	GOOD	149 - 153	N	GOOD	
7	RED-TEE	10X8"	STD		8G1003	GOOD	156 - 173	N	GOOD	
8	ECC-RED	10X4"	STD		0D5892	GOOD	153 - 156	N		
9	ELL LR RED	4x3"	STD		9K5246	GOOD	136 - 143	N		
10	TEE	3/4"	XH		8K3978 (8K)	GOOD	050 - 151	N	GOOD	

ITEM NO.	MATERIAL CHARGE NO.		CHEMICAL COMPOSITION %											PHYSICAL TEST			
			C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y S KSI	T S KSI	E %	C E X100
	STANDARD	MIN.		10	29									35.0	60.0		
		MAX.	30		135	50	58	40	40	40	15	8	20		95.0		50
1	0813308		14	22	67	10	6	12	4	4	2	1	<1	50.0	71.7	35.5	27
2	J8LA129		10	24	127	10	4	4	3	12	1	<1	<1	44.5	66.0	42.1	34
3	P08603504		21	26	52	12	10	3	4	2	1	1	10	55.9	76.2	40.0	30
4	0881285		21	27	62	10	4	10	4	5	2	1	1	39.9	73.3	37.0	33
5	J1K8479		23	22	57	15	13	1	2	6	1	<1	<1	47.6	72.4	60.0	34
6	191261		19	24	102	14	8	10	4	5	3	<1	<1	55.9	81.3	33.0	38
7	0633803		18	28	72	13	7	9	3	7	2	<1	<1	46.4	69.6	42.0	32
8	J5L1292		12	25	127	15	3	2	3	11	2	<1	<1	44.8	66.9	46.2	36
9	585246		19	24	49	8	4	10	3	6	3	<1	<1	47.9	72.6	36.0	29
10	8108778		21	24	41	16	25	1	1	2	<1	<1	<1	43.5	68.2	32.0	28

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620℃-980℃,AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880℃X0.5HR,AIR COOLING.
NACE MR-01-75-03/ISO15156.2 & NACE MR 0103-03 : SATISFACTORY

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.

Qu C Lan
MANAGER OF Q.A. DEPT.

CONFORMING TO SA 234WPB
YEAR 2010 ED
JOB # 2011-8169-09
ITEM # 5
SIGNED BY 17 MAR 2011 OK

125-001

PO#125174

INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.
17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL:(07)831-9157
FAX:(07)831-2942, 821-7500

Customer : TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS
Spec : ASME SA/ASTM A234 WPB-05a
CSA Z245.11-96 Gr241 CAT.I NACE MR 0175-03

Certificate No : O9700099-0101
Order No : CI-05-523
Date : 2010/4/28

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASME SA516 GR.70	ASME B16.9-2003	GOOD	GOOD

Item	Description		Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.
8	CAP STD	4		W921	5W921	C.S.C.	970202H0077
9	CAP STD	10		Z536	4Z536	C.S.C.	910718H0087
10	CAP STD	12		Z536	4Z536	C.S.C.	910718H0087
11	CAP STD	16		Z536	4Z536	C.S.C.	910718H0087

Specification	Chemical Composition %												Tension Test			HARDNESS TEST	Heat Treatment	Magnetic Particle Exam.	Remark
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	V ×1000	Nb ×1000	C.E ×100	Y.S P.S.I	T.S P.S.I	E %	HB			
MIN		10	25										35000	60000					
MAX	30		106	50	58	40	40	40	15	80	20	50		95000		197			
8	17	10	85	18	8	3	2	3	2	2	3	33	47248	68342	23	138	S.R. 650°C x0.5 HR		CAP ELONGATION MIN. 17% (DIN 50049/3.1B)(EN 10204 3.1
9	16	11	79	19	8	<1	3	3	<1	<1	<2	30	53252	69358	25	130			
10	16	11	79	19	8	<1	3	3	<1	<1	<2	30	53252	69358	26	130			
11	16	11	79	19	8	<1	3	3	<1	<1	<2	30	53252	69358	26	130			

C.E.=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of above specifications and purchaser's order.

