

Vendor: ALCO

W 3166.2

Doc #: 2013-8440-51

8440-01A

Vendor Rev #: -

Description: QUALITY CONTROL DATA BOOK

**devon**

REVIEW STAMP

PROJECT NO. \_\_\_\_\_

1. REVIEWED & ACCEPTED. MANUFACTURE MAY PROCEED
2. REVIEWED & ACCEPTED AS MARKED. REVISE & RE-SUBMIT. MANUFACTURE MAY PROCEED
3. REVISE AS MARKED & RE-SUBMIT. MANUFACTURE SHALL NOT PROCEED
4. REVIEW NOT REQUIRED. FOR INFORMATION ONLY. MANUFACTURE MAY PROCEED

Acceptance in any of these categories in no way relieves the Contractor/Supplier of its responsibility for the due and proper performance of the Works in accordance with the Contract/Purchase Order.

Name ..... *Dave Mahlerley* .....

Signed ..... *DAM* ..... Date *Dec. 8 2014*

DATE	JOB NO.	PURCHASE ORDER NO.
11/18/2014	407014-00120	ME-POD-0023
<b>VTRI-2595</b>	DEVON MR. NO.	
	FE-CPF-M023	
EQUIP. NO.	WORLEYPARSONS VP NO.	REV.
002-PK-10-2000	407014-00120-ME-POD-0023-0122 <i>123</i>	1

1. See attached Document Review Comment sheet for comments/missing QA/QC Records, as noted in the SDDR, and resubmit.
2. Vendor to also address Worley Parsons Discrepancy List items, and resubmit.

**WorleyParsons**  
resources & energy

REVIEW STAMP

PROJECT NO. \_\_\_\_\_

1. REVIEWED & ACCEPTED. MANUFACTURE MAY PROCEED
2. REVIEWED & ACCEPTED AS MARKED. REVISE & RE-SUBMIT. MANUFACTURE MAY PROCEED
3. REVISE AS MARKED & RE-SUBMIT. MANUFACTURE SHALL NOT PROCEED
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Name ..... *M/H* .....

Signed ..... *M/H* ..... Date *26 Nov 14*

**THIS STAMP GOVERNS THE FINAL CODING OF THE MANUFACTURERS DATA BOOK**

**NOTE: SIGN OFF OF WORLEYPARSONS APPROVAL STAMP IS ONLY APPLICABLE TO THE ENGINEERING PORTION OF THE MANUFACTURERS DATA BOOK. QA/QC PORTION TO BE REVIEWED AND APPROVED BY DEVON**

# Document Review Comments

ALCO GAS & OIL PRODUCTION – M023 407014-00120-ME-POD-0023-0123\_S1

QA Review Notes, errors, and/or missing MRB documents, as per the SDDR for Tag 002-PK-10-2000:

## GENERAL COMMENTS

- The MRB is to be one pdf document, with bookmarks noting the sections of the MRB as per the approved Table of Contents layout.
- Where are all the drawings, and specifically the vessel/piping drawings?
- Within the Purchase Order Package SCM-F-1120 document, 4.0 Final Documentation, para.4.1, a Table of Contents is to be submitted for review/approval. This has not been received. The ToC should be the first document within the MRB, listing all subsections of the data package. Then the MRB is assembled in that order.

THIS SECTION WILL BE USED TO IDENTIFY ONLY QA/QC MISSING DOCUMENTS, AS PER THE P.O. SDDR

### ***B. QA/QC RECORDS***

- B12 Weld Maps missing
- B13 Certified Welding Procedures missing
- B23 Factory Acceptance Test Procedure missing
- B25 Certified Mechanical Run Test Data missing
- B26 Vertical Pump Head Resonance Test missing
- B27 Procedures for Mechanical, Performance & Optional Test missing
- B30 Weld Procedure Qualification Records (welder qualification tickets) missing
- B34 Contractor Certifications (ASME, CWB, CSA, etc.) missing
- B35 Jurisdictional Permits missing
- B40 Insulation & Jacketing Inspection and Acceptance Report (if applicable) missing
- B41 Performance Test Report missing
- B46 Welder Log and Statistics missing
- B50 Pre-Lift Inspection Report missing
- B51 Equipment Bolt Torque Checklist missing
- B54 PSV Shop Pop Test Records missing

Project Title.	CNRL, Ferrier Central Processing Facility	Date:	11/26/2014
WP Project No.	407014-00120	Rev.	0
Devon Project No.	MR-0023		
MR Title:	COB CHD package 002-PK-10-2000		
WP MR No.	407014-00120-ME-POD-0023		
Data book Doc No.	Quality Control databook (0023-0123)		

### Final Data Books Discrepancy List

Item	Description	Reference	Remarks
1	Vessel mechanical design calculation (including lifting lug calculation) per SDR C1 and C28 are missing. Please provide.		
2	Piping flexibility and stress analysis per SDR C2 needs to be added.	Alco no.: D-2013-8440-51 (0023-0101)	

## **QUALITY CONTROL DATA BOOK**

**CNRL Ferrier Project  
Suite 2000, 400 – 3<sup>rd</sup> Ave. S.W.  
Calgary, AB  
T2P 4H2**

**2013-8440-51**

**Ferrier CFP Project  
LSD: 11-02-039- W5M**

**INSPECTION & TEST PLAN**

<b>SHOP ORDER NO.</b>	<b>DESCRIPTION</b>	<b>CLIENT PO:</b>		
8440-51	LEP Closed Hydrocarbon Drain Package/ 002-PK-10-2000	4100001343		
<b>PROJECT</b>		<b>MANUFACTURING CODES</b>		
Ferrier CPF Project 11-02-039-08 W5M		ASME SEC VIII DIV 1, 2010 ED. 2011a ADD. ASME B31.3, 2010 ED.		
<b>INSPECTION AGENCY</b>		ASME B16.5 CSA W59 CSA 47.1		
<b>APPLICABLE SPECIFICATIONS</b>				
Customer Spec. No.:	Description	Date / Rev.		
GS-5210	Piping Class Specification - A11	1		
GS-5300	Valve and Valve Classes - AA	1		
GS-5310	Valve Technical Descriptions	0		
GS-6100	Painting	2		
GS-6200	Internal Coating for Vessels	0		
GS-6300	Thermal Insulation	0		
00-GE-CRT-0001	Electrical and Automation Packaged Equipment Criteria	3		
00-AR-SPC-0001	Metal Roof, Wall Cladding and Steel Doors	A		
00-IC-PHL-0001	Instrumentation and Control Philosophy	C		
00-IC-PHL-0004	Motor Control Philosophy	B		
<b>Rev.</b>	<b>Prep. By</b>	<b>Appr. By</b>	<b>Initial</b>	<b>Rev. Description</b>
A	RE	RE		
0	RE	RE		





## INSPECTION & TEST PLAN

<b>SHOP ORDER NO.</b>	<b>DESCRIPTION/TAG</b>	<b>CLIENT PO:</b>		
8440-51	LEP Closed Hydrocarbon Drain Package/ 002-PK-10-2000	4100001343		
<b>PROJECT</b>		<b>MANUFACTURING CODES</b>		
Ferrier CPF Project 11-02-039-08 W5M		ASME SEC VIII DIV 1, 2010 ED. 2011a ADD. ASME B31.3, 2010 ED.		
<b>INSPECTION AGENCY</b>		ASME B16.5 CSA W59 CSA 47.1		
<b>APPLICABLE SPECIFICATIONS</b>				
Customer Spec. No.:	Description	Date / Rev.		
GS-2410	Structural Steel	0		
GS-2510	Metal Buildings	0		
GS-2530	Skid Assemblies and Modular Structures	0		
GS-3310	Pressure Vessels	0		
GS-3510	Packaged Equipment	0		
GS-3620	Glycol Tracing	0		
GS-3710	Welding Specification	0		
GS-4010	Electrical Design	1		
GS-4020	Electrical Installation	1		
GS-4025	EIC Testing on Pre-Packaged Skids	2		
GS-4040	Low Voltage Control Panel	1		
GS-4050	Combustible Gas H2S and Fire Detection	1		
GS-4140	Motors Below 400 HP	1		
GS-4410	Measurement Equipment - Installation Criteria	12-Jul-11		
GS-4500	Instrument Design and Installation	1		
GS-4600	Instrumentation Installation Index	23-Oct-09		
GS-4710	Process Automation Systems	0		
GS-4720	HMI Graphics	0		
GS-4730	Process Automation Systems Programming Standard	0		
GS-4740	Process Automation Systems Alarm	0		
GS-5100	Piping Design and Configuration	0		
GS-5200	Piping Material Fabrication Installation	0		
Rev.	Prep. By	Appr. By	Initial	Rev. Description
0	RE	RE		

## INSPECTION AND TEST PLAN

SL NO	ACTIVITY DESCRIPTION	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	DOCUMENT	CLIENT	3RD PARTY INSPECTOR	3RD PARTY SIGN OFF	ALCO
<b>PRESSURE VESSELS WITH 'U' STAMP</b>								
1	<b>REVIEW WPS &amp; PQR</b>	ASME SEC. IX	ASME SEC. IX	WPS/PQR	H	R	DB	R
2	<b>REVIEW WELDER QUALIFICATION</b>	ASME SEC. IX	ASME SEC. IX	WQTR	R	R	DB	R
3	<b>CHECK MTR's OF PRESSURE PARTS INCLUDING CONSUMABLES</b>	ASME SEC. IX	ASME SEC. IX	MTR	R	R	DB	H
4	<b>REVIEW OF QC MANUAL &amp; PROCEDURES</b>		ASME SEC.V ASME SEC. VIII DIV.I DRAWING CODE	QCM/QCP	R	R	DB	R
5	<b>MATERIAL IDENTIFICATION STAMPING OF PRESSURE PARTS</b>	DRAWING/SPEC	ASME SEC.II	MCL/MR		R	DB	H
6	<b>SET UP INSPECTION</b>	DRAWING	DRAWING/CODE	TS		S	DB	H
7	<b>VISUAL INSPECTION INTERNAL, EXTERNAL &amp; DIMENSIONAL</b>	DRAWING	ASME V / ASME VIII DIV 1	TS		S	DB	H
8	<b>RADIOGRAPHY TESTING OF WELDS</b>	DRAWING/CODE	ASME SEC VIII DIV. I	RTR		R	DB	H
9	<b>ULTRASONIC TESTING OF WELDS</b>	DRAWING/CODE	ASME SEC VIII DIV. I	UTR		R	DB	H
10	<b>INTERMEDIATE/FINAL MPT/LPT</b>	DRAWING/CODE	ASME SEC VIII DIV. I	MPIR/LPTR		R	DB	H
11	<b>AIR TEST OF REINFORCING PADS (IF REQUIRED)</b>	DRAWING/SPEC	DRAWING/SPEC	ATR		R/ W	DB	N/A H
12	<b>TUBES &amp; TUBESHEET DIMENSIONAL CHECK</b>	DRAWING	DRAWING	IR		S		N/A R
13	<b>WELDERS IDENTIFICATION</b>	DRAWING		RTR/VESSEL STAMPING		S	DB	H
14	<b>HYDRO TEST</b>	DRAWING	ASME VIII DIV 1	HR		W/ H	DB	H
15	<b>ABSA REVIEWED AND STAMPED DRAWINGS</b>	DRAWING	ASME SEC. VIII	CRN			DB	H
16	<b>FINAL COMPLETION NAME PLATE / MDR / PARTIAL MDR</b>	DRAWING	ASME SEC VIII	MDR/NAMEPLATE COPIES		S	DB	H

## INSPECTION AND TEST PLAN

SL NO	ACTIVITY DESCRIPTION	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	DOCUMENT	CLIENT	3RD PARTY INSPECTOR	3RD PARTY SIGN OFF	ALCO
17	<b>PAINTING INSPECTION</b> SURFACE PREP, DFT CHECK	DRAWING SPEC	COATING SPEC	IR		S		 H
18	<b>FINAL RELEASE NOTE FROM ALCO / 3rd PARTY INSPECTOR</b>	DRAWING		RELEASE DOCUMENT	H	H		 H



## INSPECTION AND TEST PLAN

SL NO	ACTIVITY DESCRIPTION	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	DOCUMENT	CLIENT	3RD PARTY INSPECTOR	3RD PARTY SIGN OFF	ALCO
<b>STRUCTURAL WORK</b>								
19	<b>REVIEW WPS &amp; PQR</b>			WPS/PQR	H	R	DB	H ✓
20	<b>REVIEW WELDER QUALIFICATION</b>		CSA W59	CWB		R	DB	H ✓
21	<b>CHECK MATERIAL FOR CONFORMITY</b>		CISC			R	DB	H ✓
22	<b>SET UP INSPECTION</b>	DRAWING	DRAWING	TS		S	DB	R ✓
23	<b>VISUAL/NDT INSPECTION</b>	DRAWING	DRAWING	TS		H	DB	H ✓
24	<b>PAINTING INSPECTION SURFACE PREP &amp; COATING</b>	DRAWING/SPEC	SPEC			S	DB	DS H
25	<b>VISUAL INSPECTION AFTER WELDING</b>						DB	H ✓

## INSPECTION AND TEST PLAN

SL NO	ACTIVITY DESCRIPTION	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	DOCUMENT	CLIENT	3RD PARTY INSPECTOR	3RD PARTY SIGN OFF	ALCO
<b>PIPING &amp; HOOK-UP ASSEMBLY</b>								
26	REVIEW NDT (LOT REQUIREMENT FOR RT)		B31.3					2
27	HYDRO /PNEUMATIC TEST	DRAWING	B31.3	AB83	W/H	W	DD	DA H
28	FINAL COMPLETION			AB83			DD	DA H
29	PAINTING INSPECTION SURFACE PREP & COATING	DRAWING/SPEC	DRAWING/SPEC			S	DD	DA H
30	INSULATION INSPECTION	SPEC	SPEC			S	DD	DA H
31	FUNCTIONAL/ CALIBRATION OF LEVEL SWITCHES INSTRUMENTATION ITEMS	DRAWING/SPEC	DRAWING/SPEC				DD	N/A
32	TEST REPORTS	SPEC	SPEC	VENDOR REPORT				N/A

## INSPECTION AND TEST PLAN

SL NO	ACTIVITY DESCRIPTION	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	DOCUMENT	CLIENT	3RD PARTY INSPECTOR	3RD PARTY SIGN OFF	ALCO
<b>SKID ASSEMBLY FINAL CHECK</b>								
33	<b>CHECK ALL COMPONENTS AS PER P&amp;ID</b>	DRAWING	DRAWING	INSP REPORT		H		JA H
34	<b>EQUIPMENT SHOP ERECTION</b>							
	A) ALIGNMENT/ ORIENTATION OF EQUIPMENT	DRAWING	DRAWING	TS				JA
	B) WELDING/BOLTING OF EQUIPMENT	DRAWING	DRAWING	TS		S		H
35	<b>CHECK CONNECTION PIPING AS PER P&amp;ID</b>	DRAWING	DRAWING	INSP REPORT		S		JA H
36	<b>FINAL VISUAL &amp; DIMENSIONS OF COMPLETE ASSEMBLY</b>	DRAWING	DRAWING	INSP REPORT		H	JD	JA H
37	<b>SURFACE PREPARATION &amp; PROTECTIVE COATING</b>	SPEC	SPEC			S	JD	JA H
38	<b>FINAL INSPECTION RELEASE NOTE</b>	DRAWING	DRAWING	RELEASE NOTE	H	H	JD	JA H
39	<b>DATA BOOK REVIEW</b>	PURCHASE ORDER	PURCHASE ORDER			R		JA

### LEGEND

<b>H</b> - HOLD	<b>MTR</b> - MATERIAL TEST REPORT
<b>W</b> - WITNESS	<b>QCM</b> - QUALITY CONTROL MANUAL
<b>S</b> - SURVEILLANCE	<b>QCP</b> - QUALITY CONTROL PROCEDURE
<b>R</b> - REVIEW DOCUMENTS	<b>RTR</b> - RADIOGRAPHIC TEST REPORT
<b>MR</b> - MATERIAL REPORT	<b>UTR</b> - ULTRASONIC TEST REPORT
<b>TS</b> - TRAVEL SHEET	<b>HR</b> - HYDROSTATIC TEST REPORT
<b>ATR</b> - AIR TEST REPORT	<b>ITR</b> - IMPACT TEST REPORT
<b>IR</b> - INSPECTION REPORT	<b>MCL</b> - MATERIAL CONTROL LIST
<b>WPQR</b> - WELDER QUALIFICATION TEST RECORD	
<b>MPTR</b> - MAGNETIC PARTICLE TEST REPORT	
<b>LPTR</b> - LIQUID PENETRANT TEST REPORT	
<b>PWHTR</b> - POSTWELD HEAT TREATMENT RECORD	
<b>DRAWING/SPEC</b> - MEANS APPROVED DRAWING/SPEC	
<b>SPEC</b> - MEANS CUSTOMER SPECIFICATION AS PER ALCO EXCEPTIONS	
<b>ABSA</b> - ALBERTA BOILERS SAFETY ASSOCIATION	
<b>ASME</b> - AMERICAN SOCIETY OF MECHANICAL ENGINEERS	



INSPECTION GROUP INC.



2836 Ellwood Dr., Edmonton, AB, Canada, T6X 0A9, Phone: (780) 450-8883 Fax: (780) 450-8884, projects@mtlinspection.com

INSPECTION RELEASE REPORT

MTL Job No. 3048-2 Release No. 001
Devon PO# 4100001343 / FE-CPF-M023 WBS No. 01-00348.01.02.03
Project Ferrier - Central Processing Facility Location / LSD Ferrier - CPF LSD: 11-02-39-08 W5M
Client Project Engineer Susan Chin - Engineer, Shane Usipuik - QA Lead, Amrik Dhaliwal - Expeditor Phone 403-776-6403, Susan.chin@dvn.com, 403-232-7497, Shane.usipuik@dvn.com, 403-776-6435, Amrik.dhaliwal@dvn.com
Vendor Alco Gas & Oil Production - Edmonton, AB Vendor Job No. 8440-51
Vendor Primary Contact Michael Wagner - Calgary, AB Phone 403-243-5055
Equipment (1) Closed Hydrocarbon Drain Package Tag No. 002-PK-10-1000
Carrier Trans Tech Trailer No. 05-0030-02
Packing Slip No. Waybill No.

Table with 6 columns: Rev #, Inspection, Shipping, Details, Date, Inspector, Vendor. Row 0: Final inspection and load out, August 13, 2014.

Description of Material or Equipment

- Closed Hydrocarbon Drain Package c/w ship loose items.

Table with 4 columns: Shop Release, Description, Yes, No, N/A. Contains 4 rows of release criteria.

Deficiency Items if Applicable

Attached N/A Comments:

Dan de Groot

Inspector

Signature

Signature

August 13, 2014

Date

780-218-1298

Phone

didegroot@telus.net

E-Mail

Any omission or failure on part of the inspector to disapprove or reject any work or materials shall not be construed as acceptance of any defective work or materials. DOCUMENT T45 (Rev 1)



INSPECTION GROUP INC.

AMVIC  
REGISTERED  
INSPECTOR

devon

2836 Ellwood Dr., Edmonton, AB, Canada, T6X 0A9, Phone: (780) 450-8883 Fax: (780) 450-8884, [projects@mtinspection.com](mailto:projects@mtinspection.com)

David Glasgow	David Glasgow	Aug 13/14	780-465-9061	dave.glasgow@alcoogasoil.com
Vendor Quality Representative	Signature	Date	Phone	E-Mail
ADDITIONAL NOTES				



INSPECTION GROUP INC.

2836 Ellwood Drive S.W. Edmonton, AB T6X 0A9  
 Office: (780) 450-8883 Fax: (780) 450-8884  
 www.mtlinspection.com

Page 1Job # 3048-2.Date July 23, 2014Client CURLShop AICOShop Job # 2013-8440-51

## ACTION ITEM REPORT

VENDOR  
REPRESENTATIVESIGN OFF  
DATE

ACTION ITEM REPORT	VENDOR REPRESENTATIVE	SIGN OFF DATE
1) Install safety gate.		DD July 30/14
2) No grease nipple on davit arm assemblies.		
3) Duct tape on flanges. May be difficult to remove on site.		
4) Cover all openings prior to shipping.		DD Aug 13/14
5) Paint quality on ladder/platform below average.		DD Aug 13/14
6) Paint touch ups needed on floor.		DD July 30/14
7) Missing plug on gate valve on Header line.		DD July 30/14
8) Seal windows, doors for shipping.		DD July 30/14
9) Subject to all electrical items are addressed.		DD July 30/14
10) General clean up.		DD Aug 13/14

MTL REPRESENTATIVE:

DATE:

July 23/14

VENDOR REPRESENTATIVE:

DATE:

July 23/14

**Phase # :** 2013-8440-51  
**Phase Title:** COB Closed Hydrocarbon Drain Package  
TAG: 002-PK-10-2000

## 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)	X	
12. Hydro Chart	X	
13. PSV & Valve Cert.	X	



the pressure equipment safety authority

# PI SSURE PIPING CONSTRUCTI 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: TAG: 002-PK-10-2000  
(Name of ABSA authorized primary contractor or subcontractor)  
5203 - 75<sup>th</sup> Street, Edmonton, Alberta T6E 5S5  
(Address)

Certificate of Authorization Permit No. AQP-1004(S) Expiry Date: Oct. 7<sup>th</sup>, 2016

2. Constructed For: \_\_\_\_\_  
(Name of primary contractor if different from above)  
 \_\_\_\_\_  
(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: Canadian Natural Resources Ltd. 2500, 855 - 2<sup>nd</sup> St. SW. Calgary, AB T2P 4J8  
(Name and address)  
LSD: 11-02-039-08 W5M Ferrier CFP Project, AB  
(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 0.5m<sup>3</sup>)

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-N/A  
(Alberta Registration No.) (Alberta Registration No.)  
 WPS No(s). used: CA-P1G1G2-AW-LT-R2; Owner's WPS No(s). (If used): N/A

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   
 High Purity

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-2013-8440-51S -001 Rev. 1 Iso #1	H.C. liquids	1,579	-29/149	3,033	H <sub>2</sub> O	SA-106-B	1.6	6" Std.	SA-105N CL 150	None / 10	10% R.T / 100% V.T.
B-2013-8440-51S -002 Rev. 1 -009 Rev. 0 Iso #2, Iso #9	Gas	1,579	-29/149	3,000	H <sub>2</sub> O	SA-106-B	1.6	6" Std 2" XH	SA-105N CL 150	None / 10	10% R.T / 100% V.T.
B-2013-8440-51S -003, -004, -005, -006 Rev. 1 -007 Rev. 0 Iso #3, Iso #4, Iso #5, Iso #6, Iso #7	Condensate	1,579	-29/149	2,965	H <sub>2</sub> O	SA-106-B	1.6	4", 3" Std 2", 1 1/2" XH	SA-105N CL 150	None / 10	10% R.T / 100% V.T.

Constructed by: Alco Gas & Oil Production Equipment Ltd. Owner's Job # 22

TAG: 002-PK-10-2000



B-2013-8440-51S -008 Rev. 1 Iso #8	Fuel Gas	1,579	-29/149	3,000	H <sub>2</sub> O	SA-106-B	1.6	2" XH	SA-105N CL 150	None / 10	10% R.T / 100% V.T.
B-2013-8440-51S -010, -011, -012 Rev. 1 Iso #10, Iso #11, Iso #12	Hot Oil	1,579	-29/149	2,965	H <sub>2</sub> O	SA-106-B	1.6	2", 1 1/2" XH	SA-105N CL 300	None / 10	10% R.T / 100% V.T.
B-2013-8440-51S -013 Rev. 1 Iso #13	Air	1,034	-45.6/38	3,000	H <sub>2</sub> O	SA-106-B	1.6	2" XH	SA-105N CL 150	None / 10	10% R.T / 100% V.T.
B-2013-8440-51S -014 Rev. 1 Iso #14	Gas / Condensate	1,579	-29/149	3,033	H <sub>2</sub> O	SA-106-B	1.6	2" XH	SA-105N CL 300	None / 10	10% R.T / 100% V.T.
D-2013-8440-51F -001 Rev. 2 D-2013-8440-51A -001 Rev. 2 -002, -003 Rev. 1 SW pipe lines from Iso #10 through bldg. htr. 002-UHG-10-2080 to Iso #12 and from Iso #12 through and past TCV-2010A to Iso #12 and by-pass line from Iso #10 to Iso #12	Hot Oil	1,579	-29/149	2,965	H <sub>2</sub> O	SA-333 Gr. 6 SA-106-B	1.6	1 1/2", 1", 1/2" XH 1" Sch 160	N/A	None / 10	100% V.T.
Thr'd pipe lines from Iso #'s 13-1 & 13-2 throughout the skid package and tubing to PCV-2010A	Air	1,034	-45.6/ 38	1,138	Air / Nitrogen	SA-106-B SA-213 TP 316/316L	1.6 / 0	1" XH 3/8" 20 BWG	N/A	N/A	100% V.T.
Thr'd tubing to PG-1010	Gas	1,579	-29/149	2,965	H <sub>2</sub> O	SA-213 TP 316/316L	0	1/2" 18 BWG	N/A	N/A	100% V.T.
Heat trace tubing on Iso #'s 1 & 8 O/S bldg..	Hot Oil	1,379	-29/149	2,965	H <sub>2</sub> O	SA-213 TP 316/316L	0	1/2" 20BWG	N/A	N/A	100% V.T.
Function tested TCV-210 A and TYI-2010A				720 or as regulated	Air	SA-213 TP 316/316L	0	3/8" 20BWG	N/A	N/A	100% V.T.

28

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.)

Alco Job# 2013-8440-51

Endorse certificate 'A' or 'B'

<p><b>A. CERTIFICATE OF COMPLIANCE</b> Signed by the subcontractor when supplying this certificate as a <b>Partial Data Report</b></p> <p>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).</p> <p>Date: _____ Contractor _____</p> <p>_____ Print Authorized Representative's Name                      Signature</p> <p><b>This certificate is not valid unless it forms part of a Final Data Report signed by Primary Contractor</b></p>	<p><b>B. CERTIFICATE OF COMPLIANCE</b> Signed by the primary contractor when supplying this certificate as a <b>Final Data Report</b></p> <p>We certify that the statements in this Data Report are correct and that piping job no. Tag: <u>002-PK-10-2000</u> 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).</p> <p>Date: <u>May 27, 2014</u> <u>Alco Gas &amp; Oil</u> Contractor _____</p> <p><u>David Glasgow</u> <i>David Glasgow</i> Print Authorized Representative's Name                      Signature</p>
---	--

**CERTIFICATE OF INSPECTION**

I, the undersigned, employed by CURL 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: <u>June 9, 2014</u>	Date: _____
<u>Dan de Groot</u> Owner's Inspector Name (please print)	_____ ABSA Safety Codes Officer (please print) (BOILER EXTERNAL PIPING ONLY)
<u>[Signature]</u> Owner's Inspector Signature:	_____ ABSA Safety Codes Officer's Signature

Current version of this Form may be obtained from [www.absa.ca](http://www.absa.ca)



U  
W  
RT2

Certified By

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

50 psi at 300 °F  
Max. Allowable Working Pressure

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

-49 °F at 50 psi  
Minimum Design Metal Temperature

2014  
Year Built

2013-8440-01A  
Serial Number

CRN W-3168.2

A No. (A) 655715

NAME CLOSED HYDROCARBON DRAIN VESSEL TAG

HEAD SA516-70MT 0.110 in C.A. 0.0625 in

SHELL SA516-70MT 0.315 in HYDRO 65 psi

2013-8440-51



U  
W

Certified By

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

246 psi at 300 °F  
Max. Allowable Working Pressure

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

-49 °F at 246 psi  
Minimum Design Metal Temperature

2014  
Year Built

2013-8440-01A  
Serial Number

CRN W-3168.2

A No. (A)

NAME HEATING COIL TAG

HEAD SA350LE2 CL1 0.144 in C.A. 0 in

SHELL SA312-316L/SA403-316L 0.218 in HYDRO 320 psi

## PIPING TRAVEL SHEET

**SERIAL NUMBER:** 2013-8440-51

**DATE:** November 22, 2013

<b>CUSTOMER:</b> <u>Canadian Natural Resources Ltd.</u>	<b>COMMENTS:</b>	DATE & INITIAL OF INSPECTOR FOR COMPLETION OF HOLD POINTS HOLD POINTS ARE IDENTIFIED WITH AN *	
<b>CODE ITEM:</b>		<b>ALCO QC</b>	<b>CUSTOMER/AGENT</b>
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 APPROVED		DS	
WELDER'S QUALIFICATIONS VERIFIED		DS	
FIT-UP		DS	
INTERNALS / EXTERNALS		DS	
WELD SIZE AND PROFILE		DS	
WELDER'S ID		DS	
<b>P.W.H.T.</b>			
POST WELD HEAT TREATMENT INSTRUCTIONS		N/A	
POST WELD HEAT TREATMENT REVIEWED		N/A	
<b>NDT INSPECTIONS</b>			
RADIOGRAPHS		DS	
BRINELL HARDNESS TESTING		N/A	
OTHER NDE		N/A	
<b>COATING</b>			
VISUAL PRIOR TO COATING		DS	
VISUAL AFTER COATING		DS	
STENCILING		N/A	
<b>TESTING</b>			
HYDROSTATIC TESTING		DS May 13/14	
PNEUMATIC TESTING USING SHOP AIR AT 100 PSIG		N/A	
PNEUMATIC TESTING USING HIGH PRESSURE TEST PROCEDURE		DS May 22/14	
FUNCTION TEST		DS May 22/14	
P & ID FROM FLOWSHEET VARIFIED		DS July 24/14	

**NOTES:**

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## Summary of Heat Numbers on Spools

Job #: 2013-8440-50/51

Customer: Canadian Natural Resources

Date: May 29, 2014

## Bill of Materials

No.	Size	Rating	Description	Schedule	Material	Heat Numbers
<b>Flanges</b>						
1	2"	CL 300	RF WN Flange	XH	SA-105N	12/73631, 12/35079
2	2"	CL 300	RF Blind Flange		SA-105N	4603008
3	6"	CL 150	RF WN Flange	Std	SA-105N	13/37955, 13/38016
4	4"	CL 150	RF WN Flange	Std	SA-105N	12/34064, 13/38606
5	4"	CL 150	RF Blind Flange		SA-350 LF2 CL1	HUP
6	3"	CL 150	RF WN Flange	Std	SA-105N	TL10006133
7	3"	CL 150	RF Blind Flange		SA-350 LF2 CL1	13/76390
8	2"	CL 150	RF WN Flange	XH	SA-105N	722, 509, TL10006617
9	2"	CL 150	RF Blind Flange		SA-350 LF2 CL1	4703602
10	2"	CL 150	RF Blind Flange		SA-105N	1068F, 13144
11	1 1/2"	CL 150	RF WN Flange	XH	SA-105N	13/75868
<b>Bleed Rings</b>						
12	3"	CL 150	RF Bleed Rings x 1 1/2" THK.		SA-516-70N	VDG
13	2"	CL 150	RF Bleed Rings x 1 1/2" THK.		SA-516-70N	TLH
<b>Spectacle Blinds</b>						
14	6"	CL 150	RF Spectacle Blind x 1/2" THK.		SA-516-70N	KQD, JYZ, JHT
15	4"	CL 150	RF Spectacle Blind x 3/8" THK.		SA-516-70N	UYB
16	2"	CL 300	RF Spectacle Blind x 3/8" THK.		SA-516-70N	TUQ, NZY
17	2"	CL 150	RF Spectacle Blind x 1/4" THK.		SA-516-70N	UYA, RQB
<b>Fittings</b>						
18	6"		90° LR Ell BW	Std	SA-234-WPB	162V
19	4"		90° LR Ell BW	Std	SA-234-WPB	11N00007
20	3"		90° LR Ell BW	Std	SA-234-WPB	55E00018, 13A00060, 2J2770, 84059, 07P00006,
20	3"		90° LR Ell BW	Std	SA-234-WPB	55A00123, 12F00005, 86035, CB798
21	2"		90° LR Ell BW	XH	SA-234-WPB	56C00214, 13B00018, 12-211407
22	1 1/2"		90° LR Ell BW	XH	SA-234-WPB	924B, 185A
23	6"x4"		Conc. Red. BW	Std	SA-234-WPB	12F20023
24	4"x3"		Conc. Red. BW	Std	SA-234-WPB	12N20011
25	4"x3"		Red. Tee BW	Std	SA-234-WPB	3A756V
26	4"x2"		Red. Tee BW	Std x XH	SA-234-WPB	CE663
27	3"x2"		Red. Tee BW	Std x XH	SA-234-WPB	B833
28	2"		Tee BW	XH	SA-234-WPB	12P10831, 2C0592, 55E10010, 55K10008
29	2"x1 1/2"		Red. Tee BW	XH	SA-234-WPB	7687
30	2"x1"		Conc. Swage BW	XH	SA-234-WPB	K2624, 123M
31	2"x1/2"		Conc. Swage BW	XH	SA-234-WPB	UCW, K444
<b>O'lets &amp; Couplings</b>						
32	1 1/2"		WOL	XH	SA-105N	59059
33	3/4"	CL 3000	TOL		SA-105N	58880
34	1/2"	CL 3000	TOL		SA-105N	58962, 58627
35	1"	CL 3000	3" LG Cplg SW		SA-105N	H3270
<b>Piping</b>						
36	6"		Pipe Sml's	Std	SA-106-B	1325292 (PA120), 53360 (PA061)
37	4"		Pipe Sml's	Std	SA-106-B	1323589 (PA038)
38	3"		Pipe Sml's	Std	SA-106-B	208978 (PA092)
39	2"		Pipe Sml's	XH	SA-106-B	1323281 (P954)
40	1 1/2"		Pipe Sml's	XH	SA-106-B	1325649 (PA155), 614348 (P929)
41	1"		Pipe Sml's	160	SA-106-B	357384 (PA052)
42	1"		Pipe Sml's	XH	SA-106-B	Y56554 (PA124)
43	1/2"		Pipe Sml's	XH	SA-106-B	574021 (P953)
<b>Tubing</b>						
44	1/2"		Tubing Sml's	20 BWG	SA-213 TP 316/316L	YX1302-681
45	3/8"		Tubing Sml's	20 BWG	SA-213 TP 316/316L	YX1102-529



**METALFAR**  
 PRODOTTI INDUSTRIALI S.P.A.  
 STAMPAGGIO A CALDO DI ACCIUMI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:  
 23851 CESANA BRIANZA (LC) - Italy  
 Via G. Pardini, 28  
 Tel. +39 031.655441  
 Fax +39 031.655148  
 quality.mff@armes.com

COMPANY WITH  
 QUALITY SYSTEM  
 CERTIFIED BY DNV  
 = ISO 9001 =

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Card. N. 1242	Del/Dated 28.02.2013	Fattura / Invoice N. 758	Del/Dated 25.02.2013
DDT / Del Note N. 931	Del/Dated 25.02.2013	No. Ord. / Our ref. N.	
TRANS AM PIPING PRODUCTS LTD		Dest.: TRANS AM PIPING PRODUCTS LTD	
9335 ENDEAVOR DRIVE S.E. T3S 0A1 CALGARY, ALBERTA CA		9335 - Endeavor Drive S.E. T3S 0A1 Calgary, ALBERTA CA	

COD. COL. COLATA POS. VS. ORDINE	Q.T.A' Q.T.Y	DESCRIZIONE DESCRIPTION	TRATTAMENTO TERMICO / HEAT TREATMENT	ORIGINE / ORIGIN OF STEEL
HEAT CODE HEAT ITEM	456,00 9,00	WIN 300 RF 2" XS A105N	NORMALIZED AT 920 C - COOLED IN STILL AIR	EUROPEAN UNION
MATERIALE / MATERIAL				
ASTM A105 (LADLE)				
PROVETTA / TEST SPECIMEN	ROTTURA TENSILE STRENGTH	CONTRAZIONE REDUCTION OF AREA	RESILLENZA / IMPACT TEST - JOULES/cm²	INVENIMENTO YIELD POINT
SEZ. mm²	526,0	58,0	20 84 80 86	NUMERO YIELD POINT
LUNG. mm	526,0	58,0		NUMERO YIELD POINT
LENGHT mm	526,0	58,0		NUMERO YIELD POINT
FORMA SHAPE				
1-O 2-O				
1				
FORMA SHAPE				
1-O 2-O				
1				

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO  
 ASTM/ASME A 105/SA 105 M - 11 ASME CODE SECT. II, PART A, ED. 2010 ADD.  
 2011a

CSA Z245.12 GRADE 248 CAT.I SOUR SERVICE

COD. COL. COLATA POS. VS. ORDINE	Q.T.A' Q.T.Y	DESCRIZIONE DESCRIPTION	TRATTAMENTO TERMICO / HEAT TREATMENT	ORIGINE / ORIGIN OF STEEL
HEAT CODE HEAT ITEM	9,00	WIN 150 RF 12" STD A105N	NORMALIZED AT 920 C - COOLED IN STILL AIR	EUROPEAN UNION
MATERIALE / MATERIAL				
ASTM A105 (LADLE)				
PROVETTA / TEST SPECIMEN	ROTTURA TENSILE STRENGTH	CONTRAZIONE REDUCTION OF AREA	RESILLENZA / IMPACT TEST - JOULES/cm²	INVENIMENTO YIELD POINT
SEZ. mm²	516,0	59,0	20 84 82 85	NUMERO YIELD POINT
LUNG. mm	516,0	59,0		NUMERO YIELD POINT
LENGHT mm	516,0	59,0		NUMERO YIELD POINT
FORMA SHAPE				
1-O 2-O				
1				

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO  
 ASTM/ASME A 105/SA 105 M - 11 ASME CODE SECT. II, PART A, ED. 2010 ADD.  
 2011a

CSA Z245.12 GRADE 248 CAT.I SOUR SERVICE

CONFORMS TO SA 105N  
 YEAR 2012  
 JOB # 0013-8440-50  
 ITEM # 1  
 SIGNED BY [Signature] NOV 28 2013

NOTE	100% MANUFACTURED IN ITALY	UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
NOTES	MANUFACTURED IN ACCORDANCE WITH ORDER AND SPECIFICATION	<u>[Signature]</u>		
	MATERIAL IN ACCORDANCE WITH NACE MR-0175/2009 ISO 15188-2009 - SOUR SERVICE			
	MATERIAL IN ACCORDANCE WITH NACE MR-0103/2012 - SOUR SERVICE			

FLANGE RF XH  
 W/2 A105N  
 BORNE  
 N  
 BY: SB  
 Rev'd  
 #

AHEAD OF THE CURVE  
 THE COMPANY'S  
 PRODUCTION  
 CAPABILITY  
 IS ALWAYS  
 IN FRONT OF  
 THE MARKET  
 DEMAND  
 TO BE  
 AHEAD OF  
 THE CURVE



**METALFAR**  
 PRODOTTI INDUSTRIALI S.P.A.

SEDE AMMINISTRATIVA ESTABILIMENTO:  
 23861 CESANA BRIANZA (LC) - Italy  
 Via G. Pardi, 26  
 Tel. +39 031.655441  
 Fax +39 031.655149  
 quality.mff@metalfar.com

COMPANY WITH  
 QUALITY SYSTEM  
 CERTIFIED BY DNV  
 = ISO 9001 =

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Certif. N. 2340	Del/Dated 22.04.2013	Fattura / Invoice N. 1559	Del/Dated 17.04.2013
DOT / Del Note N. 1799	Del/Dated 17.04.2013	Na.Ord. / Our ref. N.	
TRANS AM PIPING PRODUCTS LTD		Dest.: TRANS AM PIPING PRODUCTS LTD	
8335 ENDEAVOR DRIVE S.E.		8335 - Endeavor Drive S.E.	
T3S 0A1 - CALGARY, ALBERTA		T3S 0A1 - Calgary, ALBERTA	
CA	CA	CA	CA

**SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT**

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM 13/35699 083	VS.ORDINE YOUR REFERENCE CH-12-294	Q.TA' DESCRIZIONE Q.TY DESCRIPTION 24,00 BLIND 150 RF 8"	A105N	DIM.IN ACC. A DIM. ACCORDANCE TO ASME/ANSI B16.5-2009	VSISO E DIMENS. VIS. & DIMENS. SATISFACTORY
MATERIALE / MATERIAL ASTM A105 (LADLE)	C% 0,195 S% 0,240 Mn% 0,960 P% 0,008 Cr% 0,090 Ni% 0,060 Nb% 0,010 Cu% 0,160 Ti% 0,016 V% 0,003 Mo% 0,002 N% 0,009 AP% 0,027 C.E.% 0,390	ALLUNGAMENTO ELONGATION N/mm <sup>2</sup> 32,0	CONTRAZIONE REDUCTION OF AREA % 61,0	DUREZZA HARDNESS HV0,05 158,0 - 159,0	RESILLENZA / IMPACT TEST - JOULE/cm <sup>2</sup> TIPO / TYPE (JIS/ASTM) °C 20 KV 83 83 82	SHVERNAMENTO YIELD POINT N/mm <sup>2</sup> 0,0
PROVETTA / TEST SPECIMEN SECT. mmx 128,80 50,80	FORMA FORM 1-CO 2-D	ROTTURA TENSILE N/mm <sup>2</sup> 516,0				NO. BY OUR RES.
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010 NORMALIZED AT 920 C - COOLED IN STILL AIR						
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010 NORMALIZED AT 920 C - COOLED IN STILL AIR						
ADD. 2011a						
CSA Z245.12 GRADE 248 CAT.1 SOUR SERVICE						

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM 12/35079 055	VS.ORDINE YOUR REFERENCE CI-12-430	Q.TA' DESCRIZIONE Q.TY DESCRIPTION 455,00 W/N 300 RF 2" XS	A105N	DIM.IN ACC. A DIM. ACCORDANCE TO ASME/ANSI B16.5-2009	VSISO E DIMENS. VIS. & DIMENS. SATISFACTORY
MATERIALE / MATERIAL ASTM A105 (LADLE)	C% 0,185 S% 0,210 Mn% 0,970 P% 0,008 Cr% 0,090 Ni% 0,050 Nb% 0,010 Cu% 0,120 Ti% 0,017 V% 0,002 Mo% 0,003 N% 0,010 AP% 0,028 C.E.% 0,378	ALLUNGAMENTO ELONGATION N/mm <sup>2</sup> 31,0	CONTRAZIONE REDUCTION OF AREA % 60,0	DUREZZA HARDNESS HV0,05 158,0 - 159,0	RESILLENZA / IMPACT TEST - JOULE/cm <sup>2</sup> TIPO / TYPE (JIS/ASTM) °C 20 KV 87 89 83	SHVERNAMENTO YIELD POINT N/mm <sup>2</sup> 0,0
PROVETTA / TEST SPECIMEN SECT. mmx 128,80 50,80	FORMA FORM 1-CO 2-D	ROTTURA TENSILE N/mm <sup>2</sup> 509,0				NO. BY OUR RES.
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010 NORMALIZED AT 920 C - COOLED IN STILL AIR						
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010 NORMALIZED AT 920 C - COOLED IN STILL AIR						
ADD. 2011a						
CSA Z245.12 GRADE 248 CAT.1 SOUR SERVICE						

CONFORMS TO SA 105N  
 YEAR 2012 ED. 2011 ADD  
 JOB # 9013 - 8440-51  
 ITEM # \_\_\_\_\_  
 SIGNED BY J. NOV 28 2013

22-8440-51  
PO-134044

NOTE 100% MANUFACTURED IN ITALY NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION MATERIAL IN ACCORDANCE WITH NACE MR-0175/2008 ISO 15196-2009 - SOUR SERVICE MATERIAL IN ACCORDANCE WITH NACE MR-0103/2012 - SOUR SERVICE	UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT  <i>A. B. Estigiano</i>	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL  
--	--	--	---





FLANGE RF STD



**METALFAR**  
 PRODOTTI INDUSTRIALI S.P.A.  
 VIA S. GIUSEPPE, 28  
 41013 CASAVIA (MO) - ITALIA  
 Tel. +39 0536 855401  
 Fax +39 0536 855408  
 e-mail: info@metalfar.it

COMPANY WITH  
 QUALITY SYSTEM  
 CERTIFIED BY DNV  
 = ISO 9001 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

Certif. N. 4808	Del/Dated 09.09.2013	Fatura / Invoice N.	Del/Dated
DOT / Del Note N. 0	Del/Dated	Ms.Ord. / Our ref. N.	Del/Dated
TRANS AM PIPING PRODUCTS LTD		CA	
9335 ENDEAVOR DRIVE S.E.			
T3S 0A1 CALGARY, ALBERTA			

Pag. 9 - 12

COD. COL. COLATA	POS. ITEM	VS. ORDINE YOUR REFERENCE	Q.TA. QTY	DESCRIZIONE DESCRIPTION	Q.TA. QTY	DESCRIZIONE DESCRIPTION
128,60	50,80	1	330,0	508,0	32,0	60,0
MATERIALE / MATERIAL ASTM A105 (LADLE)						
PROPRIETA' / TEST SPECIMEN SECT. mm 128,60 SECT. mm 50,80 LEIGHT mm 1 x 0 2-PD						
ALLUNGAMENTO ELONGATION % 32,0						
ROTTURA TENSILE STRENGTH N/mm2 >> 508,0						
CONTRAZIONE REDUCTION OF AREA % >> 60,0						
DUREZZA HARDNESS HBW 154,0 - 158,0						
RESILLENZA / IMPACT TEST - JOULES C TPPO / TYPE (in 10mm) KV 20 86 96 82 0,0						
TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 920 C - COOLED IN STILL AIR						
FORNO / FURNACE ELECTRIC FURNACE						
ORIGINE / ORIGIN OF STEEL EUROPEAN UNION						

COD. COL. COLATA	POS. ITEM	VS. ORDINE YOUR REFERENCE	Q.TA. QTY	DESCRIZIONE DESCRIPTION	Q.TA. QTY	DESCRIZIONE DESCRIPTION
128,60	50,80	1	325,0	528,0	31,0	58,0
MATERIALE / MATERIAL ASTM A105 (LADLE)						
PROPRIETA' / TEST SPECIMEN SECT. mm 128,60 SECT. mm 50,80 LEIGHT mm 1 x 0 2-PD						
ALLUNGAMENTO ELONGATION % 31,0						
ROTTURA TENSILE STRENGTH N/mm2 >> 528,0						
CONTRAZIONE REDUCTION OF AREA % 58,0						
DUREZZA HARDNESS HBW 159,0 - 163,0						
RESILLENZA / IMPACT TEST - JOULES C TPPO / TYPE (in 10mm) KV 20 84 80 86 0,0						
TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 920 C - COOLED IN STILL AIR						
FORNO / FURNACE ELECTRIC FURNACE						
ORIGINE / ORIGIN OF STEEL EUROPEAN UNION						

CONFORMS TO SA 105 N  
 YEAR 2008 ED, 2011 ED  
 JOB # 2013-8440-51  
 ITEM # 3  
 SIGNED BY K NOV 28 2013

6-8440-51  
 Po-134044

NOTE 100% MANUFACTURED IN ITALY	UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT	EMTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION MATERIAL IN ACCORDANCE WITH NACE MR-01752009 ISO 15156-2009 - SOUR SERVICE MATERIAL IN ACCORDANCE WITH NACE MR-0102/2012 - SOUR SERVICE	<i>Handwritten signature</i>		

Headline text from another page, partially visible.