COMPLIANCE TO SA 234-WPB
2010 ED
2011-8169-09
6
17 MAR 2011

L. S. Tsai
Chief of Quality Assurance Section

Heat Number : W921
Trans Am Piping Products Ltd.
Shipment / Seq # : S9 - 1158 - 21
4" STD BW CAPS A234-WPB
Rev'd By : SB

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.: 10060315

Contract No.	TPCO-10197E	L/C No.		O.D.×W.T.	4 IN ×STD(114.30×6.02)	Packing	IN BUNDLES
Order	BHD Tubular Limited	Product	SEAMLESS STEEL LINE PIPE	Steel grade	GR.6/290 CAT 2 SS	Total pieces	97
P.O. No.	PO#108410	Port of desti.		Manu. Method	HOT ROLLING SEAMLESS	Total metres	
Standard	CSA Z245.1(2007) ASTM/ASME A/SA 333(2005)			Length range	40-44FT	Total Tons	20.279

	Heat No.	Lot No.	Quantity Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	Tensile test(MPa) 1*	Tem. ℃	T.S.	Type	Y.S.	Elong.%	Shrink %	2*	Tem. ℃	Size	Impact test(J) AK1	Shear %	AK2	Shear %	AK3	Shear %	AVE	Shear %
2	606168	81	97			20.279	N	81-001-1	A	20	500	Rt0.5	340	41.0		A	-56	10*3.3	37	100	36	100	35	100	36	100
	Total		97			20.279		Note:	A:strip,L,bo=25.4mm Lo=50mm																		A:V/L

	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)
3	606168	81	81-001-1		151.0	150.0	151.0	151.0	151.0	152.0	153.0	153.0	153.0	153.0	150.0	150.0	149.0	149.0	150.0	ET+UT/Φ2.2+L3	G	G

	Heat No. / Steel speci.		Chemical composition % (L: Ladle analysis P:Product analysis) C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	CE(CSA)	CE(IIW)	Hydro. Test (Psi/s)
4	606168	L	0.1400	0.25	1.05	0.008	0.003	0.03	0.03	0.01	0.05	0.043	0.030	<0.005	<0.01	<0.0005	0.0021	0.0076			0.32	0.33	2660/8
	14Mn5V	P	0.1400	0.26	1.07	0.009	0.003	0.02	0.03	0.01	0.04	0.039	0.030	0.0100	<0.01	<0.0005		0.0068			0.32	0.34	
		P	0.1400	0.26	1.06	0.009	0.003	0.02	0.03	0.01	0.04	0.039	0.030	0.0100	<0.01	<0.0005		0.0070			0.32	0.33	
		L																					
		P																					
		P																					
		L																					
		P																					
		P																					

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

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

Seal for certification:

No. 10060315 Date 2011-07-29

Page (1)

(FOR EXPORT ONLY)

Note: ( ) ;CE ‖ W=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15;Silicon and calcium treated for inclusion morphology control;in Steel Melting;Normalized: 930℃ x 25minutes

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

CONFORMS TO SA 333-Gr 6
YEAR 2007ED-2009Add
JOB 241-8169-09
ITEM 7
SIGNED BY 11-03-22

4" STD

4" XH BLK SEAMLESS STEEL PIPE
A106 GR B B.E. - D.R.L.

P.O.# 123953 Item# 1
Heat Number: 10603130
Trans Am Piping Products Ltd. - Rev'd By SB
Shipment/Seq #: S10 - 1264 2

CONFORMS TO SA 106-B
YEAR'S 2010 ED
MTS # 2011-8169-09
ITEM # 8
SIGNED BY 11-03-22

4"XH

YANTAI LUBAO STEEL PIPE CO., LTD.

MILL TEST CERTIFICATE

(EN10204 3.1)

NO 189 XINGFU MIDDLE ROAD, YANTAI, CHINA
TEL: 0086 535-6813916/6854750 FAX: (0535)6842245
HTTP://WWW.LUBAOSTEEL-TUBE.COM

PAGE1 OF 1

PURCHASER	TRANS AM PIPING PRODUCTS LTD.	DESCRIPTION OF GOODS	PIPE
DIMENSION STANDARD	ASME B36.10	CUSTOMER'S NO	L00109 / CERTIFICATE NO. UGTYG10051100000700
MATERIAL SPECIFICATION	ASTM A106-B-2006, ASME SA106-B-2007, API 5L B-2007	DATE OF DELIVERY	20100511 / SUB CONTRACT NO G0C6007921
	CSA Z245.1-2007 Gr.241 Cat I	P.O NO.	CI-10-182 / DATE OF ISSUE 20100511
	NACE MR0175-2003/ISO 15156	STAMP OF MILL INSPECTOR	LICENSE NO.

O.D 114.3mm 4" XH N.T 8.56mm Length 11-11.8M Total Length — Total Number — Order Quantity —

Total Pieces — Total Weight — Delivery Condition As-Rolled Making Method Hot Finished Seamless

No	Heat No	*	C	Si	Mn	P	S	Cu	Ni	Cr	V	Mo	Ti	B	Nb	CE	Lot No.	*	*	*	Y.S.	T.S.	E.L.	EYT	*	*	*	*	*	1	2	3	AVG	Hardness Brinnel (HB)	Pieces	Weight MT
																		3	4	5	Mpa		%		3	4	5	6	7							
	MIN		0	0	0.29	0	0	0	0	0	0	0	0	0	0						240	415	22.0												
	MAX		0.22	0.9	1.06	0.035	0.035	0.40	0.40	0.40	0.08	0.15	0.01	0.001	0.01						999	999													
	10603130	H	0.19	0.25	0.46	0.020	0.008	0.01	0.02	0.03	0.01	0.07	0	0	0	0.28	02J1024	P	1	2	310	490	29.0											164		
																		P	1	2	295	470	30.0											164		

Other	E.M.I	U.T.	M.P.I.	Visual & Dimensions	Coating	Drift Test	Hydrostatic Pressure
	GOOD	—	—	Good	Good	—	19.00MPa
Expansion	Ring Expansion	Ring Tensile	Flattening	Bending	Flanging	SSCC	Macrostructure
—	—	—	Good	—	—	—	—

	Duration of Time	Heat Treatment
	5s	—

NOTES: 2* Chemical Composition H Heat (Ladle) Analysis 3* P= Pipe Body; 4* L=Longtudinal 5* 2-ScriptT×20mm. G.L =Gauge Length L1=5.65SQRT(F0)

Remark: *** L/C NO. DPCHCV012667

SURVEYOR: *** HERE CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF ABOVE SPECIFICATIONS AND PURCHASE ORDER, AND MET THE REQUIREMENTS.

CHIEF OF QUALITY CONTROL DEPT.

Order#: 39460 Seq: 2 PO#: 123110 Heat#: KXX Mill: Delcorte
Part#: FS 2 6M HC T 5 Part Desc: Forged Steel 2 (60.3mm O.D.) 6000# (41.4MPA) HALF COUPLING THREADED A/SA105N

DELCORTE S.A.
RACCORDS ACIER-STEEL FITTINGS

J.D

17, Avenue du Corbeau - BP 597
59605 MAUBEUGE CEDEX FRANCE
Tél : 27 69.14.14 Fax : 27.64.25.69

OK

CERTIFICAT DE RECEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ex EN 10204 3.1.b)

Customer: **TUBE FITTINGS AG**
RUTSCHELENSTRASSE 15
4932 LOTZWIL
SUISSE

Order : 12675.08
COMCO NR E1007455 125-001

PO 123110

Certificate n° 138770 / 2 — 21/02/2007

Dispatch note 138770 — 20/02/2007

Material specification: **ASME/ASTM SA105N/A105N-03 CONF NACE MR0175-03**

Heat Treatment: NORMALIZED T° C 843-927

DESCRIPTION

Item	Qty	Designation	Heat N°	Identification	Spec dimension	Localisation
154	25	45 ELBOW SW 6000 2"	06/70950	FC1	ASME B16.11/91	10/06 19182
160	175	HALF CPLG API 6M 2"	06/35196	KXX	ASME B16.11/91	05/06 18855
164	350	RND HD PLUG API 6M2"	06/73577	LFP	ASME B16.11/91	10/06 19330
164	300	RND HD PLUG API 6M2"	06/73577	LFP	ASME B16.11/91	10/06 19330
174	50	RED CPLG API 3000 2"X1"	06/35857	LBF	ASME B16.11/91	06/06 18680
175	20	MF INSERT 3000 2"X1"	06/73577	LFP	DRAWING SW ACC TO ASME B16.11/91	10/06 19330
182	25	RED CPLG API 3000 2"X1"1/2	06/35196	KXW	ASME B16.11/91	05/06 18704
265	500	TEE API 3000 1/4"	06/79515	G621	ASME B16.11/91	03/06 18708
276	300	CPLG API 3000 3/8"	05/77554	KTT	ASME B16.11/91	02/06 18715
281	75	45 ELBOW SW 3000 1/2"	06/79514	G91	ASME B16.11/91	07/06 18991