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Certif. N. 5006 Del/Dated 02.10.2013 Fatura / Invoice N. 3822 Del/Dated 30.09.2013  
 DDT / Dal Note N. 4120 Del/Dated 30.09.2013 No.Ord. / Our ref. N. 0  
 TRANS AM PIPING PRODUCTS LTD  
 9335 ENDEAVOR DRIVE S.E. 9336 - Endeavor Drive S.E.  
 T3S 0A1 CALGARY, ALBERTA CA T3S 0A1 Calgary, ALBERTA CA CA

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001 =



SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COD. COL.	COLATA	POS. ITEM	VS. ORDINE	YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE	DIN IN ACC. A	DIM. ACCORDANCE TO	VISO E DIMENS. VIS. & DIMENS.									
										HEAT CODE	HEAT	CH-12-430	WIN 150 RF 6" STD	A105N	ASME/ANSI B16.5-2009	SATISFACTORY		
MATERIALE / MATERIAL	ASTM A105 (LADLE)		C% 0,190	Si% 0,230	Mn% 1,010	S% 0,005	P% 0,010	Cr% 0,130	Ni% 0,060	Mo% 0,010	Cu% 0,020	Ti% 0,020	V% 0,004	Nb% 0,001	N% 0,009	A% 0,025	C.E.% 0,400	
PROVETTA / TEST SPECIMEN	FORMA / SHAPE	1-0 2-0	ALLUNGAMENTO / ELONGATION	% 32,0	CONTRAZIONE / REDUCTION OF AREA	% 58,0	DUREZZA / HARDNESS	154,0 - 156,0	RESILLENZA / IMPACT TEST - JOULE/CM2	20	86	88	94	RESILLENZA / IMPACT TEST - JOULE/CM2	1	2	3	0,0

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO  
 ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010  
 ADD. 2011a  
 CSA Z245.12 GRADE 248 CAT. I SOUR SERVICE

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

COD. COL.	COLATA	POS. ITEM	VS. ORDINE	YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE	DIN IN ACC. A	DIM. ACCORDANCE TO	VISO E DIMENS. VIS. & DIMENS.									
										HEAT CODE	HEAT	CH-12-430	WIN 150 RF 6" STD	A105N	ASME/ANSI B16.5-2009	SATISFACTORY		
MATERIALE / MATERIAL	ASTM A105 (LADLE)		C% 0,180	Si% 0,220	Mn% 0,960	S% 0,007	P% 0,008	Cr% 0,080	Ni% 0,060	Mo% 0,010	Cu% 0,017	Ti% 0,017	V% 0,003	Nb% 0,001	N% 0,009	A% 0,028	C.E.% 0,372	
PROVETTA / TEST SPECIMEN	FORMA / SHAPE	1-0 2-0	ALLUNGAMENTO / ELONGATION	% 32,0	CONTRAZIONE / REDUCTION OF AREA	% 60,0	DUREZZA / HARDNESS	154,0 - 158,0	RESILLENZA / IMPACT TEST - JOULE/CM2	20	86	96	82	RESILLENZA / IMPACT TEST - JOULE/CM2	1	2	3	0,0

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO  
 ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010  
 ADD. 2011a  
 CSA Z245.12 GRADE 248 CAT. I SOUR SERVICE

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

CONFORMIS TO SA 105N  
 YEAR 2010 ED. 201100  
 JOB # 2013-8440-51  
 ITEM # 3  
 SIGNED BY NOV 28 2013

3-8440-51  
 P-134000

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
<i>H. E. S. Highline</i>		

NOTE 100% MANUFACTURED IN ITALY  
 NOTES MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION  
 MATERIAL IN ACCORDANCE WITH NACE MR-01752009 ISO 15156-2009 - SOUR SERVICE  
 MATERIAL IN ACCORDANCE WITH NACE MR-01032012 - SOUR SERVICE

CL 150 W/K  
 BOR 150 A 105 K  
 FLANGIA R.F. ST 0



**METALFAR**  
 PRODOTTI INDUSTRIALI S.P.A.  
 Stampaggio a caldo di acciai comuni - legati e inossidabili

23861 CCANNA BRIANZA (LC) - Italy  
 Via G. Pannil, 28  
 Tel. +39 031 6554141  
 Fax +39 031 655149  
 quality.info@metalfar.com

COMPANY WITH  
 QUALITY SYSTEM  
 CERTIFIED BY DNV  
 = ISO 9001 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

Caric. N. 3079	Def/Dated 31.05.2013	Fattura / Invoice N. 2087	Def/Dated 29.05.2013
DDT / Del Nota N. 2414	Def/Dated 26.05.2013	No. Ord. / Our ref. N.	
TRANS AM PIPING PRODUCTS LTD		Dest.: TRANS AM PIPING PRODUCTS LTD	
9335 ENDEAVOR DRIVE S.E. T3S 0A1 CALGARY, ALBERTA CA		9335 - Endeavor Drive S E T3S 0A1 Calgary, ALBERTA CA	

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COD. COL. COLATA POS	VS. ORDINE	Q. TA' DESCRIZIONE	Q. TA' DESCRIZIONE
HEAT CODE HEAT	YOUR REFERENCE	W/N 150 RF 4" STD A106N	W/N 150 RF 4" STD A106N
MATERIALE / MATERIAL			
ASTM A105 (LADLE)			
PROVETTA / TEST SPECIMEN	FORMA / SHAPE		
SEZ. mm2 LUNG. mm	1-CO 2-CO		
126,60 50,80	1		
ALLUNGAMENTO / ELONGATION	CONTRAZIONE / REDUCTION OF AREA		
30,0	58,0		
ROTTURA / TENSILE STRENGTH			
620,0			
RESILLENZA / IMPACT TEST			
20	87	83	85
TRATTAMENTO TERMICO / HEAT TREATMENT			
NORMALIZED AT 920 C - COOLED IN STILL AIR			
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO			
ASTM/A5ME A 105/SA 105 M - 11a - ASME CODE SECT. II, PART A, ED. 2010			
ADD. 2011a			
CSA Z245.12 GRADE 248 CAT.I SOUR SERVICE			

COD. COL. COLATA POS	VS. ORDINE	Q. TA' DESCRIZIONE	Q. TA' DESCRIZIONE
HEAT CODE HEAT	YOUR REFERENCE	W/N 300 RF 3" STD A106N	W/N 300 RF 3" STD A106N
MATERIALE / MATERIAL			
ASTM A105 (LADLE)			
PROVETTA / TEST SPECIMEN	FORMA / SHAPE		
SEZ. mm2 LUNG. mm	1-CO 2-CO		
126,60 50,80	1		
ALLUNGAMENTO / ELONGATION	CONTRAZIONE / REDUCTION OF AREA		
31,0	58,0		
ROTTURA / TENSILE STRENGTH			
522,0			
RESILLENZA / IMPACT TEST			
20	87	83	80
TRATTAMENTO TERMICO / HEAT TREATMENT			
NORMALIZED AT 920 C - COOLED IN STILL AIR			
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO			
ASTM/A5ME A 105/SA 105 M - 11a - ASME CODE SECT. II, PART A, ED. 2010			
ADD. 2011a			
CSA Z245.12 GRADE 248 CAT.I SOUR SERVICE			

3-8440-S1  
 2010 ED, 2011 ADD  
 2013-8440-S1  
 NOV 2 2 2013

NOTE: 100% MANUFACTURED IN ITALY	UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
NOTES: MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION		
MATERIAL IN ACCORDANCE WITH NACE MR-017&2009 ISO 15166-2009 - SOUR SERVICE		
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2012 - SOUR SERVICE		



ALCO # 01011378009  
Heat No 01011378009  
Shipped on 13/11/2013  
Shipped at 14:21  
91 Rev 0 By: SB



COMPANY WITH QUALITY SYSTEM CERTIFIED BY DMV - ISO 9001 =

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DMV - ISO 9001 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE
Caroli, N. 5076 Def/Issued 20.09.2013 Fatura / Invoice N. 3470 Def/Issued 19.09.2013
DOT / Del Nota N. 3981 Def/Issued 19.09.2013 Mc-Ord. / Our ref. N. 0 Def/Issued
TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E. Calgary, ALBERTA CA T3S 0A1

COD. COL. HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.T.A. DESCRIPTION	W/N	600	RF	3"	XS	LF2CL1
13FZ78	054	CI-12-311	158,00	W/N	600	RF	3"	XS	LF2CL1
MATERIALE / MATERIAL									
ASTM A350 LF2 CL-1/2 (LADLE)									
PROVETTA / TEST SPECIMEN	FORMA SHAPE	SEZ. / MEAS. LENGTH mm	1-0 2-D	126,60	50,80	1			
INDURIMENTO / HARDENING	VALORE / VALUE	HRC	1-0 2-D	400,0					
ROTTURA / BREAK	VALORE / VALUE	MPa	536,0						
ALLUNGAMENTO / ELONGATION	VALORE / VALUE	%	347,0						
CONTRAZIONE / REDUCTION OF AREA	VALORE / VALUE	%	70,0						
RESILIEZZA / IMPACT TEST	VALORE / VALUE	J							
RESILIEZZA / IMPACT TEST	VALORE / VALUE	J							
TRATTAMENTO TERMICO / HEAT TREATMENT									
NORMALIZED AT 830 C - COOLED IN STILL AIR									
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO									
ASTM/A500 A 350SA 350 M - 12 ASME CODE SECT. II, PART A, ED. 2010 ADD.									
2011a									
CSA Z245.12 GRADE 248 CAT.II SOUR SERVICE									

COD. COL. HEAT	POS. ITEM	VS ORDINE YOUR REFERENCE	Q.T.A. DESCRIPTION	W/N	150	RF	4"	STD	A105N
13Z8606	005	CI-12-430	128,00	W/N	150	RF	4"	STD	A105N
MATERIALE / MATERIAL									
ASTM A105 (LADLE)									
PROVETTA / TEST SPECIMEN	FORMA SHAPE	SEZ. / MEAS. LENGTH mm	1-0 2-D	126,60	50,80	1			
INDURIMENTO / HARDENING	VALORE / VALUE	HRC	32,0						
ROTTURA / BREAK	VALORE / VALUE	MPa	512,0						
ALLUNGAMENTO / ELONGATION	VALORE / VALUE	%	60,0						
CONTRAZIONE / REDUCTION OF AREA	VALORE / VALUE	%	60,0						
RESILIEZZA / IMPACT TEST	VALORE / VALUE	J							
RESILIEZZA / IMPACT TEST	VALORE / VALUE	J							
TRATTAMENTO TERMICO / HEAT TREATMENT									
NORMALIZED AT 920 C - COOLED IN STILL AIR									
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO									
ASTM/A500 A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010									
ADD. 2011a									
CSA Z245.12 GRADE 248 CAT.I SOUR SERVICE									

105 N  
YEAR 2010 EDI 2011 ADD  
JOB # 9013-8440-51  
ITEM # 4  
NOV 29 2010  
SIGNED BY

NOTE 100% MANUFACTURED IN ITALY  
NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION  
MATERIAL IN ACCORDANCE WITH NACE MR-0175/2805 ISO 15186-2008 - SOUR SERVICE  
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2012 - SOUR SERVICE

UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT  
A. S. S. S. S.

ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY



MARCHIO PRODUTTORE / MANUFACTURER'S SYMBOL

10751

# Material Test Report

COFFER®  
an **AFGBal** Company

Heat Code: **HUP**

An Ameri-Forge Group Company  
13770 Industrial Rd. Houston, TX 77015  
Sales: (713) 868-4421 Fax: (713) 455-8366

ISO 9001:2008 Certified

CE FRANKLIN LTD. 1800, 635-8th Avenue S.W. T2P 3M3 Calgary, ALB	PO: 33189070R2100	Sales Order: 130292	Line: 8
	Item Code: 0153400100-0031F		Qty Shipped: 45
	Item Desc: <b>FLG 04.00 0150 BL RF</b>		
	Supplier: STEEL DYNAMICS		Supplier Heat: A102357

Spec: CSA Z245.12-09 GRADE 248 Cat.2 - ASTM A350(12)/ASME SA350(13)

Element	(%wt)	Ladle	Product	EPCRA	CAS#	Element	(%wt)	Ladle	Product	EPCRA	CAS#
C	Carbon	0.18	0.19			Cr	Chromium	0.16	0.16	✓	7440-47-3
Mn	Manganese	1.12	1.11	✓	7439-96-5	Mo	Molybdenum	0.03	0.03		
P	Phosphorous	0.013	0.013			V	Vanadium	0.037	0.034		
S	Sulphur	0.005	0.004			Cb	Columbium	0.001	0.002		
Si	Silicon	0.24	0.22			Al	Aluminum	0.027			
Cu	Copper	0.20	0.20	✓	7440-50-8	C.E.		0.43			
Ni	Nickel	0.09	0.09	✓	7440-02-0						

Mechanical Testing			Heat Treat		
Test Lab	Accutest 496283.0		Norm. Temp. (F)	1675	
Test Bar Size	SACRIFICIAL PIECE		Norm. (Hrs)	4	
HBW	145 - 145		Norm. Cooling Type	AIR	
Elg (%)	33.0		Other	STEEL DYNAMICS	
RA (%)	73.0		MILL	A102357	
Tensile Specimen Size (in)	0.250		MHC	Y	
Tensile (ksi)	79.8		VD	Y	
Yield (ksi)	52.8		EF	Y	
Gauge Length	1		Gr.Sz	Y	
Charpy Temp (F)	-50		<div style="border: 1px solid black; padding: 5px;"> <p>CONFORMS TO SA <u>350LP2CL1</u></p> <p>YEAR <u>2010ED, 2011ADD</u></p> <p>JOB # <u>2013-8445-51</u></p> <p>ITEM # <u>5</u></p> <p>SIGNED BY <u>[Signature]</u> FEB 19 2014</p> </div>		
Charpy (ft lbs)	68 - 97 - 82				
Avg Energy 3 Specimens (ft-lbs)	82				
Min Energy 1 Specimens (ft-lbs)	68				
% Shear	55 - 80 - 70				
Lat. Exp.	56 - 80 - 60				

1-8440-51  
PO-134861.

No Weld repair performed. Chemical Analysis results shown are actual. Forgings are capable of passing hydrostatic test compatible with the appropriate rating. Elongation taken from a round specimen. Yield strength was determined using the .2% offset method. All material supplied under this order is certified to be free of mercury contamination and no mercury bearing equipment was used in manufacturing, fabrication or testing. Made in USA.

Product compliant with NACE MR0175 / ISO 15156, latest edition and dimensions to ASME B16.5. Product was manufactured in the USA.

Tensile Testing Per ASTM E8; Brinell Hardness Per ASTM E10; Charpy Testing Per ASTM E23.

AmeriForge manufactures materials according to a certified Quality Management System conforming to ISO 9001:2008 and in compliance to PED 97/23/EC, Section 4.3

No welding performed.

Product compliant with NACE MR0103, latest edition.

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

Certification No.: 286626  
 Certification Date: 12/23/2013

M. Hingwe  
 Mandar Hingwe - Dir. of Quality and Metallurgy

Order#: 312846 Seq: 17 PO#: 133700 Heat#: TL10006133 Mill: Tri-Lad  
 Part#: FL 3 1 R W STD 5 Part Desc: Flanges 3 (88.9mm O.D.) 150# RAISED FACE WELD NECK STD A/SA105N



ISO 9001:2008

### TRILAD Flanges and Fittings, Inc.

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

## CERTIFIED MATERIAL TEST REPORT

Certificate No. 13170293	EN 10204 3 1	Date of Report 7/02/2013
Customer AB	Customer Order No 405074	Quantity 32
	Tri-Lad Order No 580954	Line No 1

Specification SA105N SECT II 2010 EDITION 2011A ADDENDA	Heat Treatment NORMALISED
Item Description 3 150 WN STD RF A105N (801609)	Temperature Init 1634 F 890 C
Shop Order/Trace No	Time N=1.05RS
Lot No	Lot Definition
Heat Code TL10006133	
C.E. .41	Mell Practice EF

	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	N
Heat Product	18	1.17	.026	.011	.28	10	.05	13	.01	.001
Heat Product										
Heat Product										

Mechanical Properties				Impact Values		Shear Fracture
Yield Ksi 56	Tensile Ksi 83	Elongation 26 %	Reduction of Area 46 %	Hardness HBW 159	Impact Test Temperature	
Mpa 388	Mpa 572					
Tensile Specimen STD RD						
Lateral Expansion	Impact Type	Impact Orientation	Starting Material	Impact Specimen		

CONFORMS TO SA 105N	Notes 6-8440-51
YEAR 2010 ED, 2011 ADD	30-Stock
JOB # 2013-8440-51	PO-133700
ITEM # 6	NACE MR0103 LATEST ED.
SIGNED BY [Signature] NOV 22 2013	NACE MR0175/ISO15156-09

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

[Signature]  
 Les Mansfield, CET  
 Quality Assurance Manager



**METALFAR**  
 PRODOTTI INDUSTRIALI S.P.A.

SEDE AMMINISTRATIVA E STABILIMENTO:  
 22051 CESANNA BRIANZA (LC) - Italy  
 Via G. Pirelli, 26  
 Tel. +39 031.555441  
 Fax +39 031.655149  
 quality.metalfar@metalfar.com

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Certif N. 6330 Del/Dated 03.12.2013 Fattura / Invoice N. 4324 Del/Dated 29.11.2013  
 DDT / Del Note N. 4954 Del/Dated 29.11.2013 Ns.Ord. / Our ref. N. 0  
 CE FRANKLIN LTD. A Division of NOV WILSON Dest.: CE Franklin Ltd - DISTRIBUTION CEN.  
 1800, 635 - 8TH Avenue S.W. 2603 - 76 Avenue  
 T2P 3M3 CALGARY, ALBERTA CA T6P 1P5 EDMONTON, ALBERTA CA

COMPANY WITH  
 QUALITY SYSTEM  
 CERTIFIED BY DNV  
 = ISO 9001 =

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COD. COL. COLATA HEAT CODE HEAT	POS ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	A105N
13/39559	059	3220811-OR-2100	18,00	SIO 150 RF 10"	
MATERIALE / MATERIAL					
ASTM A105 (LADLE)					
PROVETTA / TEST SPECIMEN	FORMA SHAPE	ROTTURA TENSILE STRENGTH	ALLUNGAMENTO ELONGATION	CONTRAZIONE REDUCTION OF AREA	DUREZZA HARDNESS
SEZ. mm2   LUNG. mm SECT. mm2   LENGTH mm	1   50,80	N/mm2 >> 519,0	% 33,0	% 62,0	HBW 152,0 - 154,0
SEZ. mm2   LUNG. mm SECT. mm2   LENGTH mm	1   50,80	N/mm2 >> 338,0	% 33,0	% 62,0	HBW 152,0 - 154,0
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO					
ASTM/ASME A 105/SA 105 M - 13 ASME CODE SECT. II, PART A, ED. 2013					
CSA CAN3 Z245.12-09 GRADE 248 CAT.I SOUR SERVICE					

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

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

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

COD. COL. COLATA HEAT CODE HEAT	POS ITEM	VS ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	LF2CL1
13/76390	012	3323839-OR-2100	105,00	BLIND 150 RF 3"	
MATERIALE / MATERIAL					
ASTM A350 LF2CL1/2 (LADLE)					
PROVETTA / TEST SPECIMEN	FORMA SHAPE	ROTTURA TENSILE STRENGTH	ALLUNGAMENTO ELONGATION	CONTRAZIONE REDUCTION OF AREA	DUREZZA HARDNESS
SEZ. mm2   LUNG. mm SECT. mm2   LENGTH mm	1   50,80	N/mm2 >> 512,0	% 32,0	% 60,0	HBW 152,0 - 156,0
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO					
ASTM/ASME A 350/SA 350 M - 13 ASME CODE SECT. II, PART A, ED. 2013					
CSA CAN3 Z245.12-09 GRADE 290 CAT.II SOUR SERVICE					

TRATTAMENTO TERMICO / HEAT TREATMENT  
 NORMALIZED AT 930 C - COOLED IN STILL AIR

TRATTAMENTO TERMICO / HEAT TREATMENT  
 NORMALIZED AT 930 C - COOLED IN STILL AIR

TRATTAMENTO TERMICO / HEAT TREATMENT  
 NORMALIZED AT 930 C - COOLED IN STILL AIR

CONFORMS TO SA 350 LF2CL1  
 YEAR 2010 FEB 2011 ADD  
 JOB # 9013-8440-51  
 ITEM # 7  
 SIGNED BY [Signature] FEB 19 2011

1-8440-51  
 90-134861

NOTE 100% MANUFACTURED IN ITALY NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION MATERIAL IN ACCORDANCE WITH NACE MR-0175/2009 ISO 15156-2009 - SOUR SERVICE MATERIAL IN ACCORDANCE WITH NACE MR-0103/2012 - SOUR SERVICE	UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT [Signature]	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL 
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# NORMA (INDIA) LIMITED

48, Site IV Industrial Area, Sahibabad, Ghaziabad-201010 (U.P) INDIA.  
 Tel: 91-120-2896091. 2895404 Fax: 91-120-2895930 E-mail: normaindia@gmail.com  
 NORMA/LAB NO-027/12-13

# Works Test Certificate

P. Order No: 2"-150#WNRF XH FLG. ←  
 Component Drawing No. Machining STD  
 Customer: SILBO IND. INC. U.S.A.  
 DATE: 08.04.12  
 Forging specification: ASME SA105 -09  
 ASTM A105 -09  
 Steel Supplier: R I N L,  
 Mill Heat No. 101152  
 NORMA HEAT NO. 722 ←

### TEST RESULTS

### CHEMICAL COMPOSITION

Elements %	Specified	Actual	NORMA LAB: MIL. T.C.
Carbon	0.35max.	0.24	0.25
Manganese	0.60-1.05	0.90	0.86
Silicon	0.10-0.35	0.24	0.22
Sulphur	0.040max.	0.015	0.013
Phosphorous	0.035max.	0.21	0.019
Chromium	0.30max.	0.007	---
Nickel	0.40max.	0.003	---
Copper	0.40max.	0.002	---
Molybdenum	0.12max.	0.001	---
Vanadium	0.080max.	0.001	---
Carbon Equivalent (CE)	0.47max.	0.392	0.393

### MECHANICAL PROPERTIES.

PROPERTIES SPECIFIED OBTAINED Specified carbon as per Purchase Order 0.25max.

Yield Strength (mpa)	250.00 min.	357.76
Tensile Strength (mpa)	485.00 min.	525.36
%Elongation in 50mm / 4D	22.00 min	34.08
Hardness HB.	187. max.	156-163
% Reduction of Area	30.00 min.	48.89

Remarks:- We here by certify that the material described here in has been tested in accordance with the applicable specifications referred above and meets the requirements as per EN10204/3.1B & NACE Standard-MR0175-2003.

Checked by: Metallurgist

Certified by: Quality Control Manager

CONFORMS TO SA	105N
YEAR	NOV 2013
JOB #	NOV 22 2013
ITEM #	8

"As per ASTM A105 Table 1 Note:-For each reduction of 0.01% below the specified carbon maximum(0.35%),an increase of 0.06% manganese above the specified minimum (1.05%) will be permitted up to maximum 1.35%.

43-8266-50  
 Po # 129163

3-8440-50

NOV 22 2013



124641

<b>SUDHIR FORGINGS PVT. LTD</b>		Control No. TC/01	
KANGANWAL ROAD, P. O. JUGIANA, GT ROAD, LUDHIANA (INDIA)		Rev. 01 Ef Date 01 07 2009	
<b>TEST CERTIFICATE</b>			
(in accordance with EN 10204 3.1 B)			
ITEM	2" 150 WNRF XH (SKU 8874337X)	CERTIFICATE No.	SF/FLANGE/2215011
QUANTITY	150 PCS	LAB Ref. No.	509
FINISH	BLACK PAINT	CUSTOMER NAME	CCIF CORPORATION
MAT. SPECIFICATION	ASME SA 105N-10 / ASTM A105N-03	INVOICE No.	SF/2011-12114
P.O. No.	4028984	INVOICE DATE	29-Mar-2012
Supplier Heat No.		Description	
461B	Specified	509	
461B	Observed	509	
Supplier Heat No.		Description	
461B	Specified	509	
461B	Observed	509	
HEAT TREATMENT PROCESS :- TEMP 870°C - 910°C			
SOAKING TIME:- 2.00 HOURS			
REMARKS:			
Flanges are forged steel and manufactured in strict accordance with ASTM A561 The flange have been normalized in accordance with ASTM A561 We certify that the Material Suits the Requirement of P.O./Relevant specifications Flanges have serrated face as per MSS-SP-6 within the limit of 125 - 250 RMS Flanges are painted with black paint & Marked as SF 2 WNRF XH 150 A105N B16 5 509 INDIA			
UTS N/MM <sup>2</sup> 485 min 513.71		YIELD N/MM <sup>2</sup> 250 min 335.26	
Elongation% 22 min 42.4		R.A. % 30 min 51.23	
Hardness (BHN) 187 max 156		C% 0.25 max 0.210	
S% 0.040 max 0.038		P% 0.035 max 0.027	
Si% 0.10 - 0.35 0.083		Mn% 0.40 max 0.048	
Cu% 0.40 max 0.083		Ni% 0.40 max 0.048	
Cr% 0.30 max 0.015		Mo% 0.12 max 0.008	
V% 0.08 max 0.001		C.E % 0.47 max 0.384	
PHYSICAL / MECHANICAL PROPERTIES			
13-Stock PO # 131428			
CONFORMS TO SA 105N YEAR 2015 ED, 2011 ADD JOB # 2013-8440-50 ITEM # 8 SIGNED BY NOV 22 2013 FOR SUDHIR FORGINGS PVT. LTD			
Q.C. Engr.		Q.C. Mgr.	

Order#: 312846 - A Seq: 16 PO#: 133700 Heat#: TL10006617 Mill: Tri-Lad  
 Part#: FL 2 1 R W XS 5 Part Desc: Flanges 2 (60.3mm O.D.) 150# RAISED FACE WELD NECK XS A/SA105N

**TRILAD Flanges and Fittings, Inc.**

30 WOODSLEE AVE.  
 PARIS, ON, CANADA N3L 3V1  
 (PHONE) 519-442-6620  
 (FAX) 519-442-7658  
 www.tri-lad.com



ISO 9001:2008

**CERTIFIED MATERIAL TEST REPORT**

Certificate No. <b>13174936</b>	EN 10204 3.1	Date of Report <b>9/27/2013</b>
Customer  <b>AB</b>	Customer Order No. <b>412563</b>	Quantity <b>2</b>
	Tri-Lad Order No. <b>593063</b>	Line No. <b>2</b>

Specification <b>A105N</b>	<b>STOCK</b>	Heat Treatment <b>NORMALISED</b>
Item Description <b>2 150 WN XS RF A105N</b>	(866501)	Temperature Init 1634 F 890 C
Shop Order/Trace No.	CONFORMS TO SA <b>105N</b>	Time <b>N = .55HRS</b>
Lot No.	YEAR <b>2010 ED, 2011 Add</b>	Lot Definition <b>14 - 8440-51</b>
Heat Code <b>TL10006617</b>	ITEM # <b>8</b>	<b>44 - STOCK</b>
C.E. <b>.40</b>	Melt Fraction EF	<b>PO-133700</b>
	SIGNED BY <b>[Signature]</b>	
	NOV 22 2013	

	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V
Heat Product	19	1.03	.028	.029	.24	.13	.06	.10	.02	.001
Heat Product	Nb	.01								
Heat Product										

Mechanical Properties				Impact Test		Impact Values		Shear Fracture	
Yield	Tensile	Elongation	Reduction of Area	Hardness	Temperature				
Ksi 63 Mpa 431	Ksi 83 Mpa 575	29 %	56 %	HBW 161 HBW 161					
Tensile Specimen <b>STD RD</b>						Starting Material		Impact Specimen	
Lateral Expansion		Impact Type		Impact Orientation					

Notes

Cr+Mo <= 0.32%  
 Cr+Cu+Mo+Ni+V <= 1.00%  
 Mn/C >= 3.0  
 CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

0.12  
 0.31  
 5.42  
 0.40

ASTM A105N-12  
 ASME SA105N 2010 Edition 2011A Addenda

CSA Z245.12-09 GR 248 CAT 1 SS  
 ANSI/NACE MR0175/ISO15156:2009(E)  
 NACE MR0103 LATEST ED.  
 NACE MR0175/ISO15156-09

Material is in accordance with the applicable Standard to which it is ordered including:  
 ASME Sect II, ASME B16.5, B16.9, B16.34, B16.47, CSA, MSS, AWWA C-207  
 NO WELD REPAIR  
 Material conforms to both ASTM (A) and ASME (SA) applicable specifications.  
 We hereby certify that all information presented on this CMTR conforms to the above specification.  
 We hereby certify the results to be a true copy of the records of the company.

*[Signature]*  
 Les Mansfield, CET  
 Quality Assurance Manager

Certificate No.: SE-6954H  
 Date: 12/02/2013  
 Page: 1 OF 1

**MILL TEST CERTIFICATE**  
 EN10204-3.1 B(DIN50049/3.1 B)  
 Customer: SEYBOLD INTERNATIONAL CORP.  
 Order No.: 7006954(B)-CEF/NOV

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



PRODUCT		MATERIAL SPECIFICATIONS		DIMENSIONAL SPECIFICATIONS															
FORGED CARBON STEEL FLANGES		ASTM A-350 LF2-13 CL.1/ASME SA-350 LF2-13 CL.1		ASME B16.5-13 CSA Z245.12															
Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)											CE(*)				
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb		N			
1	1611217	300 BLRF(2"NPT TAP) 3" LF2	20 PCE	0.220	0.230	1.170	0.019	0.040	0.400	0.120	0.080	0.020	0.007	0.007	0.007	0.007	0.420		
2	1076971	150 BLRF 2" LF2	111 PCE	0.220	0.240	1.150	0.019	0.006	0.007	0.020	0.002	0.007	0.001	0.006	0.006	0.409			
3	1076971	150 BLRF 2" LF2	89 PCE	0.220	0.230	1.170	0.019	0.006	0.007	0.010	0.002	0.006	0.001	0.007	0.007	0.420			
4	1076242	600 BLRF 1" LF2	60 PCE	0.210	0.210	1.110	0.013	0.006	0.160	0.050	0.060	0.009	0.009	0.005	0.005	0.424			
5	1790147	600 BLRF(1"NPT TAP) 2" LF2	20 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.010	0.005	0.001	0.007	0.007	0.420			
6	1737178	600 BLRF(2"NPT TAP) 3" LF2	25 PCE	0.220	0.230	1.170	0.019	0.006	0.007	0.010	0.020	0.005	0.001	0.007	0.007	0.424			
7	1560596	600 HUB BLRF(1"NPT TAP) 2" LF2	100 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.001	0.007	0.007	0.424			
8	1509933	150 SORF 2" LF2	15 PCE	0.220	0.200	1.150	0.021	0.003	0.006	0.010	0.010	0.002	0.004	0.001	0.005	0.416			

Item No.	Heat No.	T.S.(*) (MPa)	Y.S.(*) (MPa)	E.L.(*) (%)	Hardness (HB)	R.A.(*) (%)	Impact Test Temp: -46°C			Material Supplier	REMARKS
							1	2	3		
1	4677159	527.0	364.0	33.8	153/151	70.4	116.0	98.0	73.0	ACOMINAS	HEAT TREATMENT(*) 890°C X 4HRS CONFORMS WITH NACE MR0103-12 AND NACE MR075/ISO 15156.2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A. CONFORMS WITH Z245.12 CAT II GR248 SOUR SERVICE-09 (FOR USE AS WELDING NECK AND BLIND FLANGES ONLY) TEST SPECIMEN SIZE: 10X10 TEST SPECIMEN ORIENTATION: TRANSVERSE IMPACT TEST TEMP.: -46°C MIN TO C RATIO IS GREATER THAN 3.0"
2	4703602	527.0	372.0	36.0	153/151	68.6	109.0	97.0	75.0	ACOMINAS	
3	4677159	527.0	364.0	33.8	153/151	70.4	116.0	98.0	73.0	ACOMINAS	
4	83623	537.4	399.1	34.4	155/153	68.5	90.0	64.0	83.0	WEI CHIH STEEL	
5	4603012	529.0	356.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS	
6	4677159	527.0	364.0	33.8	153/151	70.4	116.0	98.0	73.0	ACOMINAS	
7	4603012	529.0	356.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS	
8	4553962	535.0	354.0	33.8	154/152	68.6	40.0	37.0	47.0	ACOMINAS	



CONFORMS TO SA 350LF2CL1  
 YEAR 2010 EP No. 11100  
 JOB # 1013-8440-51  
 ITEM # 9  
 SIGNED BY: [Signature] 19 2014

\*1: T.S. = Tensile Strength, Y.S. = Yield Strength, E.L. = Elongation, R.A. = Reduction of Area  
 \*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S T=Solution Treated, S.R.=Stress Relieved, A.C.=Air Cooled, F.C.=Furnace Cooled, W.C.=Water Cooled, O.C.=Oil Cooled.  
 \*3: C.E. Value = C + (Mn/6) + ((Cr + Mo + V) / 5) + (Ni + Cu) / 15

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

OK

4) PO# 120528  
J# 7969-03

**MUNISH FORGE PVT. LTD**  
VILL. GOBINDGARH ADJOINING PHASE - VII FOCAL POINT LUDHIANA. PHONE: 3673307.2673407  
AN ISO 9001 : 2000 CERTIFIED COMPANY  
(CERTIFICATE AS PER BS EN 10204 - 3.1B)

INVOICE NO. & DATE		CUSTOMER'S NAME		CERTIFICATE NO.		DATE									
				1786/06		30 - 09 - 2006									
PART NO. / NAME		MATERIAL SPECIFICATION		P.O. NO. & DATE											
2"-150 BLRF		ASTM A105N/ASME SA 105 - NACE MRO 175													
STANDARD		QUANTITY		LAB REF. NO.											
ANSI B16.5-2003 (REVISION OF ASME B16.5-1996)		1000Pcs		1068F											
DESCRIPTION		QTY (PCs)	HEAT NO.	CHEMICAL COMPOSITION											
SPECIFIED		1000	-	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE%
MILL TEST REPORT			522108	0.25	1.05	0.035	0.040	0.10	0.40	0.40	0.30	0.12	0.05	0.02	0.43
OBSERVED		1000	1068F	MAX	MAX	MAX	MAX	0.35	MAX	MAX	MAX	MAX	MAX	MAX	MAX
GRAIN SIZE :-		6.5ASTM		0.21	0.91	0.030	0.022	0.19							
INCLUSION RATING		A 1.0 B 1.0 C 1.5 D 1.0		0.23	0.97	0.030	0.021	0.18	0.007	0.005	0.016	0.004	0.001		0.39
GRAIN FLOW		SATISFACTORY													
<b>MECHANICAL PROPERTIES</b>															
HEAT NO.	DESCRIPTION	YIELD STRENGTH Kg / mm <sup>2</sup>	TENSILE STRENGTH Kg / mm <sup>2</sup>	% ELONGATION	% REDUCTION	HARDNESS BHN									
1068F	SPECIFIED	25.30	49.28	22 MIN	30 MIN	137-187									
	OBSERVED	52.50 36.28	75.50 52.18	29.45	65.16	146-156									
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:															
MUNISH 2 BLRF 150 A 105N B16.5 H1068 F INDIA															
A.Q.C.M. (MATERIAL)		A.Q.C.M.. ( MACHINE)		FLANGE SHOP (W.M)		MANAGER (Q.C) FOR MUNISH FORGE LTD.									

CONFORMS TO SA 105N  
YEAR 2010 E.P. 2011 AYO  
JCB # 2013-8440-50  
ITEM # 10  
NOV 22 2013

1-8440-50

① Po# 120524  
J# 7958-06

OK

1-8440-51

2" 150 BLIND A105 HT-13144 59A3280

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



MILL TEST CERTIFICATE

EN10204-3.1(B01N500493.1B)

Customer: W.F.F. FITTINGS & FLANGES (CANADA) LTD.

Order No.: E05050520MJD

CONFORMS TO SA 105N  
YEAR 2010 E.P. 2011 ASD  
JOB # 2013-8440-51  
ITEM # 10  
Certificate No.: SE-5005C  
Date: 09/25/2008  
Page 1 OF 1  
SIGNED BY NOV 22 2013

DIMENSIONAL SPECIFICATIONS

ASTM B16 5-03  
CSA Z245.12

MATERIAL SPECIFICATIONS

ASTM A105-05/ASME SA105-07

PRODUCT

FORGED CARBON STEEL FLANGES

Item No	CUSTOMER P/N	DESCRIPTION	QUANTITY		CHEMICAL COMPOSITION (%)											CE(*)								
			Min	Max	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb		N							
1	13144	150 BLRF 2" A105N	500 PCE	0.200	0.350	0.200	0.100	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.060	0.070	-	-	-	-	-	-	0.408	
2	10832	150 THRF 2"x1" A105N	30 PCE	0.190	0.350	0.190	0.150	1.080	0.012	0.011	0.060	0.040	0.030	0.005	0.003	0.005	0.010	-	-	-	-	-	-	0.337
3	35702	150 THRF 1 1/2" A105N	25 PCE	0.210	0.350	0.210	0.210	1.110	0.018	0.014	0.070	0.060	0.050	0.005	0.003	0.005	0.008	-	-	-	-	-	-	0.421

Item No	Heat No	T.S.(*) (MPA)	Y.S.(*) (MPA)	E.L.(*) (%)	Hardness (H-B)	R.A.(*) (%)	Impact Test			Material Supplier	REMARKS
							Min	Max	Temp: Minimum		
2	13144	519.8	311.9	33.2	150	65.9	1	2	3	CEMIK	CONFORMS WITH NACE MR01-7503 AND MR01-0307/ISO15156.2
3	10832	523.7	323.6	34.0	150	86.8				CEMIK	CONFORMS WITH Z245.12 CAT 1 GR 246 SOUR SERVICE-05
3	35702	517.8	321.7	37.8	150	64.9				CEMIK	



\*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.L.=Oil Cooled.  
\*3 C.E. Value = C + (Mn \*8) + (Cr + Mo \*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.

Managerial Quality Assurance Dept

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Certif. N. 4683	Def/Date 28.08.2013	Fattura / Invoice N.	Def/Date
DDT / Del Note N. 0	Def/Date	Ns.Ord. / Our ref. N.	Def/Date

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

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001 =

9335 ENDEAVOR DRIVE S.E.  
 T3S 0A1 CALGARY, ALBERTA CA

**METALFAR**  
 PRONOSTI INDUSTRIALISTRIKLI S.R.L.  
 SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

DIM.IN ACC. A DIM. ACCORDANCE TO ASME/ANSI B16.5 -2009		VISO E DIMENS. VIS. & DIMENS. SATISFACTORY	
RESILLENZA / IMPACT TEST - JOULE/ft-lb	1 2 3	RESILLENZA / IMPACT TEST - JOULE/ft-lb	1 2 3
TRPO / TYPE (ft-lb/in)	20 88 94	TRPO / TYPE (ft-lb/in)	20 88 94
TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 920 C - COOLED IN STILL AIR		FORNO / FURNACE ELECTRIC FURNACE	
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010		ORIGINE / ORIGIN OF STEEL EUROPEAN UNION	

DIM.IN ACC. A DIM. ACCORDANCE TO ASME/ANSI B16.5 -2009		VISO E DIMENS. VIS. & DIMENS. SATISFACTORY	
RESILLENZA / IMPACT TEST - JOULE/ft-lb	1 2 3	RESILLENZA / IMPACT TEST - JOULE/ft-lb	1 2 3
TRPO / TYPE (ft-lb/in)	20 88 82	TRPO / TYPE (ft-lb/in)	20 88 82
TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 920 C - COOLED IN STILL AIR		FORNO / FURNACE ELECTRIC FURNACE	
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010		ORIGINE / ORIGIN OF STEEL EUROPEAN UNION	

CONFORMS TO SA 105N

YEAR 2013

JOB # 1013-8440-S1

ITEM # 1

SIGNED BY NOV 28 2013

1-8440-S1  
 Po-134044

NOTE: 100% MANUFACTURED IN ITALY	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
NOTES: MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION	OFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT	
MATERIAL IN ACCORDANCE WITH NAACE MR-0175/2009 ISO 15196-2009 - SOUR SERVICE		
MATERIAL IN ACCORDANCE WITH NAACE MR-0103/2012 - SOUR SERVICE		





6803-71 Street  
Edmonton, Alberta  
T6B 2M5

Phone: 780-450-9757  
Fax: 780-450-0298

# MILL TEST REPORT

Date: January 2, 2014

Heat Code: **VDG**

Description: Bleed Ring 3-150 ←

Material Designation: ASTM A350/LF2/A105N

Specification: SA51670N

Material Supplier: Ascometal via Ryerson

Heat Number: H9099

Work Order: Stock. 127327

NACE: MR0175-09 & MR0103-03

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Cb	Al	N2	V	Ti	B
1.69	1.132	.008	.012	.261	.143	.049	.097	.103	.0000	---	---	.013	---	---

## MECHANICAL PROPERTIES

Yield Strength (PSI)	Tensile Strength (PSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ -50°F (FTLB)	Test Direction	CE
49648	72196	33.2	67	149	34.9, 32.8, 30.5, (32.7)		412

## MISCELLANEOUS

Steelmaking Process:

Condition of Material: Normalizing Time/Temp. 2.75 hrs/1675°F; air cooled.

Grain Size:

8440-51  
P0-134824

CONFORMS TO SA 516-70N  
YEAR MOED, 2014SD  
JOB # 103-8440-51  
ITEM # 12  
SIGNED BY FEB 21 2014

Original Material: lar

ASTM A105/A350LF2  
Global P.O.: 22331  
W.O.: Stock

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: [Signature]  
Quality Assurance Representative



6803-71 Street  
Edmonton, Alberta  
T6B 2M5

Phone: 780-450-9757  
Fax: 780-450-0298

# MILL TEST REPORT

Date: February 27, 2013

Heat Code: **TLH** ←  
Description: **Bleed Ring** ← 300, 2-600, 2" x 3/4" 300, 2" x 1" 600, 3-900, 3-1500, 3-1500 RTJ, 4-150, 3-150; Vent Blind 3-900, 3-1500, 3-1500 RTJ, 4-150; Spectacle Product 4-150, 3-1500, 3-1500 RTJ, 3-2500 RTJ, 4-150, 10-900 RTJ

NAC#: **MR0175 & MR0103**

Material Designation: ASTM A350/L1/2/A 105N

Specification: SA51670N

Material Supplier: CMC Impact Metals via Ryerson

Heat Number: MM11104672

Work Order: Stock, 120472, 120080, 121138, 121548, 122068, 122134, 122404, 122466, 124149, 124733, 124426, 124919, 125161, 125076, 125331, 125325, 125736, 126495

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Al	N2	V	Ti	B
.17	1.21	.013	.004	.21	.10	.020	.08	.21	.022	---	.016	---	---

## MECHANICAL PROPERTIES

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy (@ -50°F) (FTLB)	Test Direction	CE
49.0	76.0	33	69	141	69, 71, 58 (66)		.42

## MISCELLANEOUS

Steelmaking Process: Normalizing Temp @ 1675°F; Time (min) 420.  
Condition of Material: Normalizing Temp @ 1675°F; Time (min) 420.  
Grain Size: 8440-S1  
20-134824.

CONFORMS TO SA 516-70N  
YEAR 1982/1983  
JOB # 1013-8440.S1  
ITEM # 13  
SCANNED BY [Signature] FEB 21 2014

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product

Signed: [Signature]  
Quality Assurance Representative

Original Material: Inc  
ANALYST: [Signature]  
LABORATORY: [Signature]  
MATERIAL: [Signature]





6803-71 Street  
Edmonton, Alberta  
T6B 2M5

Phone: 780-450-9757  
Fax: 780-450-0298

# MILL TEST REPORT

Date: January 31, 2008

Heat Code: **KQD**  
Description: Spectacle Product 6-150, 8-150, 2 1/2-150, 6-1500  
Material Designation: SA516-70N  
Material Supplier: Baoshan Iron & Steel Co., LTD. via Edmonton Exchanger  
Heat Number: 408258-7313446300  
Work Order: 80203, 80876, 84116, 99259

NACE: MR0175 & MR0103

## CHEMICAL COMPOSITION %

	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Sn	AL	Nb	V	Ti	N
	16	1.11	.007	.0010	.29	.20	.00	.31	.20	.0010	---	.016	.000	.014	.0021

## MECHANICAL PROPERTIES

Yield Strength (PSI)	Tensile Strength (PSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ -51°F (FTLB)	Test Direction	CE
54810	76850	25	---	151	67, 75, 64 (69)		.38

## MISCELLANEOUS

8440-51  
Po-134824

Steelmaking Process: Normalized @ 900°C for 15 minutes.  
Condition of Material: Normalized @ 900°C for 15 minutes.  
Grain Size:

CONFORMS TO SA 516-70N  
YEAR: 2008  
JOB # 4013-8440-51  
ITEM # 14  
SIGNED BY: [Signature] FEB 2 1 2014

Original Material: photo

ASTM A516-70N  
Global Mills 16739  
W.O.: 80203

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: [Signature]  
Quality Assurance Representative



6803 - 71 Street  
Edmonton, Alberta  
T6B 2M5

# MILL TEST REPORT

Date: October 30, 2007

Heat Code: **JYZ**

Description: Spectacle Product 6-150 ←

Material Designation: SA516-70N

Material Supplier: Posco via Edmonton Exchanger

Heat Number: SB73972-PB35702402

Work Order: 78357

NACE: YES

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Sn	AL	Nb	V	Ti	N
.1722	1.155	.0085	.0016	.351	.02	.000	.23	.111	---	.034	---	.019	.001	---

## MECHANICAL PROPERTIES

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ -510E (FTLB)	Test Direction	CE
51.3	75.7	24	---	151 ←	119, 123, 128 (123)		.39

## MISCELLANEOUS

Steelmaking Process:

Condition of Material: Normalized @890°C 20 min.

Grain Size:

CONFORMS TO SA 516-70N

YEAR 2007ED, 2011ASS

JOB # 1017-8440-57

ITEM # 14

SIGNED BY [Signature] FEB 21 2016

8440-51  
PO-134824

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: [Signature]  
Quality Assurance Representative

Original Materials File

ASTM A516-06N  
Global P.O.: 10220  
W.O.: 78357



6803 - 71 Street  
Edmonton, Alberta  
T6B 0A5

# MILL TEST REPORT

Date: July 13, 2007

HEAT CODE: **JHT**

Description: Spectacle Product 2-300, 8-150, 6-150

Material Designation: SA516-70N

Material Supplier: Dillinger Hutte via Edmonton Exchanger

Heat Number: 10079-549026

Work Order: 75561, 78357, 82247

NACE: MR0175

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Sn	Al	Nb	V	Ti	N
.181	1.15	.008	.0005	.361	.041	.020	.065	.036	.002	.042	.001	.002	.002	.0045

## MECHANICAL PROPERTIES

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ - 51°F (FT.LB)	Test Direction	CE
53.8	76.6	26.0	----	145	105, 117, 117 (113)		.39

## MISCELLANEOUS

Steelmaking Process: Normalized @ 1670°F, air cooled.  
Condition of Material: Normalized @ 1670°F, air cooled.  
Grain Size:

CONFORMS TO SA	<u>516-701</u>
YEAR	<u>2007, 2015</u>
JOB #	<u>2013-8440-51</u>
ITEM #	<u>14</u>
SPONSORED BY	<u>FEB 21 2014</u>

8440-51  
PO-134824

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: \_\_\_\_\_  
Quality Assurance Representative

Original Material: None  
ASTM ASSOCIATION  
Global P.O.: 10279  
W.D.E.: 7580



6803-71 Street  
Edmonton, Alberta  
T6B 2M5

Phone: 780-450-9757  
Fax: 780-450-0298

# MILL TEST REPORT

Date: November 20, 2013

HEAT CODE: **UYB**

Description: Spectacle Product 2-600, 4-150

Material Designation: SA516-70N

Material Supplier: Ruukki via Canadian Plate Products Ltd.

Heat Number: 69196-033

Work Order: 125093

NACE: Conforms to Nace MR0175/ISO 15156-2 2009 Annex A & MR0103

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	SN	B	AL	Nb	V	Ti	N
.191	1.10	.011	.001	.32	.07	.004	.04	.011	.002	.0003	.038	.001	.013	.004	.005

## MECHANICAL PROPERTIES

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (HBB)	Charpy (ft-lb)	Test Direction
51	75	28	---	159-166	119, 92, 83 (98)	CE

## MISCELLANEOUS

Steelmaking Process: Normalized  
Condition of Material: Normalized  
Grain Size: ASTM Specification A20/ A 20M

8440-51  
P0-134824

CONFORMS TO SA 516-70N  
YEAR: 2010ED, 2011AX  
JOB#: 2013-8440-51  
ITEM#: 15  
SIGNED BY: FEB 2 1 2014

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: Quality Assurance Representative

Original Material: plate  
GLOBAL MACHINE & SUPPLY INC.  
Global P.O.: 2110  
W.O.: 125093

# MILL TEST REPORT

Date: April 9, 2013

HEAT CODE: **TUQ**

Description: **Spectacle Product 2-300**

Material Designation: SA516-70N

Material Supplier: Ruukki via Edmonton Exchanger

Heat Number: 58263-013

Work Order: 120786

NACE: **Conforms to Nace MR0175/ISO 15156-2 2009 Annex A & MR0103**

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Sn	Al	B	CA	V	Ti	N
.180	1.11	.010	.001	.35	.05	.004	.03	.013	.003	.037	.0002	---	.008	.005	.003

## MECHANICAL PROPERTIES

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ -51°F (1°F.LB)	Test Direction
51	75	26	---	146	86, 81, 99 (89)	---
					C.B.	.38

## MISCELLANEOUS

Steelmaking Process:  
Condition of Material: Normalized @ 1688°F.  
Grain Size: ASTM Specification A20/ A 20M

8440-51  
Po-134824

CONFORMS TO SA 516-70N  
YEAR: 2010EP, 2011ASD  
JOB #: 1013-8440-51  
ITEM #: 16  
SIGNED BY: FEB 21 2014

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed:   
Quality Assurance Representative

Original Material, plus  
ASTM ASSURANCE  
Global Machine & Supply Inc.  
1241 - 120786

**MILL TEST REPORT**

Date: July 8, 2010

HEAT CODE: NZY - 3/8" WT.

Description: Spectacle Product 2-300, 2-600

Material Designation: SA516-70N

Material Supplier: Dillinger Hutte via Edmonton Exchanger

Heat Number: 16154-444052

Work Order: 99474, 102075

NACE: MR0175

③ 8/24-SW

Part 26812

1-8440-50

CONTROLS TO SA	816-20MT
YEAR	2010 ED, 2011 ASD
JOB #	0013-8440-50
ITEM #	16
SIGNED BY	FEB 13 2014

**CHEMICAL COMPOSITION %**

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	SN	B	AL	Nb	V	Ti	N
.148	1.12	.011	.0007	.342	.055	.015	.027	.024	.000	.0003	.043	.018	.000	.003	.0047

**MECHANICAL PROPERTIES**

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ - 51°F (FT>LB)	Test Direction
55.8	74.7	37.0	--	138-151	142, 130, 153 (142)	CE
						(.35)

**MISCELLANEOUS**

Steelmaking Process:

Condition of Material: Normalized @ 1670°F, air cooled.

Grain Size:

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: [Signature]  
Quality Assurance Representative

ASTM A516-70N  
Global P.O.: 18827  
W.O.: 99474



6803-71 Street  
Edmonton, Alberta  
T6B 2M5

Phone: 780-450-9757  
Fax: 780-450-0298

# MILL TEST REPORT

Date: November 20, 2013

Heat Code: **UYA**

Description: Spectacle Product 2-150, 3-150

Material Designation: SA516-70N

Material Supplier: Voestalpine Grobblech GmbH via American Alloy Steel

Heat Number: 931945-254281-2

Work Order: 125093

NACE: MR0175/ISO 15156-2 2009 Annex A & MR0103 2007

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Sb	As	Nb	V	Ti	B
176	1.150	.006	.0009	.328	.026	.007	.260	.158	.0020	.0020	.01	.004	.002	.0002

## MECHANICAL PROPERTIES

Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ -50°C (J)	Test Direction
396	539	25.2	---	166-174	137, 184, 167 (163)	CE

## MISCELLANEOUS

Steelmaking Process:

Condition of Material: Normalized @ 920°C, 10 min, air cooling.

Grain Size: ASTM Specification A20/A 20M

CONFORMS TO SA 516-70 N  
 YEAR 2013ED-2011ASD  
 JOB # NO13-8440.5  
 ITEM # 17  
 SIGNED BY [Signature] FEB 2 1 2014

8440-51  
PO-134824

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed: [Signature]  
Quality Assurance Representative

Original Material plate  
 ASTM A516-70N  
 Global P.O. 2014  
 W.O. 125093



6803-71 Street  
Edmonton, Alberta  
T6B 2M5

Phone: 780-450-9757  
Fax: 780-450-0298

# MILL TEST REPORT

Date: May 30, 2012

Heat Code: **ROB**  $\frac{1}{4}$ " WT.

Description: Spectacle Product 2-150

Material Designation: SA516-70N

Material Supplier: Dongkuk Steel via Edmonton Exchanger

Heat Number: K1131220-A165900-01

Work Order: 114829

NACE: Conforms to Nace MR0175/ISO 15156-2 2009 Annex A & MR0102

## CHEMICAL COMPOSITION %

C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Sn	T.A.I	Nb	V	Ti	N
.17	1.44	.012	.001	.37	.016	.001	.01	.01	---	.023	.001	.002	.002	↙

## MECHANICAL PROPERTIES

Yield Strength (KSI)	Tensile Strength (KSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)	Charpy @ -51°F (FTLB)	Test Direction	CE
52	78	24	---	151 ↙	107, 107, 100 (105)		.414

## MISCELLANEOUS

1-8440-50

CONFORMS TO SA 516-70N  
 YEAR 2010 ED, 2011 ADD  
 JOB # 1013-8440-50  
 ITEM # 17  
 DOWNSHIP 114829 FEB 13 2014

Steelmaking Process:  
 Condition of Material: Normalized @ 1670°F, 23min.  
 Grain Size: ASTM Specification A20/ A 20M

Note: The information contained here is a copy of the information for the raw material provided to Global Machine & Supply Inc. for the above mentioned product.

Signed:   
 Quality Assurance Representative

Original Material file #  
 ASTM A516-70N  
 Global P.O.: 20748  
 W.G.E. 114829



CONFORMS TO SA 234 WPB  
 YEAR 2018  
 JOB # 2013-8440-51  
 ITEM 18  
 SIGNED BY NOV 28 2018  
 Certificate No 00200015-0401  
 Order No CI-13-233

# 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)821-7500, 831-2942

Customer : TRANS AM PIPING PRODUCTS LTD.  
 Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS  
 Spec : ASME SA/ASTM A234 WPB-11a  
 CSA 245.11-09 Cat I/EN10204 3.1/NACE MR0175-09/ISO 15156-09/MR0103-10

4-8440-51  
 4-8440-51

Item	Description	Specification for Inspection										Visual Inspection			Dimensional Inspection		
		Quantity	Heat ID	Heat No	Raw Certificate No.	NDE	Test Temp	Size of specimen	Charpy V-Notch Impact Value	Ave.	ASME B16.9-2007	GOOD	GOOD	GOOD			
1	90 E L/R SMLS STD	34	963C	311963	TIANJIN 12103314												
2	90 E L/R SMLS STD	125	252D	320252	BAOSHAN 1101040006301												
7	90 E L/R SMLS STD	170	162V	1233162V	HENGYANG C201317956-1												
9	90 E L/R SMLS STD	84	A619	331619	TIANJIN 12121022												
37	90 E S/R SMLS STD	10	1673	321678	TIANJIN 12121008												
Specifi- cation	Chemical Composition %										Tension Test			Hardness Test			REMARK
	C	Si	Mn	P	S	CU	NI	CR	Mo	V	Nb	CE	YS	TS	E	HB	
Min.	10	29	135	50	58	40	40	40	15	80	20	50	35000	60000	30	197	
Max.	22	21	52	18	9	6	3	2	2	1	23	27	41499	63800	30.5	134	620°C TO 980°C HOT FORMED
1	16	23	52	18	6	2	3	1	1	1	1	29	45271	75500	31	134	
2	17	21	82	9	10	6.5	2.8	0.9	4	2	31	31	47883	68500	31	137	
7	15	20	83	15	4	2	1	<1	2	1	33	33	44256	66300	45	135	
9	18	24	88	13	5	1	6.5	0.5	7	4	37	37	45271	68600	46	135	

L.S. Tsai

Chief of Quality Assurance Section

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, and was found to meet, the requirements of above specifications and purchaser's order.

9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



Thai Benkan Co., Ltd.  
88 Soi Wapthorn, Bangkok, Thailand  
Vanitprakam 10130 Thailand

# INSPECTION CERTIFICATE

Purchaser: CCTF CORPORATION

TO EN10204 3.1

Purchase Order No: Job No

4880208

D M Y

14/02/2012 Certificate No

T- 2012200113

No	MFG. No.	Specification for Material Made from Seamless Pipe ASTM A234-11/ASME SA234-10 Gr WPB ASA Z245-11-09 Gr 241 CAT 1 SS NACE MR0175/ISO 15156-2 09LAPRD103-10	Quantity	Heat Treatment (Note 1)	Visual Examination	Dimensional Inspection
		Product & Size	(T+)		Hardness Actual Data	Item No
1	11N00004	90 EL WPB 1 1/4 S40	600	A	HB 118 - 145	7510292
2	11F00006	90 EL WPB 4 S40	79/750	A	HB 118 - 145	7510420
3	11N00007	90 EL WPB 4 S40	100/750	A	HB 118 - 145	7510420
4	10M00026	90 ES WPB 1 1/2 S40	11/60	A	HB 125 - 140	7510032
5	11N00034	45 EL WPB 6 S40	13/320	A	HB 118 - 145	7511200

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 10000	x 100	x 100	x 100	x 100	x 1000	x 1000	x 100	MPa	MPa	%
Max.	100	10	29	50	58	40	40	15	80	20	100	240	415	655	30
Material Heat No	30		106	50	58	40	40	15	80	20	100	240	415	655	30
1 JOKB458	19	19	78	13	6	3	3	2	0	0	34	322	502	45	45
2 JOK5087	19	26	86	14	6	1	2	6	8	0	36	359	532	38	38
3 J1L9044	19	19	82	12	6	2	2	4	1	0	34	313	460	38	38
4 JOL6183	19	17	87	14	5	1	2	6	2	0	35	329	503	47	47
5 06426	18	20	79	11	3	3	3	6	1	0	33	297	477	38	38

GOOD 4-8440-5 L

14-Steels  
Pa - 134180

2314 WPB  
2010ED 2011160  
2013-8440-51  
19  
DEC 03 2013

(Note 1) A: Hot formed with final temperature between 650°C - 950°C. Air Cooling. N: Normalizing 910°C (1670°F) for 1 hour. Air Cooling. S: Specimen Specification for material made from plate. W: Stress Relief 1075°C (1965°F) for 1 hour. Air Cooling.

Use findings as indicated and's responsibility is restricted to the specific data and does not extend to other requirements.

CCTF CORPORATION (MO) 5/5 (24) C 03/15  
MAGNETIC PARTICLE EXAMINATION FOR DEFECTS

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.

Y: Tempered with thickness in mm. TS: Yield strength. US: Tensile strength. E: Elongation.

Quality Assurance Manager  
Thai Benkan Co., Ltd

Order#: 312846 Seq: 5 PO#: 133700 Heat#: 55E0018 Mill: BKL - Thai Benkan  
 Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (88.9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB



Thai Benkan Co., Ltd  
 58 Soi Wattana, Bangkok, Prapachong,  
 Samutprakarn, 10130 Thailand

# INSPECTION CERTIFICATE

Purchaser : COMCO PIPE AND SUPPLY COMPANY

TO EN10204 3.1

Order No: E1-3263

Job No

Material Order No

MC-B19

E1-3263

01/03/2013 T- 2013140274

D M Y Certificate No

No.	Tl (%)	MFG. No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
1	0.000	55E0018	ASTM A234-11/ASME SA234-10 GR WPB CSA Z46.11-06 Gr 211 CPT 1 SS	ASME B16.9-2007 B16.25-2007	Good	Good
2						
3						
4						
5						

Material Heat No.	Chemical Composition %													Tension Test 1.2		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E	YS	TS	F	
23	106	10	29													
18	20	85	10	4	1	2	4	1	0	0	0	33	324	496	53	
240													240	415	30	197 HB : GOOD
665																
1-J2L8512																
1-8440-50																
234 WPB																
90 DEG																
0013-8440-50																
20																
1-Stock																
20-133700																
SIGNED BY																
NOV 22 2013																

(Note 1) A : Hot formed with final temperature between 620°C-980°C. Air Cooling N : Normalizing 910°C±5 HR. Air Cooling \*N : Normalizing 910°C±5 HR Air Cooling (Specification for material)  
 Material according to AS/NZS/ACE/AFR/169/ISO 15188-2:2008 & AFN0109 - 2010 (ISSC Region 3)  
 The fittings were made of sampled tested and inspected in accordance with the specification, and was found to meet the requirements  
 CE = C<sub>0</sub>Mn<sub>0.6</sub>/C<sub>0</sub>Mn<sub>0.5</sub>/0.05 (NH<sub>4</sub>CO)<sub>3</sub>  
 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  
 \* 1 : "T" - symbolized wall thickness in mm \* 2 : YS Yield strength TS = Tensile strength B = Elongation  
 Form TZ-6A/3

Raygapa Kampranon  
 Quality Assurance Manager  
 Thai Benkan Co., Ltd.



Thai Benkan Co., Ltd

58 Soi Watkrurui, Bangkok, Prapachong, Samprakram, 10130 Thailand.

# INSPECTION CERTIFICATE

TO EN10204 3.1

Purchaser: VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

E-No. Purchase Order No. Job No.

D M Y Certificate No.

MC-936 45001560

No.	MFG. No.	Specification for Material Made from Seamless Pipe		Quantity	Heat Treatment (Note 1)	Specification for Inspection	Visual Examination	Dimension of Inspc
		Product & Size (T=1)	ASTM A234-11/ASME SA234-10 Gr WPB CSA Z445 11-08 Gr 241 CAT 1 SS NACE MR0175ISO 15180-2,08&MR0103-2010					
1	13A00058	90 EL WPB 3 S40		87/1,000	A	ASME B16.9-2007, B16.25-2007	Good	Good
2	13A00060	90 EL WPB 3 S40 ←		834/1,000	A		Hardness Actual Data HB: 118 - 145	3516
3	12K00007	90 EL WPB 4 S40		154/800	A		HB: 118 - 145 ←	3518
4	13B00011	90 EL WPB 8 S40		77/200	A		HB: 118 - 145	3523
5	13B00086	90 EL WPB 12 STD		40/250	A		HB: 118 - 145	3534

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				
Max.	10	29											240	415	30	
Material Heat No.	30											45	655			

No.	Material Heat No.	Tension Test #2		Elongation %
		YS (MPa)	TS (MPa)	
1	J2L8512	324	496	58
2	J2L8512 →	324	496	58
3	24132	303	470	34
4	J2KB179	264	479	41
5	1-94347	364	505	44

(Note 1) A: Hot formed with final temperature between 620 °C-980°C, Air Cooling N: Normalizing 910°C±0.5 HR, Air Cooling

The heat treatment was normalized and inspected in accordance with the specification and was found to meet the requirements  
 C.E. = C-Mn/(Cr+Mo+V) \* 100 (Ni-Cu) \* 15  
 \* 1: "T" symbolized wall thickness in mm. \* 2: YS Yield strength TS = Tensile strength E = Elongation

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.

Note for WPB: For each reduction of 0.10% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.35%

Form TZ-6A/4

CE: 2012.11.16 2.34 WPA  
 YEAR: 2010 ED, 2011 ADD  
 JOB: 2012-6440-50  
 20  
 NOV 22 2012

Quality Assurance Manager  
 Thai Benkan Co., Ltd.

Order#: 312846 Seq: 5 PO#: 133700 Heat#: 2J2770 Mill: Rigid  
 Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (88.9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB

**PURCHASER:** SEYBOLD  
**STANDARD:** ASTM A234 WPB-11  
 ASME SA234 WPB-04  
 CSA Z245.11-09 Gr.241 CAT I Sour Service  
**MATERIALS:** ASTM A106 Gr.B  
**INSP. SPEC.:** ASME B16.9-07  
**DATE:** 2013-03-12  
**ORDER NO.:** 7006127/E1-3562  
**P.I. NO.:** 2-01-2  
**CERTIFI. NO.:** 13013 2-8490-50  
**INSPECTION CERTIFICATE**  
**RIGID** INDUSTRIES CO., LTD.  
 8, MEI-CHUNG RD. NIAO-SONG,  
 KAOHSIUNG 83301 TAIWAN  
 TEL: 886-77310527-8  
 FAX: 886-77315887  
 ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE	QUANTITY Pcs	MFG NO.	VISUAL & DIMENSIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION
7	ELL 45 LR 2" STD	50	2C0724	GOOD	127-133	A	
8	ELL 45 LR 2" XH	50	2J0700	GOOD	127-134	A	
9	ELL 45 LR 3" STD	50	2D6870	GOOD	137-141	A	
10	ELL 45 LR 4" STD	16	1I28101	GOOD	143-145	A	
11	ELL 45 LR 4" STD	18	2D0301	GOOD	132-134	A	
12	ELL 45 LR 4" STD	16	1K42112	GOOD	138-141	A	
13	ELL 45 LR 8" XH	20	2L5533	GOOD	139-144	A	
14	ELL 90 LR 3" STD	500	2J2770	GOOD	126-134	A	
15	ELL 90 LR 4" STD	250	2H5901	GOOD	128-136	A	
16	ELL 90 LR 4" XH	100	3A834V	GOOD	142-145	A	

CONFORMS TO SA 234 WPB  
 YEAR: 2012 ED 2011 MD  
 JOB #: 013-8490-50  
 ITEM #: 20  
 SIGNED BY: NOV 22 2013

ITEM NO.	MATERIAL CHARGE NO.	CHEMICAL COMPOSITION %											PHYSICAL PROPERTIES					
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Y S	I S	E	TT	C L	
STANDARD		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
7	315524	15	23	56	7	4	5	4	40	40	15	8	20	35.0	60.0	95.0	50	50
8	318300	18	24	55	7	2	4	3	5	3	2	<1	<1	43.5	54.9	66.2	30.3	29
9	516870	17	21	98	8	3	8	3	3	1	3	<1	<1	45.5	67.1	31.5	35	35
10	514401	18	23	97	10	7	9	4	5	1	1	<1	<1	45.5	66.6	31.3	36	36
11	514401	18	23	97	10	7	9	4	5	1	1	<1	<1	45.5	66.6	31.3	36	36
12	316412	19	24	55	9	3	3	3	3	1	1	<1	<1	45.0	65.7	32.3	29	29
13	322933	19	24	54	7	4	5	4	4	1	1	<1	<1	43.4	68.0	31.7	30	30
14	516870	17	21	98	8	3	8	3	3	1	1	<1	<1	45.5	67.1	31.5	35	35
15	514401	18	23	97	10	7	9	4	5	1	1	<1	<1	45.5	66.6	31.3	36	36
16	1226774V	17	23	86	12	3	5	4	5	5	5	<1	2	45.5	67.7	31.6	34	34

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 820°C-880°C, AIR COOLING.  
 N: NORMALIZING AT TEMPERATURE 880°C X 0.5HR, AIR COOLING.  
 → NACE MR-01-75-09/ISO 15156-2, NACE MR 0103-10, 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.  
 \* TYPE OF SPECIMEN: STRIP (WIDTH: 1 in./GAUGE LENGTH: 2 in.) \*\* SAMPLING DIRECTION: L=LONGITUDINAL T=TRANSVERSE  
**Qu E Dam**  
 MANAGER OF Q.A. DEPT



# INSPECTION CERTIFICATE

AWAJI MATERIA (THAILAND) CO., LTD.

81, MOO 4, PRAKASA ROAD, TAMBOL BANGMUANG, AMPHUR MUANG  
SAMIUTPRAKARN THAILAND 10270, Tel : (662)701-5226

MADE FROM SEAMLESS STEEL PIPE

Date : MAY 29, 2008  
Certificate No. : T09-31082/1

Purchaser : ALLIED FITTING CANADA

Order No.	091107-MZ/3	Job No.		Product	CARBON STEEL BUTT WELDING FITTINGS	Raw Material Pipe Maker	SUMITOMO METAL INDUSTRIES, LTD.															
Inspection Standard	ASME B16.9-07 ASME A234-07 WPB ASME A980-07 ASME SA234 WPB NACE MR-0175-01, MR-0103-05 CSA Z245.11-02, GR241 CAT.1	Material Standard	WPB	Appearance	GOOD	Dimension	GOOD															
Manufacturing No.	84059	Product code	WPB	Article & Size	GOOD	Quantity	756 Pos.															
Specification		Chemical Composition (%)		STD	80	LONG	RADIUS	ELBOW	3" ←	Note.	* ALL FITTING MANUFACTURED BY AWAJI MATERIA (THAILAND) CO., LTD. ARE PRODUCED FROM A138 ORB SEAMLESS PIPE *											
Min.		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	Al	C.E.	Y.S.	T.S.	E	Hardness	
Max.		X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X100	X100	X100	X100	X1000	X1000	X100	MPa	MPa	MPa	HB	HB
File Charge No.	J7KG789	30	10	29	106	50	40	40	40	15	8	2	2	5	65	-	-	240	415	655	25.5	197
		18	24	66	11	9	2	2	5	0	0	0	-	-	-	1	31	313	488	62	140 ←	

ISO 9001: 2000 Manufacturing Company  
Certified by BV. Certificate No. TH07000055

Inspection Certificate : ACCORDING TO EN 10204, 3.1 : 2004

CONFORMS TO SA 234 WPB  
YEAR 2010 ED, 2011 ADD  
JOB: 9013 8440-50  
ITEM# 20  
SIGNED BY: NOV 22 2013

1-STOCK  
PO-133700  
1-8440-50

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.

Surveyor: S. MAEKAWA  
Chief of Inspection Section

Order#: 312846 Seq: 5 PO#: 133700 Heat#: 84059 Mill: Awa!  
Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (8.9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB

Order#: 312846 Seq: 5 PO#: 133700 Heat#: 07P00006 Mill: BKL - Thai Benkan  
 Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (Ø 9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB



Thai Benkan Co., Ltd.  
 58 Soi Watkrumai, Bangkru, Prapadaeng,  
 Samutprakan, 10130 Thailand.

D M Y Certificate No.

05/02/2006 T-2006230024

# INSPECTION CERTIFICATE

TO EN10204 3.1

Purchaser: CCTF CORPORATION

E.No. MB-161 Purchase Order No. 4891537 Job No.

No.	MRG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspe.	Product & Size		Chemical Composition %													Tension Test #2								
						ASTM A234-08/ASME SA334-04 Gr. WPB CSA Z245.11 GR241 CAT I NACE MR0175-2003	ASME B16.9-2003	Quantity	Heat Treatment (Note 1)	Symbol No.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E				
1	07P00006	90 EL WPB 3 S40 ←	500	A	Good	90 EL WPB 3 S40 ←	10	29	23	19	17	67	10	2	2	2	3	4	40	40	40	15	80	20	240	415	30	197 HB	GOOD
2	07N00035	45 EL WPB 6 S40	160/320	A	Good	45 EL WPB 6 S40	10	29	23	19	17	67	10	2	2	3	4	40	40	40	15	80	20	240	415	30	197 HB	GOOD	
3	08A00096	90 EL WPB 12 XS	9	A	Good	90 EL WPB 12 XS	10	29	23	19	17	67	10	2	2	3	4	40	40	40	15	80	20	240	415	30	197 HB	GOOD	
4																													
5																													

(Note 1) A: Hot formed with final temperature between 620 °C-980°C, Air Cooling N: Normalizing 910°C±0.5 HR, Air Cooling \*N: Normalizing 910°C±0.5 HR, Air Cooling (Specification for material made from plate); S: Stress Relieving 675°C±0.5 HR, Air

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY:  
 I 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 234WPB  
 YEAR 2010 EP. 2011 AD  
 JOB # 1013-8440-51  
 20  
 NOV 2 2 2012  
 SIGNED BY

Quality Assurance Manager  
 Thai Benkan Co., Ltd.

1-8440-51

Order#: 266306 - C Seq. 49 PO#: 131660 Heat#: 55A00123 Mill: BKL - Thai Benkan  
 Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (88.9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB



# INSPECTION CERTIFICATE

Enquirer: COMCO PIPE AND SUPPLY COMPANY

Thai Benkan Co., Ltd.  
 88 Soi Warkanao Bangkok Pipeline  
 Samprasanakulajit Road  
 D M Y 0000000000

TO EN10204 3.1

Purchase Order No. Job No.

ET-2999

No.	T1 (%)	MFG. No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection	Product & Size		Quantity	Heat Treatment (Note 1)	Hardness Actual Data	Boron (ppm)
							ASTM A234-11/ASME SA234-10 Gr WPB CSA Z46.11-08 R-241 C81.1 SS	ASME B16.9-2007 / B16.25-2007				
1	0.000	55A00125-1	90 EL WPB 4 XS	A	Good	Good	96/100	500	A	HB: 130, 135, 139	< 0.0061	
2	0.003	55A00123	90 EL WPB 3 STD ←	A	Good	Good	500	500	A	HB: 128, 130, 132 ←	0.0062	
3												
4												
5												

Specification	Chemical Composition %												Tensile Test *1			E
	C	Si	Mn	P	S	Cr	Ni	Mo	V	Nb	Cu	As	YS	TS	%	
Min	100	100	100	100	1000	100	100	100	1000	1000	1000	X	X	X	X	X
Max	10	29	106	50	10	40	40	15	80	20	40	40	240	415	30	187 MPa
Material Heat No	23												240	655		34
1	972845	15	18	74	15	6	15	10	18	6	0	34	322	499		34
2	22927	17	24	81	8	1	11	4	9	5	3	35 ←	328	480		34
3																
4																
5																

Sweet Service  
 1-8440-51  
 18-8376-50  
 PO# 131660  
 CONFORMS TO SA 234 WPB  
 YEAR M0ED, 2011 ADD  
 JOB# 7013-8440-51  
 ITEM# 20  
 ISSUED BY NOV 22 2013

Note 1: A. Not formed with fine temperature between 630°C (980°F) Air Cooling. N. Normalizing 910°C (1670°F) Air Cooling. \*1. Normalizing 910°C (1670°F) Air Cooling. \*2. Yield strength. U = Elongation.  
 \*3. Yield strength. U = Elongation.  
 \*4. Yield strength. U = Elongation.  
 \*5. Yield strength. U = Elongation.  
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 \*97. Yield strength. U = Elongation.  
 \*98. Yield strength. U = Elongation.  
 \*99. Yield strength. U = Elongation.  
 \*100. Yield strength. U = Elongation.

Quality Assurance Manager  
 Thai Benkan Co., Ltd.





Thai Renkan Co., Ltd.  
58 Soi Waikrui, Bangkru, Prapatong,  
Samutprakarn, 10130 Thailand.

# INSPECTION CERTIFICATE

Purchaser : VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

TO EN 10204 3.1

E-No. MC-645 Purchase Order No. 45001462 Job No.

D M Y Certificate No.

03/11/2012 T-2012045261

No.	MFG. No.	Specification for Material Made from Seamless Pipe		Quantity	Heat Treatment (Note 1)	Visual Examination	Dimensional Inspection
		ASTM A234-11/ASME SA234-10 Gr.WPB CSA Z46 11-08 Gr. 241 CAT 1 SS NACE MR0175/ISO 15156-2/098MR0103-2010	Product & Size (T*)				
1	12E00004	90 EL WPB 3 S40	385/1,500	A	Good	Good	Good
2	12F00005	90 EL WPB 3 S40 ←	69/1,500	A	HB : 118 - 145 ←	3518	3518
3	12K00006	90 EL WPB 3 S40	46/1,500	A	HB : 118 - 145	3518	3518
4	12F20071	RE WPB 12 X 8 STD	3/10	N	HB : 120 - 140	2821	2821
5	12E00012	90 EL WPB 2 S80	24/750	A	HB : 130 - 160	3578	3578

Specification	Chemical Composition %											Tension Test *2			
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E
Min.	100	100	100	100	100	100	100	100	100	100	100	100	100	MPa.	%
Max.	10	29	106	50	58	40	40	15	80	20	45	240	415	30	197 HB :
Material Heat No.	30	106	50	58	40	40	15	80	20	45	655	655	655	655	GOOD 1-8440-51
1 48751	16	24	90	10	1	8	3	4	3	3	33	317	479	31	25-Shock
2 972974 →	16	17	77	12	5	14	8	18	5	0	34	327	504	33	PO# 131473
3 973946	16	20	76	13	4	14	8	17	5	0	35	319	496	34	CONFORMS TO SA 234 WPB
4 25172	18	19	78	8	2	2	2	4	1	0	52	307	455	41	YEAR 2010-2011
5 972694	16	19	79	21	6	15	8	19	5	0	35	336	518	31	JOB# 2013-8440-51

(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+C)/15  
MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

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.

\* J : "T" symbolized wall thickness in mm. \* 2 : YS Yield strength TS = Tensile strength F = Elongation



Quality Assurance Manager  
Thai Renkan Co., Ltd.

VI QA Approved

Order No. 121207AAW/7  
 Date: 2013-11-22

CONFORMS TO SA 234 WPB  
 YEAR 2010 ED, 2nd Ed  
 JOB # 0013-8440-S1  
 ITEM # 20  
 SIGNED BY NOV 22 2013

2-8440-S1  
 7-8390-S1  
 70-132707

### INSPECTION CERTIFICATE

AWAJI MATERIA (THAILAND) CO., LTD.  
 81, WODA, FRAKASA ROAD, TAMBOL BANGMIANG, AMPHUR MIANG  
 SAMUTPRAKARN THAILAND 10270, Tel : 0882701-5226

MADE FROM SEAMLESS STEEL PIPE



Purchaser : ALLIED FITTING CANADA  
 Job No. 121207AAW/7  
 Product CARBON STEEL BUTT WELDING FITTINGS  
 Raw Material Pipe Maker: SUMITOMO METAL INDUSTRIES, LTD.

Inspection Standard	Material Standard	Appearance	GOOD	Dimension	GOOD	Quantity	Notes														
								STD	90	LONG	RADIUS	ELBOW	3"								
ASME B16.9 ASTM A880-07 ASTM A880-07 ASME SA234 WPB ASME SA234 WPB ASME SA234 WPB ASME SA234 WPB	ASTM A880-07 WPB ASME SA234 WPB ASME SA234 WPB ASME SA234 WPB ASME SA234 WPB ASME SA234 WPB	except nuclear usage	GOOD	GOOD	GOOD	250 Pcs.	"ALL FITTING MANUFACTURED BY AWAJI MATERIA (THAILAND) CO., LTD. ARE PRODUCED FROM A108 GR2 SEAMLESS PIPE"														
Manufacturing No. 66035	Product code WPB	Article & Size																			
Chemical Composition (%)																					
Specification	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	Al	C.E.	Y.S.	T.S.	E	Hardness	
Min.	100	10	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	415	96	HB
Max.	30	-	106	50	56	40	40	40	15	8	2	2	5	65	-	-	-	-	655	-	197
Pipe Charge No. 1010255	18	22	68	21	7	2	2	8	2	0	0	-	-	-	11	32	308	466	82	134	

ISO 9001: 2000 Manufacturing Company  
 Certified by BV, Certificate No. TH0760055

Inspection Certificate : ACCORDING TO EN 10204, 3.1 : 2004

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

\*2 For each reduction of 0.01% below the specified carbon(C) Maximum, an increase of 0.08% manganese(Mn) above specified maximum will be permitted up to a maximum of 1.35% as per foot note D of ASTM A234-42/ASME SA234, Table 1.

ELBOW / Fitting temperature 780°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.

Chief of Inspection: S. MAEGAWA

Surveyor to

A.T-2423

Order#: 312846 Seq: 5 PO#: 133700 Heat#: CB798 Mill: TK Corporation  
 Part#: WF 3 STD 90 PB Part Desc: Weld Fittings 3 (88.9mm O.D.) STD LR 90 DEG ELBOW A/SA234-WPB



# INSPECTION CERTIFICATE

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

117-12, Noksan Saneop Daero  
 Gangseo-gu, Busan,  
 618-817 Korea  
 Tel : 82-51-970-6672  
 Fax : 82-51-831-6886

Customer	Comco Pipe & Supply		Certificate No.	20130602648	Date	2013/06/11																																			
P.O No.	E1-233777-6		Project Name																																						
Job No.																																									
Specification for Material	ASTM/ASME A/SA234 WPB(10 Ed. & 11 Add.)NACE MR0175-3/NACE MR0103-07			Starting Material	DCAMLC05 PIPE																																				
Specification for Inspection	ASME B16.9-2007			Dimension and Visual Inspection	GOOD																																				
Heat Code No [HCN]	No	Descriptions			Qty (Pcs)	Heat Treatment																																			
CB798	0001	90° ELBOW LONG STD B.W 3"			106	HOT FORMED 845°C~945°C																																			
<table border="1"> <tr> <td colspan="7">CONFORMS TO SA 234 WPB</td> </tr> <tr> <td colspan="7">YEAR 2105ED, 2011 ADD</td> </tr> <tr> <td colspan="7">JOB # 2013-8440-51</td> </tr> <tr> <td colspan="7">ITEM # 20</td> </tr> <tr> <td colspan="7">SIGNED BY: NOV 22 2013</td> </tr> </table>							CONFORMS TO SA 234 WPB							YEAR 2105ED, 2011 ADD							JOB # 2013-8440-51							ITEM # 20							SIGNED BY: NOV 22 2013						
CONFORMS TO SA 234 WPB																																									
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SIGNED BY: NOV 22 2013																																									
					1-8440-51 1-Stock PO-133700																																				

## CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Cb	B	C E	Raw Heat No
CB798	Max	0.23	-	1.06	0.050	0.020	0.40	0.40	0.15	0.40	0.020	0.020	0.005	0.43	
	Min.	-	0.13	0.29	-	-	-	-	-	-	-	-	-	-	
CB798	L	0.20	0.26	0.55	0.011	0.005	0.04	0.06	0.06	0.06	0.004	0.014	0.0003	0.321	408941
	P	0.18	0.24	0.53	0.010	0.003	0.02	0.04	0.03	0.04	0.003	0.012	0.0002	0.267	

## MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test	
		Mpa	Mpa	(%)	HB	
CB798	Max.	-	655	-	197	
	Min.	240	415	25.4		
CB798	P	271.4	478.8	31.4	142	144

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: \*Nb+V: Max 0.03  
 -CB798 : 0.018

Legend:  
 HB: Brinell  
 ST: Solution Treatment  
 SR: Stress Relieving  
 AC: Air Cool  
 OC: Oil Cool  
 WQ: Water Quenched  
 WC: Water Cool  
 B: Base  
 W: Weld  
 H: Heat  
 L: Ladle  
 P: Product  
 N: Normalized  
 T: Tempered  
 A: Annealed  
 Q: Quenched  
 Y S: 0.2% Offset Method  
 (G): Hot-Dip Galvanized Coating

Reviewed by:  
 Witnessed by:

Approved by:

*J. H. [Signature]*

Head of Quality Control Dept

# INSPECTION CERTIFICATE

Purchaser: COMCO PIPE AND SUPPLY COMPANY

Thai Benkan Co. Ltd  
 58 Soi Waikrunai, Bangkok, Thailand  
 Samsatnakom, 10130 Thailand



TO EN10204 3.1

E-No. MD-139 Purchase Order No. EI-1081-REV 1 Job No.

D M Y Certificate No

No.	MFG. No	Specification for Material Made from Seamless Pipe		Quantity	Heat Treatment (Note 1)	Visual Examination	Dimensional Inspection
		ASTM A234-1/ASME SA234-10 GR. WPB	Product & Size				
1	56C00220	90 EL WPB 3 XS	200	A	Good	Good	
2	56C20206	RC WPB 3 X 2 STD	25	N	HB : 151, 153, 154	Good	
3	56C00214	90 EL WPB 2 XS	200/500	A	HB : 123, 124, 125	Good	
4	56C00216	45 EL WPB 3 S160	50	A	HB : 140, 143, 147	Good	
5	56C00218-1	180 EL WPB 3 S160	12/30	A	HB : 151, 152, 153	Good	

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	X 240	X 415	X 30
Max	30	10	29	106	50	40	40	15	80	20	20	301	467	656	63
Material Heat No.	19	22	84	15	5	2	2	3	1	0	0	34	301	467	63
1	J3K5852	19	20	81	18	5	2	5	1	0	1	34	340	495	37
2	J3K5206	16	19	77	12	2	15	6	10	5	0	33	328	509	34
3	978898	11	29	130	10	1	1	2	12	1	0	35	322	469	67
4	J3L2513	11	29	130	10	1	1	2	12	1	0	35	322	469	67
5	J3L2513	11	29	130	10	1	1	2	12	1	0	35	322	469	67

**HARDNESS MAX**  
 11- 8440-51  
 50-Stock  
 Po-153700  
 CONFORMS TO SA 234 WPB  
 YEAR 2013-2014  
 JOB # 2013-8440-51  
 ITEM # 21  
 SIGNED BY NOV 22 2013

(Note 1) A : Hot formed with final temperature between 520°C-980°C, Air Cooling. N : Normalizing 910°C±0.5 HR. Air Cooling  
 Material according to ASME/SAE M90175/ISO 161652-2018 & M90193-2010 (CSG Reheat 3) Annex A. Steel making process is basic oxygen fully ladle steel  
 The fittings were manufactured sampled, tested and inspected in accordance with the specification and were found to meet the requirements  
 CE = C+Mn/64+(Cr+Mo+V)/5+(Ni+Cu)/15  
 \* 1 : "T" symbolized wall thickness in mm \* 2 : YS Yield strength TS = Tensile strength E = Elongation  
 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  
 Note for WPB: For each reduction of 0.10% below the specified carbon maximum, an increase of 0.00% magnesium above the specified maximum will be permitted up to a maximum of 1.35%  
 Form: TZ-6A/4

Quality Assurance Manager  
 Thai Benkan Co., Ltd.



# INSPECTION CERTIFICATE

Purchaser: TRANS-AM PIPING PRODUCTS LTD.

Thai Benkan Co., Ltd.  
58 Soi Watkrasai, Bangkhen, Prapachong,  
Samutprakan, 10130 Thailand.

TO EN10204 3.1

E.No. MC-865  
Purchase Order No. CH-12-379 C/O: 2  
Job No.

D M Y Certificate No.  
02/04/2013 T- 2013180064

No.	MFG. No.	Specification for Material Made from Seamless Pipe	Specification for Inspection		Visual Examination	Dimensional Inspection
			ASME B16.9-2007/B16.25-2007	ASME B16.9-2007/B16.25-2007		
		Product & Size	Quantity	Heat Treatment (Note 1)	Hardness Actual Data	
1	12G00044	90° EL WPB 12 S120	1/15	A	HB : 116 - 145	Good
2	13B00018	90° EL WPB 2 S80	3,000/4,000	A	HB : 130 - 180	Good
3						
4						
5						

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	28											240	415	30	197 HB : GOOD
Material Heat No.	30		106	50	58	40	40	40	15	80	20			655		
1	2-80323	19	25	84	13	3	<1	1	3	1	1	34	249	483	37	
2	978740	15	19	75	16	4	18	9	18	5	0	34	329	513	33	
3																
4																
5																

ORIGINAL

234 WPB  
YEAR 2010EJ, 2011 ADD  
JOB # 213-8440-51  
SIGNED BY NOV 29 2013

(Note 1) A : Not formed with final temperature between 620 °C-880°C, Air-Cooling. N : Normalizing 910°Cx0.5 HR. Air-Cooling.  
The ferrite was manufactured as specified below and will increase in accordance with the requirements.  
C.E. = CrNi5/6(Cr-Mo-V)5-(Ni-Cu)15  
\* 1 : \*1 symbolized wall thickness in mm. \* 2 : YS Yield strength TS = Tensile strength E = Elongation  
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.

60 - Stock  
PO - 134121  
3-8440-51

2 : XH LR 90 BW ELBOW A234-WPB

REVISIONS  
 01 : Original  
 02 : Revised  
 03 : Revised  
 04 : Revised  
 05 : Revised  
 06 : Revised  
 07 : Revised  
 08 : Revised  
 09 : Revised  
 10 : Revised  
 11 : Revised  
 12 : Revised  
 13 : Revised  
 14 : Revised  
 15 : Revised  
 16 : Revised  
 17 : Revised  
 18 : Revised  
 19 : Revised  
 20 : Revised  
 21 : Revised



Thai Benkan Co., Ltd.  
 58 Soi Watkrasai, Bangkok, Prapachong,  
 Sanutprakarn, 10130 Thailand.

# INSPECTION CERTIFICATE

Purchaser : TRANS-AM PIPING PRODUCTS LTD.

TO EN10204 3.1

D M Y Certificate No.  
 02/04/2013 T- 2013180064

E.No. MC-865  
 Purchase Order No. CH-12-379 COO: 2  
 Job No.

No.	MFG. No.	Specification for Material Made from Seamless Pipe ASTM A234-1/ASME SA234-10 GR. WPB CSA Z46.11 (G241) GRTI NACE MR0175 ISO 15156-1:2009	Quantity	Heat Treatment (Note 1)	Visual Examination	Dimensional Inspection
Product & Size		(T*1)				
1	12G00044	90 EL WPB 12 S120	1/15	A	HB : 118 - 145	Good
2	13E00018	90 EL WPB 2.580	3,000/4,000	A	HB : 130 - 180	Good
3						
4						
5						

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			
Max.	100	10	29										240	415	30
Material Heat No.	30		108	50	58	40	40	40	15	80	20			655	
1 2-80323	19	25	84	13	3	<1	1	3	1	1	<1	34	248	483	37
2 978740	15	19	75	16	4	18	9	18	5	0	0	34	328	513	33
3															
4															
5												5-8440-51			

ORIGINAL

(Note 1) A : Hot formed with final temperature between 620 °C/987°F. Air Cooling. N : Normalizing 910°C/0.5 HR. Air Cooling

The above was manufactured, sampled and inspected in accordance with the specifications and test methods to make the requirements.  
 C.E. = C-Mn/6(Cr-Mo-V)/5-(Ni-Cu)/15  
 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :  
 \* 1 : "T" symbolized wall thickness in mm. \* 2 : YS Yield strength TS = Tensile strength E = Elongation  
 We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the manufacturer's requirements and that the test results shown herein are correct

YEAR 2010 EDD-2011 ADD  
 JOB # 2013 - 8440-51  
 SIGNED BY [Signature] 04/02/2014

Quality Assurance Manager  
 Thai Benkan Co., Ltd.

60-Stock  
 PO-134121

Date: Aug. 6, 2013  
 Certificate No: 5000-13005000  
 Certificate No: EN10204-2004 3.1

Cr-Mo < or = 0.30%  
 Cr-Ni-Cu-Mo < or = 1.00%  
 Hardness Max 197HB  
 6000

Crane Supply Valve Warehouse  
 Order No.: P040002-631650  
 Invoice No.: HY20130808

Specification for Inspection  
 ASME B16.9-2007

Visual and Dimensional Inspection  
 GOOD

Material Specification  
 ASTM A516 (SA 240) WPB  
 WAVE M30173-02  
 NON-DESTRUCTIVE TEST(MT)

**MATERIAL TEST REPORT**  
 YANGZHOU HUAYU PIPE FITTING CO., LTD.  
 NO.59,BAOYING STREET,BAOYING COUNTY,JANGSU PROVINCE,P.R.CHINA 225009

NO.	Product Description	Heat L.D.	Quantity (Pcs)	Tension Test (1)				Chemical Composition %											Heat Treatment (2)	Row Material Type (4)			
				TS Mpa	YS Mpa	E %	C	Mn	Si	P	S	Cr	Ni	Mo	V	Cu	Nb	CE(2)					
20	300 STD WPB BW CON RED	112038	67	415	240	30	0.30	1.06	0.29	0.10	0.050	0.058	0.40	0.40	0.15	0.38	0.40	0.02	0.45	HF			
21	4X3 STD WPB BW CON RED	12-105833	87	517	362	34	0.18	0.44	0.21	0.016	0.003	0.01	0.03	0.01	0.01	0.01	0.02	-	0.25	HF			
22	EX4 STD WPB BW CON RED	1241042	62	488	326	28	0.19	0.43	0.21	0.010	0.008	0.10	0.04	0.005	0.001	0.02	-	0.30	HF				
23	EX5 STD WPB BW CON RED	112468	25	490	320	31	0.20	0.45	0.21	0.022	0.013	0.10	0.03	0.01	0.01	0.14	-	0.29	HF				
24	EX3 STD WPB BW ECC RED	12-105833	37	517	362	34	0.20	0.44	0.26	0.010	0.006	0.10	0.04	0.005	0.001	0.01	-	0.29	HF				
25	EX4 STD WPB WELD CAP	1112-05370	62	470	285	30	0.15	0.31	0.26	0.010	0.003	0.02	0.01	0.01	0.010	0.03	-	0.30	HF				
26	EX4 STD WPB WELD CAP	208845	75	462	313	30	0.18	0.35	0.24	0.015	0.008	0.01	0.02	0.020	0.010	0.02	-	0.27	HF				
27	EX4 STD WPB WELD CAP	208845	62	462	313	30	0.18	0.49	0.24	0.015	0.008	0.01	0.02	0.020	0.010	0.02	-	0.27	HF				
28	EX4 STD WPB WELD CAP	208845	50	462	313	30	0.18	0.49	0.24	0.015	0.008	0.01	0.02	0.020	0.010	0.02	-	0.27	HF				
29	EX4 STD WPB WELD ELL	12-211407	250	486	328	32	0.18	0.51	0.25	0.013	0.005	0.05	0.02	0.001	0.003	0.03	-	0.28	HF				
30	EX4 STD WPB WELD ELL	11-208855	50	485	365	32	0.18	0.25	0.26	0.016	0.011	0.08	0.03	0.001	0.003	0.04	-	0.28	HF				
31	EX4 STD WPB WELD ELL	11-213078	50	515	365	31	0.20	0.44	0.27	0.022	0.005	0.10	0.03	0.003	0.008	0.05	-	0.30	HF				
32	EX4 STD WPB WELD ELL	12-211407	50	486	328	32	0.18	0.51	0.23	0.013	0.005	0.05	0.02	0.001	0.003	0.03	-	0.28	HF				
Total (Page 1-Page2)																							



We hereby certify that the products detailed hereon conform to the specifications and technical conditions with the specifications concerned and also with the relevant standards and technical conditions mentioned herein are correct. This material was manufactured under the control of the company's quality management system.

CONFORMS TO SA 240 WPB  
 YEAR 2010 ED 2011ADD  
 2012 EN 4051  
 ITEM# 21  
 SIGNED BY APR 3 0 2013

20-Stock  
 20-134901.

125-001  
P-# 122231



# INSPECTION CERTIFICATE

(MILL TEST)

Customer: TRANS AM PIPING PRODUCTS LTD.  
Product: SEAMLESS CARBON STEEL BUTT WELD FITTINGS  
Spec: ASME SA/ASTM A234 WPB-05A  
CSA 7243 11-96 GZ41 CALLINEACE MR 0175-03

CHUP HSIN ENTERPRISE CO., LTD.  
17, TUNG LI ROAD HSIAO KANG  
KAOHSIUNG, TAIWAN R.O.C.  
TEL: (07)831-9157-9  
FAX: (07)831-2942, 821-7500

Certificate No: 09700066-0104  
Order No: CI-08-362  
Date: 2008/10/8

Specification for Raw Material		Specification for Inspection		Visual Examination		Dimensional Inspection	
ASTM A106 GR.B		ASME B16.9-2001		GOOD		GOOD	
Item	Description	Quantity	Heat ID	Heat No.	Raw Material Mfg	Raw Certificate No	
43	90 E L/R XS	1	320D	J7L1320	SUMITOMO	BYTK2231	
44	90 E L/R XS	1 1/4	728A	J6K1728	SUMITOMO	BYYL8104	
45	90 E L/R XS	1 1/2	185A	J6K4185	SUMITOMO	BYYL4506	
45	90 E L/R XS	1 1/2	924R	J7L6924	SUMITOMO	BYTK2300	
46	90 E L/R XS	2	505C	J6K3505	SUMITOMO	BYYL4349	

### Chemical Composition %

Specification	Chemical Composition %											
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.F.
MIX	18	24	46	11	9	2	3	4	2	0	0	27
MAX	30	106	50	58	40	40	15	80	20	50	30	33
43	18	24	46	11	9	2	3	4	2	0	0	27
44	19	19	78	14	5	4	3	2	1	0	0	33
45	20	24	46	16	10	2	2	4	1	0	0	29
45	21	28	48	27	9	2	2	3	1	0	0	30
46	19	26	56	9	9	2	1	2	1	0	0	29

### Tension Test

T.S. P.S.T	E (%)	HARDNESS TEST	
		HB	HRC
60000	30	197	
95000			
61600	40	137	
66700	40	138	
65300	40	139	
68200	40	141	
60900	40	138	

### Heat Treatment

620°C TO 980°C  
HOT FORMED

### Magnetic Particle Exam

(DIN 50049/3.1B)  
(EN 10204 3.1B)

CONFORMS TO SA 234 WPB  
YEAR 2010 EPI 2011 ADD  
JOB 2013-8440-S0  
ITEM# 22  
SIGNED BY L.S. Tsai  
NOV 22 2013  
Chief of Quality Assurance Section

C.F. = (C+Mn)/5 + (Cr+Mo+V)/5 + (Ni+Cu)/15

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

L.S. Tsai  
Chief of Quality Assurance Section

HEAT NUMBER : 924B  
TRANS AM PIPING PRODUCTS - REV'D BY: 1-1/2" XH LR 90 BW ELS A234-WPB

SHIPMENT/SEQ #: 5 8 - 1458 89



Stock  
P# 12-6163



# INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.

Certificate No : 09600133-0206  
Order No : CI-07-632  
Date : 2008/2/26

Customer: TRANS AM PIPING PRODUCTS LTD.  
Product : SEAMLESS STEEL PIPE FITTING  
Spec : ASME SA/ASTM A234 WPB-05a  
CSA Z245.11-06 G241 CALINACE MR.0175-03

17, TUNG LI ROAD HSIAO KANG  
KAOHSIUNG, TAIWAN R.O.C.  
TEL:(07)831-9157-9  
FAX:(07)831-2942, 821-7500

Specification for Raw Material	Specification for Inspection	Visual Examination	Dimensional Inspection
ASTM A106 GR.B	ASME B16.9-2001	GOOD	GOOD

Item	Description	Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.
81	90 E L/R XS	1	028D	J6K0028	SUMITOMO	BYYL4408
82	90 E L/R XS	1 1/4	508A	J4K4508	SUMITOMO	BYYP4008
83	90 E L/R XS	1 1/2	185A	J6K4185	SUMITOMO	BYYL4506
84	90 E L/R XS	2	305C	J6K3505	SUMITOMO	BYYL4349
85	90 E L/R XS	3	0613	J6K0613	SUMITOMO	BYYL6573
85	90 E L/R XS	3	2332	J6K2332	SUMITOMO	BYYL8203
86	90 E L/R XS	4	A993	J6KA993	SUMITOMO	BYYL8206
89	45 E L/R XS	2 1/2	2727	J6K2727	SUMITOMO	BYYL6571

Specification	Chemical Composition %											Tension 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	HARDNESS TEST		
MIX	10	29	106	50	58	40	40	40	15	80	20	50	35000	60000	30	197		
81	18	24	44	15	10	2	4	2	0	0	0	27	47800	65300	42	137	620°C TO 980°C	[DIN 50089/3.1B]
82	20	22	48	10	9	1	2	1	0	0	0	29	48500	67100	42	142	HOT FORMED	JEN 10204 3.1B
1063	20	24	46	16	10	2	4	1	0	0	29	49300	65300	40	139			
1063	19	26	56	9	9	2	1	2	1	0	29	47900	60900	40	138		CONFORMS TO SA 234-CPB	
185	18	28	65	10	5	9	4	5	4	0	32	45000	78500	41	137		YEAR 2010 ED, 1011 ADD	
8	13	14	74	8	6	5	3	2	1	0	26	45000	61200	41	135		ICS # 1013-8440-51	
86	14	16	73	9	3	4	3	2	1	0	27	42000	64100	40	135		TERM# 22	
89	15	25	73	10	5	9	5	3	3	0	29	47100	71800	41	134		SIGNED BY: L.S. Tsai NOV 22 2010	

C.E.=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15  
We hereby certify that the product described herein has manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Chief of Quality Assurance Section  
L.S. Tsai

1-1/2" XH LR 90 BW ELKS A234-WPB

TRANS AM PIPING PRODUCTS - REV'D BY: [Signature]  
HEAT NUMBER : 185A  
SHIPMENT # : 1063



Thai Benkan Co., Ltd.