CONFORMATION 105N
YEAR 2010 ED
JOB 2011-8169-09
ITEM # 9
SIGNED BY 17 MAR 2011

CHEMICAL ANALYSIS

Item	Identif.	C %	Si%	Mn%	P%	S%	Cr%	Mo%	V%	Ni%	Cu%	Cb%	Ce%	Cr+Mo	Cu+Ni+Cr+Mo
mini			0.100	0.600											
maxi		0.250	0.350	1.350	0.035	0.040							0.47	0.320	1.000
154	FC1	0.185	0.200	0.880	0.013	0.001	0.090	0.010	0.017	0.050	0.130	0.001	0.37	0.100	0.280
160	KXX	0.185	0.250	1.000	0.011	0.013	0.090	0.010	0.023	0.050	0.180	0.001	0.39	0.100	0.330
164	LFP	0.195	0.200	0.910	0.010	0.010	0.090	0.010	0.014	0.050	0.160	0.000	0.38	0.100	0.310
164	LFP	0.195	0.200	0.910	0.010	0.010	0.090	0.010	0.014	0.050	0.160	0.000	0.38	0.100	0.310
174	LBF	0.200	0.230	1.090	0.010	0.015	0.100	0.010	0.020	0.050	0.150	0.001	0.42	0.110	0.310
175	LFP	0.195	0.200	0.910	0.010	0.010	0.090	0.010	0.014	0.050	0.160	0.000	0.38	0.100	0.310
182	KXW	0.185	0.250	1.000	0.011	0.013	0.090	0.010	0.023	0.050	0.180	0.001	0.39	0.100	0.330
265	G621	0.185	0.220	0.920	0.011	0.004	0.090	0.010	0.017	0.050	0.160	= 0.000	0.38	0.100	0.310
276	KTT	0.180	0.240	1.170	0.015	0.010	0.100	0.010	0.022	0.050	0.160	0.001	0.42	0.110	0.320
281	G91	0.185	0.230	0.900	0.011	0.009	0.110	0.010	0.019	0.050	0.160	OK	0.38	0.120	0.330

MECHANICAL TESTS

Item	Identi-fication	Re 0.2% N/mm²	Rm N/mm²	A%	Z%	HB
mini		250.0	485.0	22.0	30.0	
maxi						187
154	FC1	312.0	502.0	33.3	58.1	150 - 153
160	KXX	352.0	501.0	28.9	58.3	167
164	LFP	319.0	514.0	32.5	56.8	156 - 158
164	LFP	319.0	514.0	32.5	56.8	156 - 158
174	LBF	384.0	524.0	28.0	56.8	166
175	LFP	319.0	514.0	32.5	56.8	156 - 158
182	KXW	352.0	501.0	28.9	58.3	155
265	G621	315.0	508.0	32.9	57.5	151
276	KTT	332.0	538.0	31.1	55.3	159
281	G91	314.0	506.0	33.0	57.7	158

VISA Brunmont
le 160307
JD Service AQ

Others
RE 0.2 % = YIELD STRENGTH - RM = TENSILE STRENGTH - A % = ELONGATION - Z % = REDUCTION OF AREA

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.
We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensionnal control.

Quality département

Réalisation DECLIC 3000 tél 27 66 14 71

P.O.#, 125578 Item# 2
Heat NumDer: 58180
Trans Am Piping Products Ltd. - Rev'd By: SED
Shipment/Seq #: S 10 - 1724 61

2X8-36 STD FS B/W PIPET A105N

(25) 125001

PO# 125578

INTERNATIONAL
NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone: 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

MTR #: 200,410

PO #: CI-10-588

Sales Order #: C001014440 Date: 12/28/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58180

Material: A/SA105N 09

Item	Quantity	Description
66		36 - 8 X 2 STD BWP A/SA105N
82		6 - 3 1/2 X 2 XS BWP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.200	0.03	0.100	1.04	0.010	0.01	0.04	0.008
	S	SI	V					
	0.019	0.17	0.02					

Carbon Equivalency: Ladle 0.39

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	72,500	48,750	34.20	62.30	132 BHN	135 BHN

Normalized

I. IN ACCORDANCE WITH NACE SPEC MR0175-2002

CONFORMS TO SA 105N
YEAR 2010 ED
JOB 2011-8169-09
ITEM # 10
SIGNED BY 18 MAR 2011

Marie Dehmer
Quality Assurance Representative

P.O.# 125165 Job# 125-001 Item# 4
Heat Number: 931272
Trans Am Piping Products Ltd. - Rev'd By: SB
Shipment/Seq #: S10 . 1668 . 1