58 Soi Watrasai, Bangkok, Prapachong,  
Samutprakram, 10130 Thailand.

# INSPECTION CERTIFICATE

Purchaser : TRANS-AM PIPING PRODUCTS LTD.

TO EN10204 3.1

E-No. MFC-760 Purchase Order No. Cl-12-235 CPO: 1 Job No.

**COPY COPY COPY COPY COPY**

99972012 T: 201280478  
Visual Examination Dimensional Inspection

No.	MFG. No.	Specification for Material	ASME B16.9-2007, 316.25-2007	Visual Examination	Dimensional Inspection
1	12D0000	90 EL WPB 8 S40	21750	A	Good
2	12E0000	90 EL WPP	20750	A	Good
3	12E0000	90 EL WPP	29375	A	Good
4	12F20023	RC WPB	123	N	HB : 150 - 185
5	12D20020	RC WPB 8 S40	1	N	HB : 130 - 150

# BANK

Material Heat No.	Si	Mn	P	S	Mo	C	Hardness	Hardness	Hardness	Hardness	Hardness
30	17	24	82	7	1	30	474	35	474	35	474
20153	17	24	82	7	1	30	474	35	474	35	474
J2K280	20	18	18	5	2	2	298	35	298	35	298
J1KA246	19	18	18	5	2	2	275	35	275	35	275
7-050	22	18	18	5	2	2	275	35	275	35	275
J1KB083	20	19	77	24	8	2	313	34	313	34	313

(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. N : Normalizing 910°Cx0.5 HR. Air Cooling. N : Normalizing 910°Cx0.5 HR. Air Cooling. N : Normalizing 910°Cx0.5 HR. Air Cooling.

The Bar was manufactured, sampled, tested and inspected in accordance with the specifications and tested in accordance with the requirements.

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

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.

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

ORIGINAL

**COPY COPY COPY COPY COPY**

6" x 1/2" CONC  
1-8440-5J  
P-134044

FORM NO. 1001  
DATE: 2013-11-28  
SIGNATURE: [Signature]  
TITLE: [Blank]  
NOV 28 2013

Quality Assurance Manager  
Thai Benkan Co., Ltd.

6X4 STD BW CONC REDUCER A234-WPB Rev'd BY: SB 71



Thai Benkan Co., Ltd  
58 Soi Waikrunaj, Bangkru, Prapacheng,  
Samutprakarn, 10130 Thailand.

# INSPECTION CERTIFICATE

Purchaser : VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

TO EN10204 3.1

D M Y Certificate No.

04/01/2013 T- 2013040003

E-No. MC-936 Purchase Order No. 45001586 Job No.

No.	MFG. No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspect
		ASTM A234-11/ASME SA234-10 GR WPB CSA Z245.11-08 GR 2M1 CAT 1 SS INCE MR0175/ISO 15165-2:08&MR0103-2010	ASME B16.9-2007, B16.25-2007	Good	Good
		Product & Size	Quantity	Hardness Actual Data	Item No
1	12K20010	RC WPB 4 X 3 S40	67/100	HB : 135 - 150	2479
2	12N20011	RC WPB 4 X 3 S40 ←	33/100	HB : 135 - 150 ←	2479
3	12N00011	90 EL WPB 10 S40	48/200	HB : 120 - 150	3537
4	12P00007	90 EL WPB 10 S40	60/200	HB : 120 - 150	3537
5	12N20105	RC WPB 4 X 3 S80	39/150	HB : 125 - 140	2633

Specification	Chemical Composition %											Tension Test #2			
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	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	%	
Max	10	29	106	50	58	40	40	40	15	80	20	45	655		
Material Heat No	30														
1	J2L5104	19	19	84	15	6	1	4	1	0	0	34	471	37	
2	975472	16	20	82	12	3	18	9	5	0	0	36	283	38	
3	23240	19	18	79	10	3	1	2	3	1	0	33	498	36	
4	J2K4598	19	22	82	14	6	2	4	1	0	0	34	293	40	
5	J1L9044	19	19	82	12	6	2	4	1	0	0	34	308	44	

197 HB : GOOD 1-8440-51

12-Stock  
Po - 132098

APPROVED TO: 234 WPB  
YEAR: 2010ED, 2011MD  
JOB #: 2013-8440-51  
DATE: 24  
NOV 22 2013

(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 15165-2:08 & MR0103-2010)

The findings 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+C)/15  
MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY  
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.

\* 1 : "T" symbolized wall thickness in mm. \* 2 : YS Yield strength TS = Tensile strength E = Elongation  
Form TZ-6A/3

Rungnapa Kampanon  
Quality Assurance Manager  
Thai Benkan Co., Ltd.

VLQA Approved

# INSPECTION CERTIFICATE



**PURCHASER :** SEYBOLD INT'L CORP.  
**STANDARD :** ASTM A234 WPB-11  
 ASME SA234 WPB-04  
 CSA Z45.11-09 Gr.241 CAT I Sour Service  
**MATERIALS :** ASTM A106 Gr.B  
**INSP. SPEC. :** ASME B16.9 -07

**DATE :** 2013-10-08  
**ORDER NO. :** 7006807/CI-13-236  
**P.I. NO. :** 13C05-2  
**CERTIF. NO. :** 13J02-5

8. MEI-CHUNG RD., NHAO-SONG,  
 KAOHSIUNG 83301, TAIWAN  
 TEL: 886-77310527-8  
 FAX: 886-77315887

1-8440-51  
 Po-134044

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL & DIMENSIONAL INSPECTION	HARDNESS MAX 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	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 %
2	ELL 90 LR 2" S160	200	2C1000	GOOD	143-152	N	CONFORMS TO SA											134 w PB			
3	ELL 90 LR 3" STD	500	3E732V	GOOD	128-140	A	YEAR 2010 ED, 2011 600														
4	CON-RED 6X2" STD	25	3E071V	GOOD	132-141	N	GOOD														
5	CON-RED 6X2" XH	15	3E061V	GOOD	136-146	N	GOOD														
6	ECC-RED 10X6" STD	15	3A742V	GOOD	105-115	N	GOOD														
7	RED-TEE 4X3" STD	75	3A756V	GOOD	128-140	N	GOOD											25 SIGNED BY NOV 28 2013			
ITEM NO.	MATERIAL CHARGE NO.	MIN. MAX.		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		30	35	29	50	58	40	40	40	15	8	20	35.0	60.0			50		
2	318300	18	24	55	7	2	4	3	4	3	5	3	<1	<1	43.8	65.7	31.5	L	29		
3	1226772V	15	21	84	12	2	6	2	4	2	4	1	<1	2	44.7	70.0	32.2	L	31		
4	1215161V	15	24	83	10	2	4	2	4	2	4	1	<1	1	42.8	67.6	31.4	L	30		
5	1215163V	14	23	84	10	4	5	2	4	2	4	2	<1	1	43.4	68.4	31.2	L	30		
6	1232162V	15	17	84	12	9	6	3	6	3	3	1	<1	1	44.1	67.3	30.8	L	30		
7	1226636V	15	24	88	12	2	5	2	5	2	4	1	<1	1	42.8	67.6	31.0	L	31		

(NOTE): A-HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620°C -980°C, AIR COOLING.  
 N-NORMALIZING AT TEMPERATURE 880°C X0.5HR, AIR COOLING.

NACE MR-01-75-09/ISO15156.2, NACE MR 0103-10-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.

\* TYPE OF SPECIMEN: STRIP (WIDTH: 1 in./GAUGE LENGTH: 2 in.) \*\* SAMPLING DIRECTION: L=LONGITUDINAL T=TRANSVERSE

**Ou E Lan**

MANAGER OF Q.A. DEPT.

4X3 STD BW RED TER A234-WPB

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# INSPECTION CERTIFICATE

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

117-12, Noksan Saneop Daero,  
 Gangseo-gu, Busan,  
 618-817 Korea  
 Tel : 82-51-970-8672  
 Fax : 82-51-831-6886

Customer	Trans Am Piping Products Ltd.		Certificate No.	20130803597	Date	2013/08/21
P.O No.	CI-13-411		Project Name	EDMONTON		
Job No.						
Specification for Material	ASTM/ASME A/SA234 WPB(10 Ed. & 11 Add.) NACE MR0175/ISO 15156-2 AND NACE MR0103-07		Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B18.9-2007		Dimension and Visual Inspection	GOOD		
Heat Code No [HCN]	No.	Descriptions	Q'ty (Pcs)	Heat Treatment	N.D.E (GOOD)	
BV662	0022	REDUCING TEE STD / X-S B.W 3" x 1-1/2"	10	N: 910°C	MT	
CF759	0023	REDUCING TEE STD / X-S B.W 3" x 2"	300	N: 910°C	MT	
CE363	0025	REDUCING TEE STD / X-S B.W 4" x 2"	100	N: 910°C	MT	

## CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C Si Mn P S Ni Cr Mo Cu V C.E Raw Heat No											
		Max.	0.30	0.35	1.06	0.050	0.058	0.40	0.40	0.15	0.40	0.080	0.50
	Min.	-	0.10	0.29	-	-	-	-	-	-	-	-	-
BV662	L	0.11	0.19	0.87	0.014	0.004	0.08	0.15	0.06	0.132	0.00	0.278	069924
CF759	L	0.14	0.17	0.78	0.008	0.002	0.02	0.07	0.02	0.03	0.01	0.293	325026
CE363	L	0.12	0.20	0.87	0.010	0.004	0.10	0.18	0.06	0.165	0.00	0.297	977238

CONFORMS TO SA 234 WPB  
 YEAR 2010 ED, 2011 ADD  
 JOB # 2013-8440-51  
 ITEM # 26  
 SIGNED BY [Signature] NOV 28 2013

1-8440-51  
PO-134044

## MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test	
		Ksi	(%)		HB	
	Max.	-	95	-	197	
	Min.	35	60	26.4		
BV662	P	42.6	63.8	37.5	144	142
CF759	P	41.9	64.8	38.1	140	142
CE363	P	37.5	63.6	39.1	142	144

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: \*CSA Z45.11 Gr. 241 Cat I Sour Service  
 \*CRN No.  
 QA9067.2, OA9067.24, DA9067.27, OA9067.20,  
 OA9067.28, OA9067.25, OA9067.29, OA9067.26,  
 QA9067.21, OA9067.22, DA9067.23

Legend:  
 HB: Brinell  
 ST: Solution Treatment  
 SR: Stress Relieving  
 N: Normalized  
 T: Tempered  
 A: Annealed  
 Q: Quenched  
 Y: 50% Offset Method  
 (G): Hot-Dip Galvanized Coating  
 AC: Air Cool  
 OC: Oil Cool  
 WC: Water Quenched  
 WC: Water Cool  
 B: Base  
 W: Weld  
 H: Heat  
 L: Ledge  
 P: Product

Reviewed by:  
 Witnessed by:

Approved by: [Signature]

Head of Quality Control Dept

CONFORMS TO SA 134 WPB  
 YEAR 2012 DE 27  
 JOB # 103-8440-51  
 ITEM # 27  
 SIGNED BY [Signature] NOV 28 2013  
 Certificate No : 00100169-0402  
 Order No : CI-12-649  
 Date : 2013/06/25

1-8440-51  
 10-134044



**INSPECTION CERTIFICATE**

Customer : TRANS AM PIPING PRODUCTS LTD. (MILL TEST)  
 Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS  
 Spec : ASME SA/ASTM A234 WPB-11a  
 CHUP HSIN ENTERPRISE CO., LTD.  
 17, TUNG LI ROAD HSIAO KANG,  
 KAOHSIUNG, TAIWAN, R.O.C.  
 TEL:(07)831-9157 FAX:(07)821-7500, 831-2942  
 MR0175-09/ISO 15156-09/MR0103-10

Item	Description	Specification for Inspection										Visual Inspection			Dimensional Inspection		
		Quantity	Heat ID	Heat No	Raw Certificate No.	NDE	Test Temp	Size of specimen	Charpy V-Notch Impact Value	Ave.	ASME B16.9-2007	GOOD	GOOD	GOOD			
111	TEE SMLS XS	6	6016	J0L6016	SUMITOMO BYYM8807	PASS											
130	RED TEE SMLS XS	20	330A	J0L1330	SUMITOMO BYYM8360	PASS											
133	RED TEE SMLS XS	17	A67V	1215167B	HENGYANG C201300261-1	PASS											
136	RED TEE SMLS STD / XS	23	B833	J8KB833	SUMITOMO BYYF3800	PASS											
Speci- cation	Chemical Composition%											Tension Test		Hardness Test		REMARK	
	C	Si	Mn	P	S	CU	Ni	Cr	Mo	V	Nb	C.E	Y.S	T.S	E		HB
Min.	10	29											35000	60000	30		
Max.	22	135	50	58	80	40	40	15	80	20	50		95000	95000		197	
111	17	22	52	19	8	2	1	4	1	0	27	42100	66700	42.5	139		
130	17	23	52	12	9	5	2	3	2	0	27	42800	68200	40	137		
133	15	24	87	10	8.8	7.1	2.3	3.3	0.8	1	31	43530	64000	37	134		
136	12	24	133	16	3	1	2	12	1	0	37	49700	74000	43.3	138		

L.S. Tsai

Chief of Quality Assurance Section

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, and was found to meet, the requirements of above specifications and purchaser's order.



Thai Benkan Co., Ltd.

58 Soi Watkrutai, Bangkok, Prapachineng  
Samutprakram, 10130 Thailand.

# INSPECTION CERTIFICATE

Purchaser : VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

TO EN10204 3.1

E-No. MC-936 Purchase Order No. 45001560 Job No.

D M Y Certificate No.

08/02/2013 T- 2013040046

No.	MFG. No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
		Product & Size	Quantity	Heat Treatment (Note 1)	Hardness Actual Data
1	12P10831	TWPB 2 S80 ←	194/300	N	HB : 116 - 145 ←
2	12M10832	TWPB 3 S80	26/75	N	HB : 118 - 145
3	12M10815	TWPB 6 S40	13/75	N	HB : 120 - 150
4	12N10815	TWPB 6 S40	51/75	N	HB : 120 - 150
5	12N10816	TWPB 6 S40	2/75	N	HB : 120 - 150

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.	%
Max.		10	29										240	415	30
Material Heat No.	30		108	50	58	40	40	40	15	80	20	45			
1 J2L8512 →	18	20	85	10	4	1	2	4	1	0	0	33	327	480	56
2 J1KA032	19	18	83	18	5	1	2	5	2	0	0	34	310	491	39
3 J2L6263	19	20	85	13	8	1	2	3	1	0	0	34	328	478	39
4 975058	20	23	47	13	1	10	6	15	4	2	0	33	289	470	37
5 51227	17	23	83	10	1	8	3	5	2	3	1	34	328	468	36

(Note 1) A : For 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 things 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

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.

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

Form 17-6-7

THAI BENKAN CO., LTD.  
 58 SOI WATKRUTAI, BANGKOK, PRAPACHINENG  
 SAMUTPRAKRAM, 10130 THAILAND  
 TEL: 02-013-2098  
 FAX: 02-013-2099  
 E-MAIL: info@bkl.co.th  
 NOV 22 2013

Quality Assurance Manager  
 Thai Benkan Co., Ltd.

VI QA Approved

DATE: 2012-11-10  
 ORDER NO: 7007091326 SOWR  
 P I NO: 10011 4-8925-50  
 CERTIFI NO: 537 Ro# 131428

INSPECTION CERTIFICATE  
**RIGID** INDUSTRIES CO., LTD.  
 8 MEI-CHUNG RD. NIAO-SUNG,  
 KAOHSIUNG H.SIEN, 33301 TAIWAN  
 TEL: 886-77210577-8  
 FAX: 886-77315827

BUYER: SEYBOLD  
 ASTM A334 WPB 11  
 ASME SA334 WPB 04  
 (SA 2242 100" x 241 Gal. Seam Service)  
 MATERIALS: ASTM A106 (B) SEAMLESS PIPE  
 PIPE SPEC: ASME B16.9C

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO	PRODUCT R. SIZE	QUANTITY PCS	MFG NO	VISUAL & DIMENSIONAL INSPECTION	HARDNESS MAY BE IN THIS	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	TEST NO	PHYSICAL TEST	
									Y-S KSI	T-S KSI
2	ELL 45 LR 8"	60	1K3855	GOOD	144	A			35.0	90.0
3	ELL 45 LR 3"	20	2J328	GOOD	146	A			43.4	91.6
4	ELL 90 LR 2"	500	204686	GOOD	135	A			43.6	87.6
5	ELL 90 LR 3"	100	287130	GOOD	134	A			44.5	87.8
6	ELL 90 LR 3"	200	2H5527	GOOD	134	A			43.1	88.6
7	ELL 90 LR 8"	200	1K3492	GOOD	145	A			44.4	86.2
8	ELL 90 LR 8"	50	2H503	GOOD	143	A			45.0	75.7
9	ELL 90 LR 8"	10	2H551	GOOD	124	N			44.4	82.4
10	COMPRD 10X5	300	204592	GOOD	133	N			43.4	82.0
11	TEE 2" XH	5	204593	GOOD	140	N			43.0	82.0
12	RED-TEE 8X4"	5	204595	GOOD	140	N			43.0	82.6

CONFORMS TO SA 231 WPB  
 YEAR: 2010 ED, 2011 ADD  
 JOB #: 1013-6440-51  
 ITEM #: 28  
 SOLVED BY: NOV 22 2013  
 COCC: 3-8440-51

ITEM NO	MATERIAL CHARGE IIC	CHEMICAL COMPOSITION %									
		C	Mn	P	S	Si	Cr	Ni	Cu	Mo	V
4	208805	0.02	0.29	0.007	0.010	0.24	0.004	0.004	0.001	0.001	0.001
5	316800	0.02	0.26	0.008	0.010	0.24	0.004	0.004	0.001	0.001	0.001
6	318365	0.02	0.25	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
7	317930	0.02	0.25	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
8	319627	0.02	0.24	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
9	100292	0.02	0.24	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
10	312002	0.02	0.24	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
11	303220	0.02	0.24	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
12	319192	0.02	0.24	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001
13	21112733	0.02	0.23	0.006	0.010	0.24	0.004	0.004	0.001	0.001	0.001

ON L LAM  
 ALL INFORMATION CONTAINED HEREIN IS THE PROPERTY OF RIGID INDUSTRIES CO., LTD. AND IS TO BE USED ONLY FOR THE SPECIFIC PROJECT AND NOT FOR ANY OTHER PURPOSE. THE INFORMATION CONTAINED HEREIN IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED FOR ANY OTHER PROJECT OR FOR ANY OTHER PURPOSE. THE INFORMATION CONTAINED HEREIN IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED FOR ANY OTHER PROJECT OR FOR ANY OTHER PURPOSE.



Order#: 312846 Seq: 12 PO#: 133700 Heat#: 55E10010 Mill: BKL - Thai Benkan  
 Part#: WF 2 XS T PB Part Desc: Weld Fittings 2 (60.3mm O.D.) XS WELD TEE A/SA234-WPB



Thai Benkan Co., Ltd.  
 58 Soi Wakkonai, Bangkok, Prapacheng,  
 Samprakarn: 10130 Thailand

# INSPECTION CERTIFICATE

TO EN10204 3.1

D M Y Certificate No.  
 11/02/2013 - 2013140192

Purchaser: COMICO PIPE AND SUPPLY COMPANY

E-No. Purchase Order No. Job No.

MC-819 E1-3263

No.	MFG. No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
1	55E10010	ASTM A234-11/ASME SA234-10 GR WPB CSA Z46 11-09 Gr 241 CAT 1 SS	ASME B16.9-2007, B16.25-2007	Good	Good
2	55E10015	Product & Size T WPB 2 X S	Heat Treatment (Note 1)	Hardness Actual Data	Boron (%)
3	55E10017-1	T WPB 3 X 1 STD	N	HB : 142, 143, 145	0.0001
4		T WPB 3 X 2 STD	N	HB : 133, 134, 136	0.0000
5			N	HB : 126, 128, 130	0.0000

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	X 100	MPa	%
Max															
Material Heat No	23												240	415	30
1 J2L4043	20	21	84	13	8	2	2	5	1	0	0	35	334	485	58
2 J2K4431	19	19	85	20	5	2	2	6	1	0	0	35	341	498	37
3 J2K4431	19	19	85	20	5	2	2	6	1	0	0	35	341	498	37
4															
5															

(Note 1) A: Hei 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 in Thailand according to ANONVACE MR0175/ISO 15156-2:2008 & MR0103:2010 (SSC Report 3))

The fittings was manufactured sample tested and reported 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 THE ONLY: 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.

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

Form TZ-6A/3

CONFORMS TO SA 234 WPB  
 YEAR 2010 ED, 2011 AD  
 JOB# 2013-8440-51  
 ITEM# 28  
 SIGNED BY NOV 22 2013

Rungnapa Kanphitakorn  
 Quality Assurance Manager  
 Thai Benkan Co., Ltd.

Order#: 312846 Seq: 12 PO#: 133700 Heat#: 55K10008 Mill: BKL - Thai Benkan  
 Part#: WF 2 XS T PB Part Desc: Weld Fittings 2 (60.3mm O.D.) XS WELD TEE A/SA234-WPB



Thai Benkan Co., Ltd  
 58 Soi Watkrnai, Bangku, Prapatzeneng,  
 Samutprakarn, 10130 Thailand  
 D M Y Certificate No.

# INSPECTION CERTIFICATE

Purchaser: COMCO PIPE AND SUPPLY COMPANY

TO EN10204 3.1

E-No. Purchase Order No. Job No.

MC-947 E1-3560

No.	MFG. No.	Specification for Material Made from Seamless Pipe		Quantity	Heat Treatment (Note 1)	Specification for Inspection	Visual Examination	Dimensional Inspection
		ASTM A234-11/ASME SA234-10 Gr-WPB CSA Z46 11-08 Gr 241 CAT 1 SS	Product & Size					
1	55K10001	T WPB 1 S160	5	5	N	ASME B16.9-2007, B16.25-2007	Good	Good
2	55K10006	T WPB 16 STD	5	5	N		HB : 128, 131, 133	< 0.0001
3	55K10008	T WPB 2 XS	150	150	N		HB : 142, 143, 145 HB : 144, 146, 153	< 0.0001 0.0001
4								
5								

Specification	Chemical Composition %											Tensile 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	MPa	MPa	%
Max	10	24	85	10	4	1	4	1	1	<1	35	240	415	30	
Material Heat No.	23	19	106	50	10	40	40	15	80	20	40	655	655	47	
1	2-76095	19	24	85	10	4	1	4	1	<1	35	287	475	47	
2	3-90042	19	24	83	17	3	<1	3	<1	<1	34	305	489	46	
3	J2L8512	18	20	85	10	4	1	2	4	0	33	327	480	56	
4															
5															

(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 Material according to ANSINACE MR0175/ISO 15156-2, 2008 & MR0103 - 2010 (SSC Region 3))

The fittings was manufactured, sampled tested and inspected in accordance with the specifications, and was found to meet the requirements  
 CE = C+Mn/6+(C+Mo+V)/5+(Ni-Cu)/15  
 MAGNETIC PARTICLES EXAMINATION FOR TEE ONLY

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

\* 1 : "T" symbolized wall thickness in mm \* 2 : YS Yield strength TS = Tensile strength E = Elongation  
 Form TZ-6A/3

CONFORMS TO SA 234 WPB  
 YEAR 2013  
 JOE F. 28  
 SIGNED BY NOV 22 2013

Bungratana Komplatoon  
 Quality Assurance Manager  
 Thai Benkan Co., Ltd.

2X11/2 - KH BW RED TEE A234-WPB  
 CONFORMS TO SA 134 WPB  
 YEAR 2010  
 JOB # 1013-8440-51  
 ITEM # 29  
 SIGNED BY NOV 28 2011  
 Certificate No : 00100097-1001  
 Order No : CI-12-376  
 Date : 2013/06/25



# INSPECTION CERTIFICATE

Customer : TRANS AM PIPING PRODUCTS LTD. (MILL TEST)  
 Product : SEAMLESS CARBON STEEL BUTT WELD FITTINGS  
 Spec : ASME SA/ASTM A234 WPB-11a  
 MR0175-09/ISO 15156-09/MR0103-10  
 CHUP HSIN ENTERPRISE CO., LTD.  
 17, TUNG LI ROAD HSIAO KANG,  
 KAOHSIUNG, TAIWAN, R.O.C.  
 TEL:(07)831-9157 FAX:(07)821-7500, 831-2942

Starting Material		Specification for Inspection										Visual Inspection			Dimensional Inspection			
ASTM A106 GR.B		ASME B16.9-2007										GOOD			GOOD			
Item	Description	Quantity	Heat ID	Heat No	Raw Certificate No.	NDE MT	Test Temp	Size of specimen	Charpy V-Notch Impact Value	Ave.								
113	CON RED SMLS STD	2	8135	J0L8135	SUMITOMO WMYL7883	PASS												
199	RED TEE SMLS XS	4	7687	J8L7687	SUMITOMO BYYK3056	PASS												
219	RED TEE SMLS STD/XS	5	607B	J0L6607	SUMITOMO BYYM8314	PASS												
Chemical Composition%													Tension Test		Hardness Test		REMARK	
Speci-cation	C	Si	Mn	P	S	CU	Ni	Cr	Mo	V	Nb	C.E	Y.S	T.S	E	HB		
X100	10	21	135	50	58	40	40	40	15	80	20	50	35000	60000	30	197		
Min.	22	17	51	8	3	7	3	4	2	0	0	27	44300	71100	40.5	138		
Max.	17	13	77	6	3	6	3	2	1	0	0	27	45800	66800	41	135		
	18	21	55	19	10	2	2	3	1	0	0	28	44300	66000	41	134		
													NORM. 910°C x0.5HR					

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, and was found to meet, the requirements of above specifications and purchaser's order.

*L.S. Tsai*

Chief of Quality Assurance Section

Current Date: Tue, 30 Apr 2013 14:52:25 +0000

**Material Test Report**

Report Number: 25189

Date: Wed, Feb 27th 2013

Description: 2" SWAGES & BULL PLUGS

Heat Treatment: H.R.

Specification: A234-WPB/SA234-WPB

Material: C1018

Year of Revision: 1

CRN: 0A7470.5CR1

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

2" x 1" SCH 80 PBE CONC SWAGE

Additional Comment:

**Chemical Analysis**

Heat Code: K2624

Heat Number: A130312

C	0.190	Cu	0.160	Al	0.029
Mn	1.050	Ni	0.070	Ti	0.001
P	0.009	Cr	0.150	Ca	0.005
S	0.003	Mo	0.080	Sn	0.010
Si	0.230	V	0.033		
N	0.007	Cb/Nb	0.002		

Carbon Equivalency Formula Used:  
 $C + (Mn/8) + (Cr + Mo + V)/5 + (Ni + Cu)/15$   
CE = 0.43

CONFORMS TO SA 234 WPB  
 YEAR 2010 ED, 2011 MD  
 JOB # 2013-8440-51  
 ITEM # 30  
 SIGNED BY [Signature] NOV 22 2013

10-Stock  
Po-133856  
N-8440-51

**Mechanical Tests**

Yield PSI: 60500

Tensile PSI: 83500

Elongation: 29 % @ 2"

Reduction of 65 Area %

Size: 2.375" RND

Brinell Hardness: 163

**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.

[Signature]

Ian Shields  
Q.A. Manager and Customer Service



**Sarnia**

Toll Free: 1-888-511-1381  
By regular telephone at: 519-336-2960  
By fax at 519-344-3181

Mailing Address:  
PO Box 909,  
645 Kedcco St.  
Sarnia, ON  
N7T 7K6

**Edmonton**

Toll Free: 1-800-861-3800  
By regular telephone at: 780-438-4944  
By fax at 780-436-3917

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

 I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A. Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY Tel. +39 0185 467661 - Fax +39 0185 466610 - E-mail quality.imi@farinagroup.com MATERIAL TEST DEPARTMENT	COMPANY WITH QUALITY SYSTEM ISO 9001: 2008 CERTIFIED BY RINA CERT. N° 2391/S
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INSPECTION CERTIFICATE EN 10204:2004 / 3.1	Nr 104343 Dated 27.03.2013
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TRANS AM PIPING PRODUCTS LTD. 9335 Endeavor Drive S.E. Calgary, Alberta T3S 0A1 CA	Purchase Order Nr CI-12-888 C/O 2 Item Nr 010 Packing List Nr 202 Invoice Nr 103
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Heat Code	Heat Nr	Quantity	Description
123M	1273959	75,00	CONC.SWAGE PBE S-80 2"x1" MSS SP 95 WPB

Element	C	SI	Mn	S	P	Cr	Ni	Mo	Ti	Cu
ASTM A234 WPB (LADLE)	0,180	0,220	0,960	0,010	0,011	0,090	0,080	0,010	0,016	0,160

Element	V	Nb	N	AL	C.E.	PRE
ASTM A234 WPB (LADLE)	0,003	0,002	-	0,025	0,385	-

Test specimen Sect. mm2	Length mm	Shape 1=O - 2=□	Tensile N/mm2	Yield Strength > 0,2% N/mm2	Yield Strength > 1% N/mm2	Elongation %	Reduction of area %
122,65	50,00	1	528,0	334,0	-	38,0	-

HARDNESS		IMPACT TEST				
HBW	TYPE	Test specimen	°C	1-Joule	2-Joule	3-Joule
180,0 - 186,0	KV	10x10mm	-10	54	58	57

Heat treatment	Normalized at 880°C / Air Cool	ELECTRIC FURNACE
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Dimension in accordance	MSS SP95 Ed.2008 - ASME B36.10 Ed.2004 - NACE MR 0175 ISO 15158 Ed.2009 MSS SP25 Ed.2008 - NACE MR 0103 Ed. 2012 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS
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Material in accordance	ASME SA ASTM A234/A234M-11a Gr. WPB
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Visual & Dimensional	SATISFACTORY	Origin	EUROPEAN UNION	Our Ref.	2012-1E201-0000654-0010
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Notes

15-Stock  
 PO-134121  
 2-8440-51

CONFORMS TO SA	234 WPB
YEAR	2010 ED, 2011 ASD
JOB #	2013-8440-51
ITEM #	30
SIGNED BY	DEC 03 2013

QUALITY CONTROL DEPT. Boris Fizzotti 	INSPECTION AUTHORITY	MANUFACTURER'S SYMBOL IML 
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CANYIL

CERTIFICATE OF TEST

Reference No.: JB-0411

02/26/99

Order Number: 0000000-

7540841

EMCO DIST. GROUP (WESTLND EDM)  
14940-121A AVENUE

EDMONTON AB.  
TSV 1A3

Part Number: 5220400000  
Description: 2 X 1/2 SCH 80 CONC SWAGED NIP TEE

Specification: ASTM A234 GRADE WPB/ ASME SA234 GRADE WPB

Fitting Trademark: J B SMITH

Chemical Analysis %

Heat No.	Ht Code	C	Mn	P	S	Si	Cu	Ni	Cr
B69350	UCW ←	0.15	1.04	0.006	0.008	0.23	0.01	0.01	0.04
		Mo	V	Cb/Nb					
		0.01	0.00	0.00					

Mechanical Properties

Yield Strength psi : 43,100	Tensile Strength psi : 67,700
MPa : 297	MPa : 466
Elongation % 2" : 37.0	Red. Area % : 64.0
	Hardness BHN : 128

Heat Treatment:

2-8440-50

CONFORMING TO SA	234 WPB
YEAR	NOV 10 ED, 2011 ADD
JOB #	013-8440-50
ITEM #	31
SAMPLED BY	NOV 22 2013

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

CANYIL

Material Test Report

Current Date: Tue, 14 Oct 2008 10:00:00 AM

Report Number: 7642

Date: Tue, Nov 30th 1999

Description: 2" SWAGES & BULL PLUGS

Heat Treatment: H.R

Specification: A234-WPB/SA234-WPB

Material: C1018

Date of Revision: 0000-00-00 00 00 00

CRN

Comment



2" x 1/2" x H SWAGE  
2" x 1/2" S160 SWAGE

Chemical Analysis

Heat Code: K444

Heat Number: 10564

C	0.200	Cu	0.200	Al	
Mn	0.810	Ni	0.081	Ti	0.000
P	0.013	Cr	0.217		0.000
S	0.020	Mo	0.036		
Si	0.240	V	0.000		
N	0.000	Nb	0.000		

Carbon Equivalency Formula Used:  
C+(Mn/6)+(Cr+Mo)/5+(Ni+Cu)/15  
CE=0.40

Mechanical Tests

Yield PSI: 52800

Elongation: 28 % @ 2"

Size: 2.375" RND

Tensile PSI: 84900

Reduction of 61  
Area %

Brinell Hardness: 183

Charpy Impact Test

Individual Values:

(V1) 0 ft/lbs (V2) 0 ft/lbs (V3) 0 ft/lbs

This Material Test Report meets DIN 59 049/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

Inn Shields  
O.A. Manager and Customer Service



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 Kedco 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

2-8440-51

CONFORMING TO SA	234WPB
YEAR	2010 ED, 2011 BDD
JOB #	1013-8440-51
ITEM #	31
SIGNED BY	NOV 22 2010



Manufacture of Piping and Pressure Vessel Components  
 4404 Haygood St - Houston, TX 77022  
 Phone: 713-695-3633 Fax: 713-695-3528  
 A Bormey Forge Company

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

MTR #: 258,027  
 PO #: CI-13-444

Sales Order #: C001311061

Date: 07/26/2013

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.

Material: A/SA105N 09

Item	Quantity	Description
18	50	36 - 4 X 1 1/2 XS BWP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.190	0.08	0.060	1.09	0.007	0.013	0.02	0.008
	S	SI	V					
	0.021	0.21	0.004					
Carbon Equivalency:		Ladle		0.40				

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						

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
	73,449	50,791	34.25	61.83	132 BHN
					135 BHN

Normalized

IAW NACE MR0175/ ISO 15156- 2009

Certified Material Test Report

Heat Code: 59059

CONFORMS TO SA	105N
YEAR	2010 ED, 2011 ADD
JOB #	2013-8440-51
ITEM #	32
SIGNED BY	Nov 28 2013

1-8440-51  
 Po-134044

Marie Dehmer  
 Quality Assurance Representative





**Manufacturer of Piping and Pressure Vessel Components**  
 4404 Haygood St - Houston, TX 77022  
 Phone: 713-695-3633 Fax: 713-695-3528  
 A Bomany Forge Company

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

MTR #: 251,948  
 PO #: CI-13-306

Sales Order #: C001306001 Date: 04/23/2013

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: 58880

CONFORMS TO SA	105N
YEAR	2012 ED, 2011 ADP
JOB #	2013-8440-51
ITEM #	33
TESTED BY	NOV 22 2013

175-Stock  
 Po-132467  
 2-8440-51

Material: A/SA105N 09

Item	Quantity	Description
15	1,500	36 - 1 1/2 X 3/4 3M THP A/SA105N

**Chemical Composition**

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.209	0.04	0.050	1.02	0.006	0.013	0.02	0.008
	S	SI	V					
	0.019	0.24	0.004					
Carbon Equivalency:	Ladle		0.39					

Product	B	C	CR	CU	MN	MO	NB	NI
	<0.0002	0.202	0.04	0.050	1.03	0.007	0.014	0.03
	P	S	SI	V				
	0.005	0.014	0.24	<0.001				
Carbon Equivalency:	Product		0.39					

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
	74,099	49,441	34.85	56.26	135 BHN

135 BHN

Normalized

LAW NACE MR0175/ ISO 15156-2009

Marie Dehmer  
 Quality Assurance Representative



**Manufacturer of Piping and Pressure Vessel Components**  
 4404 Haygood St - Houston, TX 77022  
 Phone: 713-695-3633 Fax: 713-695-3528  
 A Bomsey Forge Company

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

MTR #: 251,948

PO #: CI-13-306

Sales Order #: C001306001

Date: 04/23/2013

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: 58880

CONFORMS TO	A105N
YEAR	2010 ED, 2011 ADD
JOB #	1013-8440-51
ITERA #	33
DATE	NOV 27 2013

175-Stock  
 Po-132467  
 2-8440-51

Material: A/SA105N 09

Item	Quantity	Description
15	1,500	36 - 1 1/2 X 3/4 3M THP A/SA105N

**Chemical Composition**

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.209	0.04	0.050	1.02	0.006	0.013	0.02	0.008
	S	SI	V					
	0.019	0.24	0.004					
Carbon Equivalency:	Ladle		0.39					

Product	B	C	CR	CU	MN	MO	Nb	NI
	<0.0002	0.202	0.04	0.050	1.03	0.007	0.014	0.03
	P	S	SI	V				
	0.005	0.014	0.24	<0.001				
Carbon Equivalency:	Product		0.39					

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
	74,099	49,441	34.85	56.26	135 BHN

Normalized

IAW NACE MR0175/ ISO 15156-2009

Marie Dehmer  
 Quality Assurance Representative



Manufacturer of Pipes and Pressure Vessel Components  
 4404 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 #: 246,756

PO #: CI-13-124

Sales Order #: C001300902

Date: 02/05/2013

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.

Material: A/SA105N 09

Item	Quantity	Description
4	34	36 - 3/4 X 1/2 3M THP A/SA105N

Certified Material Test Report

Heat Code: 58962

CONFORMS TO SA	105N
YEAR	2010 ED, 2011 MS
JOB #	2013-8440-50
ITEM #	34
SIGNED BY	NOV 22 2013

50-Stock  
 Po# 131489  
 2-8440-50

Chemical Composition

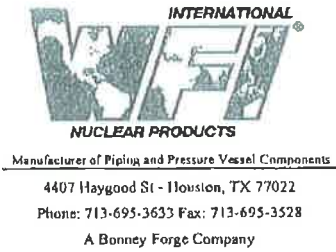
Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.200	0.04	0.070	1.05	0.005	0.012	0.02	0.009
	S	SI	V					
	0.019	0.20	0.004					
Carbon Equivalency:		Ladle		0.39				

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
	79,000	47,700	28.00	63.00	159 BHN	163 BHN

Normalized

LAW NACE MR0175/ ISO 15156- 2009

Marie Dehmer  
 Quality Assurance Representative



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

MTR #: 227,018

PO #: CL-12-213

Sales Order #: C001203284

Date: 03/23/2012

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.

Material: A/SA105N 09

Item	Quantity	Description
8	500	36 - 3/4 X 1/2 3M THP A/SA105N IAW NACE MR0175/ISO 15156-2009

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.220	0.03	0.050	1.05	0.000	0.013	0.02	0.006
	S	SI	V					
	0.020	0.21	0.003					
Carbon Equivalency:	Ladle		0.41					

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
	81,500	53,500	31.00	56.00	163 BHN

Normalized

Certified Material Test Report

Heat Code: 58627

CONFORMS TO SA 105N  
 YEAR 2010 E.D. 2011 ADD  
 JOB # 2013-8440-51  
 ITEM # 34  
 DATED BY: NOV 22 2013

50-stock  
 Po # 129492

2-8440-51

Marie Dehmer  
 Quality Assurance Representative

Phone (780) 466-4122  
 Fax (780) 463-5587

**KS Manufacturing Enterprises Ltd.**

5203-76 Avenue  
 Edmonton, Alberta T6B 0A7

**MATERIAL TEST REPORT** 25104

**Date:** 2013-11-14

**Purchaser:** ALCO GAS OIL PRODUCTION EQUIPMENT LTD.

**Distributor:**

**Purchaser Order No.** 133927

**Distributor Order No:**

**Products**

Item No.	Qty.	Product	Specification	Heat No	Description
1	85	1" X 6" LONG 3000 THRD COUPLING B16.11 CRN# 0A0297.2	A/SA350 LF2	H3270	1-3/4" RD BAR ASTM A105, A576, A350 LF2 CL 1, A696 GR C, A370-05, A29, API 6A PSL 3, ASME SA105, SA350 LF2 CL 1, NACE MR01- 75/ISO 15156, NACE MR01-03, DIN/EN 10204 3.1

**Chemical Properties**

Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Nb	Co	N	Al	Sn	Ti
H3270	.173	1.232	.008	.014	.265	.091	.062	.011	.077	.013	.000	-	-	-	-	-


**Mechanical Properties**

Item No.	Heat No	Yield	Tensile	Elong % in 2"	RA	B.H.N.	Impact FT	Impact LB	Remarks
1	H3270	49,442 PSI	75,250 PSI	34	73-2	143-149	88.6-85.6-90.0 @ -50		NORMZE:1697 F. 2 HRS A.C. C.E.: .411

CONFORMS TO SA 350 LF2 CL 1  
 YEAR 2010 ED, 2011 ADD  
 JOB # 2013-8440-S1  
 ITEM # 35  
 SIGNED BY [Signature] NOV 22 2013

85-Stock  
 Po-133927  
 1-@ 6" LG  
 8440-S1

We hereby certify the above results to be correct as contained in the records of the company.

  
 Kwang Y. Lee

ZONGSHI VALVE STEEL  
STEEL CO., LTD

# MILL TEST CERTIFICATE

1996-10-26 4100, Beijing C. C. Social P. R. China

Tel and fax: +86 784 8875736

E-mail: hst@hststeel.com

Alco # DA130

C2013369231

(ACCORDING TO EN10203 3.1b)

PRODUCT	PIPE	CERTIFICATE NO	2013-10-16	PAGE	1/1
ITEM NO	10000000000000000000	DELIVERY CONDITION	HR		
ITEM NAME	SEAMLESS STEEL PIPE	HEAT TREATMENT			
ITEM SPECIFICATION	6" X SCH40	DIMENSIONS	6" X SCH40 X 40FT		
ITEM GRADE	A333-3	TOTAL LENGTH	FT		
ITEM NUMBER	13000000000000000000	TOTAL WEIGHT			

NO	SPECIFICATION	LENGTH	WEIGHT	TENSILE TEST		YIELD STRENGTH	ELONGATION	REDUCED SECTION	TENSILE TEST
				STRENGTH	ELONGATION				
1	CONFORMS TO SA 106B	FT	KG	MPa	%	MPa	%	MPa	YSTS
2	YEAR 2010 E.D. 2011A								
3	JOB 2013 - 8440-51								
4	ITEM 36								
5	SIGNED BY 28 March 3/14								

NO	SPECIFICATION	LENGTH	WEIGHT	IMPACT TEST		TEMPERATURE	ORIENTATION	HARDNESS TEST
				CHARPY	VELOCITY			
1	CONFORMS TO SA 106B	FT	KG	J	m/s	°C		
2	YEAR 2010 E.D. 2011A							
3	JOB 2013 - 8440-51							
4	ITEM 36							
5	SIGNED BY 28 March 3/14							

SAMPLE ORIENTATION: L=LONGITUDINAL T=TRANSVERSE  
 SAMPLE TYPE: S=STRIP C=COILED F=FULL-SECTION  
 Q&T=QUENCHING AND TEMPERING  
 AK2=ABSORB ENERGY FOR THE SECOND SET  
 N-NORMALIZING  
 A-ANNEALING  
 AV-AVERAGE  
 LE=SIDE EXPANSION  
 1E-FIO: EXPANDED  
 1R-HOT ROLLED  
 N&T-NORMALIZING AND TEMPERING

HIGHTOWER VALLEY STEEL  
LBS CO., LTD

# MILL TEST CERTIFICATE

Address: 10 Duxburycom, Haverhill, MA 01830  
P: (603) 891-1001

Telephone: +86 794 8979289  
E-mail: hst@hightowersteel.com

(ACCORDING TO EN:10204-3:10)

PRODUCT	PIPE	CERTIFICATE NO.	C201356923-1
MANUFACTURER	P. O. NO.	DATE	2013-10-16
ORDER NO.	1120611	DELIVERY CONDITION	FR
STEEL GRADE	SEAMLESS STEEL - ERW PIPE	HEAT TREATMENT	
STEEL SPECIES	S. DNK42, Grade 250	DIMENSIONS	6" x SCH40 x 40FT
	TOTAL PRICE	TOTAL WEIGHT	

TYPE	CHEMICAL COMPOSITION (%)											
	C	Mn	Cr	Mo	W	Cu	Pb	Bi	Sn	Al	Si	Se
W	0.36	0.27	0.25	0.08	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
M	0.25	0.23	0.21	0.07	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P	0.015	0.013	0.011	0.005	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
S	0.012	0.010	0.009	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
As	0.005	0.004	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
N	0.005	0.004	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Fe	0.005	0.004	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

TESTING METHOD	NONDESTRUCTIVE TEST		PIPE END		END SURFACE (RATIO)	
	UT/RT	UT/RT	UT/RT	UT/RT	UT/RT	UT/RT
UT/RT	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	N/A	N/A
UT/RT	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	N/A	N/A
UT/RT	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	N/A	N/A

PRODUCT ANALYSIS: CE=0.36% C, Mn=0.27%, Cr=0.25%, Mo=0.08%, W=0.02%, Cu=0.01%, Pb=0.01%, Bi=0.01%, Sn=0.01%, Al=0.01%, Si=0.01%, Se=0.01%  
 R-RATIO: R=0.015, S=0.012, As=0.005, N=0.005, Fe=0.005  
 R-RATIO: R=0.015, S=0.012, As=0.005, N=0.005, Fe=0.005  
 R-RATIO: R=0.015, S=0.012, As=0.005, N=0.005, Fe=0.005


CONFORMS TO SA 106-B  
 YEAR 2013-ED 25-11A  
 JOB # 2013-8440-51  
 ITEM # 36  
 SIGNED BY: [Signature] March 3/14

HONGYANG VALIN STEEL  
TUBE CO., LTD

MILL TEST CERTIFICATE

Add: 10 BinJiXinca, Hongshang,  
CaoX, Hunan, P. R. China P. C. 421001  
Tel and Fax: 455 734 8872729  
E-mail: hys@hysteel.tube.com

SHO TUBULAR LIMITED		CERTIFICATE NO.	20131016	PAGE	2/3
PLANT CODE	F. O. NO.	117000	DATE	HR	
PLANT	SEAMLESS STEEL LINE PIPE	DELIVERY CONDITION			
PRODUCT TYPE	SEAMLESS STEEL PIPE				
GRADE	ER6063 Grade 270	DIMENSIONS	6" x SCH40 x 40FT		
TOTAL LENGTH	TOTAL PIECES	TOTAL LENGTH	FT	TOTAL WEIGHT	MT
REMARK: PRODUCT MADE IN CHINA					

<p>1. Accuracy of the test results herein described has been manufactured in accordance with the standards and specifications required in your order and complies with the corresponding requirements.</p> <p>2. This certificate is issued by a computerized system and it is valid with electronic signature. In case the owner of the certificate would release a copy of the test result to any third party, please do not hesitate to contact Hongyang Valin Steel Tube.</p> <p>3. Any alteration and/or modification will be subject to the law.</p> <p>4. For more information, please contact us at the following address: hys@hysteel.com</p> <p>5. HONGYANG VALIN STEEL TUBE CO., LTD</p>		<p>Quality Manager</p> 
<p>6. HONGYANG VALIN STEEL TUBE CO., LTD</p>		<p>Certificate-maker: 唐娅娜</p>





MANUFACTURER: TIANJIN PIPE (GROUP) CORPORATION  
 ADD: JINTANG ROAD DONGLI DISTRICT, TIANJIN, CHINA  
 TEL: 86-22-24801073  
 FAX: 86-22-24801291

# QUALITY CERTIFICATE

QR-11-S.2.4-19

Licence No.:

No.: 13061924

Contract No. **TPCO-13014E** L/C No. **SEAMLESS STEEL LINE PIPE** Packing **IN BUNDLES**  
 Order **BHD Tubular Limited** Product **SEAMLESS STEEL LINE PIPE** Steel grade **CAT I Gr 290 SS/42/Gr B/GR.C** Total pieces  
 P.O. No. **PO# 111606** Port of desti. **Manu Method: HOT ROLLING SEAMLESS** Total metres  
 Standard **CSA Z245.1-07/API SPEC 5L-2007/ASTM/ASME A/SA 106-2011** Length range **40-44FT** Total Tons **AICO # PA 061**

Lot No. **140** Quantity **106B** Delivery condition **As rolled** Tensile test (MPa)  
 Heat No. **533760** Pieces **36** Bundles **36** Tons **36** T.S. Type **R10.5** Y.S. Elong % **410** 33.0  
 Impact test (J) **AK1 AK2 AK3** Shear % **AK1 AK2 AK3** Shear AVE %  
 YEAR **NOV 2011** ADD **Stocks**  
 JOB # **NO13-8440-51**  
 ITEM # **36**  
 SIGNED BY **NOV 28 2011**  
 A strip, L<sub>0</sub>=25, l<sub>mm</sub> L<sub>0</sub>=50mm

Heat No.	Sample No.	Hardness test (middle)				Hardness test (outside)				Fla. test(1)	Fla. test(2)	
		1	2	3	4	1	2	3	4			
533760	140-140-06-074	184.0	182.0	181.0	182.0	183.0	182.0	182.0	181.0	182.0	G	G

Heat No.	Steel spec.	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(MN)
533760	L	0.1700	0.24	1.14	0.009	0.002	0.06	0.08	0.03	0.06	0.028	0.060	<0.01	<0.01	<0.0005	0.0018				0.40	0.40
	P	0.1600	0.25	1.12	0.007	0.002	0.05	0.07	0.03	0.05	0.027	0.060	<0.01	<0.01	<0.0005	0.0014				0.38	0.39
	P	0.1600	0.25	1.12	0.007	0.002	0.05	0.07	0.03	0.05	0.027	0.060	<0.01	<0.01	<0.0005	0.0015				0.38	0.39

NDE (100%) Visual and dimension **G** Hydro. Test **G** Pipe end NDE **G** Pipe end beveling **G** Residual mag. Test **G** SSCC **HIC** We hereby state that all pipes are manufactured and inspected according to above standards and order.

Heat No. **533760** Visual and dimension **G** Hydro. Test **G** Pipe end NDE **G** Pipe end beveling **G** Residual mag. Test **G** SSCC **HIC**  
 NACE MR 0103-2010/MR 0175-2009/ISO 15156-2A-2009; CE(CSA)=C+Fx[Mn/6+S/24+Cu/1.5+Ni/20+(Cr+Mo+V+Nb)/5+5B];  
 CE(LW)=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15; ALUMINUM KILLED STEEL, EAF-LF-CONTINUOUS CASTING;  
 EN10204-3.1; Silicon and calcium treated for inclusion morphology control in Steel Melting.  
 Remark: desti.=destination; Tem.= Temperature; speci.= specification; Man.=Manufacturer; Fla.=Flattening; G=Good; Hydro.=Hydrostatic; Mag.=Magnetic



See for certification:

No. **(1)** Date **2013-6-25**  
 Page: **(1)**

(FOR EXPORT ONLY)

Address: Daitik Incub, Hongkong City, Runan, P. R. China P. O. 421001

Tel and Fax: +86 756 8973799  
 E-mail: hst@hststeel.com

C201329100-1  
 AICO # PA-038

**MILL TEST CERTIFICATE**

HONGYANG VALIN STEEL  
 TUBE CO., LTD

CUSTOMER: SHD TUBULAR LIMITED CERTIFICATE NO: 112000  
 CONTRACT/ITEM NO: 2110600772-05 P.ONO.: 2013-8-14 PAGE: 1/1  
 PRODUCT: SEAMLESS STEEL LINE PIPE DELIVERY CONDITION: HR  
 SPECIFICATION: SEE SPECIFICATION NOTE HEAT TREATMENT: 4' x S40 x 20 FT  
 GRADE: R.2/X42, Grade 290 DIMENSIONS: TOTAL LENGTH: 31 FT TOTAL WEIGHT: 31.5 MT  
 TOTAL BUNDLES: 1 TOTAL PIECES: 209

NO	HEAT NO	BUNDLES	PIECES	LENGTH		WEIGHT	TENSILE TEST ASTM A370			
				FT	MM		TS(PS)	YS(PS)	EL(%)	RA (%)
1	1327589	6	107	2141.398	10491	58150	48140	36.0	36.0	0.71
2	1324630	3	57	1140.745	5589	71775	53795	35.0	35.0	0.75
3	1324630	3	44	880.575	4314	70470	53215	34.5	34.5	0.76
4	1313280	11	209	4182.730	20493	74965	53650	31.5	31.5	0.72

NO.	IMPACT TEST				NON METALLIC INCLUSION	GRAIN SIZE	HARDNESS TEST
	NOTCH TYPE	ORIENTATION	TEMPERATURE (C)	SIZE (mm)			
1	AV	LD	0	0	0.68	1068	HR10
2	AV	LD	0	0	0.68	1068	HR10
3	AV	LD	0	0	0.68	1068	HR10
4	AV	LD	0	0	0.68	1068	HR10

NO. 2013-8440-51  
 YEAR 2013  
 ITEM 37  
 SERIAL 28 March 2013

SAMPLE ORIENTATION: L-LONGITUDINAL T-TRANSVERSE  
 SAMPLE TYPE: S-STRIP C-CLUSSED F-FULL-SECTION  
 Q&T-QUENCHING AND TEMPERING  
 AV-AVERAGE LE-SIDE EXPANSION  
 N-NORMALIZING RE-HOT EXPANDED  
 A-ANNEALING HR-HOT ROLLED  
 AV-AVERAGE RE-ANNEALING AND TEMPERING



ADD: 70 HALLINGTON, HEMPSTEAD  
 CITY: HUNTER, P. O. BOX 1421301  
 TEL AND FAX: 466 734 8872289  
 E-MAIL: HALLINGTON@HALLINGTON.COM

# MILL TEST CERTIFICATE

CONTRACT NO. 2110009		CERTIFICATE NO. 2013-5141	PAGES: 3/3
P.O. NO. 112209		HR	
SPECIFICATION: SEAMLESS STEEL PIPE		DELIVERY CONDITION	
RE: SEAMLESS PIPE		RE: TREATMENT	
DIMENSIONS: 4" x S40 x 20FT		TOTAL WEIGHT: MT	
TOTAL PIECES:		TOTAL LENGTH: FT	
REMARK: ORIGIN: MADE IN CHINA			

<p>THIS CERTIFICATE IS VALID ONLY IF THE ORIGINAL SIGNATURE IS PRESENT ON THE ORIGINAL DOCUMENT. IN CASE THE ORIGINAL SIGNATURE IS NOT PRESENT, THE CERTIFICATE IS NOT VALID.</p>	
<p>Signature: [Handwritten Signature]</p>	<p>Quality Manager</p>
<p>Certificate-maker: 唐婉婷</p>	

Order#: 327419 Seq: 1 PO#: 134452 Heat#: 208978 Mill: Yangzhou Lontrin Steel Tube Co., Ltd  
 Part#: P 3 STD S6 D BL Part Desc: Pipe 3 (88.9mm O.D.) STANDARD SMLS A/SA106-B DRL BEVELED (com)

CONFORMS TO SA 106B
YEAR 2010 ED 2011A
JOB # 2013-8440-51
DATE 2013-03-14

Stock  
 PO-134452  
 3" SCH STD.

YANGZHOU LONTRIN STEEL TUBE CO., LTD  
 BY DA March 13/14

YANGZHOU LONTRIN STEEL TUBE CO., LTD  
 No. 131000000399999 area along the River  
 Suzhou City, Jiangsu Province, China  
 Tel: 86-0514-86180111 Fax: 0514-86638233

MILL TEST CERTIFICATE (ISO9001/EN10204-3.1)



CUSTOMER: COULTINHO & FERROSTAAL LTD  
 PRODUCT: PRIME NEWLY PRODUCED STEEL PIPE

ISO REGISTRATION NO: 44 100 07254

API 5L certification No: 0506 PED certification number: IDD/S-09/49

SPEC: ASTM/ASME A106-B(2011)/SA106-B(2010), API 5L-B-PSL-1 45th ed./ANSI/NACE MR-0175/ISO-15156-2A(2009), MR0103

CONTRACT NO: 1020055700-1

Alco # PA-092

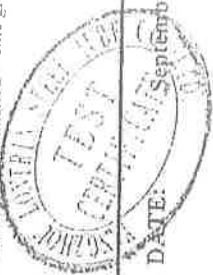
CERTIFICATE NUMBER: 07312-14

NO.	HEAT NO.	LOT NO.	BUNDLES	PIECES	SIZE (INCH)	TOTAL LENGTH 1125.98 FT	PCS	TOTAL WEIGHT		DELIVERY CONDITION	HOT FINISHED
								LB	FT		
1	208980	13085AR280	A106-B/SA106-B, 5L-B-PSL-1	API	3.500"X0.216" X38-42FT	1220.47	31	Min	92661.52		
								Max			
2	208979	13085AR281	A106-B/SA106-B, 5L-B-PSL-1	API	3.500"X0.216" X38-42FT	1141.73	29	Min	86664.08		
								Max			
3	208978	13085AR282	A106-B/SA106-B, 5L-B-PSL-1	API	3.500"X0.216" X38-42FT	4765.78	121	Min	36146.62		
								Max			

CHEMICAL VALUES/COMPOSITION (Product Analysis) Wt%													
C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V	Ti	Nb	B	CE
0.20	0.23	1.35	0.030	0.050	0.25	0.25	0.35	0.08	0.08	0.04			0.40
0.20	0.21	0.41	0.015	0.008	0.03	0.01	0.01	0.001	0.001	0.002			0.0051 0.28
0.19	0.20	0.43	0.016	0.007	0.02	0.01	0.01	0.001	0.001	0.001			0.002 0.0001 0.27
0.20	0.20	0.43	0.017	0.008	0.02	0.01	0.01	0.001	0.001	0.001			0.001 0.0002 0.28
0.20	0.19	0.41	0.014	0.008	0.03	0.02	0.01	0.001	0.002	0.001			0.001 0.0001 0.28
0.19	0.19	0.42	0.015	0.009	0.02	0.01	0.01	0.001	0.001	0.001			0.001 0.0001 0.27
0.20	0.19	0.42	0.016	0.010	0.02	0.01	0.01	0.001	0.001	0.001			0.001 0.0001 0.28
0.20	0.21	0.43	0.020	0.013	0.02	0.01	0.01	0.001	0.001	0.001			0.001 0.0001 0.28
0.20	0.20	0.44	0.026	0.018	0.02	0.01	0.01	0.001	0.001	0.001			0.002 0.0001 0.28
0.20	0.19	0.44	0.024	0.016	0.02	0.01	0.01	0.001	0.001	0.001			0.001 0.0001 0.28

NO.	HEAT NO.	MECHANICAL PROPERTIES					FLATTENING TEST	BENDING TEST	HYDRO TEST	NONDESTRUCTIVE TEST					SURFACE QUALITY					DIMENSION TOLERANCE								
		ReL (MPa)	YIELD STRENGTH	TENSILE STRENGTH	Elongation	% HB				NBS	IMPACT TEST	HT PSI/S (holding time)	ET ASTM E309	UT ASTM E213	INSIDE	OUTSIDE	PIPE BODY	PIPE END	OD	PIPE BODY	PIPE END	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
		≥245	≥415	≥22	81	82				80	100%	100%	100%	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	
1	208980	372	505	25	81	—	Satisfactory	—	2500PSI/15s	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory					
2	208979	402	530	26	82	—	Satisfactory	—	2500PSI/15s	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory					
3	208978	405	525	27	80	—	Satisfactory	—	2500PSI/15s	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory					

REMARKS: 1. We hereby certify that the products were manufactured and tested strictly according to the applicable specifications and customer's purchase order and specification.  
 2. Melting process of steel: Electric furnace - Fully killed.  
 3. No weld repair.  
 4. The pipes are no mercury contamination.  
 5. State of delivery: Hot Finished - fine grain practice.  
 6. PED certification NO. 07-202-1326-WZ-1610/1  
 7. EN 10204/3.1 2004



DATE: September 10, 2013

QUALITY REPRESENTATIVE:

MANAGING REPRESENTATIVE:

HENGYANG VALIN STEEL  
TUBE CO., LTD

MILL TEST REPORT

Address: 10 Dalixincun, Hengyang City, Hunan, P. R. China P. C. :421001  
Tel and Fax: +86 734 8873739  
E-mail: hsteeldynssteel.com

Alco # P954

(ACCORDING TO EN10204.3.1)

CUSTOMER	CE FRANKLIN	CERTIFICATE NO.	C201318333-1
CONTRACT NO.	2111000674	P.O. NO.	PO.3213317-OR-2100
PRODUCT	SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE.	L/C NO.	3FAHDS-00278
SPECIFICATION	SEE SPECIFICATION NOTE	DELIVERY CONDITION	HR
GRADE	B.X42	HEAT TREATMENT	
TOTAL BUNDLES:	27	TOTAL LENGTH:	20053.25 FT
		TOTAL WEIGHT:	45.713 MT

NO.	LOT No.	HEAT No.	BUNDLES	PIECES	LENGTH		WEIGHT	TENSILE TEST ASTM A170				COLD BENDING TEST	
					FT	MT		TS(Psi)	YS(Psi)	RDLS	EL(%)		R.A. (%)
1	934302903	1323281	12	452	9045.98	20.621	74240	53070			30.0	0.71	ACCEPTABLE
2	934302904	1323281	7	251	5023.32	11.451	70180	51185			31.0	0.73	ACCEPTABLE
3	934302905	1323282	5	191	3822.53	8.714	72500	51185			32.0	0.71	ACCEPTABLE
4	935100416	1323281	3	108	2161.42	4.927	70615	51475			36.0	0.73	ACCEPTABLE

NO.	IMPACT TEST				NON METALLIC INCLUSION	GRAIN SIZE	HARDNESS TEST
	NOTCH TYPE	ORIENTATION	TEMPERATURE (C)	SIZE (mm)			
	AK1 (J)	Av. (J)	% SHEAR AREA	LE			
	AK2 (J)	Av. (J)	% SHEAR AREA	LE			
1	/	/	/	/	10bb	2011A	7.0
2	/	/	/	/	1660-Stock	2013-8440-51	7.0
3	/	/	/	/	29	29	7.0
4	/	/	/	/	PO-153196	March 3/14	7.0

NOTES:  
W1--THEORETICAL WEIGHT  
W2--ACTUAL WEIGHT  
NR--NORMALIZING ROLLED  
AK1--ABSORB ENERGY FOR THE FIRST SET  
AK2--ABSORB ENERGY FOR THE SECOND SET  
SAMPLE ORIENTATION: L--LONGITUDINAL T--TRANSVERSE  
SAMPLE TYPE: S--STRIP C--CLUBBED F--FULL-SECTION  
Q&T--QUENCHING AND TEMPERING  
N--NORMALIZING  
A--ANNEALING  
AV--AVERAGE  
LE--SIDE EXPANSION  
HE--HOT EXPANDED  
HR--HOT ROLLED  
N&T--NORMALIZING AND TEMPERING

Address: 10 Dalinincun, Hongqiang City, Hunan, P. R. China  
P. C.: 421001  
Tel and Fax: +86 734 8873739  
E-mail: hsteel@steelsuba.com

### MILL TEST REPORT

HENGYANG VALIN STEEL  
TUBE CO., LTD

(ACCORDING TO EN10204 3.1)

CUSTOMER	CE FRANKLIN	CERTIFICATE NO.	C20131833-1	DATE:	2013-5-22	PAGE:	2/5	
CONTRACT NO.	2111060674	P.O.NO.	PO 321317 OR-2100	L/C NO.:	3FAHD5-00278	DELIVERY CONDITION	HR	
PRODUCT	SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE							
SPECIFICATION	SEE SPECIFICATION NOTE							
GRADE	B.X42							
TOTAL BUNDLES:	27	TOTAL PIECES:	1002	TOTAL LENGTH:	28053.250	FI	45.713	RT
HEAT No.		TOTAL WEIGHT:			2" x 0.218" x 20FT			
LOT No.	CHEMICAL COMPOSITION (%)							

NO	HEAT No.	Type	C	SI	Mn	Cr	Mb	W	Cu	Ni	P	Al	Sa	As	Pb	Sb	Nb	Ti	Zr	N	Bi	S	V	B	Ca	CE	SUM1	SUM2	SIK3	SI	SI2	R3	
			*100			*1000			*10000			*100			*1000			*10000			*1000												
1	1323281	H	19	33	94	72	18		45	23	12						2	2	2				33	31	4	37	161.1	5.1	7.1			4.9	
	934302903	P	19	32	86	52	23		59	42	12						1	2	2				45	33	2	36	179.3	4.3	6.3			4.5	
	934302903	P	19	31	86	53	22		59	41	12						1	2	2				43	32	2	36	178.2	4.2	6.2			4.5	
2	1323280V	H	19	34	88	68	22		42	23	14						1	2	2				24	30	4	36	158	4	6			4.5	
	934302904	P	18	31	88	51	20		59	42	11						1	2	2				37	32	1	35	175.2	4.2	6.2			4.9	
	934302904	P	18	31	86	52	21		59	42	12						1	2	2				45	31	1	35	177.1	4.1	6.1			4.3	
3	1323282	H	18	32	86	64	17		52	27	13						1	2	2				58	35	2	35	161.5	4.5	6.3			4.8	
	934302905	P	19	31	88	53	21		60	42	12						1	2	2				38	33	1	36	179.3	4.3	6.3			4.6	
	934302905	P	18	32	86	52	23		59	42	12						1	2	2				46	33	1	35	175.3	4.3	6.3			4.8	
4	1323283	H	19	33	94	72	18		45	23	12						2	2	2				33	31	4	37	161.1	5.1	7.1			4.9	
	935100416	P	19	32	88	65	18		50	26	13						1	2	2				56	35	2	36	162.5	4.5	6.5			4.6	
	935100416	P	19	32	87	64	18		50	25	13						1	2	2				52	36	2	36	160.6	4.6	6.6			4.5	
		H																															
		P																															
		P																															
		P																															
POSITION			PIPE BODY			PIPE END			END SURFACE(GROOVE)			BE																					
NDT Type(Level)			ET			MPI						ACCEPTABLE																					
LAMINAR			ACCEPTABLE			ACCEPTABLE			N/A			ACCEPTABLE																					
TEST RESULT			ACCEPTABLE			ACCEPTABLE			N/A			ACCEPTABLE																					
RESIDUAL MAGNESIUM									N/A			ACCEPTABLE																					
UT THICKNESS MEASUREMENT									N/A			ACCEPTABLE																					
HYDROSTATIC TEST			M(m/2)			2970/5						ACCEPTABLE																					
NOTES:			F1-REACT ANALYSIS			P-PRODUCT ANALYSIS			CE-EQUIVALENT CARBON			R-RATIO			R1-Ca/S			R2-A1/N			R3-Mn/C												
			CE1W=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15			CEPM=C+Si/30+(Mn+Cr+V)/20+(Nb+Mo)/15+(V+Ti)/8+5B			R1=Ca/S			R2=A1/N			R3=Mn/C			CONFORMS TO SA															
			SUM1=C+Cu+Mo+Ni+V			SUM2=Nb+V			SUM3=Nb+V+Ti									YEAR 2010 EO 2011A															
																		JOB # 2013-8440-51															
																		ITEM # 39															
																		SIGNED BY 29 March 3/14															


HENGYANG VALIN STEEL  
TUBE CO., LTD

MILL TEST REPORT

Add: 10 Daliniao, Hengyang  
City, Hunan, P. R. China P. C.: 421001  
Tel and Fax: +86 734 8873739  
E-mail: hsyesteel@163.com

(ACCORDING TO EN10204 3.1)

CUSTOMER	CE FRANKLIN	CERTIFICATE NO.	C201318333-1
CONTRACT NO.	2111000674	P.O.NO.	PO.3213317-08-2100
PRODUCT	SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE	L/C NO.	3FAHDS-00278
SPECIFICATION	SEE SPECIFICATION NOTE	DELIVERY CONDITION	HR
GRADE	B.X42	HEAT TREATMENT	
TOTAL BUNDLES:	27	TOTAL PIECES:	1002
		DIMENSIONS	2" x 0.218" x 20FT
		TOTAL LENGTH:	20053.250 FT
		TOTAL WEIGHT:	45.713 MT
REMARK: 1. ORIGIN: MADE IN CHINA. 2. ALL ELEMENTS TO BE LISTED;			

SPECIFICATION NOTE	ASTM A53B-2012/A106B-2011, ASME SA33B/SA106B-2010, API 5L B/X42, PSLL-44TH EDITION, NACE MR-0175-2009 (FOR HARDNESS ONLY)
We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.	
This certificate is issued by a computerized system and it is valid with electronic signature. In case the owner of the certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use.	
Any alteration and/or falsification will be subject to the law.	
If you need to assure the authenticity of this certificate, please do not hesitate to contact Hengyang Valin Steel Tube CO., LTD, E-mail: hsyesteel@163.com	
CUSTOMER THIRD PARTY	
Quality Manager:	
Certificate-number:	刘年亚



01530624



02/01/2014

PA-155

4000 30th St. Pittsburgh, PA 15201  
Tel: 412-641-1500 Fax: 412-641-1501  
E-mail: sales@sprachem.com

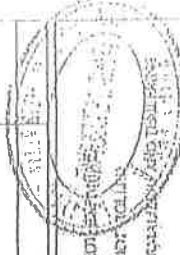
**MILL TEST CERTIFICATE**  
(ACCORDING TO EN 10603)

HENSHANG RAILIN STEEL  
TEKKO, LTD

CONTRACT NO.	PROJ. NO.	CERTIFICATE NO.	MATERIAL	SIZE	TEST	UNIT
			SEAMLESS STEEL LINE PIPE			
PRODUCT	SEAMLESS STEEL LINE PIPE	DELIVERY CONDITION				
SPECIFICATION	SEE SPECIFICATION NOTE	HEAT TREATMENT				
GRADE	42CrMo4					
TOTAL BUNDLES	#	TOTAL PIECES	SIZE	TOTAL LENGTH	WT.	UNIT

NO.	LOT NO.	HEAT NO.	BUNDLES	PIECES	LENGTH		WEIGHT	TENSILE TEST AS PER AISI	YIELD TENSILE	TENSILE	EARTH	ELONG.	RELAT. TO	ANISOT.	TOLERANCE	NOTE
					FT.	MM.										
1	889426	12081	9	548	18667159	12081	12081	480	5175	240						ACCEPTABLE

NO.	IMPACT TEST				MATERIAL CONDITION	HARDNESS TEST
	TEMP.	TYPE	ORIENTATION	TEMP.		



CONFORMS TO SA 1060  
YEAR 2010 ED 2011A  
REV: 2013-8440-51  
ITEM: 40  
SIGNATURE: [Signature] March 3/14

PA-155  
Stock  
P0135026

W-TENSILE WEIGHT  
W-TOTAL WEIGHT  
W-TENSILE JULETS  
W-TENSILE ENERGY FOR THE TEST SET  
W-TENSILE ENERGY FOR THE SECOND SET

BANGSANG VALIN STEEL  
TUBE CO., LTD

MILL TEST CERTIFICATE

100-1101110  
100-1101110

100-1101110  
100-1101110

CLIENT/PROJ	BANGSANG VALIN STEEL			CONTRACT NO	100-1101110	DATE	2011.03.14	PAGE	2 / 2	
PRODUCT	SEAMLESS STEEL PIPE			DELIVERY CONDITION	N					
GRADE	S275MR			HEAT TREATMENT						
TOTAL LENGTH	10000 mm			WEIGHT	1000 kg					
CHEMICAL COMPOSITION (%)										
TEST No. LOT No.	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S1	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S2	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S3	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S4	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S5	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S6	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S7	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S8	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S9	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
S10	C	Si	Mn	P	S	Al	Ni	Cr	Mo	Fe
	0.12	0.02	0.35	0.01	0.005			0.02		100
MECHANICAL PROPERTIES TEST										
TENSILE TEST			YIELD POINT			ELONGATION				
TEST No.	TEMP	Rm	Rp0.2	A	B	C	D	E	F	
100-1101110	20	360	235	15	10	5	5	5	5	
FLAW TEST										
TEST No.	TEMP	ACCEPTABLE	REMARKS							
100-1101110	20	ACCEPTABLE	REMARKS							

CONFORMS TO SA 106-15  
YEAR 2010 ED 2011A  
JOB # 2013-844D-51  
ITEM # 40  
SIGNED BY *[Signature]* March 3/14

HENGJIANG VALIN STEEL  
 TUBE CO., LTD  
 249 1880791-22  
 SEAMLESS STEEL LINE PIPE  
 SEE SPECIFICATION SHEET  
 GRADE  
 TOTAL BUNDLES 2

MILL TEST CERTIFICATE

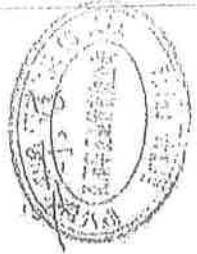
CONFORMING TO STANDARD 3.13

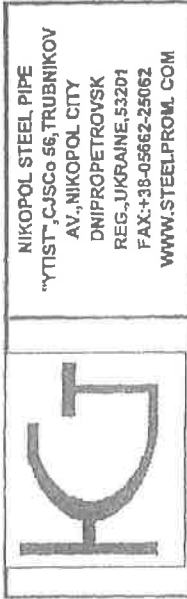
HENGJIANG VALIN STEEL  
 TUBE CO., LTD  
 249 1880791-22  
 SEAMLESS STEEL LINE PIPE  
 SEE SPECIFICATION SHEET  
 GRADE  
 TOTAL BUNDLES 2

CUSTOMER	En-Chen Steel Corporation	CERTIFICATE NO.	101998	NOTES	
CONTRACT NO.	249 1880791-22	P.O. NO.	101998	REMARKS	
PRODUCT	SEAMLESS STEEL LINE PIPE	INSULATED CONDITION	N		
SPECIFICATION	SEE SPECIFICATION SHEET	HEAT TREATMENT			
GRADE	20#(Q235B)	DIMENSIONS	Φ56 X 4.2 X 12000		
TOTAL BUNDLES	2	TOTAL LENGTH	10962.95	WT	TOTAL WEIGHT: 18364 MT

REMARKS: 1.ORGANMADE IN CHINA 2. ALL DIMENSIONS TO BE LISTED.

SPECIFICATION (SEE) Q235B SEAMLESS STEEL DATE:	HENGJIANG VALIN STEEL TUBE CO., LTD 249 1880791-22 SEAMLESS STEEL LINE PIPE SEE SPECIFICATION SHEET GRADE TOTAL BUNDLES 2	HENGJIANG VALIN STEEL TUBE CO., LTD 249 1880791-22 SEAMLESS STEEL LINE PIPE SEE SPECIFICATION SHEET GRADE TOTAL BUNDLES 2
The following certify that the material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.		
This certificate is issued by a computerized system and is valid with electronic signature. In case the owner of the certificate would misuse it, the manufacturer shall not be held responsible for any unlawful or not allowed use.		
Any electronic number modification will be subject to the law.		
If you need to assess the authenticity of this certificate, please do not hesitate to contact Hengjiang Valley Steel Tube Co., Ltd. Email: hvt@hengjiangvalin.com		
CUSTOMER THIRD PARTY:		
Quality Manager:		Certificate number: 20190922





NIKOPOL STEEL PIPE  
 "VTIST", CJSCo 56, TRUBNIKOV  
 AV., NIKOPOL CITY  
 DNIPROPETROVSK  
 REG., UKRAINE, 53201  
 FAX: +38-05662-25062  
 WWW.STEELPROML.COM

# MILL TEST REPORT

IN ACCORDANCE WITH EN 10204/3. 1B

NO. 302-B

DATE: 15.08.2006

BUYER:

SIZE: 1 1/2" SCH 80 SMLS (1.900" x 0.200")

Alko # P929

PURCHASE ORDER #

SPECIFICATION: ASTM A333/ ASME SA 333  
 NACE MR 0175-2002

GRADE: G6

Stock  
 P-132903

CONFORMS TO SA 333-6  
 YEAR 2010 ED 2011A  
 JOB # 2013-8440-51  
 ITEM # 40  
 SIGNED BY 25 April 17/14

HEAT NUMBER	LADLE ANALYSIS-STEEL											PRODUCT CHEMISTRY %			OTHER VALUES		
	C	Si	Mn	S	P	Cr	Ni	Cu	Mo	V	CE	Mn/C	Cm-Cu-Mo-Ni-V	max 1			
614348	0,19	0,22	0,52	0,023	0,018	0,02	0,02	0,02	0,01	<0,01	0,28	2,74	0,07	0,07			
613633	0,20	0,22	0,54	0,020	0,016	0,02	0,02	0,02	0,01	<0,01	0,30	2,70	0,07	0,07			
623806	0,18	0,23	0,52	0,024	0,014	0,02	0,01	0,03	0,01	<0,01	0,27	2,89	0,07	0,07			
623797	0,19	0,22	0,55	0,022	0,023	0,02	0,02	0,02	0,01	<0,01	0,29	2,89	0,07	0,07			

## MECHANICAL PROPERTIES

HEAT NUMBER	Beat No	YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	Elongation %	FLATTENING TEST	BEND TEST	IMPACT TEST CHARPY V-NOTCH L - 10x3,33 ft x lb			TEMP. °C	HYDRO. STATIC TEST (PSI)	NON-DESTRUCTIVE TEST METHOD USED	HARDNESS TEST
							1	2	3				
614348	2819	49200	71000	28	NONE	GOOD	15,1	16,8	16,8	-53°	NONE	EDDY CURRENT	<22HRC
613633	2841	47700	65000	31	NONE	GOOD	15,0	16,8	14,7	-53°	NONE	EDDY CURRENT	<22HRC
623806	2837	47600	69000	31	NONE	GOOD	15,4	16,8	16,3	-53°	NONE	EDDY CURRENT	<22HRC
623797	2834	49000	68000	34	NONE	GOOD	16,5	15,6	15,4	-53°	NONE	EDDY CURRENT	<22HRC

Normal size of longitudinal strip sample for stretching test: width, mm: 12,5±0,25, calculated length, mm:50

\* I CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED WITH THE ORDERED SPECIFICATION AND THAT THE TEST INFORMATION IS CORRECT AND CONTAINED IN THE RECORDS OF THE COMPANY

Senior control foremen

Prepared by

Mannesmannrohr Sachsen GmbH (A01) Mannesmannrohr Sachsen GmbH Mennoumannstraße 11 01610 Zellitz	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallourec Group	MATERIAL TEST REPORT (A02) (3.1 NACH EN 10204:2004) PARAGRAPH 10, C No. 1724/02/12 (A03) Page: 1 (5) Date: 27.03.2012
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1 5160 A106

(A01) Mannesmannrohr Sachsen GmbH	(A06.1) V&M-Order-No. 06085121 (A06.2) Suborder LA2160
(A06.1) Customer CCTF CORPORATION 5407-53RD AVENUE CA-T6B0G2 EDMONTON, AB/CANADA	(A07.2) Order-No. VM2052 Date 01.02.2012
(A07.2) Orderer VALLOUREC TUBES CANADA INC. / SUITE 101	(A07.3) Order-No. 4890987-00

Aico # PA-052

(B01, B02, B04) Description of the product	HOT FINISHED SEAMLESS LINE PIPE MAX. 10 % SHORT LENGTHS, NOT SHORTER THAN 17 FT RESIDUAL MAGNETISM DOES NOT EXCEED 30 GAUSS ENDS PLAIN, SQUARE CUT TUBE ENDS CLOSED BY PLASTIC PLUGS INSIDE WITHOUT RUST PROTECTION OUTSIDE DRY VARNISH DEVIATION FROM STRAIGHTNESS MAX. 4 MM ON 1 M AT EACH END, TOTAL DEVIATION OF TUBE LENGTH MAX. 0.2 % IN BUNDLES OF MAX. 4000 KG, WITH 6 STEEL BANDS AND 2 SLINGS (NYLON) FOR CONTAINER REPORT ELEMENTS: C, SI, MN, P, S, CU, CR, NI, MO, V, NB, B REFERENCE-NUMBER SKU NO 2520524 V & M FRANCE NO/ITEM LA2158/03 API SPEC. 5 L, PSL 1, 10.2007 ASTM A 106 M - 10 ASTM A 530 M - 04 A ASME SA 106, EDITION 2010 ASME SA 530 M, EDITION 2010 ASME BOILER AND PRESSURE VESSEL CODE, SECTION II, PART A, EDITION 2010 CSA Z 245.1:2009 NACE MR 0175/ISO 15156-2:2009/ EN ISO 15166-2:2009, ANNEX A.2.1.2 NACE STANDARD MR 0103-2010, PARAGRAPH 2.1 X 42 / GRADE B (ASTM A 106 M / ASME SA 106) / GRADE B (API 5L) / GRADE 200 (CSA Z245.1, CAT. I) AS ROLLED "SOOR SERVICE AS DEFINED IN PARAGRAPH 10 OF CSA-Z245.1. BUT WITHOUT HIC TEST. THESE PSL 1 PRODUCTS DO NOT CONFORM TO ANNEX H OF API 5L." STEEL MANUFACTURER IS HKM, DUISBURG, GERMANY	CONFORMS TO SA 106 B YEAR 2010 ED 2011 A JOB # 2013-8440-51 ITEM # 41 SIGNED BY: [Signature] April 17/14
---	--	--

Stock  
Po-133965

Mannesmannrohr Sachsen GmbH (A01) Mannesmannrohr Sachsen GmbH Mannesmannstrasse 11 01619 Zittau	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallourec Group	MATERIAL TEST REPORT (A02) (3.1 NACH EN 10204:2004) PARAGRAPH 16, C
		No. : 72429Zh12 (A03) Page: 2 / 5 Date: 27.08.2012

(A13) V&M Item	(A00) Cust. Item	(B14) Item text	(B00) Dimensions	(B10) Single length
3			NPS 1 IN X SCHED. 160,000 IN	FIXED LENGTH 20 FT SINGLE LENGTH TOLERANCE IN IN + 4,00 / - 0,00

(A13) V&M Item	(A00) Cust. Item	(B00) Quantity	(B11) Total length ft	(B13) Weight lbs
3		120	2.400,00	6.914

(071)

HEAT CHEMICAL ANALYSIS

(B07.1) Heat	(B16) Process	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %	Mo %
min		-	0,100	0,29	-	-	-	-	-	-	-
max		0,280	0,500	1,09	0,030	0,0350	-	0,400	0,400	0,400	0,150
357304	Oxygen (BOF)	0,190	0,200	0,74	0,012	0,0020	0,027	0,040	0,120	0,070	0,020

(B07.1) Heat	V %	Ti %	Nb/Cb %	Co %	B %	CQ 24 %	EF 14 %	EF 02 %				
min												
max	0,080	0,0400	0,110	-	0,0010	,40	1,00	0,15				
357304	0,001	0,0040	0,001	0,0050	0,0002	,38	0,25	0,01				

CQ 24	$CEV = C + F \times (Mn/6 + Si/24 + Cu/16 + Ni/20 + (Cr + Mo + V + Co)/6 + 5B)$
EF 14	$EF = Cr + Mo + Ni + Cu + V$
EF 02	$EF = V + Ti + Nb$

Heats fully killed

E-F3 = NB + V = MAX. 0,06%  
E-F3 = 0,006% (357304)

(072)

PRODUCT CHEMICAL ANALYSIS

CONFORMS TO SA	106-B
YEAR	2010 ED 2011 A
JOB #	2013-8440-57
ITEM #	41
SIGNED BY	28 April 17/14

Mannesmannrohr Sachsen GmbH (n01) Mannesmannrohr Sachsen GmbH Mannesmannstrasse 11 01618 Zolthofen	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Valloire Group	MATERIAL TEST REPORT (A12) (3.1 NACH EN 10204:2004) PARAGRAPH 16, C
		No. : 724292h12 (A03) Page: 3 / 5 Date: 27.08.2012

(c72)  
**PRODUCT CHEMICAL ANALYSIS**

(007.1) Heat	(c00.1) Test Place	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %	Mo %
min		-	0.100	0.29	-	-	-	-	-	-	-
max		0.280	0.500	1.00	0.030	0.0360	-	0.400	0.400	0.400	0.60
357384		0.169	0.218	0.72	0.012	0.0010	0.020	0.045	0.118	0.070	0.021
357384		0.170	0.217	0.72	0.012	0.0010	0.026	0.045	0.116	0.078	0.021

(007.1) Heat	(c00.1) Test Place	V %	Ti %	Nb/Cb %	Co %	B %				
min		-	-	-	-	-				
max		0.080	0.0400	0.110	-	0.0010				
357384		0.002	0.0030	0.002	0.0050	0.0002				
357384		0.002	0.0030	0.002	0.0050	0.0002				

CHECK ANALYSIS ON 2 TUBES PER HEAT

**TENSILE TEST RESULTS**

Type (c10.1)	FULL SECTION TEST SPECIMEN
Test temperature (c03)	ROOM TEMPERATURE
Direction (c77)	longitudinal

(007.1) Heat	(c00.1) Test Place	(c10) Dimension	(c11) YS	(c12) TS	(c13) Elong.	(c14.1) Ratio			
		mm	R <sub>10.8</sub> pel	R <sub>m</sub> pel	2 <sup>s</sup> %	R/R <sub>m</sub>			
min		-	42000	60000	24.0	-			
max		-	-	-	-	-			
357384	60060	33.50X06.25	48021	71938	48.7	0.68			

HARDNESS TEST WITH FREQUENCY AS FOR THE TENSILE TESTS

**HARDNESS TEST RESULTS**

CONFORMS TO SA	106-B
YEAR	2010 ED 2011A
JOB #	2013-8440-51
ITEM #	41
SIGNED BY	DA April 17/14

Mannesmannrohr Sachsen GmbH (A01) Mannesmannrohr Sachsen GmbH Mannesmannwerkstatt 11 01619 Zöllschau	 <b>VALLUREC &amp; MANNESMANN TUBES</b> Vallourec Group	MATERIAL TEST REPORT (A02) (3.1 NACH EN 10204:2004) PARAGRAPH 10, C
		No. : 724202H12 (A03) Page: 4 / 5 Date: 27.06.2012

**HARDNESS TEST RESULTS**

(007.1) Head	(008.1) Test Place	(021) Value HB	(031) Value HB	(031) Value HB						
min										
max		200.0	200.0	200.0						
357384	00868	145.0	144.0	140.0						

(045)


**OTHER TESTS ON PIPE**

Test	Conditions	Test rate	Result
HEAT TREATMENT	HOT FINISHED IN THE RANGE OF NORMALIZING TEMPERATURE		
HYDROSTATIC TEST	3000 PSI, HOLDING TIME 6 SEC.	EACH PIPE/TUBE	NO LEAKAGE
FLATTENING TEST			SATISFACTORY
BENDING TEST			SATISFACTORY
APPEARANCE AND DIMENSIONS (D01)		EACH PIPE/TUBE	SATISFACTORY
VERIFICATION TEST		EACH PIPE/TUBE	SATISFACTORY
HARDNESS TEST		HB MAX. 200,0	
HARDNESS TEST		HRC MAX. 22	GUARANTEED
PIPE PRODUCTION METHOD	SEAMLESS, HOT-ROLLED		

- EDDY CURRENT TEST ACC. TO CSA Z 246.1: SATISFACTORY
- KILLED STEEL
- HYDROSTATIC TEST: 20,7 MPA, HOLDING TIME 6 SEC. EACH PIPE/TUBE; NO LEAKAGE

(A04, B06)

**MARKING, IDENTIFICATION**

3 	PAINT STENCILED ON ONE SIDE MANUFACTURER MANUFACTURER'S MARK SPEC. 5L API-MONOGRAM 6L0150.5 MONTH/YEAR 33,4 X 6,36 NW 1 X SCHED.160 TERMS OF DELIVERY PSL 1/A106/SA106/Z245.1-09 X42 / B / B / Z50 CAT I PROCESS OF MANUFACTURE SMLS 9S HEAT-NO. TEST PRESSURE BAR TEST PRESSURE PSI 3000 NDE TUBE/PIPE LENGTH MM TUBE/PIPE LENGTH FT PIPE NO. (TALLY-NR.) 85665121 V&M ITEM-NO 3 WA GERMANY CUSTOMER ORDER-NO. VM2852 ORDER-NO. USER 4800087-00 MANUFACTURER'S NAME
--	--

DATE: 06/12  
 TUBE NUMBER: 1 - 120

(301)  
 The supplied products are in compliance with the requirements of the order

CONFORMS TO SA	106-B
YEAR	2010-ED 2011A
JOB #	2013-8440-51
ITEM #	41
SIGNED BY	08 April 17/14



Mannesmannrohr Sachsen GmbH <small>(A01)</small> Mannesmannrohr Sachsen GmbH Mannesmannstrasse 11 01010 Zittau	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallourec Group	MATERIAL TEST REPORT <small>(A02)</small> (3.1 NACH EN 10204:2004) PARAGRAPH 16, C No. : 72420zh12 <small>(A03)</small> Page: 6 / 6 Date: 27.08.2012
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(A05, 202, 203)

Date	27.08.2012
Validated by	Inspection Representative
	RACZ <i>Ulrike</i>
☎	(03525) 792318
📠	(03525) 791140
@	ULRIKE.RACZ@SMP-TUBES.DE
Stamp	

Indication in parentheses correspond to attributes according to EN 10180

This test result and certification responsibility may neither be modified nor used for other products. Changes are regarded as indication of documents and will be subject to external prosecution.



Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: +49.5254.81-0 Fax: +49.5254.1.13666

**BENTELER**

Steel/Tube

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

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

VAN LEEUWEN PIPE & TUBE  
(CANADA) INC.  
2875-64 AVENUE  
EDMONTON, AB T6P 1R1  
CANADA

Dokument-Nr.: 41-718541/001/P

Document No.:  
No. du document:

Kunden-Bestell-Nr.:  
Purchase Order No.:  
No. de commande du client:

Benteler Auftrags-Nr.: 1578490  
Benteler Order No.:  
No. de commande Benteler:

Versandanzeigen-Nr.: 4119764  
Dispatch Note No.:  
No. d'avis d'expédition:

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

Prüf-Nr.:

Inspection No.:

Hersteller: Warmrohrwerk/Zieherlei  
Manufacturer:  
Producteur:

Herstellerzeichen:  
Manufacturer's brand:  
Marque du producteur:

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

Stahlschmelzungsverfahren: ELEKTROSTAHL  
Steelmaking process: ELECTRIC FURNACE  
Procédé d'élaboration de l'acier: FOUR ÉLECTRIQUE

Lieferbedingungen:  
Terms of delivery:  
Conditions de livraison:

ASME SA-106, ASME Section II Part A Addenda 2011a, S6, ASTM-A 106-2011, S6, API Specification 5L Forty-Fourth Edition, October 2007, ISO 3183:2007, PSL 1, incl. ADDENDUM 3, CSA Standard Z245.1-07 Category I, Sour Service, ANS/INACE MR0175/ISO 15156-1:2009, ANS/INACE MR0175/ISO 15156-2:2009

Maße - Toleranzen:  
Dimensions-tolerances:  
Dimensions-tolérances:

ASME B36.10M-2004, ASME SA-530, ASME Section II Part A Edition 2010 Addenda 2011a, ASTM-A 530-2004a

Stahlsorte:

GRADE 290, GRADE B, GRADE X 42

Steel grade:

Nuance d'acier:

Lieferzustand:

Hot rolled

Delivery condition:

État de livraison:

Produktkennzeichnung:

FS: BENTELER Z.245.1-07 - ISO 3183 - A 106-S6 - SA-106-S6 Spec 5L-0151.1 API SIGN 0912

Product marking:

PSL1 B/X42/290 SS HEAT-NO. TEST PRESSURE NDE DIMENSIONS WA GERMANY P.O. 45001557

Marquage du produit:

AEZ = Ätzbleibbeschriftung, Etching ink marking, Gravure à l'encre, PK = Farbkennzeichnung, colour marking, marquage par couleur, FSD = Farbstahldrucker, Colour jet printer, Impprimante à jet d'encre de couleur, LK = Laserkennzeichnung, Laser marking, Marquage laser, PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette, FS = Prägestempel, die stamp, marquage par poinçonnage, TS = Tintenstrahlkennzeichnung, ink jet spray marking, imprimante à jet d'encre

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Alco # P953

CONFORMS TO SA	106-B
YEAR	2010 ED 2011A
JOB #	2013-8440-51
ITEM #	43
SIGNED BY	DA April 17/14



VLQA Approved

ABNAHMEPRÜFZEUGNIS EN 10204-3.1  
 INSPECTION CERTIFICATE EN 10204-3.1  
 CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: 41-718541/001/P  
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**Alco#P953**

Pos.	Stück	Maße	Länge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachlängen
Item	Number	Dimensions	Length	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths
Poste	Nombre	Dimensions	Longueur	Poids	No. de coulée	Pression d'épreuve	Série de no. des tubes	Longueurs multiples
		feet	feet	lbs		PSI		
0001	976	1" NPS * Sched. 80 18 FT - 22 FT	19468,77	41562	573889	3000	5	
0002	943	1/2" NPS * Sched. 80 18 FT - 22 FT	19888,16	21418	574021	3000	5	
0003	754	3/4" NPS * Sched. 80 18 FT - 22 FT	15460,96	23303	574179	3000	5	
0005	386	1" NPS * Sched. 160 18 FT - 22 FT	8358,27	23700	574021	3000	5	
0006	517	3/4" NPS * Sched. 40 18 FT - 22 FT	10380,71	12037	574020	3000	5	
0007	224	1 1/2" NPS * Sched. 40 18 FT - 22 FT	4872,44	13144	217117	3000	5	
0010	294	3/4" NPS * Sched. 160 18 FT - 22 FT	6292,65	12518	574020	3000	5	

CONFORMS TO SA	1068
YEAR	2010 ED 2011A
JOB #	2013-8440-51
ITEM #	43
SIGNED BY	28 April 17/14

Stock  
 Po-133198

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

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	T1	B
Item	Heat No.													
Poste	No. de coulée													
0001	573889	0,130	0,200	0,74	0,011	0,002	0,10	0,02	0,06	0,06	0,002	0,011	0,002	0,0001
0002	574021	0,130	0,180	0,76	0,007	0,002	0,13	0,03	0,09	0,08	0,002	0,012	0,001	0,0001
0003	574179	0,120	0,220	0,73	0,008	0,001	0,11	0,03	0,05	0,06	0,002	0,013	0,002	0,0001
0005	574021	0,130	0,180	0,76	0,007	0,002	0,13	0,03	0,09	0,08	0,002	0,012	0,001	0,0001
0006	574020	0,140	0,170	0,75	0,006	0,002	0,10	0,03	0,08	0,07	0,002	0,011	0,001	0,0001
0007	217117	0,125	0,210	0,73	0,008	0,002	0,08	0,03	0,07	0,10	0,002	0,012	0,002	0,0001
0010	574020	0,140	0,170	0,75	0,006	0,002	0,10	0,03	0,08	0,07	0,002	0,011	0,001	0,0001

ABNAHMEPRÜFZEUGNIS EN 10204-3.1  
 INSPECTION CERTIFICATE EN 10204-3.1  
 CERTIFICAT DE RECEPTION EN 10204-3.1

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 No. du certificat:

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

Formelergebnisse / Formula results / Résultats des formules

Pos.	Schmelzen-Nr	1. Formel	2. Formel	3. Formel	4. Formel
Item	Heat No.	1. Formula	2. Formula	3. Formula	4. Formula
Poste	No. de coulée	1. Formule	2. Formule	3. Formule	4. Formule
0001	573889	0,286	0,263	5,692	0,242
0002	574021	0,300	0,273	5,846	0,332
0003	574179	0,277	0,247	6,083	0,252
0005	574021	0,300	0,273	5,846	0,332
0006	574020	0,301	0,284	5,357	0,282
0007	217117	0,280	0,258	5,840	0,282
0010	574020	0,301	0,284	5,357	0,282

CONFORMS TO SA 106-B  
 YEAR 2010 ED 2011A  
 JOB # 2013-8440-51  
 ITEM # 43  
 SIGNED BY [Signature] April 17/14

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

Pos.	Schmelzen-Nr	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
Item	Heat No.													
Poste	No. de coulée													
0001	573889	0,120	0,190	0,73	0,009	0,002	0,10	0,02	0,05	0,05	0,001	0,014	0,002	0,0002
0001	573889	0,120	0,190	0,73	0,009	0,002	0,10	0,02	0,05	0,05	0,001	0,014	0,002	0,0001
0002	574021 ←	0,130	0,180	0,75	0,006	0,002	0,13	0,04	0,08	0,09	0,001	0,015	0,001	0,0001
0002	574021	0,130	0,180	0,76	0,006	0,002	0,13	0,04	0,08	0,09	0,001	0,015	0,001	0,0001 ←
0003	574179	0,130	0,220	0,73	0,007	0,001	0,11	0,04	0,04	0,06	0,001	0,015	0,002	0,0004
0003	574179	0,120	0,220	0,73	0,007	0,001	0,11	0,04	0,04	0,06	0,001	0,015	0,002	0,0004
0005	574021	0,130	0,180	0,75	0,006	0,002	0,13	0,04	0,08	0,09	0,001	0,015	0,001	0,0001
0005	574021	0,130	0,180	0,76	0,006	0,002	0,13	0,04	0,08	0,09	0,001	0,015	0,001	0,0001
0006	574020	0,150	0,180	0,76	0,006	0,002	0,11	0,03	0,08	0,08	0,001	0,016	0,002	0,0001
0006	574020	0,140	0,180	0,75	0,005	0,002	0,11	0,03	0,08	0,08	0,001	0,015	0,002	0,0001

ABNAHMEPRÜFZEUGNIS EN 10204-3.1  
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Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos.	Schmelzen-Nr.	C	SI	MIN	P	S	CR	MO	NI	CU	V	NB	TI	B
Item	Heat No.													
Poste	No. de coulée													
0007	217117	0,120	0,200	0,73	0,008	0,002	0,08	0,03	0,07	0,12	0,001	0,015	0,002	0,0001
0007	217117	0,120	0,200	0,73	0,008	0,002	0,08	0,03	0,07	0,13	0,001	0,016	0,002	0,0001
0010	574020	0,150	0,180	0,76	0,006	0,002	0,11	0,03	0,08	0,08	0,001	0,016	0,002	0,0001
0010	574020	0,140	0,180	0,75	0,005	0,002	0,11	0,03	0,08	0,08	0,001	0,015	0,002	0,0001

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

Formalerggebnisse / Formula results / Résultats des formules

Pos.	Schmelzen-Nr	1. Formel	2. Formel	3. Formel	4. Formel
Item	Heat No.	1. Formula	2. Formula	3. Formula	4. Formula
Poste	No. de coulée	1. Formule	2. Formule	3. Formule	4. Formule
0001	573889	0,272	0,243	6,083	0,221
0001	573889	0,272	0,242	6,083	0,221
0002	574021	0,300	0,274	5,769	0,341
0002	574021	0,302	0,275	5,846	0,341
0003	574179	0,288	0,268	5,615	0,251
0003	574179	0,278	0,249	6,083	0,251
0005	574021	0,300	0,274	5,769	0,341
0005	574021	0,302	0,275	5,846	0,341
0006	574020	0,315	0,304	5,066	0,301
0006	574020	0,303	0,288	5,357	0,301
0007	217117	0,276	0,245	6,083	0,301
0007	217117	0,277	0,246	6,083	0,311
0010	574020	0,315	0,304	5,066	0,301
0010	574020	0,303	0,288	5,357	0,301

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**Prüfergebnisse / Test results / Résultats des essais**

Die Rohre sind auf Dichtheit geprüft durch:  
 The tubes have been submitted to a leak tightness test by:  
 Les tubes ont passé un contrôle d'étanchéité par:

PASSED

Die Rohre wurden zerstörungsfrei geprüft:  
 The tubes are non destructively tested:  
 Les tubes ont passé un essai non destructif:

PASSED

Augensichtkontrolle:  
 Visual inspection:  
 Examen visuel:

PASSED

Biegeversuch:  
 Bending test:  
 Essai de cintrage:

PASSED

Maßkontrolle:  
 Dimensions examination:  
 Vérification des dimensions:

PASSED

CONFORMS TO SA 106-B  
 YEAR 2010 ED 2011A  
 JOB # 2013-8440-51  
 ITEM # 43  
 SIGNED BY DA April 17/14

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

Die Probenahme erfolgte an Vielfachlängen.  
 The sampling was carried out on multiple lengths.  
 L'échantillonnage était réalisé aux longueurs multiples.