2" CL 300 W/N FLANGE RF STD
BORE A105N

125-001

SANEING STEEL FORGING CO.,LTD.
311, Jen Hsin Road, Jen Wu Hsiang
Kaohsiung Hsien, Taiwan, R.O.C.
TEL: 07-3724249 FAX: 07-3712823
URL: www.saneng.com.tw
e-mail: saneng@ksts.seed.net.tw

MILL TEST CERTIFICATE

EN10204-3.1 B/D:N5004/9/3.1.B)

PO #125165

Customer: TRANS AM PIPING PRODUCTS LTD
Order No: 7003502.1-7/A

Certificate No.: SE 3502A
Date: 12/06/2010
Page: 1 OF 1

PRODUCT	MATERIAL SPECIFICATIONS	DIMENSIONAL SPECIFICATIONS
FORGED CARBON STEEL FLANGES	ASTM A105-09/ASME SA105-09	ASME B16.5-09 CSA Z245.12

Item No	CUSTOMER P/N	DESCRIPTION	QUANTITY
1		300 WNRF STD 2" A105N	
2		300 WNRF STD 2" A105N	
3		300 WNRF XS 2" A105N	
4		300 WNRF XS 2" A105N	
5		300 WNRF XXS 2" A105N	
6		300 WNRF XXS 2" A105N	

CHEMICAL COMPOSITION (%)

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N			CE(*3)
Min	-	0.100	0.600	-	-	-	-	-	-	-	-	-			
Max	0.350	0.350	1.050	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020				
1	0.211	0.240	1.000	0.013	0.014	0.006	0.019	0.054	0.002	0.007	0.005	0.004			0.385
2	0.210	0.210	1.150	0.007	0.013	0.040	0.060	0.030	0.009	0.003	0.005	0.011			0.423
3	0.207	0.270	1.080	0.011	0.011	0.007	0.049	0.044	0.005	0.042	0.005	0.005			0.401
4	0.210	0.210	1.150	0.007	0.013	0.040	0.060	0.030	0.009	0.003	0.005	0.011			0.420
5	0.200	0.200	1.160	0.007	0.011	0.060	0.040	0.030	0.005	0.003	0.005	0.010			0.408
6	0.222	0.270	1.040	0.016	0.012	0.005	0.016	0.051	0.002	0.009	0.005	0.003			0.403
	0.210	0.210	1.150	0.007	0.013	0.040	0.060	0.030	0.009	0.003	0.005	0.011			0.420

Item No	Heat No	TS (*1) (MPA)	YS (*1) (MPA)	EL (*1) (%)	Hardness (HB)	RA (*1) (%)	Impact Test Temp Minimum Joule 1	2	3	Material Supplier
Min		485.0	250.0	22.0	-	30.0				
Max		-	-	-	187					
1	931272	509.9	319.7	35.2	154	66.0				NTMK
2	13145	521.7	317.7	34.4	153	67.7				OEMK
3	10984	519.8	342.1	35.2	151	69.5				NTMK
4	13145	521.7	317.7	34.4	153	67.7				OEMK
5	12144	519.3	311.9	33.2	150	65.9				OEMK
6	920981	521.7	337.3	32.2	157	65.0				NTMK
7	13145	521.7	317.7	34.4	153	67.7				OEMK

■ HEAT TREATMENT(*2)
☑ N

■ REMARKS
850°C X3HRS
CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156-2
CONFORMS WITH Z245.12 CAT I GR 246 SOUR SERVICE-05
TEST SPECIMEN ORIENTATION: TRANSVERSE

(*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 found with the requirements called for by the above order.

CSA Z245.1 SA 105N
YEAR 2010 ED
JOB # 2011-8169-09
ITEM # 11
SIGNED BY 17 MAR 2011

Manager of Quality Assurance Dept.

P.O.# 123071-125-01 Item 1
Heat Number: 57984 1/2X3/4-[illegible] CL 3000 FS THREADED PIPET
Trans Am Piping Products Ltd. - Rev'd By: SB A105N
Shipment/Seq #: S 10 - 1157 4

INTERNATIONAL WFI NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
1407 Haygood St. Houston, TX 77022
Phone: 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

OK

Mtr #: 186.828

PO #: CL-10-180

Sales Order #: C0010002982 Date: 03/31/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed

We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 57984 ←

CONFORMS TO SA 105N
YEAR 2010 ED
JOB 2011-8169-09
ITEM # 13
SIGNED BY 17 MAR 2011

125-057

PO #123071

Material: A/SA105N 09

Item	Quantity	Description
14		36 - 3/4 X 1/2 3M THP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NI	P	S
	0.200	0.02	0.040	1.08	0.010	0.03	0.006	0.022
	SI	V						
	0.24	0.004						

Carbon Equivalency: Ladle 0.39

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	72,500	48,750	34.05	61.55	130 BHN	132 BHN

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

Normalized

Marie Dehmer
Quality Assurance Representative

P.O.# 124834 Job# 125-0 Item# 15
Heat Number: 58010
Trans Am Piping Products Ltd. Rev'd By: SB 3/4X11/2-36 CL 3000 FS THREADED PIPET
Shipment/Seq #: S 10 - 1390 17 A105N

INTERNATIONAL
NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone 713-695-3633 Fax: 713-695-3529
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9535 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

Mtr #: 192,876
PO #: CI-10-355
Sales Order #: C001008457 Date: 08/03/2010

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 58010 ←

125-001

PO # 124834

Material: A/SA105N 09

Item	Quantity	Description
17		36 - 1 1/2 X 3/4 3M THP A/SA105N ←
36		36 - 1 1/2 X 3/4 3M SWP A/SA105N

105N
2010 EB
2011-8169-09
15
17 MAR 2011

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.040	1.02	0.000	0.013	0.02	0.007
	S	SI	V					
	0.024	0.22	0.003					

Carbon Equivalency: Ladle 0.39

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	75,500	51,000	29.00	66.00	149 BHN	149 BHN

Normalized

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002

Marie Dehmer
Quality Assurance Representative

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

RADIOGRAPHY REPORT

CUSTOMER:	DESCRIPTION:	ALCO JOB NUMBER:
HUSKY ENERGY	NPS 4 CL300 LEVEL CONTROL CAGE	2011-8169-09
DATE:	TECHNIQUE # USED:	CODE:
MAR 22 2011	RT P#2 REV # 0	B31.3
MATERIAL:	MAT'L THICKNESS:	EDITION: 2008a ADDENDA: -
P1	STD	ACCEPTANCE: 5% RANDOM

[1] NO. OF FILMS PER CASSETTE

LEGEND: * - WELDER SYMBOL; IP - INCOMPLETE PENETRATION; BT - BURN THROUGH; IC - INTERNAL CONCAVITY; HL - HI LO; LC - LOW COVER; UC - UNDER CUT; AS - ARC STRIKE; S - SLAG; P - POROSITY; I - ICICLE; C - CRATER; CRACK (1) SLIGHT (2) MEDIUM (3) SEVERE

[ ] SINGLE WALL EXPOSURE
[X] DOUBLE WALL EXPOSURE
[X] SINGLE WALL VIEWING
[ ] DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC		REMARKS	ACC	REJEC
XR1	4" SCH 40	33													✔	

COSTING

SOURCE TYPE:	IR 192			HRS.	
STRENGTH:	32 Ci			8" FILM	
SOD:	4.163"			17" FILM	
OFD:	.237"			PIPE	
FILM TYPE:	AGFA D4 CLASS 1	1	4" SCH 40	PIPE	
FOCAL SPOT SIZE:	.12"			PIPE	
				PIPE	

@			
@			
@			
@			
@			
@			
@			

COMMENTS: _____ TOTAL EXPOSURES: 3

TOTAL COSTS

PAGE 1 OF 1 INSPECTOR BARRY RASMUSSEN LEVEL SNT III CGSB II

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: *2011-8169-09*

DESCRIPTION: *LEVEL CONTROL CAGE*

NAME OF AUTHORIZED INSPECTION AGENCY: *N/A*

TYPE OF TEST:
HYDROSTATIC ☒
PNEUMATIC ☐
HYDROTATIC-PNEUMATIC ☐

TEST PRESSURE: *620* psig

POSITION OF THE UNIT TESTED
HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: *Water* **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: *ALCO QCP-71*

PRESSURE GAUGE(S) NUMBER: *G5 & G10*

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO LEAKS OR OTHER DEFECTS WERE FOUND.

3/23/2011

QC INSPECTOR/ ALCO GAS & OIL **DATE**

3/23/2011

3RD PARTY INSPECTOR **DATE**

AUTHORIZED INSPECTOR **DATE**