**Zugversuch längs Vollprobe / Tensile test longitudinal Full section test specimen / Essai de traction longitudinale Eprouvette a section complete**

Pos. Proben-Nr. Schmelzen-Nr. Probenabmessung Streckgrenze Zugfestigkeit Dehnung  
 Item Specimen No. Heat No. Specimen dimensions Yield strength Tensile strength Elongation  
 Poste No. de l'éprouvette No. de coulée Dimensions de l'éprouv. Limite élastique Résistance à la traction Allongement

Anforderungen Requirements Exigences	mm	ReH	Rm	1. Formel			
		N/mm <sup>2</sup> MIN 290	N/mm <sup>2</sup> 415-625	%	MIN 30		
0001	000001	573889	33,45 X	4,60	348	477	50
0002	000001	574021	← 21,30 X	3,75	371	501	40
0003	000001	574179	26,85 X	4,00	361	482	44
0006	000001	574020	26,85 X	2,95	379	500	42

Einschnürung  
 Area reduction  
 Coefficient de striction

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Zugversuch längs Gewicht und Länge / Tensile test longitudinal Weight and length / Essai de traction longitudinale Poids et longueur

Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	Streckgrenze	Zugfestigkeit	Dehnung	Einschnürung
Item	Specimen No.	Heat No.	Specimen dimensions	Yield strength	Tensile strength	Elongation	Area reduction
Poste	No. de l'éprouvette	No. de coulée	Dimensions de l'éprouv.	Limite élastique	Résistance à la traction	Allongement	Coefficient de striction
Anforderungen			ReH	Rm	A2"		
Requirements			N/mm <sup>2</sup>	N/mm <sup>2</sup>	%		
Exigences		g mm	MIN 280	415-625	MIN 30		
0005	000001	574021	1.689,40 408	300	457	48	
0007	000001	217117	1.629,90 411	356	489	54	
0010	000001	574020	1.200,10 403	331	468	44	

1. Formel  
 1. Formula  
 1. Formule

Härteprüfung / Hardness test / Essai de dureté

Pos.	Proben-Nr.	Schmelzen-Nr.	Härte			
Item	Specimen No.	Heat No.	Hardness	HRC	HB	HV
Poste	No. de l'éprouv.	No. de coulée	Dureté		HRB	HBW
Anforderungen						
Requirements						
Exigences				MAX 200		
0001	000001	573889		139		
0002	000001	574021		148		
0003	000001	574179		141		
0005	000001	574021		140		
0006	000001	574020		147		
0007	000001	217117		144		
0010	000001	574020		138		

CONFORMS TO SA	106-B
YEAR	2010 ED 2011A
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Restmagnetismus / Demagnetize / Démagnétiser

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



Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**  
Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**  
INSPECTION CERTIFICATE EN 10204-3.1  
CERTIFICAT DE RECEPTION EN 10204-3.1

**Dokument-Nr.:** 41-718541/001/P  
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Vermerk / Remark / Remarque

NACE Standard: Hardness acc. to ANSI/NACE MR0175/ISO 15156; HRC max 22., The material meets the requirements of NACE MR0103, Region 3, in accordance to Figure 1 and Appendix A.2, ANSI/NACE MR0175/ISO 15156-2:2009; Certificate remarks: The Material is Aluminium deoxidized and inclusion shape controlled with Calcium-Silicon treatment, it is the end user's responsibility to ensure that all environmental requirements as well as the requirements regarding engineering, construction and operation of facilities are fulfilled in the country of use. Fit for purpose of the parts as well as homologation is not the scope of this contract., This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-07 meets the requirement for micro hardness of max. 248 HV 500 gf., No weld repair has been carried out; Bend test: mandrel diameter 12D; Bending angle: 90 °

Grain size: acc. to ASTM-E 112, Grain size 6 and finer: Item 001 Heat no. 573889 = 10, Item 002 Heat no. 574021 = 10 - 11, Item 003 Heat no. 574179 = 10, Item 005 Heat no. 574021 = 9 - 10, Item 006 Heat no. 574020 = 10, Item 007 heat no. 217117 = 10, Item 010 Heat no. 574020 = 9.

Verkäufer(in) / Salesman/ woman in charge / Personne chargée : Mrs Schöneweis, Tel.: 05254/81-4234, Fax: 4289

Paderborn Schloß Neuhaus, 12.10.2012, TEL.: 05254.81-1765 FAX: 05254.81-1752

  
Abnahmepersonbeauftragter  
Inspection representative  
Contrôleur

THOMAS GOLLAN / GUT

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



# MILL TEST CERTIFICATE

## SHANGHAI PUFA STAINLESS STEEL PIPE FACTORY

7 Hongye Road, Tang Town, Pudong New District, Shanghai, China

ISO 9001:2008 MOODY

REGISTRATION No.: 110703068

CERTIFICATE NO.: 13-7-89  
 PURCHASER: SC MFG Group  
 INSTITUTE: INST. INSTITUTE - STICK  
 COMMODITY: Seamless Stainless Steel Tube OD Polished to 320Grit  
 CONTRACT NO.: SC-15531  
 SPECIFICATION: ASTM A213-11a/ASME SA213-08/ASTM A269-10 EAW  
 DATE OF REPORT: 2013.7.15  
 PO - 134762.

Steel Grade	Heat No.	Lot No.	Dimensions			Process	Delivery Condition	Macroscopic Inspection	
			O.D. (in)	W.T. (in)	Length (ft)			End Cut	Appearance
TP316/ TP316L	YX1302-681		1/2	0.035	20	Cold-Drawn	Solution - Annealed	Passed	Passed

### Chemical Composition (W.T. %)

Element	C	Mn	P	S	Si	Cr	Ni	Mo	Ti
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	16.0~18.0	10.0~14.0	2.00~3.00	/
Ladle Analysis	0.019	0.73	0.033	0.001	0.40	16.65	10.05	2.04	/
Product Analysis	0.022	0.70	0.035	0.001	0.40	16.47	10.30	2.14	/

### Mechanical Properties

Test Item	Y.S. (MPa) Rp0.2	T.S. (MPa) Rm	EL. (%) In 2 in	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test
Requirements	≥205	≥515	≥35	/	HRB≤80	/	22%	e=0.09	
Test Results	260/270	590/600	61/62	/	75/77	/	Passed	Passed	Passed

### Non Destructive Tests

Test Item	Eddy Current Test	Ultrasonic Test	Hydrostatic Test	Inter-granular Corrosion Test
Requirements	ASTM E 426	/	/	ASTM A262 E
Test Results	Passed	/	/	OK

### Remarks:

Materials is NACE MR0103-2007 compliant  
 Tubes tested per ASTM A1016-11a  
 All tubes annealed to above 1900 Deg F and water quenched  
 below 800 Deg F in 3 minutes- No weld repair performed  
 In Compliance with EN 10204-3.1  
 Materials is NACE MR0175/ISO 15156-2003 compliant  
 Tubes Made in CHINA

We hereby certify that the material described herein has been made and tested completely in accordance with the above specification and with the requirements of the purchase order or contract.	Prepared by: QC Manager
Approved by: General Manager	JOB # 2013-844D-51 ITEM # 44 SIGNED BY XA May 1/14

CONFORMS TO SA 213 TP 316/316L  
 TESTED 2010 ED 2011A

3/8" x 20 BWS Tubing

CONFORMS TO SA 313 TP 316/316L  
 YEAR 2010 ED 2011A  
 JOB # 2013-844D-51  
 ITEM# 45  
 SIGNED BY DA May 1/14

# MILL TEST CERTIFICATE

## SHANGHAI PUFA STAINLESS STEEL PIPE FACTORY

7 Hongye Road, Tang Town, Pudong New District, Shanghai, China

ISO 9001:2008 MOODY

REGISTRATION No.: 110703068

CERTIFICATE NO.: 11-9-28  
 PURCHASER: SC MFG Group  
 COMMODITY: Seamless Stainless Steel Tube OD Polished to 240Grit  
 CONTRACT NO.: SC-15310  
 SPECIFICATION: ASTM A213-10/ASME SA213-08/ASTM A269-10 EAW  
 DATE OF REPORT: 2011.9.12

Steel Grade	Heat No.	Lot No.	Dimensions			Process	Delivery Condition	Macroscopic Inspection	
			O.D. (in)	W.T. (in)	Length (ft)			End Cut	Appearance
TP316/ TP316L	YX1102-529	←	3/8	0.035	20	Cold-Drawn	Solution -Annealed	Passed	Passed

### Chemical Composition (W.T. %)

Element	C	Mn	P	S	Si	Cr	Ni	Mo	Ti
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	16.0~18.0	10.0~14.0	2.00~3.00	/
Ladle Analysis	0.020	0.68	0.035	0.001	0.53	16.52	10.08	2.06	/
Product Analysis	0.026	0.64	0.038	0.003	0.42	16.86	10.28	2.05	/

### Mechanical Properties

Test Item	Y.S. (MPa) Rp0.2	T.S. (MPa) Rm	EL. (%) In 2 in	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test
	≥205	≥515	≥35	/		/	22%		
	270/280	570/580	59/60	/		/	Passed		Passed

### Non Destructive Tests

Test Item	Requirements	Test Results
Eddy Current Test	Ultrasonic Test	
ASTM E 426	/	ASTM A262 E
Passed	/	OK

### Remarks:

Materials is NACE MR0103-2007 compliant  
 Tubes tested per ASTM A1016-08  
 All tubes annealed to above 1900 Deg F and water quenched  
 below 800 Deg F in 3 minutes- No weld repair performed  
 In Compliance with MIL-P-24691 / 3  
 In Compliance with RoHS Directive 2008/35/EC  
 In Compliance with EN 10204-3.1  
 Tubes Made in CHINA

We hereby certify that the material described herein has been made and tested completely in accordance with the above specification and with the requirements of the purchase order or contract.

Prepared by:

QC Manager

Approved by:

General Manager

# ALCO GAS & OIL RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: DEVON CANADA CORP.		DESCRIPTION: Hookup 1 - Drain Vessel Package			ALCO JOB NUMBER: 2013-8440-51
DATE: April 3 2014	TECHNIQUE # USED: RT P#2 REV # 5		CODE: B31.3		
MATERIAL: P1	MAT'L THICKNESS: STD		EDITION: 2012	ADDENDA: -	
ACCEPTANCE: 10% RANDOM					

<b>1</b> NO. OF FILMS PER CASSETTE					
LEGEND:	* - WELDER SYMBOL	HL - HI LO	S - SLAG	CRACK	<input type="checkbox"/> SINGLE WALL EXPOSURE
	IP - INCOMPLETE PENETRATION	LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input checked="" type="checkbox"/> DOUBLE WALL EXPOSURE
	BT - BURN THROUGH	UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/> SINGLE WALL VIEWING
	IC - INTERNAL CONCAVITY	AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/> DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
XR1	2" SCH 80	37												✓	
XR2	3" SCH 40	8												✓	
XR3	2" SCH 80	36												✓	
XR4	2" SCH 80	5										2		✓	
XR5	2" SCH 80	8												✓	
XR6	2" SCH 80	8												✓	
XR7	2" SCH 80	36												✓	
XR8	2" SCH 80	36												✓	
XR9	3" SCH 40	36												✓	
XR10	4" SCH 40	8												✓	
XR11	4" SCH 40	41								1				✓	
XR12	6" SCH 40	5												✓	

**COSTING**

SOURCE TYPE:	IR 192			HRS.
STRENGTH:	41.8 Ci			8" FILM
SOD:	3.284"			17" FILM
OFD:	216"	2	4" SCH 40	PIPE
FILM TYPE:	AGFA D4 CLASS 1	2	3" SCH 40	PIPE
FOCAL SPOT SIZE:	.155"	7	2" SCH80	PIPE
		1	6" SCH 40	PIPE

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COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 36 \_\_\_\_\_

CUSTOMER: DEVON CANADA CORP	DESCRIPTION: Hookup 1 - Drain Vessel Package	ALCO JOB NUMBER: 2013-8440-51
DATE: JUNE 8 2014	TECHNIQUE # USED: RT P#2 REV # 5	CODE: B31.3
MATERIAL: P1	MAT'L THICKNESS: SCH 80	EDITION: 2012      ADDENDA - ACCEPTANCE: 10% RANDOM

1	NO. OF FILMS PER CASSETTE	LEGEND:	* - WELDER SYMBOL	HL - HI LO	S - SLAG	CRACK	<input type="checkbox"/>	SINGLE WALL EXPOSURE
			IP - INCOMPLETE PENETRATION	LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input checked="" type="checkbox"/>	DOUBLE WALL EXPOSURE
			BT - BURN THROUGH	UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING
			IC - INTERNAL CONCAVITY	AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
XR13	2" SCH 80	37												✓	
XR14	2" SCH 80	41												✓	

**COSTING**

SOURCE TYPE:	IR 192	HRS.	@
STRENGTH:	94 Ci	8" FILM	@
SOD:	3.284"	17" FILM	@
OFD:	.216"	PIPE	@
FILM TYPE:	AGFA D4 CLASS 1	PIPE	@
FOCAL SPOT SIZE:	.155"	2      2" SCH80	@
		PIPE	@

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COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES 6 TOTAL COSTS \$0.00



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HC DRAIN INLET ISO#'s 1-1 & 1-2

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G2 & G3

**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.**

David Glasgow  
QC INSPECTOR/ ALCO GAS & OIL

4/4/2014  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR

\_\_\_\_\_  
DATE

5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HC DRAIN INLET ISO #1-3

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G25

**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.**

*David Slurgow*

QC INSPECTOR ALCO GAS & OIL

4/3/2014

DATE

3<sup>RD</sup> PARTY INSPECTOR

DATE

AUTHORIZED INSPECTOR

DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HP FLARE GAS OUTLET ISO #2

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G2 & G3

**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.**

David Glasgow 4/4/2014  
QC INSPECTOR/ ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** CONDENSATE OUTLET ISO#'s 3-1 & 3-3

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G25

**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.**

David Glasgow 4/3/2014  
QC INSPECTOR/ ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

## CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** CONDENSATE OUTLET ISO #3-2

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 430 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G13 & G25

**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.**

David Blugan 5/27/2014  
QC INSPECTOR/ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE

5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

## CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** CONDENSATE OUTLET ISO #4

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 450 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G12 & G23

**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

4/4/2014

\_\_\_\_\_  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR

\_\_\_\_\_  
DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** CONDENSATE OUTLET ISO #5

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G25

**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.**

*David Hargrove*  
\_\_\_\_\_  
QC INSPECTOR/ ALCO GAS & OIL

4/3/2014  
\_\_\_\_\_  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR

\_\_\_\_\_  
DATE



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**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** PSV-1012A GAS RELIEF ISO #6

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 430 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G13 & G25

**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.**

*David Dwyer* 5/13/2014  
QC INSPECTOR/ ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** TRUCK-OUT CONNECTION ISO #7

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G25

**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.**

David Glasgow 4/3/2014  
QC INSPECTOR/ ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** FUEL GAS INLET ISO#'s 8-1 & 8-2

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 435 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 & G19

**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.**

David Alesgow 4/3/2014  
QC INSPECTOR/ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

## CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** VENT GAS CONNECTION ISO#'s 9-1 & 9-2

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 435 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 & G19

**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.**

David Glasgow 4/3/2014  
QC INSPECTOR/ ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE





5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HEAT MEDIUM SUPPLY ISO #10-1

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 430 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G13 & G25

**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.**

David Slusgow  
QC INSPECTOR/ ALCO GAS & OIL

5/13/2014  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR

\_\_\_\_\_  
DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HEAT MEDIUM SUPPLY ISO #10-2

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G11

**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.**

David Glusqew 4/3/2014  
QC INSPECTOR/ ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HEAT MEDIUM RETURN ISO #11

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G11

**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.**

David Glasgow 4/3/2014  
QC INSPECTOR/ALCO GAS & OIL DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

## CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HEAT MEDIUM RETURN ISO#'s 12-1 & 12-4

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 450 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G12 & G23

**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.**

*David Glasgow*

QC INSPECTOR/ALCO GAS & OIL

4/4/2014

DATE

3<sup>RD</sup> PARTY INSPECTOR

DATE

AUTHORIZED INSPECTOR

DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** HEAT MEDIUM RETURN ISO#'s 12-2 & 12-3

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 430 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** WATER **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** G13 & G25

**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.**

<u>David Husgar</u> QC INSPECTOR/ ALCO GAS & OIL	<u>5/13/2014</u> DATE
<u>3<sup>RD</sup> PARTY INSPECTOR</u>	<u>DATE</u>
<u>AUTHORIZED INSPECTOR</u>	<u>DATE</u>



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: 2013-8440-51

DESCRIPTION: UTILITY/INSTRUMENT AIR SUPPLY ISO#'s 13-1 & 13-2

NAME OF AUTHORIZED INSPECTION AGENCY:

TYPE OF TEST: HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

TEST PRESSURE: 435 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 & G19

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.

David Glasgow  
QC INSPECTOR/ ALCO GAS & OIL

4/3/2014  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR

\_\_\_\_\_  
DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

## CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-51

**DESCRIPTION:** SPOOLS FOR LIT-1010 & LIT-1010A  
ISO#'s 14-1, 14-2, 14-3 & 14-4

**NAME OF AUTHORIZED INSPECTION AGENCY:**

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 440 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 & G11

**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.**

*David Glasgow*  
\_\_\_\_\_  
QC INSPECTOR/ ALCO GAS & OIL

4/3/2014  
\_\_\_\_\_  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

\_\_\_\_\_  
DATE



RECORDING CHARTS  
GRAPHIC CONTROLS CANADA LTD.  
GANANOQUE, ONTARIO

GAS MEASUREMENT

Chart Rec # N 242E 1116450201

METER

PLATE

Gauges

G2, G3

April 4, 2014

ON M.  
19.

LOCATION

2013-8440-51

Remarks Iso\*1-1, Iso\*1-2

CMR P1500W100

Iso\*2

6 P.M. 7





RECORDING CHARTS  
GRAPHIC CONTROLS CANADA LTD.  
GANANOQUE, ONTARIO

GAS MEASUREMENT

Chart Rec # N 242E-11116450201

METE

PLATE  
Gauges

68, 625

April 3, 2014

ON M.  
19

LOCATION 2013-8440-51

Remarks Iso# 1-3, Iso# 3-1

CMR P1500W100

Iso# 3-3, Iso# 5, Iso# 7

2013-8440-50 Iso# 5

78 01

6 P.M.

6 A.M.

5

4

3

2

7

8

9

MIDNIGHT



RECORDING CHARTS  
GRAPHIC CONTROLS CANADA LTD.  
SARNANOQUE, ONTARIO

Chart Rec. GAS MEASUREMENT  
LEASER, SN 242E1116450201

PLATE  
Gauges  
513, 625

May 27, 2014

LOCATION 2013-8440-51

Remo #/I  
CMR 001M0051D

DIFFERENTIAL

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RECORDING CHARTS  
GRAPHIC CONTROLS CANADA LTD.  
GANANOQUE, ONTARIO

GAS MEASUREMENT

Chart Rec. 3/N 242E 1116480201

LEAK  
METER

PLATE  
Gauges

612, 623

April 4, 2014

ON M  
19

LOCATION

2013-8440-B1

Remarks

Iso # 4, Iso # 12-1

CMR P1500W100

Iso # 12-4

450 PSI

6 P.M.



RECORDING CHARTS  
GRAPHIC CONTROLS CANADA LTD.  
GANANIBOUE, ONTARIO

Chart Rec. S/N 242E VIII 6450201  
LEASE

PLATE Gauges  
G13, G25  
MAY 13, 2014

LOCATION 2013-8440-51

Remarks Iso # 6, Iso # 10-1

CMR P1500W100

Iso # 12-2, Iso # 12-3

SW pipe lines from Iso # 10

through bldg. Mr. 0002- UHG-10-2080

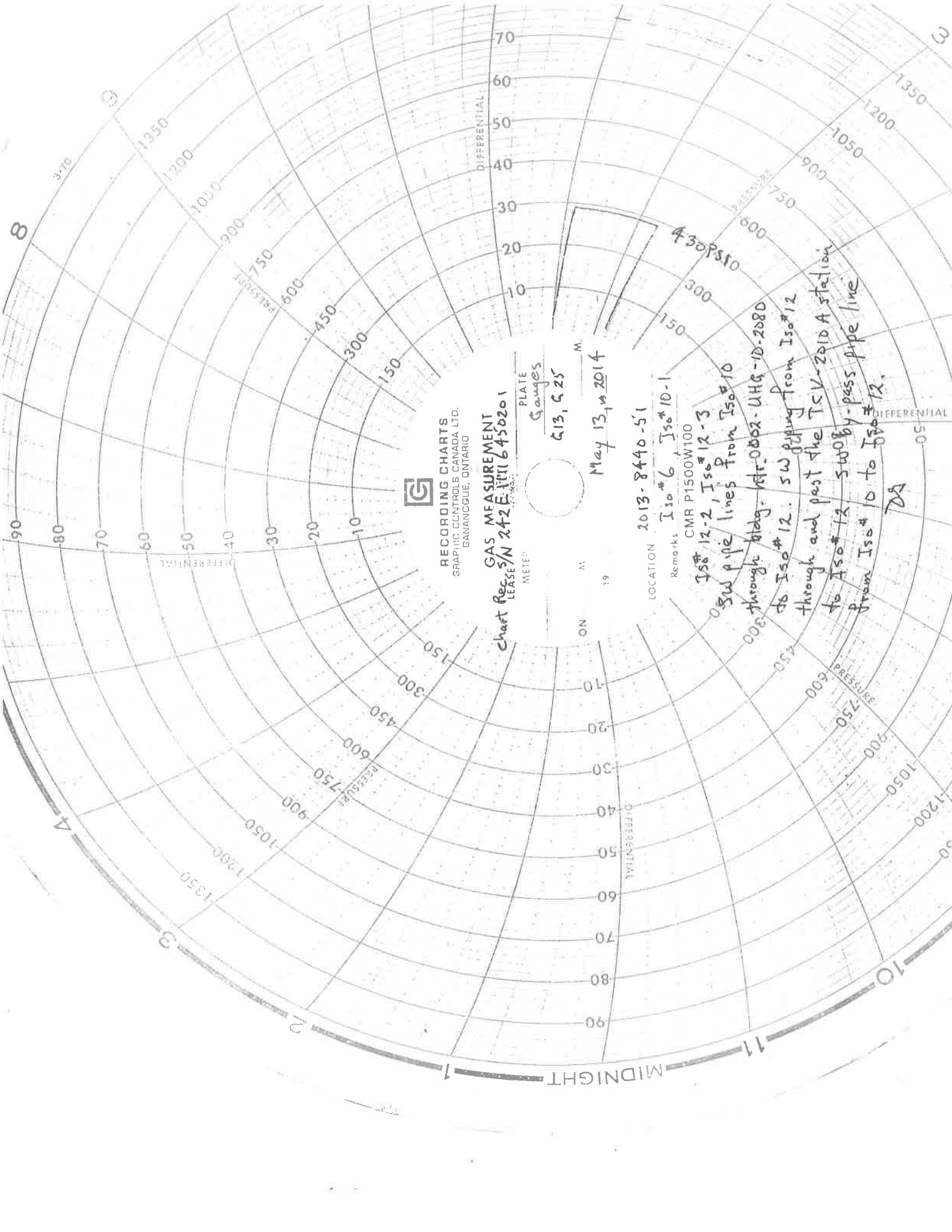
to Iso # 12. SW piping from Iso # 12

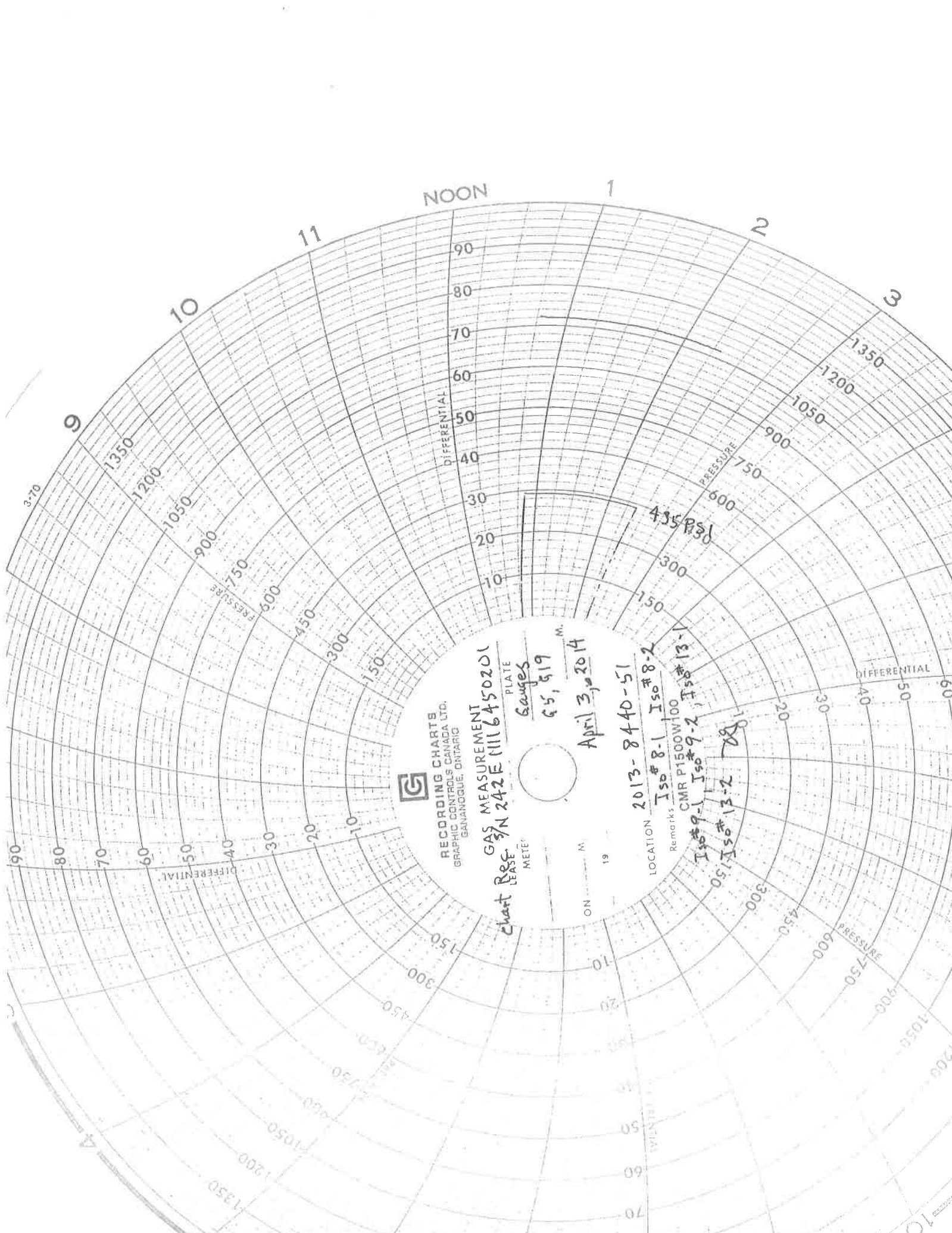
through and past the TSK-2010 A station

to Iso # 12. SW by-pass pipe line

from Iso # 10 to Iso # 12.

DA





**RECORDING CHARTS**  
 GRAPHIC CONTROLS CANADA LTD.  
 BANBROOK, ONTARIO

**GAS MEASUREMENT**

Chart Ref: **S/N 242E III 6450201**

PLATE  
**Gauges**

**65, 919**

**April 3, 2014**

LOCATION **2013-8440-51**

Remarks  
**Iso # 8-1, Iso # 8-2**

**CMR P1500W100**

**Iso # 9-1, Iso # 9-2, Iso # 13-1**

**Iso # 13-2**

METERS  
 61  
 NO

TWENTY

ONE

**RECORDING CHARTS**  
GRAPHIC CONTROLS CANADA LTD.  
GANANOQUE, ONTARIO

**GAS MEASUREMENT**  
Chart Re. LEASE #N 242E-11116450201  
METER

PLATE  
Gauges  
G8, G11

April 3, 2014 M.

LOCATION 2013-8440-51

Remarks: Iso #10-2, Iso #11  
CMR P1500W100  
Iso #14-1, Iso #14-2, Iso #14-3  
Iso #14-4 JRS

440851

6 P.M.

E.H.

# CORIX<sup>®</sup> Control Solutions

3/3

## Consolidated Pressure Safety Valve Test Certificate and Serial Number File

Work Order ID: SO95093-1  
 Item ID: 100460  
 Customer Name: Alco Gas & Oil  
 Customer PO ID: 134793 - 8440-5551  
 Sales Order Writer: Dale Haines

Formerly Barber Foss and Controls

As appropriate, ensure all units are specified as per customer's requirements.

<b>Model</b>	1-1/2" 1905-00F-1-CC-MS-31-RF-LA CONSOLIDATED RELIEF VALVE			
<b>Size Designation</b>	1.5	inches	<b>Test Media</b>	Water
<b>Set Pressure</b>	74 ✓	psig	<b>Service Media</b>	HC liquids
<b>CDTP</b>	74	psig	<b>O Ring Material</b>	n/a
<b>Superimposed Min BP</b>	0	psig	<b>O Ring Durometer</b>	n/a
<b>Superimposed Max BP</b>	0	psig	<b>Province</b>	AB
<b>Total Back Pressure</b>	0	psig	<b>Code Stamp</b>	UV
<b>Temperature</b>	60	F	<b>Code Case</b>	n/a
<b>Capacity</b>	81.00	GPM Water ✓		
<b>Tag</b>	PSV-2012A			
<b>Shop Requirements</b>	PSV-102A			
<b>Comments</b>				

<b>Serial Number</b>	8B67772	<b>Spring Number</b>	017CR
<b>Base Heat</b>	B08217-0295702	<b>Spring Range From</b>	74 To 87
<b>Nozzle Heat</b>	Y6608-4589401	<b>Manufacturers Hydrostatic Test Number:</b>	
<b>Bonnet Heat</b>	B07547-0295901	<b>Nozzle</b>	H
<b>Code Case</b>		<b>Base</b>	H
		<b>Checked By</b>	EB

### Conversion of Manufacturers Parts

Part Description	Reworked Dimension	Machined By	Checked By
------------------	--------------------	-------------	------------

<b>Washer Tolerance Accepted</b>	<input checked="" type="checkbox"/>	<b>EVT Number</b>	
<b>Washer Machined By</b>	EB	<b>Gauge Number</b>	002CE
<b>Stamped/Checked By</b>	EB	<b>Leakage Rate</b>	<input checked="" type="checkbox"/> Meets API 527 OR: _____ bubbles/min
<b>Assembled By</b>	EB	<b>Back Pressure Test Performed At</b>	
<b>Test Pressure 1</b>	74 psig	<input checked="" type="checkbox"/> 30 psig / 205 kPag	
<b>Test Pressure 2</b>	74	<input type="checkbox"/> 100 psig / 690 kPag	
<b>Test Pressure 3</b>	74	<input type="checkbox"/> Other _____	
<b>Reseat Pressure</b>	70	<input type="checkbox"/> Not Applicable	
<b>Blowdown</b>	4	<b>Tested By</b>	GC
<b>Simmer Point</b>	2/A	<b>Stamping Checked By</b>	EB
<b>Ring Setting Upper</b>	15N	<b>Test Date:</b>	2/12/14
<b>Ring Setting Lower</b>		<b>Witnessed By</b>	
<b>Liquid Trim Popping Pressure (if applicable)</b>	76		
<b>Comments</b>	BORLE .675		

The valve furnished on the above order has been inspected and found to be in accordance with specifications, drawings, and requirements of this order. Consolidated Pressure Safety Valves are manufactured by Dresser Flow Solutions and assembled by Corix Control Solutions

Form.105 Rev 12

**Phase # :** 2013-8440-01A  
**Phase Title:** Closed Hydrocarbon Drain Vessel

## 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	X	
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart	X	
13. PSV & Valve Cert.		N/A



A633713

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

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

- 1. Manufactured and certified by: ALCO GAS & OIL PRODUCTION EQUIPMENT LTD. ... 2. Manufactured for: DEVON CANADA CORPORATION ... 3. Location of installation: FERRIER CFP PROJECT ... 4. Type: HORIZONTAL CLOSED HYDROCARBON DRAIN VESSEL ... 5. ASME Code Section VIII Div 1: 2010 EDITION 2011a ADDENDA

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): 2 (b) Overall Length: 20'-0" S/S

Table with columns: Course(s), Material, Thickness, Long. Joint (Cat. A), Circum. Joint (Cat. A, B, & C), Heat Treatment. Row 1: 2, 78" ID, 10'-0", SA516-Gr.70MT, 0.375", 1/16", 1, FULL, 100%, 1, SPOT, 70%, N/A, N/A.

- 7. Heads: (a) SA-516-Gr.70MT (b) SA-516-Gr.70MT

Table with columns: Location (Top, Bottom, Ends), Thickness, Radius, Elliptical Ratio, Conical Apex Angle, Hemispherical Radius, Flat Diameter, Side to Pressure, Category A. Rows (a) and (b) for END.

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.)

- 9. MAWP: 50 PSIG (Internal) 15 PSIG (External) at max temp. 300°F (Internal) 300°F (External) Min. design metal temp. -49°F at 50 PSIG

- 10. Impact Test: NO-EXEMPT PER UCS-66 CURVE 'D' & FIG UCS-66.1, FLANGES PER UCS-66(g) & UCS-67(a) at test temperature of N/A

- 11. Hydro., Pneu., or comb. test press. HYDROSTATIC 65 PSIG Proof Test N/A

Items 12 and 13 to be completed for tube sections.

- 12. Tubesheet: Stationary, Floating, Diameter, Thickness, Attachment details. 13. Tubes: Diameter, Thickness, Attachment details.

Items 14-18 incl. To be completed for inner chambers of jacketed vessels or channels of heat exchangers.

- 14. Shell (a) Number of course (s): 22 (COIL) (b) Overall Length: 80'-10 3/4" S/S

Table with columns: Courses, Material, Thickness, Long. Joint (Cat A), Circum. Joint (Cat. A, B, & C), Heat Treatment. Rows 1, 2, 3 for NPS 2.

- 15. Heads: (a) SA-350LF2 CL1 NPS 2 CL300 RFWN (b) SA-350LF2 CL1 NPS 2 CL300 RFWN

Table with columns: Location (Top, Bottom, Ends), Thickness, Radius, Elliptical Ratio, Conical Apex Angle, Hemispherical Radius, Flat Diameter, Side to Pressure, Category A. Rows (a) and (b) for END.

If removable, bolts used (describe other fastening) N/A (Material spec. number grade, size, number)

**Form U-1 (Back)**

16. MAWP 246 PSIG 50 PSIG at max temp. 300°F 300°F Min. design metal temp. -49°F at 246 PSIG  
 (Internal) (External) (Internal) (External)

17. Impact Test NO – COIL & FLANGES EXEMPT PER UCS-66(g), UCS-67(a) & UHA-51(d)1 at test temperature of N/A  
 Indicate yes or no and the component(s) impact tested

18. Hydro., pneu., or comb. test press. Hydrostatic 320 PSIG Proof Test N/A

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
HC DRAIN INLET	1	NPS 6	CL150 RFWN	SA333-6	SA350LF2 CL1	0.432"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
HP FLARE GAS	1	NPS 6	CL150 RFWN	SA333-6	SA350LF2 CL1	0.432"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
COND OUTLET	1	NPS 4	CL150 RFWN	SA333-6	SA350LF2 CL1	0.337"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
DRAIN	1	NPS 3	CL150 RFWN	SA333-6	SA350LF2 CL1	0.300"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
VENT GAS OUT	1	NPS 2	CL150 RFWN	SA333-6	SA350LF2 CL1	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
FUEL GAS INLET	1	NPS 2	CL150 RFWN	SA333-6	SA350LF2 CL1	0.218"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
VENT	1	NPS 4	CL150 RFWN	SA333-6	SA350LF2 CL1	0.337"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL
UTILITY	1	NPS 2	CL150 RFWN	SA333-6	SA350LF2 CL1	0.344"	1/16"	N/A	UW16.1(c)	TYPE 1	SHELL

20. Supports: Skirt NO Lugs NONE Legs NONE Others SADDLES Attached WELDED TO SHELL  
 (Yes or No) (Number) (Number) (Describe) (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, Manufacturer's name and identifying number)  
N/A

22. Remarks NO – IMPACT TEST EXEMPT STUDS & NUTS PER FIG UCS-66 NOTE(c) / RT PER UW-11(a)5(b)  
AS BUILT DRAWING: D-2013-8444-01-001/002 & 002/002 R4/1 / VOLUME: 870 Ft<sup>3</sup>  
SEE ATTACHED U4 DATA REPORT

**CERTIFICATE OF SHOP COMPLIANCE**

We certify that the statements in this report are correct and that all details of design, material, construction and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

U Certificate of Authorization 14259 Expires OCTOBER 7, 2016  
 Date MAY 29, 2014 Name Alco Gas & Oil Production Equipment Ltd. Signed [Signature]  
 (Manufacturer) (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 MAY 29, 2014 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date MAY 29, 2014 Signed [Signature] Commissions AB 268 NB 13043 A, B  
 (Authorized Inspector) (National Board (incl endorsements) State, Province and number)

**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 BOILER AND PRESSURE VESSEL CODE Section VIII, Division 1. U Certificate of Authorization No. \_\_\_\_\_ Expires \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ Signed \_\_\_\_\_  
 (Assembler) (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 the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of \_\_\_\_\_ By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date \_\_\_\_\_ Signed \_\_\_\_\_ Commissions \_\_\_\_\_  
 (Authorized Inspector) (National Board (incl endorsements) State, Province and number)

A633713

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

1. Manufactured and certified by ALCO GAS & OIL PRODUCTION EQUIPMENT LTD. - 5203 75TH STREET, EDMONTON, AB T6E 5S5, CANADA
2. Manufactured for DEVON CANADA CORPORAITON - SUITE 2000, 400 3RD AVENUE SW, CALGARY, AB, T2P 4H2
3. Location of installation FERRIER CFP PROJECT (LSD: 11-02-039-08 W5M)
4. Type HORIZONTAL CLOSED HYDROCARBON DRAIN VESSEL 2013-8440-01A
W-3166.2 D-2013-8440-01-001/002 R0 N/A 2014
(CRN) (Drawing No.) (National Board number) (Year built)

Nozzles, Inspection, and safety valve openings:

Table with columns: Purpose (Inlet, Outlet, Drain, etc), No., Diameter or Size, Type, Material (Nozzle, Flange), Nozzle Thickness (Nom., Corr.), Reinforcement (Material), Attachment Details (Nozzle, Flange), Location (Insp. Open.). Rows include PRESSURE IND, LEVEL BRIDLE, TIT / TG, MANWAY, MANWAY.

Data Report Item Number Remarks table. Items include MANWAY BLIND BOLTINGS, ITEM # 14 (COIL), COIL BREAK FLANGES BOLTINGS with detailed material and quantity specifications.

Certificate of Authorization: Type: U No. 14259 Expires OCTOBER 7, 2016
Date MAY 29, 2014 Name ALCO GAS & OIL PRODUCTION EQUIPT. LTD Signed (Representative)
Date MAY 29, 2014 Name Frank Zheng Commission AB 268 NB 13043 A, B (Authorized Inspector) [National Board (incl. Endorsement), State, Province and number.]

October 28, 2013

**Attention:** Magdi Ghobrial  
ALCO GAS & OIL PRODUCTION EQUIPMENT LTD  
5203 75 STREET  
EDMONTON, AB T6E 5S5

The design submission, tracking number 2013-07060, originally received on September 18, 2013 was surveyed and accepted for registration as follows:

**CRN :** W3166.2

**Accepted on:** October 28, 2013

**Reg Type:** New Design

**Drawing No. :** D-2013-8440-01-001/002 Rev 0

Description	MAWP	Design Temperature	MDMT
Internal Pressure	345kPa	149 °C	-45 °C
External Pressure	103kPa	149 °C	-45 °C
Heating coil	1696kPa	149 °C	-45 °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.



U  
W  
RT2

Certified By

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

50 psi at 300 °F  
Max. Allowable Working Pressure

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

-49 °F at 50 psi  
Minimum Design Metal Temperature

2014

Year Built

2013-8440-01A

Serial Number

GRN W-3166-2

A No. 655713

NAME CLOSED HYDROCARBON DRAIN VESSEL TAG

HEAD SA516-70MT 0.310 in C.A. 0.0625 in

SHELL SA516-70MT 0.375 in HYDRO 15 psi

2013-8440-51



U  
W

Certified By

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

246 psi at 300 °F  
Max. Allowable Working Pressure

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

-49 °F at 246 psi  
Minimum Design Metal Temperature

2014

Year Built

2013-8440-01A

Serial Number

GRN W-3166-2

A No. 655713

NAME HEATING COIL TAG

HEAD SA350LF2 CL1 0.344 in C.A. 0 in

SHELL SA312-316L/SA403-316L 0.375 in HYDRO 330 psi

TRAVEL SHEET

Authorized Inspector (Signature) \_\_\_\_\_

*Frank Zheng*

Date 2014-03-17

CUSTOMER / LOCATION		SERIAL NUMBER / UNIT		(A) NUMBER <b>693713</b>		
DEVON CANADA CORPORATION		2013-8440-01A		DRAWING NUMBER		
FERRIER CPF PROJECT, AB		LSD: 11-02-039-08 W5M		D-2013-8440-01-001/002 & 002/002		
ITEMS: <b>CLOSED HYDROCARBON DRAIN VESSEL 78" ID X 20'-0" S/S</b>		COMMENTS:		INITIALS		
				HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.
Repair Procedure Approved						
Approved Drawings / CRN		<b>W-3166.2</b>			<b>DD May 8/14</b>	<b>* F14-5-28</b>
Material Checked / Heat Verified		REVIEWED <b>MAY 06 2014</b>			<b>DD May 8/14</b>	<b>* F14-5-1</b>
MTR Checked		REVIEWED <b>MAY 06 2014</b>				<b>* F2014-5-28</b>
Impact Test		EXEMPT UCS-66 CURVE (a) UCS-66 (a) <b>SEP 23 2013</b>				
Unit Layout		<b>April 21, 2014</b>		<b>ED</b>		
Weld Procedure Approved		REVIEWED <b>SEP 23 2013</b>			<b>DD May 8/14</b>	<b>*</b>
Welder(s) Qualifications		REVIEWED <b>MAY 06 2014</b>			<b>DD May 8/14</b>	<b>*</b>
Fit-Up: Shell & Heads		TYPE 1 <b>MAY 01 2014</b>				<b>*</b>
Nozzles & Fittings		<b>MAY 06 2014</b>				
Internals		<b>MAY 01 2014</b>			<b>DD May 8/14</b>	
Externals		<b>MAY 06 2014</b>				
Connections: Location		<b>MAY 06 2014</b>			<b>DD May 8/14</b>	
Rating		CL150 CL300 <b>MAY 06 2014</b>			<b>DD May 8/14</b>	
Internal Inspection <b>MW HD/F14-5-1</b>		<b>END HD/F14-5-1</b> <b>MAY 01 2014</b>			<b>DD May 8/14</b>	<b>* F14-5-1</b>
Internals Installed <b>EW HD/F14-5-1</b>		<b>EW HD/F14-5-1</b> <b>MAY 01 2014</b>			<b>DD May 8/14</b>	
Weld Profile, Sizes & ID		CHECKED <b>MAY 06 2014</b>			<b>DD May 8/14</b>	<b>* F2014-5-6</b>
Radiographs		UW-11(a)5(b), NOZZLE BW 100% <b>MAY 06 2014</b>				<b>* F2014-5-28</b>
Other NDE		UT CAT D / MPI FILLET WELDS <b>MAY 06 2014</b>				
Stamping		CHECKED <b>MAY 06 2014</b>				
External Upon Completion of Welding		CHECKED <b>Except Saddles</b> <b>MAY 06 2014</b>			<b>DD May 8/14</b>	<b>* F2014-5-6</b>
Alternative Test						
PWHT Charts Checked		NONE				
Hydrostatic Test - CHART RECORD		VESSEL 65 PSIG GAGE# <b>B1, B4</b> <b>MAY 08 2014</b>			<b>DD May 8/14</b>	<b>* F14-5-5</b>
		COIL 320 PSIG GAGE# <b>G8, G9</b> <b>APR 24 2014</b>			<b>DD May 8/14</b>	<b>* F14-5-20</b>
MDR		<b>MAY 29 2014</b>				<b>* F14-5-29</b>
Name Plate		<b>MAY 29 2014</b>				<b>* F14-5-29</b>

PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-516-70MT	0.330"	<b>696 89/570270203/</b>	Repads			
Shell	SA-516-70MT	<b>G1 0.375"</b> <b>G2</b>	<b>PL-154</b> <b>PL-148</b>	Tubes			
Tubesheet							

\* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

*Heating coil = EXT HTS / F14-217*

# ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

## MATERIAL CONTROL & NDE LIST

SERIAL NUMBER: 2013-8440-01A  
 CUSTOMER: DEVON CANADA CORPORATION  
 DATE: MAY 8, 2014

### NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT LS CS	UT CAT D	MPI FILLET WELDS
END HEAD	78.000"ID X 0.330" MTAF	SA-516-70MT	G9689-5702702031	✓	✓		✓
SHELL	78"ID X 10'-0"LG X 0.375" THK	SA-516-70MT	7940M	✓	✓		✓
SHELL	78"ID X 10'-0"LG X 0.375" THK	SA-516-70MT	E3A070-D10	✓	✓		✓
END HEAD	78.000"ID X 0.330" MTAF	SA-516-70MT	G9689-5702702031	✓	✓		✓
N1 RFWN	NPS 6 CL150 XS	SA-350 LF2 CL1	83623	✓	✓	✓	✓
N2 RFWN	NPS 6 CL150 XS	SA-350 LF2 CL1	83623	✓	✓	✓	✓
N3 RFWN	NPS 4 CL150 XS	SA-350 LF2 CL1	421V2	✓	✓	✓	✓
N4 RFWN	NPS 3 CL150 XS	SA-350 LF2 CL1	4573144	✓	✓	✓	✓
N5 RFWN	NPS 2 CL150 XS	SA-350 LF2 CL1	1273144	✓	✓	✓	✓
N6 RFWN	NPS 2 CL150 XS	SA-350 LF2 CL1	1273144	✓	✓	✓	✓
N7 RFWN	NPS 4 CL150 XS	SA-350 LF2 CL1	421V2	✓	✓	✓	✓
N8 RFWN	NPS 2 CL150 S160	SA-350 LF2 CL1	4677159	✓	✓	✓	✓
N9 RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N10A RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N10B RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓

PREPARED BY AF

**ALCO**  **GAS & OIL**  
**PRODUCTION EQUIPMENT LTD.**

MATERIAL CONTROL & NDE LIST


SERIAL NUMBER: 2013-8440-01A  
 CUSTOMER: DEVON CANADA CORPORATION  
 DATE: MAY 8, 2014

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT	UT CAT D	MPI FILLET WELDS
N11A RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N11B RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N12A RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N12B RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N13 RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	4603012	✓	✓	✓	✓
N14 RFWN	NPS 2 CL300 S160	SA-350 LF2 CL1	1449/11	✓	✓	✓	✓
M1 RFWN	NPS 24 CL150 STD	SA-350 LF2 CL1	616V2	✓			
M1 NECK	24"OD X 7 <sup>1</sup> / <sub>16</sub> "LG X 0.750"THK	SA-516-70MT	365957-97274	✓	✓	✓	✓
M1 RF BLIND	NPS 24 CL150	SA-350 LF2 CL1	24635	✓			
M2 RFWN	NPS 24 CL150 STD	SA-350 LF2 CL1	616V2	✓	✓		
M2 NECK	24"OD X 8 <sup>1</sup> / <sub>16</sub> "LG X 0.750"THK	SA-516-70MT	380617-99931-02	✓	✓	✓	✓
M2 RF BLIND	NPS 24 CL150	SA-350 LF2 CL1	24635	✓			

PREPARED BY 



**ALCO**  **GAS & OIL**  
**PRODUCTION EQUIPMENT LTD.**

MATERIAL CONTROL & NDE LIST

SERIAL NUMBER: 2013-8440-01A  
 CUSTOMER: DEVON CANADA CORPORATION  
 DATE: MAY 8, 2014

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR					
NOZLE NECKS	NPS 6 SMLS PIPE XS	SA-333-6	2201333	✓					
	NPS 4 SMLS PIPE XS	SA-333-6	461529	✓					
	NPS 3 SMLS PIPE XS	SA-333-6	336565	✓					
	NPS 2 SMLS PIPE XS	SA-333-6	23593	✓					
	NPS 2 SMLS PIPE S160	SA-333-6	1240365	✓					
COIL	NPS 2 CL300 RFWN S80	SA-182-316L	12/1061, 12/728	✓					
	NPS 2 90° LR ELBOW S80	SA-403-316L	FK1208-120, YY12-90	✓					
	NPS 2 SMLS PIPE S80	SA-312-316L	11D0892, 1301-048	✓					

PREPARED BY 

Serial Number: 8440-01A Filled By: MIKE

Customer: Devon Canada Corporation Date: April 21 2014

MATERIAL REPORT

Type of vessel Vertical \_\_\_\_\_ Horizontal

Title	Diameter	Item #	ALCO ID #	Heat #	Slab #	Mat'l Spec	Min Thk (in)
Head	78" ID	1	✓ 991689	5702702051		SA-516-70	3/8"
	" "	" "	✓ " "	" "		" "	" "
	" "	" "	✓ " "	" "		" "	" "
	" "	" "	✓ " "	" "		" "	" "
Shell #1	878 ID	3	PL179	AC5509	4094P3	" "	" "
#2	" "	" "	PL154	EA070 DO	606744	" "	" "
#3	" "	" "	✓ " "	" "	" "	" "	" "
#4	" "	" "	✓ PL148	KA2300	7940M	" "	" "
Repad							
Nozzle	6" XH	29 30	✓ PA-004			SA-335-6	XH
	4" XH	34	✓ PL145	461529		" "	" "
	3" XH	38	✓ PL418			" "	" "
	2" XH	42	✓ PA-045			" "	" "
	2" SCH160	43 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	✓ 945			" "	SCF160
	2" SCH80	101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200	✓ P 969			SA-312 TP316L	SCF80
Skirt / Saddle	2" SCH80	101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200	✓ PA157			" "	" "
	5' 9" X 9' 5"	1	✓ PL145			SA-516-70	1/2"
	8' X 5' 10"	10	✓ PL167			" "	1/2"
Miscellaneous							

8440-01X2



edmonton exchanger  
& manufacturing ltd.

# CERTIFICATE OF COMPLIANCE

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

Customer ALCO GAS & OIL PRODUCTION PO 132443-8446-01 Work Order C99355 Date 2013/07/04 ColC# 42122 Page 1 of 1

Item#	Description	Qty	Heat#	Brinell Hardn.	Required Min Thk	Recorded Min Thk	Form. Proc.
H99355-1	HEAD(S) - Semi-Elliptical 2:1 - 0.3750" NOM (0.3100" MIN) X 78" ID (Material Spec: SA 516-70 Normalized)  Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A Conforms to NACE MR0103 2007	4	G9689-5702702031	MTR	0.3100"	0.3450"	1

#### Forming Procedure:

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

Brinell Equipment: Newage Calibrated Pin  
Brinell Hardness Tester

#### Supplementary Requirements

#### Normalized Material Identification Marking:

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

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

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

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

#### Supplementary Examination - Items



edmonton exchanger  
& manufacturing ltd.

# CERTIFICATE OF COMPLIANCE

MTR List

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 132443-~~8440-01~~    Work Order C99355    Date 2013/07/04    CofC# 42122    Page 1 of 1

MTR ID	Pages	Heat#	Thickness	Material Grades
16430	9	G9689-5702702031	.375"	SA 516-70 N

Heat#	Material Grades	MTR ID
G9689-5702702031	SA 516-70 N	16430



















新日本製鐵株式會社  
Nippon Steel Corporation

鋼材検査証明書  
INSPECTION CERTIFICATE

本 社 千100-8071 東京都千代田区丸の内二丁目6番1号  
HEAD OFFICE 2-6-1, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8071, JA  
君津製鐵所 千299-1141 千葉県君津市君津1番地  
KIMITSUWORKS 1, KIMITSU, KIMITSU-CITY, CHIBA-PREF. 299-1141, JA

証明番号 頁  
CERTIFICATE No. P-16084 PAGE 113E  
発行年月日 2011-09-09  
DATE OF ISSUE 1001

需要家管理番号 需要家管理番号  
CUSTOMER'S CONTROL No. E3001P079, F07

注文者 HANWA CO., LTD.  
注文者照合番号 228-68511010  
契約番号 1-831-H1-5-9-AI01  
商品名 HOT ROLLED STEEL PLATES

規格 ASME SA-516 GRADE 70-E10  
文書番号 需要家 需要家管理番号  
DOCUMENT No. CUSTOMER'S CONTROL No. E3001P079, F07

寸法	数量	質量	製鋼番号 CAST No.	製品番号 PLATE No.	引張試験 TENSILE TEST			衝撃試験 IMPACT TEST		化学成分 CHEMICAL COMPOSITION %										
					試験番号 TEST No.	試験結果	試験方法	試験結果	試験方法	C	Si	Mn	P	S	Cr	Ni	Mo	Nb	V	TA
DIMENSION mm, inch, feet	QUANTITY	MASS	CAST No.	PLATE No.	Y.S.	T.S.	伸長	2V	FT LB	C	Si	Mn	P	S	Cr	Ni	Mo	Nb	V	TA
		Kg			0.2%		%	平均値	個々値											
					HEAT TREATMENT			SPECIMEN NORMALIZING												
					PLATE			TEMPERATURE												
					LADLE			CEQ1 = C+Mn/6+(Ni+Cu)/15+(Cr+Mo+W)/5												
					LADLE			TE1 = C+Ni+Cr+Mo												
					LADLE			TE3 = CR+MO												
					PRODUCT			TE1 = C+Ni+Cr+Mo												
					PRODUCT			TE3 = CR+MO												
					CHEMICAL COMPOSITION %			X10000												
					CHEMICAL COMPOSITION %			X1000												
					CHEMICAL COMPOSITION %			X100												
					LADLE TREATMENT			VACUUM DEGASSED												
					SULPHIDE SHAPE CONTROL															



注釈 NOTES 1 位置方向 Longitudinal, C: 長手方向 Transverse, R: 45° 方向 45Deg. to the Longitudinal Axis  
2 G.L. 標点距離 Gauge 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: 2.1, 8', J: 5.65/So, K: 4, So  
3 RA: 絞り Reduction of Area, Y.R.: 降伏比 Yield Ratio, 4 A: 合格 Acceptable, 5 F: 厚手 Full Size, 2: 2.5mm, 3: 3.3mm, 4: 3.3mm, 5: 5.0mm, 6: 6.67mm, 7: 7.5mm, 8: 6.7mm, 9: 厚板厚 Plate Thickness, 6 P: 型高板厚 Product Analysis, 7 N: 焼戻し Normalized, Q: 焼入れ Quenched, T: 焼戻し Tempered, CR: Controlled Rolled, NI: C: CLC Process/TMC Process, CLC: CLC Process/TMC Process, A.R.: As Rolled, T.M.R.: TMR-Process/TMC Process, N.R.: Normalizing Rolled  
S.H.: 焼戻し面 Shear Fracture, C.F.: 脆性断面 Fracture, L.E.: 側面出 Lateral Expansion, A.G.S.: ボーステンアイト板度 Austenite Grain Size, F.G.S.: エイライト板度 Ferrite Grain Size, S.B.: Stress Relieved/Post Weld Heat Treatment  
温度 Temperature

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  
Head of Department  
若津製鐵所厚板管理グループリーダー  
PLATE QUALITY CONTROL DEPT.  
KIMITSUWORKS





12400 Highway 43 North, Axis, Alabama 36505

# Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

**Customer:** SAMUEL & SON LIMITED  
 (A DIVISION OF SAMUEL SALES)  
 2360 DIXIE ROAD  
 MISSISSAUGA  
 ON L4Y1Z7

**Customer P.O.No.:** U01327 & 41-350443  
**Mill Order No.:** 41-350444-02  
**Shipping Manifest:** AR 152216

**Product Description:** ASTM A516-70(10)/ASME SA516-70(11A)  
 NACE MR0175 ANNEX A2.1.2 COMPLIANT  
 LCVN 20 FT-LBS @ -50F/A673-P  
 NORMALIZED

**Ship Date:** 27 Jan 13  
**Cert Date:** 27 Jan 13  
**Cert No.:** 081364956  
 (Page 1 of 1)

**Size:** 0.375 X 120.0 X 480.0 (IN) ←

**Aico #** PL154

Heat Id	Piece Id	Tested Thickness	Tensiles:			Charpy Impact Tests						BDWTT Temp %Shr				
			YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Average Hardness	Abs. Energy(FTLB)	% Shear	Tst Temp		Tst Dir	Tst Siz (mm)		
E3A070	D10	0.376 (DISCRT) ←	77		25	T	156 HBW	80	80	80	80	80	80	-50F	L	7.5

Heat Id	Chemical Analysis										ORGN						
	C	Mn	P	S	SI	Tot Al	Sol Al	Cu	Ni	Cr		Mo	Cb	V	TI	B	Cev
E3A070	.20	.86	.014	<.001	.25	.025	.028	.27	.14	.15	.04	.001	.006	.008	.0002	.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 (IIV) = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15  
 MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT  
 CHARPY FULL SIZE EQUIVALENT = ABSORBED ENERGY AVG X 10 / TEST SIZE IN MM  
 NORMALIZED PLATES. HEATED AT 1665F FOR 19 MINUTES.  
 TEST COUPONS TAKEN FROM HEAT TREATED PLATE.  
 PRODUCTS SHIPPED:

Heat Id	Product	WGT	PCES
E3A070	D10	6406774	1, WGT: 6177
E3A070	D10	6406772	1, WGT: 6177
E3A070	D10	6406775	1, WGT: 6221
E3A070	D10	6406777	1, WGT: 6221
E3A070	D10	6406770	1, WGT: 6210
E3A070	D10	6406776	1, WGT: 6221
E3A070	D10	6406773	1, WGT: 6177
E3A070	D10	6406778	1, WGT: 6221

Stock  
Po # 131470

CONFORMS TO EN 516-70MT  
 YEAR 2010 ED 2011ADD  
 JOB # 29B-8440-01  
 ITEM # 3  
 SHIPPED BY JLD 23 APR 2014

(P) Cust Part #: \_\_\_\_\_

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION

Justin Ward  
 SENIOR METALLURGIST - PRODUCT



ESSAR STEEL ALGOMA INC., 105 West Street, Sault Ste. Marie, Ontario, Canada P6A 7B4

ALCO # PL 148

SO No., Item & Date:	8002265 000040 2012/09/08	Shipment No. & Date:	1000007084 2012/09/24	TC No., Date & Time:	ESA-11258 2012/09/27 - 20:25:30
Sold to Customer Name and Address:	VARSTEEL LIMITED 4TH STREET SOUTH #330 - 220 LETHBRIDGE, Alberta, Canada T1J 4J7	Ship to Customer Name and Address:	VARSTEEL LIMITED 52 STREET SE 10220 CALGARY, Alberta, Canada T1J 4J7	Customer PO NO./Item:	CY-953827 / 4
				BOL NO.:	1000007084
				Cust/Part No.:	C P RAIL (CAD FUNDS) - TTPX804403
				Carrier:	
Customer Specification:	HR STEEL PLATE Carbon ASTM A516 GR 70 (10) Normalized Normalize Temp 1670 F CVNL Req. 15 / 12 FT-LEF at -50.0 F Sid Thickness Tol PQV Top and Bottom Standard Surface No Weld Repair Flatness 1/2 A20 Fine Grain				

Supplementary Instructions: Test Cert 1: Receiving@varsteel.ca Test Cert 2: MARK.FILATOFF@VARSTEEL.CA

Insp TR:	Test Report As Per Spec	Cust Use:	PVQ
----------	-------------------------	-----------	-----

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 STANDARD RECORD KEEPING PRACTICES. 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)945-4995 FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT.

MEETS EN 10204:2004 TYPE 3.1  
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM

ALL HEATS FULLY KILLED.  
HEATS INDICATED WITH (\*) FINE GRAINED  
HEATS INDICATED WITH (v) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS.

Dimensions (T x W x L)	Heat No-MS	Quantity	Pcs												
0.3750" x 120.000" x 450.00"	7940M-02	12,252 LB	2												
*****CHEMICAL PROPERTIES*****															
Heat No. (wt%)	C	Mn	P	S	Si	Cr	Ni	Cu	Mo	Al	Nb	V	B	Ti	DD
7940M	0.21	1.10	0.008	0.005	0.330	0.02	0.01	0.04	0.01	0.030	0.000	0.000	0.0003	0.002	0.4000

Impact Tests:

Heat No.	Batch No.	SRCE	LAB	GAUGE	COND	METH	DIR	LOC	SIZE	TEMP(F)	ENERGY(R-lbf)	ENERGY AVG(R-lbf)
7940M	AA2299	166"	ALG	0.3750	NORM	CVN	L	B	3/4	-50	108.92.97	99

Tensile Tests:

Heat No.	Batch No.	SRCE	LAB	GAUGE	COND	METH	DIR	LOC	YIELD(KSI)	TENSILE(KSI)	EL SCALE	ELONG(%)
7940M	AA2299	166"	ALG	0.3750	NORM	2	T	B	55	76	8"	26

CONFORMS TO SA 516-70MT  
YEAR 2010 ED 2011 ADD  
SCC 20P-8440-01  
3  
APR 23 2014  
MANAGER METALLURGICAL SERVICES BY

2- STOCK  
PO# 131128

K. UGHADPAGA  
MANAGER METALLURGICAL SERVICES

\*\*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 ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OF VALUES REPORTED HEREIN CAN NOT BE USED TO QUALIFY THE STEEL FOR ANY SPECIFICATION OTHER THAN THE ONE INDICATED AND CAN NOT BE RELIED UPON FOR ANY PURPOSE (INCLUDING DESIGN OR CALCULATIONS) AS REPRESENTING THE ACTUAL STRENGTH OF SUCH STEEL.

66823



# MILL TEST CERTIFICATE

**ORIGINAL**

PL-195

Order No. : J126100017  
 PO No. : LPP201205005  
 Commodity : STEEL PLATE  
 Specification : ASTM A516-70N/ASME SA516-70N  
 Supplier : DONGKUK INTERNATIONAL INC.  
 Customer : SALZGITTER  
 Certificate No. : DP3-1-120713-297-002  
 Date of issue : Jul. 13, 2012

Dimension Unit inch : mm : Spacing	Product No	Quantity	Weight kg	Heat No	Tensile Test		Impact Test		Hardness	Chemical Composition (%)										Remarks							
					Yield	Tensile	Charpy	U		V	C	Si	Mn	P	S	Cr	Ni	Cu	Mo		Nb						
12.70*2438*7315 5*58*2281	A280194-01.02.03.04.05		1,778	S072404	T 1	51	76	27	1:158 2:136 3:148 A:151	182	L	16	36	143	12	3	10	1	1	1	1	1	1	2	23RFB		
	Sub Total (20)	5	8,880		T 1	50	75	27	1:187 2:134 3:138 A:103	152	L	16	35	144	14	3	10	1	2	1	2	1	2	1	2	23RFB	
	Sub Total (30)	5	9,250		T 1	51	76	26	1:148 2:135 3:154 A:146	124	L	15	35	141	13	4	5	20	1	3	1	3	1	3	1	3	23RFB
	Sub Total (30)	5	9,250		T 1	51	76	26	1:148 2:135 3:154 A:146	124	L	15	35	141	13	4	5	20	1	3	1	3	1	3	1	3	23RFB

When using this ordered product for other uses, rather than the above specification use, product damage and safety accidents may be caused.

Surveyor to: \_\_\_\_\_

Chief of Process Control Team:

Page: 2/3

YEAR: 2010ED 2011A  
 JOB #: 2013-8440-01  
 ITEM #: 7-9  
 STOCK PO-15030  
 SIGNED BY: APR 24 2012





12400 Highway 43 North, Axis, Alabama 36505

# Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

<b>Customer:</b> SAMUEL & SON LIMITED (A DIVISION OF SAMUEL SALES) 2360 DIXIE ROAD MISSISSAUGA ON L4Y1Z7		<b>Customer P.O.No.:</b> J01367 & 41-358150		<b>Mill Order No.:</b> 41-358151-05		<b>Shipping Manifest:</b> AR157310													
<b>Product Description:</b> ASTM A516-70(10)/ASME SA516-70(11A) NACE MR0175 ANNEX A2.1.2 COMPLIANT LCVN 20 FT-LBS @ -50F/A673-P NORMALIZED		<b>Ship Date:</b> 20 Apr 13		<b>Cert No:</b> 081377828 (Page 1 of 1)		<b>Cert Date:</b> 20 Apr 13													
<b>Size:</b> 1.000 X 120.0 X 480.0 (IN)		<b>Alco # PL167</b>																	
<b>Tested Pieces:</b>		<b>Charpy Impact Tests</b>																	
<b>Heat Id</b>	<b>Piece Id</b>	<b>C</b>	<b>Mn</b>	<b>P</b>	<b>S</b>	<b>Si</b>	<b>Tot. Al Sol Al</b>	<b>Cu</b>	<b>Ni</b>	<b>Cr</b>	<b>Mo</b>	<b>Cb</b>	<b>V</b>	<b>Ti</b>	<b>B</b>	<b>Cev</b>	<b>ORGN</b>		
E3D012	C25	1.19	1.01	.010	.001	.24	.025	.24	.14	.14	.03	1.002	1.006	.008	.0002	.42	USA		
<b>Tensiles:</b>	<b>UTS (KSI)</b>	<b>%RA</b>	<b>Elong %</b>	<b>Tst Dir</b>	<b>Average Hardness</b>	<b>Abs. Energy (FTLB)</b>	<b>% Shear</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Avg</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Avg</b>	<b>Tst Temp</b>	<b>Dir</b>	<b>Tst Siz (mm)</b>	<b>BDWTT Temp %Shr</b>
	74		27	T	149 HBW	114 109 98 107										-50F	CH	10.	
<b>Chemical Analysis</b>																			
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 (LIW) = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15 MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT NORMALIZED PLATES. HEATED AT 1665F FOR 44 MINUTES. TEST COUPONS TAKEN FROM HEAT TREATED PLATE. PRODUCTS SHIPPED: E3D012 C25 6429223 PCS: 1, WGT: 16527 E3D012 C25 6429221 PCS: 1, WGT: 16523																			
E3D012 C25 6429222 PCS: 1, WGT: 16523																			
i-Stock PO-132728																			
CONFORMS TO SA 516-70MT YEAR 2010 ED 2011 ADD JOB # 2013-9440-01 ITEM # 10 BY 6/23 APR 2014																			
<b>Customer Part #:</b>		<b>WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION</b>																	
		JUSTIN WARD SENIOR METALLURGIST - PRODUCT																	

CLIENTE / Customer / Client

VAN LEEUWEN PIPE AND TUBE -CAN  
2875-64TH AVENUE  
EDMONTON - ALBERTA T6P 1R1  
CANADA

### CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DINEN 10204 / 3.1  
ISO 10474 / 3.1



HOJA: 152296  
Page: 2

FECHA: 30/10/2012  
Date: No. N.º

SU PEDIDO N.º  
Your Order No. 45001569

PRODUCTO  
Article - Produit  
FLANGES  
ASME B16.5-09

DE of. -de 30/08/2012

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

Bº Zubillaga, 3 - Apdo. 14  
20560 ONATI (Gipuzkoa) SPAIN  
Tel.: 34 - 943 780552  
Fax: 34 - 943 781808  
E-mail: ulma@ulmapping.com

NORMAS APLICABLES  
Requirements - Normes Applicables

ASME B16.5-09

MARCA DEL FABRICANTE  
Mark of factory  
Marque du fabricant



Packing List: 97265

MATERIAL CORRESPONDIENTE ASTM/ASME A/SAS350LF2CL1-11

MACE MR0175/ISO15156-2-09 & MR0103-12  
Clause 7.2.1.4, Annex A.2 and SSC Region 3.  
CSA-Z245.12-09 GR248 CAT II -SS

DEPARTAMENTO QUALITY ASSURANCE  
Département

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations	COLADA N.º Heat No. N.º Coulée	T. Strength Resist Rivul N/mm2	Y. Strength 0.2 % N/mm2	ALARGAMA Elongation Allongement Lo. 4 g %	ESTRICCION Red. Area Striction %	RESILIENCIA Impact test Resilience Joules	CHARRY V 10x10mm MEDIA Average kg/mm2	DUREZA Hardness Dureté HBW
14 24869	40	BLIND 3 600LB RF A350LF2	2872	NE	342V2	505	311	33,50	66,30	35	46	154 162
39 22173	72	WN 8 150LB STD/40 RF A350LF2	2502	NE	437M2	507	353	34,50	68,00	74	74	145 155
39 22173	24	WN 8 150LB STD/40 RF A350LF2	2492	NE	477V2	521	322	25,00	52,80	68	71	154 156
43 37589	5	WN 8 300LB S160 RF A350LF2	1602	NE	238V2	508	304	62,00	62,60	46	40	146 155
43 37589	19	WN 8 300LB S160 RF A350LF2	2932	NE	602V2	512	305	30,20	60,30	56	60	145 152
66 24525	20	WN 24 150LB STD/20 RF A350LF2	2952	NE	616V2	535	314	26,70	55,90	57	63	151 152
66 24525	10	WN 24 150LB STD/20 RF A350LF2	2972	NE	617V2	534	312	28,00	58,30	35	35	152 156

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

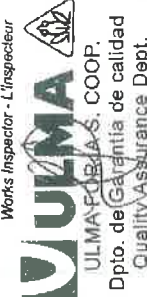
COLADA N.º Heat No. N.º Coulée	C %	Si %	Mn %	P %	S %	Cr %	Mi %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
238V2	0,200	0,230	0,890	0,017	0,001	0,160	0,080	0,040	0,001	0,004	0,190	0,018	0,000	0,000	0,407
342V2	0,204	0,202	0,960	0,015	0,007	0,060	0,130	0,026	0,000	0,004	0,328	0,023	0,000	0,000	0,413
437M2	0,160	0,215	1,240	0,014	0,004	0,050	0,024	0,006	0,003	0,052	0,067	0,022	0,000	0,000	0,384
477V2	0,190	0,250	0,990	0,013	0,008	0,060	0,110	0,020	0,001	0,000	0,279	0,018	0,000	0,011	0,386
602V2	0,200	0,230	0,860	0,009	0,003	0,159	0,081	0,047	0,000	0,002	0,212	0,034	0,000	0,000	0,404
616V2	0,210	0,240	0,890	0,013	0,002	0,180	0,080	0,030	0,001	0,001	0,240	0,032	0,000	0,000	0,422
617V2	0,200	0,220	0,880	0,009	0,006	0,190	0,090	0,080	0,001	0,004	0,180	0,045	0,000	0,000	0,419

TEST SPECIMEN: SIZE STANDARD ( 10X10 ). ORIENTATION TRANSVERSE.  
N NORMALIZED AT 900 C. AND ALLOWED TO COOL IN STILL AIR

(\*) OBSERVACIONES:  
Remarks  
Observations

- Las dimensiones y la condición superficial se hallaron satisfactorias
- Dimension and surface condition were found acceptable
- Les dimensions et états de surface sont satisfaisants
- Los materiales citados cumplen las normas aplicables
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR  
Works Inspector - L'inspecteur



CONFORMS TO SA 350LF2CL1  
YEAR 2012, 2011 ADD  
JOB # 2013-8440-01  
ITEM # #18  
SIGNED BY [Signature] SEP 26 2013

4-8440-01  
Po-133415



ULOA Approved



# 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 133437-8440-01    Work Order C100880    Date 2013/10/11    CofC# 44359    Page 1 of 2

Item#	Description	Qty	Heat#	Brinell Hardn.	Weld Proc.	Form. Proc.
S100880-2-1	SHELL(S) - 0.8750" NOM X 24" OD X 60" (Material Spec: SA 516-70 Normalized)  Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A Conforms to NACE MR0103 2007	1	G1133-476530707	MTR	WP600	4
S100880-3-1	SHELL(S) - 0.7500" NOM X 24" OD X 7.875" (Material Spec: SA 516-70 Normalized)  Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A Conforms to NACE MR0103 2007	1	365957-97274	MTR	WP600	4
S100880-3-2	SHELL(S) - 0.7500" NOM X 24" OD X 7.875" (Material Spec: SA 516-70 Normalized)  Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A Conforms to NACE MR0103 2007	1	380617-99931-02 ←	MTR	WP600	4
S100880-4-1	SHELL(S) - 0.7500" NOM X 24" OD X 8.6875" (Material Spec: SA 516-70 Normalized)  Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A Conforms to NACE MR0103 2007	1	365957-97274 ←	MTR	WP600	4
S100880-4-2	SHELL(S) - 0.7500" NOM X 24" OD X 8.6875" (Material Spec: SA 516-70 Normalized)  Conforms to NACE MR0175 / ISO 15156-2 2009 Annex A Conforms to NACE MR0103 2007	1	365957-97274	MTR	WP600	4

**Forming Procedure:**  
4. Cold Formed

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



edmonton exchanger  
& manufacturing ltd.

# CERTIFICATE OF COMPLIANCE

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

Customer ALCO GAS & OIL PRODUCTION    Po 133437 - 8440-01    Work Order C100880    Date 2013/10/11    corC# 44359    Page 2 of 2

## Supplementary Examination - Items

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edmonton exchanger  
& manufacturing ltd.

# CERTIFICATE OF COMPLIANCE

MTR List

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 133437 -814001    Work Order C100880    Date 2013/10/11    Co/C# 44359    Page 1 of 1

**Email to andy.jutt@alcogasoil.com**

**Email to brenda.abbott@alcogasoil.com**

**Email to nora.henke@alcogasoil.com**

**Email to ship-rec@alcogasoil.com**

**Email to ptaschuk@edmontonexchanger.com**

MTR ID	Pages	Heat#	Thickness	Material Grades
16686	14	365957-97274 ←	.75"	SA 516-70 N
17634	6	380617-99931-02 ←	.75"	SA 516-70 N
17943	5	G1133-476530707	.875"	SA 516-70 N

Heat#	Material Grades	MTR ID
365957-97274	SA 516-70 N	16686
380617-99931-02	SA 516-70 N	17634
G1133-476530707	SA 516-70 N	17943

**QMF-System: Certification as per ISO 9001**



**DILLINGER HÜTTE**

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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991 MATERIAL TEST REPORT (MTR)	A10	Advice of dispatch No./ Date of dispatch	406870-06.12.11	A08/ Manufacturer's order/ A03 Certificate No.	369269-002	Sheet	1/
A05	Established inspecting body DH	A06	Purchaser EDMONTON STEEL, EDMON	A07.1	No. ED10580-J1010-ER	B01	Product HOT ROLLED PLATES	
B02/	Steel design. SA516-70		Final receiver EDMONTON STEEL, EDMON	A07.2	No. SA20-S5			
B03	Any suppl requirements DIL-HUE-2:R31-2010-11-22							



**A01-A99 Further commercial information - Concession requests**

B14	B07.2	B07.1	B16	B12	B11	B04	B07.2	B07.1	A09
Item No.	Heat No.	Roll plate / Test No.	Concession request no.	mass KG	Length	Product delivery condition	Heat No.	Roll plate No. / Test No.	Purchaser article number
01	365960	96593-03	1-QZFHQ	4650	480,00000		365954	45272-01	
				4650	480,00000		365954	45272-02	
				4650	480,00000		365954	45272-03	
				4650	480,00000		365956	02688-01	
				4650	480,00000		365956	02688-02	
				4650	480,00000		365956	02688-03	
				4650	480,00000		365960	96593-01	
				4650	480,00000		365960	96593-02	
				4650	480,00000		365960	96593-03	
				4650	480,00000		365960	96595-01	
				4650	480,00000		365960	96595-02	
				4650	480,00000		365960	96595-03	
				4650	480,00000		365960	96597-01	
				4650	480,00000		365960	96597-02	
				4650	480,00000		365960	96597-03	
				4650	480,00000		365960	96715-01	
				4650	480,00000		365960	96715-02	
				4650	480,00000		365960	96715-03	
				4650	480,00000		365960	97271-01	

**B01-B99 Description of the product**

B14	B08	B09	B10	B11	B12	B04	B07.2	B07.1	A09
Item No.	Number of pieces	Thickness	Width	Length	mass KG	Product delivery condition	Heat No.	Roll plate No. / Test No.	Purchaser article number
01	1	0,6250	120,50000	480,00000	4650	N	365954	45272-01	
01	1	0,6250	120,50000	480,00000	4650	N	365954	45272-02	
01	1	0,6250	120,50000	480,00000	4650	N	365954	45272-03	
01	1	0,6250	120,50000	480,00000	4650	N	365956	02688-01	
01	1	0,6250	120,50000	480,00000	4650	N	365956	02688-02	
01	1	0,6250	120,50000	480,00000	4650	N	365956	02688-03	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96593-01	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96593-02	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96593-03	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96595-01	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96595-02	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96595-03	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96597-01	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96597-02	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96597-03	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96715-01	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96715-02	
01	1	0,6250	120,50000	480,00000	4650	N	365960	96715-03	
01	1	0,6250	120,50000	480,00000	4650	N	365960	97271-01	

A04	Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department	Date 07.12.11
			Inspector's stamp
		B. BALDAUF Test House Manager	Date 07.12.11



QM-System: Certification as per ISO 9001

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 406870-06.12.11	A08/ Manufacturer's order/ A03 Certificate No. 369269-002	Sheet 2/...
A05	EDMONTON STEEL, EDMON A07.1 No. ED10580-J1010-ER EDMONTON STEEL, EDMON A07.2 No. SA20-S5		B01 Product HOT ROLLED PLATES	
B02	Steel design. SA516-70			
B03	Any suppl. ASME-II-A:10 requirements DIL-HUE-2:R31-2010-11-22			

B01-B99 Description of the product

B14 Item No.	B08 Number of pieces	B09 Thickness	B10 Width	B11 Length	B12 Theoretical mass	B04 Product delivery condition	B07.2 Heat No.	B07.1 Rolled plate No./ Test No.	A09 Purchaser article number
				INCH					
01	1	0,6250	x 120,50000	x 480,00000	4650	N	365960	97271-02	
01	1	0,6250	x 120,50000	x 480,00000	4650	N	365960	97271-03	
**	21				97650				
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97272-01	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97272-02	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97272-03	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97273-01	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97273-02	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97273-03	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97274-01	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97274-02	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97274-03	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97275-01	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97275-02	
02	1	0,7500	x 96,50000	x 480,00000	4469	N	365957	97275-03	
**	12				53628				
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365945	84632-01	
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365945	84632-02	
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365945	84632-03	
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365945	87205-01	
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365945	87205-02	
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365945	87205-03	
03	1	0,8750	x 120,50000	x 480,00000	6510	N	365947	83863-01	

① Shell - 24" OD - 7.875" LONG.  
 ② Shells - 24" OD - 8.6875" LONG.  
 8440-01  
 Po - 133437

CONFORMS TO SA 516-70MT  
 YEAR 2010ED, BALDAUF  
 JOB # 2613-8440-01  
 ITEM # #19, #24  
 SIGNED BY J. BAUMANN OCT 28 2013



QMI-System: Certification as per ISO 9001

Erläuterungen siehe Rückseite/E. Applications voir au verso/See reverse for explanations (www.dillinger.de/certificates)

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10	Advice of dispatch Date of dispatch	A08/A03	Manufacturer's order/ Certificate No.	Sheet	
	INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		406870-06.12.11		369269-002	3/...	
	MATERIAL TEST REPORT (MTR)						
A05	Established inspecting body DH	A06	Purchaser Final receiver	A07.1	No. ED10580-J1010-ER	B01	Product HOT ROLLED PLATES
			EDMONTON STEEL, EDMON				
			EDMONTON STEEL, EDMON	A07.2	No. SA20-S5		
B02	Steel design. SA516-70						
B03	Any suppl. requirements						
	ASME-II-A:10						
	DIL-HUE-2:R31-2010-11-22						

B01-B99 Description of the product

B14	B08	B09	B10	B11	B12	B04	B07.2	B07.1	A09
Item No.	Number of pieces	Thickness	Width	Length	Theoretical mass	Product delivery condition	Heat No.	Rolled plate Test No.	Purchaser article number
			INCH		KG				
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	83863-02	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	83863-03	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84116-01	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84116-02	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84116-03	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84117-01	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84117-02	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84117-03	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84118-01	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84118-02	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84118-03	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84119-01	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84119-02	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84119-03	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84120-01	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84120-02	
03	1	0,8750	X 120,50000	X 480,00000	6510	N	365947	84120-03	
**	24				156240				
04	1	1,0000	X 96,50000	X 480,00000	5959	N	365946	84147-01	
04	1	1,0000	X 96,50000	X 480,00000	5959	N	365946	84147-02	
04	1	1,0000	X 96,50000	X 480,00000	5959	N	365946	84147-03	
04	1	1,0000	X 96,50000	X 480,00000	5959	N	365946	84149-01	
04	1	1,0000	X 96,50000	X 480,00000	5959	N	365946	84149-02	

A04 Z01Z02/Z03 We hereby certify that the above mentioned materials have been delivered in accordance with the terms of order.



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



B. BALDAUF  
Test House Manager

Inspector's stamp Date 07.12.11



**QM-System: Certification as per ISO 9001**



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

A02	INSPECTION CERTIFICATE 3.1	AS PER EN 10204:2004	A10	Advice of dispatch No./ Date of dispatch	406870-06.12.11	A08/ Manufacturer's order/ A03 Certificate No.	369269-002	Sheet	4 /
	INSPECTION CERTIFICATE 3.1.B	AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991							
	MATERIAL TEST REPORT (MTR)								
A05	Established inspecting body	A06 Purchaser	A07.1 No.	EDMONTON STEEL, EDMON	ED10580-J1010-ER	B01 Product	HOT ROLLED PLATES		
DH		Final receiver	A07.2 No.	EDMONTON STEEL, EDMON					
B02/	Steel design.	SA516-70							
B03	Any suppl. requirements	ASME-II-A:10 DIL-HUE-2:R31-2010-11-22							

**B01-B99 Description of the product**

B14 Item No.	B08 Number of pieces	B09 Thickness	B10 Width	B11 Length	B12 Theoretical mass	B04 Product delivery condition	B07.2 Heat No.	B07.1 Rolled plate No./ Test No.	A09 Purchaser article number
04	1	1,0000 X	96,50000 X	480,00000 X	5959 N	N	365946	84149-03	
04	1	1,0000 X	96,50000 X	480,00000 X	5959 N	N	365946	84511-01	
04	1	1,0000 X	96,50000 X	480,00000 X	5959 N	N	365946	84511-02	
**	8				47672				
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84628-01	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84628-02	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84628-03	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84629-01	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84629-02	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84629-03	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84630-01	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84630-02	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84630-03	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84631-01	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84631-02	
05	1	1,0000 X	120,50000 X	480,00000 X	7440 N	N	365945	84631-03	
**	12				89280				
06	1	1,1250 X	121,00000 X	480,00000 X	8405 N	N	365946	84146-01	
06	1	1,1250 X	121,00000 X	480,00000 X	8405 N	N	365946	84146-02	
**	2				16810				
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	93620-01	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	93620-02	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	93621-01	

A04	Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department
	Manufacturer's mark	B. BALDAUF Test House Manager	Inspector's stamp	Date 07.12.11

**QM-System: Certification as per ISO-9001**

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 406870-06.12.11	A08/Manufacturer's order/ A03 Certificate No. 369269-002	Sheet 5 / ...
A05:Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No.	ED10580-J1010-ER	B01 Product HOT ROLLED PLATES	
B02: Steel design. SA516-70	Final receiver EDMONTON STEEL, EDMON	A07.2 No.	SA20-S5		
B03 Any suppl. requirements	ASME-II-A:10 DIL-HUE-2:R31-2010-11-22				

**B01-B99 Description of the product**

B14 Item No.	B08 Number of pieces	B09 Thickness	B10 Width	B11 Length	B12 Theoretical mass	B04 Product delivery condition	B07.2 Heat No.	B07.1 Rolled plate Test No.	A09 Purchaser article number
				INCH.					
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	93621-02	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	93622-01	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	93622-02	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	94966-01	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	94966-02	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	94968-01	
07	1	1,2500 X	97,00000 X	480,00000 X	7487 N	N	365962	94968-02	
**	10				74870				
***	89				536150				

**B04 Product delivery condition**

ITEM NO.: 01-07  
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.: 01-07  
STEEL DESIGNATION SA516 70 MTLTY SA516 60 MTLTY  
HEAT NO. / TRADEMARK / ROLLED PLATE NO.-TEST NO. / INSPECTOR'S STAMP

**B07-B99 Further information about the product**

ITEM NO.: 01-07  
THICKNESS REDUCTION RATIO: >= 3,0 IS FULFILLED (CF. A/SA20 PAR. 5.3)

A04		A01	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department
	Manufacturer's mark		Inspector's stamp B. BALDAUF Test-House Manager
			Date: 07.12.11
			PP 1

QM-System: Certification as per ISO 9001



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

A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004		A10 Advice of dispatch No./ Date of dispatch	A08/ Manufacturers order/ A03 Certificate No.	Sheet
INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		406870-06.12.11	369269-002	6 / ...
MATERIAL TEST REPORT (MTR)		B01 Product HOT ROLLED PLATES		
A05 Established inspecting body DH		EDMONTON STEEL, EDMON A07.1 No. ED10580-J1010-ER		
A06 Purchaser Final receiver		EDMONTON STEEL, EDMON A07.2 No. SA20-S5		
B02/ Steel design. SA516-70				
B03 Any suppl. requirements		ASME-II-A:10 DIL-HUE-2:R31-2010-11-22		

C10-C29 Tensile test

B14 Item No.	B07.2 Heat No.	B07.1 Rol.plate/ Test No.	B05 Reference (heat) treatment	C01 C02/ C03 C01 Temp. GR.F	C10 C11 KSI RP02	C12 RM	C13 A % LO=8IN	C14-C15 A % LO=2IN
01	365954	45272		K1 Q RT	51,8	75,8	26	
01	365956	02688		K1 Q RT	51,6	75,7	28	
01	365960	96593		K1 Q RT	49,3	74,1	27	
01	365960	96595		K1 Q RT	50,2	74,7	27	
01	365960	96597		K1 Q RT	50,5	74,4	26	
01	365960	96715		K1 Q RT	50,0	74,8	27	
01	365960	97271		K1 Q RT	50,0	75,0	29	
02	365957	97272		K1 Q RT	49,3	74,8	28	
02	365957	97273		K1 Q RT	49,4	74,8	27	
02	365957	97274		K1 Q RT	48,7	74,7	29	
02	365957	97275		K1 Q RT	49,7	75,0	28	
03	365945	84632		K1 Q RT	49,7	75,1	29	
03	365945	87205		K1 Q RT	49,2	74,5	29	
03	365947	83863		K1 Q RT	50,8	74,8	29	
03	365947	84116		K1 Q RT	50,5	75,1	28	
03	365947	84117		K1 Q RT	51,3	75,7	28	
03	365947	84118		K1 Q RT	51,9	75,1	29	
03	365947	84119		K1 Q RT	51,0	74,7	28	
03	365947	84120		K1 Q RT	50,2	75,0	30	
04	365946	84147		K1 Q RT	50,6	75,3	29	
04	365946	84149		K1 Q RT	51,2	74,7	29	
04	365946	84511		K1 Q RT	50,8	75,0	28	
05	365945	84628		K1 Q RT	49,4	74,1	29	

A04	Z01Z02/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.	Inspector's stamp	Date	PP
		B. BALDAUF Test House/Manager	07.12.11	1
		AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection: department		

**QM-System: Certification as per ISO 9001**



**DILLINGER HÜTTE**

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

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 406870-06.12.11	A08/A03	Manufacturer's order/ Certificate No. 369269-002	Sheet 7/
A05	Established inspecting body DH	A06	Purchaser EDMONTON STEEL, EDMON	A07.1	No. ED10580-J1010-ER	
			Final receiver EDMONTON STEEL, EDMON	A07.2	No. SA20-S5	
B02	Steel design. SA516-70					
B03	Any suppl. requirements DIL-HUE-2:R31-2010-11-22					

**C10-C29 Tensile test**

B14	B07.2	B07.1	B05	C01	C02/C03	C10	C11	C12	C13	C14-C15
Item No.	Heat No.	Roll plate/ Test No.	Reference (heat) treatment	C01	Temp. GR.F	Temp. GR.F	KSI RP02	RM	A %	A % L0=2IN
05	365945	84629		K1 Q	RT	RT	49,7	74,5		
05	365945	84630		K1 Q	RT	RT	50,2	74,2		
05	365945	84631		K1 Q	RT	RT	49,6	74,4		
06	365946	84146		K1 Q	RT	RT	50,0	74,7		
07	365962	93620		K1 QV	RT	RT	48,9	74,4	36	
07	365962	93621		K1 QV	RT	RT	49,9	74,0	35	
07	365962	93622		K1 QV	RT	RT	50,9	74,1	35	
07	365962	94966		K1 QV	RT	RT	49,7	74,7	36	
07	365962	94968		K1 QV	RT	RT	52,8	75,0	35	

**C30-C39 Hardness test**

B14	B07.2	B07.1	B05	C01	C02/C03	C30	C35	C31	C32
Item No.	Heat No.	Roll plate/ Test No.	Reference (heat) treatment	C01	Temp. GR.F	Temp. GR.F	Temp. GR.F	Individual values	Mean value
01	365954	45272		K1	RT	RT	RT	150	150
01	365956	02688		K1	RT	RT	RT	151	150
01	365960	96593		K1	RT	RT	RT	147	147
01	365960	96595		K1	RT	RT	RT	148	148
01	365960	96597		K1	RT	RT	RT	148	147
01	365960	96715		K1	RT	RT	RT	149	149
01	365960	97271		K1	RT	RT	RT	148	148
02	365957	97272		K1	RT	RT	RT	147	147
02	365957	97273		K1	RT	RT	RT	148	148
02	365957	97274		K1	RT	RT	RT	147	147
02	365957	97275		K1	RT	RT	RT	147	147

A04

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

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

*B. Baldauf*  
B. BALDAUF  
Test House Manager

Inspector's stamp Date 07.12.11

PP 1

**QMI-System: Certification as per ISO 9001**



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		A10 Advice of dispatch, No./ Date of dispatch 406870-06.12.11	A08/ Manufacturer's order/ A03: Certificate No. 369269-002	Sheet 8/...
MATERIAL TEST REPORT (MTR)		B01 Product HOT ROLLED PLATES		
A05 Established/Inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10580-J1010-ER		
	Final receiver EDMONTON STEEL, EDMON	A07.2 No.		
B02/ Steel design. SA516-70	SA20-S5			
B03 Any suppl. requirements DIL-HUB-2:R31-2010-11-22				

**C-30-C39 Hardness test**

B14 Item No.	B07.2 Heat No.	B07.1 Roll plate/ Test No.	B05 Reference (heat) treatment	C01	C02/C01	C03 Temp. GR.F	C30 Method of test	C35 Individual values	C31	C32 Mean value
03	365945	84632	K1	O		RT	HBW 10/3000	HB 148	149	149
03	365945	87205	K1	O		RT	HBW 10/3000	HB 145	145	146
03	365947	83863	K1	O		RT	HBW 10/3000	HB 148	147	147
03	365947	84116	K1	O		RT	HBW 10/3000	HB 150	149	149
03	365947	84117	K1	O		RT	HBW 10/3000	HB 148	148	148
03	365947	84118	K1	O		RT	HBW 10/3000	HB 146	147	147
03	365947	84119	K1	O		RT	HBW 10/3000	HB 147	144	146
03	365947	84120	K1	O		RT	HBW 10/3000	HB 145	145	145
04	365946	84147	K1	O		RT	HBW 10/3000	HB 147	148	148
04	365946	84149	K1	O		RT	HBW 10/3000	HB 147	144	146
04	365946	84511	K1	O		RT	HBW 10/3000	HB 145	145	145
05	365945	84628	K1	O		RT	HBW 10/3000	HB 146	146	146
05	365945	84629	K1	O		RT	HBW 10/3000	HB 145	145	145
05	365945	84630	K1	O		RT	HBW 10/3000	HB 145	146	145
05	365945	84631	K1	O		RT	HBW 10/3000	HB 146	144	145
06	365946	84146	K1	O		RT	HBW 10/3000	HB 147	146	146
07	365962	93620	K1	O		RT	HBW 10/3000	HB 144	145	144
07	365962	93621	K1	O		RT	HBW 10/3000	HB 143	141	142
07	365962	93622	K1	O		RT	HBW 10/3000	HB 145	144	144
07	365962	94966	K1	O		RT	HBW 10/3000	HB 148	147	147
07	365962	94968	K1	O		RT	HBW 10/3000	HB 147	146	147

A04	Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department	A01
			PP 1
	Inspector's stamp B. BALDAUF Test House Manager	Date 07.12.11	

QM-System: Certification as per ISO 9001



DILLINGER HÜTTE

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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204 :2004 INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991 MATERIAL TEST REPORT (MTR)	A10	Advice of dispatch No/ Date of dispatch 406870-06.12.11	A08/Manufacturer's order/ A03: Certificate No. 369269-002	Sheet 9/
A05	Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10580-J1010-ER	B01 Product HOT ROLLED PLATES	
B02/	Steel design. SA516-70	Final receiver EDMONTON STEEL, EDMON	A07.2 No. SA20-S5		
B03	Any suppl. requirements DIL-HUE-2:R31-2010-11-22				

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 Individual values AV=FT.LBF	C43 Mean value
01	365954	45272		K1	LV	-51		CHP-V			134	141
01	365956	02688		K1	LV	-51		CHP-V			124	111
01	365960	96593		K1	LV	-51		CHP-V			129	170
01	365960	96595		K1	LV	-51		CHP-V			130	151
01	365960	96597		K1	LV	-51		CHP-V			202	191
01	365960	96715		K1	LV	-51		CHP-V			140	166
01	365960	97271		K1	LV	-51		CHP-V			134	123
02	365957	97272		K1	LV	-51		CHP-V			189	150
02	365957	97273		K1	LV	-51		CHP-V			131	201
02	365957	97274		K1	LV	-51		CHP-V			99	131
02	365957	97275		K1	LV	-51		CHP-V			131	47
03	365945	84632		K1	LV	-51		CHP-V			110	133
03	365945	87205		K1	LV	-51		CHP-V			83	122
03	365947	83863		K1	LV	-51		CHP-V			130	116
03	365947	84116		K1	LV	-51		CHP-V			109	104
03	365947	84117		K1	LV	-51		CHP-V			162	138
03	365947	84118		K1	LV	-51		CHP-V			150	131
03	365947	84119		K1	LV	-51		CHP-V			162	163
03	365947	84120		K1	LV	-51		CHP-V			188	103
04	365946	84147		K1	LV	-51		CHP-V			117	115
04	365946	84149		K1	LV	-51		CHP-V			147	120
04	365946	84511		K1	LV	-51		CHP-V			115	101
05	365945	84628		K1	LV	-51		CHP-V			148	138
05	365945	84629		K1	LV	-51		CHP-V			117	97

A04

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

Inspector's stamp  
B. BAUDAUF  
Test House Manager

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

Date: 07.12.11

PP: 1



QM-System: Certification as per ISO 9001

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	406870-06.12.11	A08/ Manufacturer's order/ A03 Certificate No.	369269-002	Sheet	10/...
A05	Established/inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10580-J1010-ER	B01 Product HOT ROLLED PLATES			
B02/	Steel design. SA516-70	Final receiver EDMONTON STEEL, EDMON	A07.2 No. SA20-S5				
B03	Any suppl. requirements ASME-II-A:10 DIL-HUE-2:R31-2010-11-22						

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
05	365945	84630		K1	LV	-51	-51	CHP-V		AV 98	125	90
05	365945	84631		K1	LV	-51	-51	CHP-V		AV 110	125	86
06	365946	84146		K1	LV	-51	-51	CHP-V		AV 107	77	103
07	365962	93620		K1	LV	-51	-51	CHP-V		AV 53	119	78
07	365962	93621		K1	LV	-51	-51	CHP-V		AV 96	103	89
07	365962	93622		K1	LV	-51	-51	CHP-V		AV 106	116	119
07	365962	94966		K1	LV	-51	-51	CHP-V		AV 86	113	130
07	365962	94968		K1	LV	-51	-51	CHP-V		AV 120	73	110

C70-C99 Chemical composition % - Heat analysis

B07.2 Heat	C70	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
365945	Y	0,176	0,371	1,18	0,008	0,0008	0,0060	0,039	0,023	0,059	0,035	0,000	0,000	0,001	0,002
365946	Y	0,179	0,384	1,19	0,008	0,0011	0,0064	0,030	0,016	0,047	0,028	0,001	0,000	0,001	0,002
365947	Y	0,176	0,382	1,19	0,007	0,0011	0,0078	0,043	0,022	0,051	0,020	0,001	0,001	0,001	0,002
365954	Y	0,182	0,372	1,17	0,008	0,0012	0,0060	0,042	0,019	0,071	0,029	0,002	0,000	0,001	0,002
365956	Y	0,178	0,375	1,17	0,007	0,0010	0,0084	0,047	0,023	0,071	0,016	0,001	0,000	0,001	0,002
365957	Y	0,177	0,380	1,18	0,008	0,0008	0,0057	0,035	0,015	0,061	0,024	0,001	0,000	0,001	0,002
365960	Y	0,189	0,376	1,16	0,009	0,0009	0,0060	0,033	0,016	0,067	0,033	0,001	0,000	0,000	0,002
365962	Y	0,171	0,385	1,18	0,008	0,0014	0,0064	0,036	0,015	0,051	0,027	0,000	0,000	0,000	0,001

**QM-System: Certification as per ISO 9001**



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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10	Advice of dispatch No./ Date of dispatch	A08 / Manufacturer's order/ A03 Certificate No.	Sheet
	INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		406870-06.12.11	369269-002	11 / ...
	MATERIAL TEST REPORT (MTR)			B01 Product	
A05	Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10580-J1010-ER	HOT ROLLED PLATES	
		Final receiver EDMONTON STEEL, EDMON	A07.2 No. SA20-SS		
B02	Steel design SA516-70				
B03	Any suppl. requirements	ASME-II-A:10			
		DIL-HUE-2:R31-2010-11-22			

**C70-C99 Chemical composition % - Heat analysis**




B07.2 Heat	C70	B	CA	AL-T
365945	Y	0,0002	0,0027	0,032
365946	Y	0,0002	0,0031	0,034
365947	Y	0,0002	0,0016	0,032
365954	Y	0,0002	0,0019	0,033
365956	Y	0,0003	0,0027	0,031
365957	Y	0,0003	0,0023	0,036
365960	Y	0,0000	0,0024	0,035
365962	Y	0,0002	0,0030	0,040

**C94 Heat analysis Carbon equivalent / Alloying restrictions**

B07.2 Heat	FO-02=	0,39	FO-51=	0,000	FO-55=	0,16	FO-78=	0,06	FO-91=	6,7
365945	FO-02=	0,39	FO-51=	0,001	FO-55=	0,12	FO-78=	0,04	FO-91=	6,6
365946	FO-02=	0,39	FO-51=	0,002	FO-55=	0,14	FO-78=	0,04	FO-91=	6,8
365947	FO-02=	0,39	FO-51=	0,002	FO-55=	0,16	FO-78=	0,05	FO-91=	6,4
365954	FO-02=	0,39	FO-51=	0,001	FO-55=	0,16	FO-78=	0,04	FO-91=	6,6
365956	FO-02=	0,39	FO-51=	0,001	FO-55=	0,14	FO-78=	0,04	FO-91=	6,7
365957	FO-02=	0,40	FO-51=	0,001	FO-55=	0,15	FO-78=	0,05	FO-91=	6,1
365960	FO-02=	0,38	FO-51=	0,000	FO-55=	0,13	FO-78=	0,04	FO-91=	6,9

**C95 Ladle treatment**

ITEM NO.: 01-07  
 HEAT OF THE INDICATED ITEM: VACUUM DEGASSED / SULPHIDE SHAPE CONTROL

A04	 Manufacturer's mark	 B. BALDAUF Test House Manager	 AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department	Date 07.12.11 Inspector's stamp PP 1
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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**



**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 406870-06.12.11	A08/ Manufacturer's order/ A03 Certificate No. 369269-002	Sheet 12/...
A05	Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10580-J1010-ER	
		Final receiver EDMONTON STEEL, EDMON	A07.2 No.	HOT ROLLED PLATES
B02/	Steel design. SA516-70		SA20-S5	
B03	Any suppl. requirements DIL-HUE-2:R31-2010-11-22			

**C95 Further information about ladle treatment**

ITEM NO.: 01-07  
CALCIUM TREATED

**C70-C99 Chemical composition % - Product analysis**

B07.2 Heat	B07.1 Test No.	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
365945	84629	K1	0,177	0,366	1,17	0,008	0,0007	0,0055	0,037	0,023	0,034	0,000	0,000	0,001	0,001
365945	87205	K1	0,178	0,359	1,16	0,008	0,0011	0,0066	0,037	0,023	0,034	0,000	0,000	0,001	0,001
365946	84147	K1	0,176	0,390	1,18	0,008	0,0011	0,0066	0,029	0,015	0,027	0,000	0,000	0,001	0,002
365946	84150	K1	0,178	0,384	1,19	0,008	0,0013	0,0067	0,031	0,016	0,028	0,001	0,000	0,000	0,002
365946	84513	K1	0,174	0,383	1,18	0,008	0,0006	0,0054	0,037	0,024	0,034	0,000	0,001	0,001	0,001
365947	84117	K1	0,175	0,379	1,18	0,007	0,0008	0,0060	0,037	0,018	0,022	0,001	0,000	0,001	0,002
365954	45272	K1	0,179	0,379	1,16	0,007	0,0010	0,0053	0,039	0,026	0,034	0,001	0,000	0,001	0,001
365956	02688	K1	0,178	0,364	1,15	0,006	0,0008	0,0103	0,045	0,023	0,017	0,000	0,000	0,000	0,002
365957	97739	K1	0,174	0,375	1,16	0,008	0,0010	0,0053	0,034	0,014	0,024	0,000	0,000	0,000	0,002
365960	96713	K1	0,171	0,370	1,15	0,009	0,0009	0,0055	0,033	0,015	0,031	0,001	0,000	0,001	0,002
365962	93622	K1	0,172	0,377	1,17	0,008	0,0017	0,0063	0,034	0,015	0,028	0,000	0,000	0,001	0,001

**B07.2 B07.1 C01**

B07.2 Heat	B07.1 Test No.	B	CA	AL-T
365945	84629	K1	0,0002	0,0027
365945	87205	K1	0,0002	0,0026
365946	84147	K1	0,0002	0,0030
365946	84150	K1	0,0002	0,0029
365946	84513	K1	0,0001	0,0023
365947	84117	K1	0,0002	0,0019
365954	45272	K1	0,0000	0,0022
365956	02688	K1	0,0002	0,0027

A04

201702Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

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

*B. Baldauf*  
B. BALDAUF  
Test House Manager

Inspector's stamp  
Date 07.12.11

PP 1



QM-System: Certification as per ISO 9001

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

A02	INSPECTION CERTIFICATE 3.1	AS PER EN 10204 : 2004	A10	Advice of dispatch No./ Date of dispatch	406870-06.12.11	A08/ Manufacturer's order/ A03 - Certificate No.	369269-002	Sheet	13/...
	INSPECTION CERTIFICATE 3.1.B	AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991				B01 Product	HOT ROLLED PLATES		
	MATERIAL TEST REPORT (MTR)								
A05	Established Inspecting body DH	A06 Purchaser Final receiver	EDMONTON STEEL, EDMON	A07.1 No.	ED10580-J1010-ER				
B02/	Steel design.	SA516-70		A07.2 No.	SA20-S5				
B03	Any suppl. requirements	ASME-II-A:10 DIL-HUE-2:R31-2010-11-22							

C70-C99 Chemical composition % - Product analysis

B07.2 Heat	B07.1 Test No.	C01	B	CA	AL-T
365957	97739	K1	0,0001	0,0021	0,035
365960	96713	K1	0,0002	0,0020	0,035
365962	93622	K1	0,0002	0,0027	0,036

C94 Product analysis Carbon equivalent / Alloying restrictions

B07.2 Heat	B07.1 Test No.	C01	FO-02=	FO-51=	FO-55=
365945	84629	K1	0,39	0,000	0,15
365945	87205	K1	0,39	0,000	0,15
365946	84147	K1	0,39	0,000	0,12
365946	84150	K1	0,39	0,001	0,12
365946	84513	K1	0,39	0,001	0,15
365947	84117	K1	0,39	0,001	0,13
365954	45272	K1	0,39	0,001	0,18
365956	02688	K1	0,39	0,000	0,16
365957	97739	K1	0,38	0,000	0,13
365960	96713	K1	0,38	0,001	0,15
365962	93622	K1	0,38	0,000	0,13

C94 Carbon equivalent formula / Alloying restrictions

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

A04



Manufacturer's mark

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

*B. Baldauf*

B. BALDAUF  
Test House Manager



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

Inspector's stamp

Date 07.12.11

PP 1

**QM-System: Certification as per ISO 9001**



**DILLINGER HÜTTE**

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

<p>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)</p>	<p>A10 Advice of dispatch No./ Date of dispatch 406870-06.12.11</p>	<p>A06/ Manufacturer's order/ A03 Certificate No. 369269-002</p> <p>B01 Product HOT ROLLED PLATES</p> <p>Sheet 14</p>
<p>A05 Established inspecting body DH</p>	<p>A06 Purchaser EDMONTON STEEL, EDMON</p> <p>A07.1 No. ED10580-J1010-ER</p> <p>A07.2 No. EDMONTON STEEL, EDMON</p>	
<p>B02/ Steel design. SA516-70</p> <p>B03 Any suppl. ASME-II-A:10</p> <p>requirements DIL-HUE-2:R31-2010-11-22</p>		<p>SA20-S5</p>

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

ITEM NO.: 01-07

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

<p>A04</p> <p>Manufacturer's mark</p>	<p>Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.</p> <p><i>B. Baldauf</i></p> <p><b>AHB</b></p> <p>Inspector's stamp</p> <p>Date 07.12.11</p> <p>AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department</p>	<p>A01</p> <p>PP. 1</p>
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QM-System: Certification as per ISO 9001

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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10	Advice of dispatch No./ Date of dispatch	A08/ Manufacturer's order/ A03 Certificate No.	Sheet
	INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		442736-16.01.13	380161-002	1/...
	MATERIAL TEST REPORT (MTR)			B01 Product	
A05	Established Inspecting body DH	A06 Purchaser	EDMONTON STEEL, EDMON	A07.1 No.	ED10609-J1010-ER
		Final receiver	EDMONTON STEEL, EDMON	A07.2 No.	
B02/	Steel design. SA516-70				
B03	Any suppl. requirements				
	ASME-11A:2010+ADDENDA-2011A				
	DIL-HUE-2:R33-2012-10-01				
			SA20-S5		



B01-B99 Description of the product

B14 Item No.	B08 Number of pieces	B09 Thickness	B10 Width	B11 Length	B12 Theoretical mass	B04 Product delivery condition	B07.2 Heat No.	B07.1 Rolled plate No./ Test No.	A09 Purchaser article number
01	1	0,6250 x	120,50000 x	480,00000 x	4650 N	N	380614	01001-02	
01	1	0,6250 x	120,50000 x	480,00000 x	4650 N	N	380617	99936-03	
**	2			9300					
02	1	0,7500 x	120,50000 x	480,00000 x	5580 N	N	380614	01148-01	
02	1	0,7500 x	120,50000 x	480,00000 x	5580 N	N	380614	01148-02	
02	1	0,7500 x	120,50000 x	480,00000 x	5580 N	N	380614	01148-03	
02	1	0,7500 x	120,50000 x	480,00000 x	5580 N	N	380617	99931-02	
**	4			22320					
03	1	0,8750 x	96,50000 x	480,00000 x	5214 N	N	380616	99947-01	
03	1	0,8750 x	96,50000 x	480,00000 x	5214 N	N	380616	99947-02	
03	1	0,8750 x	96,50000 x	480,00000 x	5214 N	N	380616	99947-03	
03	1	0,8750 x	96,50000 x	480,00000 x	5214 N	N	380616	99949-01	
03	1	0,8750 x	96,50000 x	480,00000 x	5214 N	N	380616	99949-02	
03	1	0,8750 x	96,50000 x	480,00000 x	5214 N	N	380616	99949-03	
**	6			31284					
04	1	0,8750 x	178,00000 x	356,00000 x	7133 N	N	380616	99946-01	
***	13			70037					

① Shell. 24" OD - 7.875" I.D.  
8440-01  
Po-133437

CONFORMS TO EN 516-70MT  
YEAR 200ED, 2011 ADD  
JOB # 1613-8440-01  
ITEM # #19  
SIGNED BY [Signature] OCT 28 2013

B04 Product delivery condition

ITEM NO.: 01-05  
 N: HT: 1670 GR.F +36 -27 GR.F  
 SOAKING TIME TO ATTAIN THE TARGET TEMPERATURE OVER THE WHOLE SECTION: 1-1,75 MIN/MM (25-45 MIN/INCH)  
 COOLING IN STILL AIR

A04	Z01/Z02/Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.		
		AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department	A01
		[Signature]	
		B. BALDAUF Test House Manager	
		Inspector's stamp	Date 17.01.13
			PP 1





QM-System: Certification as per ISO 9001

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

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	442736-16.01.13	A08/ Manufacturer's order/ A03 Certificate No.	380161-002	Sheet	2 / ...
A05	Established inspecting body DH	A06	Purchaser Final receiver	EDMONTON STEEL, EDMON EDMONTON STEEL, EDMON	A07.1 No.	ED10609-J1010-ER	B01	Product HEAVY PLATES
B02	Steel design.	SA516-70						
B03	Any suppl. requirements	ASME- IIA:2010+ADDENDA-2011A DIL-HUE-2:R33-2012-10-01						

B06 Marking of the product

ITEM NO.: 01-05  
 STEEL DESIGNATION SA516 70 MTLTV SA516 60 MTLTV  
 HEAT NO. / TRADEMARK / ROLLED PLATE NO. -TEST NO. / INSPECTOR'S STAMP

B07-B99 Further information about the product

ITEM NO.: 01-05  
 THICKNESS REDUCTION RATIO >= 3,0 IS FULFILLED (CF. A/SA20 PAR. 5.3)

C10-C29 Tensile test

B14 Item No.	B07.2 Heat No.	B07.1 Rol.plate/ Test No.	B05 Reference (heat) treatment	C01		C02/C03		C10		C11		C12		C13		C14-C15	
				Temp. GR.F	Temp. GR.F	KSI RP02	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F
01	380614	01001	K1 Q	RT	51,2	RT	76,7	28									
01	380617	99936	K1 Q	RT	50,9	RT	75,5	27									
02	380614	01148	K1 Q	RT	50,6	RT	75,7	28									
02	380617	99931 ←	K1 Q	RT	49,6 ←	RT	74,8 ←	29									
03	380616	99947	K1 Q	RT	49,7	RT	75,3	29									
03	380616	99949	K1 Q	RT	50,2	RT	75,4	29									
04	380616	99946	K1 Q	RT	49,6	RT	76,4	30									

C30-C39 Hardness test

B14 Item No.	B07.2 Heat No.	B07.1 Rol.plate/ Test No.	B05 Reference (heat) treatment	C01		C02/C01		C30		C31		C32	
				Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F	Temp. GR.F
01	380614	01001	K1 O	RT	HBW 10/3000	HB	146	147					
01	380617	99936	K1 O	RT	HBW 10/3000	HB	141	142					
02	380614	01148	K1 O	RT	HBW 10/3000	HB	144	144					
02	380617	99931 ←	K1 O	RT	HBW 10/3000	HB	141	142					

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

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

AHB

B. BALDAUF  
 Test House Manager

Inspector's stamp Date 17.01.13 PP 1

QM-System: Certification as per ISO 9001



DILLINGER HÜTTE

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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10	Advice of dispatch No./ Date of dispatch	A08/ Manufacturer's order/ A03 Certificate No.	Sheet
A03	INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		442736-16.01.13	380161-002	3 / ...
MATERIAL TEST REPORT (MTR)					
A05	Established inspecting body DH	A06 Purchaser EDMONTON STEEL, EDMON	A07.1 No. ED10609-J1010-ER	B01 Product HEAVY PLATES	
		Final receiver EDMONTON STEEL, EDMON	A07.2 No.		
B02/	Steel design. SA516-70		SA20-S5		
B03	Any suppl. requirements	ASME - IIA: 2010+ADDENDA-2011A DIL-HUE-2:R33-2012-10-01			

C30-C39 Hardness test

B14	B07.2	B07.1	B05	C01	C02/C01	C03	C30	C35	C31	C46	C45	C42	C43
Item No.	Heat No.	Roll plate/ Test No.	Reference (heat) treatment			Temp. GR.F	Method of test	Individual values	Individual values	Energy	Individual values AV=FT,LBF	Mean value	Mean value
03	380616	99947		K1	O	RT	HBW 10/3000	HB 145	146	144	142	145	145
03	380616	99949		K1	O	RT	HBW 10/3000	HB 143	140	143	142	142	142
04	380616	99946		K1	O	RT	HBW 10/3000	HB 142	142	142	142	142	142

C40-C49 Impact test

B14	B07.2	B07.1	B05	C01	C02/	C03	C41	C40	C44	C46	C45	C42	C43
Item No.	Heat No.	Roll plate/ Test No.	Reference (heat) treatment		C01	Temp. GR.F	Width of test piece	Type of test piece	Testing method	Energy	Individual values AV=FT,LBF	Mean value	Mean value
01	380614	01001		K1	LV	-51		CHP-V	AV 106	142	122	123	123
01	380617	99936		K1	LV	-51		CHP-V	AV 193	115	189	166	166
02	380614	01148		K1	LV	-51		CHP-V	AV 101	98	105	101	101
02	380617	99931		K1	LV	-51		CHP-V	AV 195	113	130	146	146
03	380616	99947		K1	LV	-51		CHP-V	AV 91	101	97	96	96
03	380616	99949		K1	LV	-51		CHP-V	AV 126	97	119	114	114
04	380616	99946		K1	LV	-51		CHP-V	AV 113	150	96	120	120

C70-C99 Chemical composition % - Heat analysis

B07.2	C70	C	SI	MN	P	S	N	CU	MO	NI	CR	NB	SN	TI
380614	Y	0,184	0,368	1,19	0,011	0,0008	0,0062	0,031	0,025	0,056	0,039	0,001	0,000	0,003
380616	Y	0,187	0,375	1,19	0,009	0,0014	0,0055	0,026	0,015	0,041	0,040	0,001	0,000	0,003
380617	Y	0,176	0,374	1,18	0,009	0,0006	0,0060	0,022	0,024	0,050	0,070	0,001	0,000	0,003

A04 Z01/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.


  
 B. BALDAUF  
 Test House Manager


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

Date 17.01.13  
 PP 1

**QM-System: Certification as per ISO 9001**



**DILLINGER HÜTTE**

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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10	Advice of dispatch No./ Date of dispatch	Sheet	
	INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		442736-16.01.13	4/	
	MATERIAL TEST REPORT (MTR)				
A05	Established inspecting body DH	A06	Purchaser EDMONTON STEEL, EDMON	A07.1	No. ED10609-J1010-ER
			Final receiver EDMONTON STEEL, EDMON	A07.2	No. SA20-S5
B02/	Steel design. SA516-70				
B03	Any suppl. requirements				
	ASME- IIA: 2010+ADDENDA-2011A				
	DIL-HUE-2: R33-2012-10-01				

**C70-C99 Chemical composition % - Heat analysis**

C70	B	CA	AL-T
B07.2 Heat			
380614	Y	0,0002	0,0016
380616	Y	0,0003	0,0018
380617	Y	0,0002	0,0015

**C94 Heat analysis Carbon equivalent / Alloying restrictions**

B07.2 Heat			
380614	FO-02=	0,40	FO-51=
380616	FO-02=	0,40	FO-51=
380617	FO-02=	0,40	FO-51=

**C95 Ladle treatment**

ITEM NO.: 01-05  
HEAT OF THE INDICATED ITEM: VACUUM DEGASSED / SULPHIDE SHAPE CONTROL

**C95 Further information about ladle treatment**

ITEM NO.: 01-05  
CALCIUM TREATED

**C70-C99 Chemical composition % - Product analysis**

C01	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
B07.1 Heat														
380614	01001	K1	0,185	0,381	1,18	0,010	0,0011	0,0059	0,028	0,021	0,051	0,039	0,001	0,000
380614	01148	K1	0,180	0,351	1,16	0,010	0,0009	0,0061	0,029	0,023	0,055	0,037	0,001	0,000
380616	99940	K1	0,184	0,371	1,17	0,009	0,0020	0,0058	0,025	0,012	0,038	0,039	0,000	0,000
380616	99952	K1	0,184	0,374	1,18	0,009	0,0017	0,0058	0,026	0,013	0,041	0,039	0,000	0,000
380616	99992	K1	0,183	0,378	1,17	0,009	0,0015	0,0054	0,025	0,014	0,042	0,039	0,001	0,000
380617	99931	K1	0,172	0,361	1,15	0,008	0,0005	0,0059	0,020	0,023	0,049	0,070	0,000	0,000

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



Manufacturer's mark

*B. Baldauf*



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

B. BALDAUF  
Test House Manager

Inspector's stamp Date 17.01.13

PP 1

**QM-System: Certification as per ISO 9001**



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

A02	INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004	A10	Advice of dispatch No./ Date of dispatch	A08/A03	Manufacturer's order/ Certificate No.	Sheet
	INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+A1:1995 + AS PER ISO 10474:1991		442736-16.01.13		380161-002	5/...
	MATERIAL TEST REPORT (MTR)					
A05	Established inspecting body	A06	Purchaser	A07.1	No.	ED10609-J1010-ER
	DH		Final receiver	A07.2	No.	EDMONTON STEEL, EDMON
B02/	Steel design.	SA516-70				SA20-S5
B03	Any suppl. requirements	ASME-IIA:2010+ADDENDA-2011A DIL-HUE-2:R33-2012-10-01				

**C70-C99 Chemical composition % - Product analysis**

Heat	Test No.	C	SI	MN	P	S	N	CU	MO	NI	CR	V	NB	SN	TI
B07.2	B07.1	C01													
380617	99936	K1	0,187	0,362	1,15	0,008	0,0010	0,0057	0,021	0,047	0,066	0,001	0,000	0,000	0,003
B07.2	B07.1	C01													
380614	01001	K1	0,0002	0,0016	0,033										
380614	01148	K1	0,0002	0,0018	0,033										
380616	99940	K1	0,0001	0,0018	0,037										
380616	99952	K1	0,0002	0,0019	0,036										
380616	99992	K1	0,0001	0,0019	0,035										
380617	99931	K1	0,0002	0,0014	0,032										
380617	99936	K1	0,0003	0,0015	0,032										

**C94 Product analysis Carbon equivalent / Alloying restrictions**

Heat	Test No.	FO-02=	FO-51=	FO-55=
B07.2	B07.1	C01		
380614	01001	K1	FO-02= 0,40	FO-51= 0,14
380614	01148	K1	FO-02= 0,39	FO-51= 0,14
380616	99940	K1	FO-02= 0,39	FO-51= 0,11
380616	99952	K1	FO-02= 0,40	FO-51= 0,12
380616	99992	K1	FO-02= 0,39	FO-51= 0,12
380617	99931	K1	FO-02= 0,39	FO-51= 0,16
380617	99936	K1	FO-02= 0,40	FO-51= 0,16

A04



Manufacturer's mark

2011/202/203 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

*B. Baldauf*

B. BALDAUF  
Test House Manager



Inspector's stamp

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

Date 17.01.13

pp 1

A01



**QM-System: Certification as per ISO 9001**



**DILLINGER HÜTTE**

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

<p>A02 INSPECTION CERTIFICATE 3.1 AS PER EN 10204:2004 INSPECTION CERTIFICATE 3.1.B AS PER EN 10204:1991+AI:1995 + AS PER ISO 10474:1991</p>	<p>A10 Advice of dispatch No./ Date of dispatch 442736-16.01.13</p>	<p>A08/ Manufacturer's order/ A03 Certificate No. 380161-002</p>	<p>Sheet 6</p>
<p>MATERIAL TEST REPORT (MTR)</p>		<p>B01 Product HEAVY PLATES</p>	
<p>A05 Established inspecting body DH</p>	<p>A06 Purchaser EDMONTON STEEL, EDMON</p>	<p>A07.1 No. ED10609-J1010-ER</p>	
<p>B02/ Steel design. SA516-70</p>	<p>Final receiver EDMONTON STEEL, EDMON</p>	<p>A07.2 No. SA20-S5</p>	
<p>B03 Any suppl. requirements ASME- IIA: 2010+ADDENDA-2011A DIL-HUE-2: R33-2012-10-01</p>			

**C94 Carbon equivalent formula / Alloying restrictions**

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

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

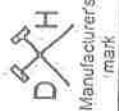
ITEM NO.: 01-05

EXAMINATION OF MARKING, SURFACE, SHAPE AND DIMENSIONS: THE RESULTS MEET THE REQUIREMENTS.

- SURFACE AS PER ASME-SA20
- THICKNESS AS PER ASME-SA20
- LENGTH AND WIDTH AS PER ASME-SA20
- FLATNESS AS PER 1/2-ASME-SA20



A04



Z01Z02Z03 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.

*B. Baldauf*



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

B. BALDAUF  
Test House Manager

Inspector's stamp

Date 17.01.13

PP 1



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

**MILL TEST CERTIFICATE**

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

Customer:

Order No.: E000267

Certificate No.: SE103209

Date: 04/29/2013

Page: 1 OF 1

PRODUCT		MATERIAL SPECIFICATIONS												DIMENSIONAL SPECIFICATIONS											
FORGED CARBON STEEL FLANGES		ASTM A-350 LF2-11 CL. 1/ASME SA-350 LF2-11 CL. 1												ASME B16.5-09 CSA Z245.12											
Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)												CE(*3)									
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N										
		Min	Max	0.210	0.200	1.180	0.011	0.006	0.040	0.090	0.050	0.005	0.002	0.001	0.010	0.020	0.400	0.120	0.080	0.020	-	-	0.427		
1	150 BLRF 24" LF2		10 PCE																						
CONFORMS TO SA 350 LF2 CL1 YEAR 2010 ED, 2nd ADD JOB # 0013-8440-01 ITEM # #20 SIGNED BY [Signature] SEP 26 2013																									
Item No.	Heat No.	T.S.(*) (MPA)	Y.S.(*) (MPA)	E.L.(*) (%)	Hardness (HB)	R.A.(*) (%)	Impact Test			Material Supplier	REMARKS														
							Temp: -46°C	Minimum: 20.0 Joule	3																
1	24635	537.0	380.0	35.6	154/152	69.5	47.0	44.0	36.0	EVRAZ ZSMK	HEAT TREATMENT(*2) <input checked="" type="checkbox"/> N <input type="checkbox"/> R 890°C X3HRS CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15156.2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A. CONFORMS WITH Z245.12 CAT II GR248 SOUR SERVICE-09 (FOR USE AS WELDING NECK AND BLIND FLANGES ONLY) TEST SPECIMEN SIZE: 10X10 IMPACT TEST TEMP: -46°C MN TO C RATIO IS GREATER THAN 3.0"														



\*1: T.S. = Tensile Strength, Y.S. = Yield Strength, E.L. = Elongation, R.A. = Reduction of Area.  
 \*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S.T=Solution Treated, S.R=Stress Relieved, A.C=Air Cooled, F.C=Furnace Cooled, W.C=Water Cooled, O.C=Oil Cooled.  
 \*3: C.E. Value = C + (Mn / 6) + (Cr + Mo + V) / 5 + (Ni + Cu) / 15

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 Dept

SAN ENG STEEL FORGING CO. LTD  
 311, Jen Hein Road, Jen Wu District  
 Kaohsiung, Taiwan, R.O.C.  
 TEL: 07-3724248; FAX: 07-3712923  
 URL: www.saneng.com.tw  
 e-mail: saneng@ksis.seed.net.tw

**MILL TEST CERTIFICATE**

EN10204-3.1B(DIN50049/3.1B)  
 Customer: SEYBOLD INTERNATIONAL CORP.  
 Order No.: 7006135(3)-VL

Certificate No.: SE-6135C  
 Date: 01/04/2013  
 Page: 4 OF 5

**DIMENSIONAL SPECIFICATIONS**

ASTM A360 LF2-11 CL.1/ASME SA350 LF2-11 CL.1  
 ASME B16.5-09  
 CSA Z245.12

**MATERIAL SPECIFICATIONS**

FORGED CARBON STEEL FLANGES

**PRODUCT**

Item No.	CODE NO	DESCRIPTION	QUANTITY		CHEMICAL COMPOSITION (%)											CE(*)		
			Min	Max	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb		N	
31	24589-LF2	300 WNRFS160 3" LF2	15	PCE	0.300	0.209	0.250	1.010	0.013	0.040	0.300	0.400	0.120	0.080	0.020	-	-	0.386
32	22186-LF2	300 WNRFS160 4" LF2	169	PCE	0.210	0.200	0.200	1.150	0.017	0.005	0.010	0.001	0.005	0.001	0.005	-	-	0.406
33	22186-LF2	300 WNRFS160 4" LF2	6	PCE	0.200	0.210	0.210	1.100	0.011	0.003	0.100	0.050	0.010	0.009	0.001	0.008	-	0.408
34	24626-LF2	600 WNRFS160 4" LF2	20	PCE	0.220	0.240	0.240	1.180	0.017	0.005	0.008	0.030	0.010	0.010	0.001	0.007	-	0.427
35	37560-LF2	300 WNRFS160 4" LF2	20	PCE	0.200	0.210	0.210	1.100	0.011	0.003	0.100	0.050	0.010	0.009	0.001	0.008	-	0.408
36	22118-LF2	300 WNRFS160 4" LF2	15	PCE	0.220	0.250	0.250	1.150	0.015	0.004	0.007	0.010	0.010	0.003	0.004	0.001	0.005	0.416
37	24578-LF2	150 WNRFS160 4" LF2	20	PCE	0.210	0.210	0.210	1.140	0.017	0.004	0.007	0.020	0.010	0.002	0.003	0.001	0.008	0.406
38	24590-LF2	300 WNRFS160 4" LF2	20	PCE	0.220	0.220	0.220	1.170	0.012	0.002	0.006	0.010	0.010	0.002	0.003	0.001	0.006	0.419
39	22172-LF2	150 WNRFS160 6" LF2	33	PCE	0.210	0.210	0.210	1.110	0.013	0.005	0.160	0.050	0.013	0.009	0.009	0.005	0.424	
40	22172-LF2	150 WNRFS160 6" LF2	27	PCE	0.200	0.220	0.220	1.100	0.012	0.004	0.150	0.080	0.012	0.009	0.001	0.011	0.418	

Item No.	Heat No.	T.S.(*) (MPa)		Y.S.(*) (MPa)	E.L.(*) (%)	Hardness (HB)	R.A.(*) (%)	Impact Test Temp: -46°C		Material Supplier	HEAT TREATMENT(*)	REMARKS
		Min	Max					1	2			
31	931274	509.9	655.0	325.6	34.8	197	65.0	27.0	26.0	NTMK	880°CX3HRS	CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15156-2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A. CONFORMS WITH Z245.12 CAT II GR248 SOUR SERVICE-09 AND GR290 CAT II M45C SS(FOR USE AS WELDING NECK AND BLIND FLANGES ONLY) TEST SPECIMEN SIZE: 10X10 IMPACT TEST TEMP.: -46°C
32	4554034	520.0	685.0	362.0	34.0	154/152	69.5	72.0	39.0	ACOMINAS	880°CX3HRS	
33	80399	539.4	655.0	378.5	36.6	153/151	71.3	30.0	61.0	WEI CHIH STEEL	880°CX3HRS	
34	4809477	539.0	655.0	358.0	31.0	154/151	66.8	86.0	87.0	ACOMINAS	880°CX3HRS	
35	80399	539.4	655.0	379.5	36.6	154/151	71.3	30.0	61.0	WEI CHIH STEEL	880°CX3HRS	
36	4443573	517.8	655.0	363.8	34.6	152/150	71.3	87.0	87.0	ACOMINAS	880°CX3HRS	
37	4417803	543.3	655.0	408.0	34.0	157/155	75.4	70.0	84.0	ACOMINAS	880°CX3HRS	
38	4390813	521.7	655.0	357.9	34.0	154/151	68.6	50.0	92.0	ACOMINAS	880°CX3HRS	
39	83823	537.4	655.0	399.1	34.4	155/153	68.6	90.0	64.0	WEI CHIH STEEL	880°CX3HRS	
40	82004	531.5	655.0	387.4	32.6	155/152	70.4	89.0	88.0	WEI CHIH STEEL	880°CX3HRS	

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

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

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

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



CONFORMS TO SA 350 LF2CL  
 YEAR 2008ED, 2611ADD  
 JOB # 2013-8440-01  
 ITEM # #28  
 SIGNED BY Jk-SEP 26 2013

4-8440-01  
 Po-133A15

Manager of Quality Assurance Dept



VL QA Approved



3020 FORON RD.  
1121 HARRISON AV PMB 293  
CENTRALIA WA 98531

# Material Test Report

Manufactured by:  
Jindal Saw LTD  
A-59-60, Malegaon MIDC, Sivr

Customer Order No: 133352125-001      Scot Order No: 789849.03      INDIA, Alcoa # P A004 IN

ALCO GAS & OIL PRODUCTION EQUIP  
5203 - 75 STREET  
EDMONTON AB T6E 5S5

Material Supplier: 99312.00  
Part Number: 6" SCH XH SA333 G6 HONED  
Scot Rec. No: 10137004

Heat Number: 2201333      Grade:      Dimensions: 6.625" OD 5.753" / 5.769" ID X  
Scot Spec: MS-      ASTM Spec: A106-B/C / A333-      Other Spec: API 5L X42  
Description: HFS NORMALIZED STEEL TUBING \*MERCURY FREE \*NO WELD REPAIR

Meter Run Stock  
Pd-133352  
CONROBUS TO SA 333-5  
JOB # 2013-2446-01  
DATE 29, 30  
SIGNED BY [Signature] 23 APR 2014

Chemical Analysis	C	Mn	P	S	Si	Cu	Ni	Cr	MO	V	CE
	0.20	1.13	0.012	0.006	0.29	0.005	0.008	0.009	0.003	0.001	0.388

Mechanical Test Results	Yield Strength:(PSI)	Tensile Strength:(PSI)	Elongation:(%) in 2" G.L.	ROA:(%)	Hardness
	49407	74194	39.96		158 (BHN) ←

Charpy Impact Energy	Orientation - Longitudinal							
	Energy (Joules)			Shear Area (%)				
Temp	1	2	3	Avg	1	2	3	Avg
-45	C	58.00	84.00	90.00	77.33			

The reported analysis and test results are certified to be the same as furnished to us by our supplier. All records and test reports covering the above materials are on file at Scot Industries and may be examined by your personnel or by any agent authorized by you.

[Signature]  
Quality Assurance

10/21/13



# INSPECTION CERTIFICATE

Customer : SEAMLESS LOW TEMPERATURE CARBON (MILL TEST)  
 Product : STEEL BUTT WELD FITTINGS CHUP HSIN ENTERPRISE CO., LTD.  
 Spec : ASME SA/ ASTM A420 WPL6-10 17, TUNG U ROAD HSIAO KANG, KAOHSIUNG, TAIWAN, R.O.C.  
 [DIN 50049/B.1B]EN10204 3.1/NACE MR TEL:(07)831-9157 FAX:(07)821-7500, 831-2942  
 0175-03

Certificate No : 00100114-0202  
 Order No : E000256  
 Date : 2013/04/17

Starting Material		Specification for Inspection										Visual Inspection		Dimensional Inspection		
ASTM A333 GR-6		ASME B16.9-2010										GOOD		GOOD		
Item	Description	Quantity	Heat ID	Heat No	Raw Certificate No.	NDE	Test Temp °C	Size of specimen mm	Charpy V-Notch Impact Value J	Ave.	Impact Test		Heat Treatment		REMARK	
											Test Temp °C	Ave.	Heat Treatment	REMARK		
23	90 E/S/ R SMLS WPL6 STD	4	768A	J7L1768	SUMITOMO BYYM2454		-45	10 X 5.0 X 55	48	80	68			2-8440-01 P0-133415 CONFORMS TO SA 420WPL6 YEAR 2012ED, 2011ADD JOB# 1013-8440-01 ITEM # #31 SIGNED BY [Signature] SEP 26 2013		
25	RED TEE SMLS WPL6 STD	4 X 2	0350	J8L0350	SUMITOMO BYYK3263		-45	10 X 5.0 X 55	30	32	28					
27	RED TEE SMLS WPL6 XS	4 X 3	2298	J7L8229	SUMITOMO BYYK2508		-45	10 X 7.5 X 55	112	118	122					
28	90 E/S/ R SMLS WPL6 STD	6	5673	J8L5673	SUMITOMO BYYK3261		-45	10 X 5.0 X 55	46	78	54					
29	45 E/L/ R SMLS WPL6 XS	6	B243	J0L6243	SUMITOMO BYYM8307		-45	10 X 10 X 55	58	62	60					
Specification	Chemical Composition%										Hardness Test		REMARK			
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E		Y.S	T.S	E
Min.	15	40	135	35	40	40	40	30	12	80	20	50	35000	60000	30	197
Max.	30	27	67	15	7	5	3	3	1	0	0	30	47600	68000	41	138
23	19	27	100	11	4	9	4	4	2	0	0	35	52200	77600	40	138
25	18	26	52	20	9	2	1	3	2	0	0	26	42500	65400	41	135
27	17	19	81	11	6	10	4	3	1	0	0	25	40400	62600	40	132
28	12	24	97	8	2	7	3	4	1	0	0	30	46400	68900	41	138
29	13															

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, and was found to meet, the requirements of above specifications and purchaser's order.

*L.S. Tsai*  
 Chief of Quality Assurance Section

CLIENTE / Customer / Client

VAN LEEUWEN PIPE AND TUBE -CAN  
2875-64TH AVENUE  
EDMONTON - ALBERTA T6P 1R1  
CANADA

**CERTIFICADO DE INSPECCION**  
Inspection Certificate - Certificat de Reception

DIN EN 10204 / 3.1  
ISO 10474 / 3.1



FECHA: 19/10/2012

N.º 151903

HOJA: Page: 2

ULMA FORJA S COOP

PRODUCTO  
Article - Produit

FLANGES

SU PEDIDO N.º  
Your Order No. 45001569

DE of. de 30/08/2012

Bº Zubillaga, 3 - Apdo 14  
20560 ONATI (Gipuzkoa) SPAIN  
Tel.: 34 - 943 780562  
Fax: 34 - 943 781808  
E-mail: ulma@ulmapiping.com

NORMAS APLICABLES  
Requirements - Normes Applicables

ASME B16.5-09

MARCA DEL FABRICANTE  
Mark of factory

Packing List: 98872

MATERIAL CORRESPONDIENTE ASTMASME A/SA350LF2CL1-11

MODO DE FUSION (\*)  
Steel Making - Elaboration de l'acier  
F = Elec. Y = Oxígeno básico

DEPARTAMENTO QUALITY ASSURANCE  
Section Département

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations	COLADA N.º Heat No N.º Caille	Y. Strength Resist Rp0.2 N/mm2	Y. Strength Resist Rp0.2 N/mm2	Elongation Allongement Lo. A d %	ESTRICCION Red. Area Striction %	RESILIENCIA Impact test Résilience Joules	CHARPY V 10x10mm MEDIA Average Moyenne °C	DUREZA Hardness Dureté HBW				
													ALARGAMIENTO Elongation Lo. A d %			
5 24650	70	WN 2 1500LB XS/80 RF A350LF2	2782	NE	233V2	532	323	27.90	57.60	47	53	55	52	-50	159	164
10 22209	105	WN 3 600LB XS/80 RF A350LF2	2602	NE	452V2	523	313	26.60	55.50	65	63	61	63	-50	151	156
13 24573	24	WN 3 900LB XS/80 RF A350LF2	1752	NE	233V2	516	307	34.20	66.90	35	41	43	40	-50	154	164
16 24625	17	WN 3 600LB XS/80 RF A350LF2	2602	NE	417V2	528	325	25.60	54.00	50	52	58	57	-50	156	161
21 22202	41	WN 4 600LB XS/80 RF A350LF2	2562	NE	444V2	502	294	34.00	66.40	47	45	43	45	-50	147	155
21 22202	31	WN 4 600LB XS/80 RF A350LF2	2402	NE	447V2	513	305	30.80	61.40	56	54	53	55	-50	151	156
23 22170	196	WN 4 150LB XS/80 RF A350LF2	2552	NE	421V2	519	315	29.40	57.30	57	57	52	55	-50	148	152
34 22188	36	WN 6 300LB STD/40 RF A350LF2	2502	NE	455V2	529	317	30.20	60.70	59	60	60	59	-50	151	157
37 22119	8	BLIND 6 300LB RF A350LF2	2532	NE	447V2	515	307	30.00	60.40	58	57	56	57	-50	151	156

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

COLADA N.º Heat No N.º Caille	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
233V2	0.195	0.220	1.090	0.021	0.006	0.050	0.100	0.025	0.000	0.002	0.280	0.020	0.000	0.000	0.417
417V2	0.207	0.193	0.930	0.012	0.003	0.070	0.140	0.032	0.000	0.004	0.242	0.023	0.000	0.000	0.409
421V2	0.210	0.240	0.860	0.011	0.002	0.170	0.100	0.040	0.003	0.003	0.240	0.035	0.000	0.000	0.422
444V2	0.200	0.240	0.860	0.008	0.006	0.230	0.100	0.060	0.001	0.001	0.250	0.044	0.000	0.000	0.425
447V2	0.189	0.204	0.940	0.011	0.004	0.270	0.120	0.028	0.000	0.004	0.270	0.024	0.000	0.000	0.432
452V2	0.187	0.193	0.920	0.011	0.004	0.080	0.120	0.027	0.000	0.004	0.229	0.021	0.000	0.000	0.386
455V2	0.176	0.256	1.135	0.014	0.003	0.130	0.110	0.027	0.000	0.007	0.280	0.020	0.000	0.000	0.424

(\*) OBSERVACIONES:  
Remarks  
Observations

TEST SPECIMEN: SIZE STANDARD ( 10X10 ), ORIENTATION TRANSVERSE.  
N\_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.
- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

CONFORMS TO SA 350LF2CL1  
YEAR 2012  
JOB # 10152 / 2012 ADD  
ITEM # 10152-8440-01  
SIGNED BY [Signature] SEP 26 2013

EL INSPECTOR  
Works Inspector - L'Inspecteur

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



VI OA Approved

P145



1445360  
1128129

# IPSCO KOPPEL TUBULARS CORPORATION

## TUBE TEST REPORT

Page 1 of 2

ORDER: T13829	005	HEAT: 461529	P.O.: 1064769-OR-2100	PART NO.																																																								
SOLD TO: CE FRANKLIN P.O. BOX 6776 STATION D CALGARY, ALBERTA T2P 2E8			SHIP TO: CE FRANKLIN LTD. RAIL SPUR 8585 EDMONTON TRANSFER EDMONTON, AB																																																									
SPECIFICATION(S): ASME ASTM SA/A333-05 GR 1 & 8 CERTIFIED NACE MR0175 2003-12-15 & ✓ EN 10204 TYPE 3.1 JAN 2005																																																												
GRADE: 1012 M	SIZE: 4.500 X 0.337	DRL	WPF: 15.00	QUALITY: SEAMLESS HOT FINISH																																																								
CONDITION (SPECIAL): NORMALIZE TEST METHODS USED: ASTM E416  TEST RESULTS CONFORM TO THE STANDARDS AND SPECIFICATION LISTED ABOVE.																																																												
<table border="1"> <thead> <tr> <th></th> <th>C</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Si</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>Cu</th> <th>Al</th> <th>V</th> <th>Ca</th> <th>Fe</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>.11</td> <td>.77</td> <td>.003</td> <td>.007</td> <td>.28</td> <td>.17</td> <td>.13</td> <td>.05</td> <td>.25</td> <td>.018</td> <td>.003</td> <td>.001</td> <td>.0004</td> </tr> <tr> <td>P</td> <td>.11</td> <td>.72</td> <td>.006</td> <td>.006</td> <td>.27</td> <td>.16</td> <td>.12</td> <td>.05</td> <td>.24</td> <td>.015</td> <td>.001</td> <td>.002</td> <td>.0008</td> </tr> <tr> <td>P</td> <td>.11</td> <td>.73</td> <td>.006</td> <td>.006</td> <td>.27</td> <td>.16</td> <td>.12</td> <td>.05</td> <td>.24</td> <td>.016</td> <td>.001</td> <td>.002</td> <td>.0008</td> </tr> </tbody> </table>						C	Mn	P	S	Si	Cr	Ni	Mo	Cu	Al	V	Ca	Fe	L	.11	.77	.003	.007	.28	.17	.13	.05	.25	.018	.003	.001	.0004	P	.11	.72	.006	.006	.27	.16	.12	.05	.24	.015	.001	.002	.0008	P	.11	.73	.006	.006	.27	.16	.12	.05	.24	.016	.001	.002	.0008
	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	Al	V	Ca	Fe																																															
L	.11	.77	.003	.007	.28	.17	.13	.05	.25	.018	.003	.001	.0004																																															
P	.11	.72	.006	.006	.27	.16	.12	.05	.24	.015	.001	.002	.0008																																															
P	.11	.73	.006	.006	.27	.16	.12	.05	.24	.016	.001	.002	.0008																																															
MATERIAL 100% MELTED AND MANUFACTURED IN THE USA.																																																												
Specimen ASTM#	Yield KSI	Tensile KSI	ELNG 2"	R/A	C.E.	Rockwell ASTM# Avg	Hydrotest																																																					
1.000 * ST →	48.0 46.4	67.0 66.7	44.0 44.0		.31	87 72 69 70 RB	3000 PSI 5 Sec Hold																																																					

NORMALIZED @ 1650 DEGREES F.  
FOR APPROXIMATELY 1 HR. @ TEMP.  
TENSILE TEST (S) = 1" STRIP LONGITUDINAL  
FLAT (S) - SATISFACTORY  
REVISED TO ADD SPEC REV DATE - 04/29/2008  
REVISED TO REPORT LONGITUDINAL  
CHARPY - 06/23/08

CONFORMS TO SA	333-6
YEAR	2010 ED 2011 ADD
JOB #	2013-0440-01
ITEM #	34
SIGNED BY	4/23 APR 2014

PS

4" X H  
2014

*Paul Hightberger*

6/23/08

DATE

QA MGR/PRIMARY OPERATIONS

MATERIAL WAS NOT EXPOSED TO MERCURY DURING PROCESSING.  
NO WELDING OR WELD REPAIR PERFORMED ON THIS MATERIAL.  
MATERIAL IS FREE OF HARMFUL RADIATION.

THIS CERTIFICATION MAY NOT BE REPRODUCED EXCEPT IN FULL.

IPSCO KOPPEL WORKS  
P.O. BOX 780  
BEAVER FALLS, PA 15010

IPSCO AMBRIDGE WORKS  
P.O. BOX 410  
AMBRIDGE, PA 15003

IPSCO BAYTOWN WORKS  
2800 SPUR 55  
BAYTOWN, TX 77520

# ipsco koppel tubulars corporation

## TUBE TEST REPORT

Page 2 of 2

ORDER: T13629	005	HEAT: 461529	P.O.: 1964769-OR-2100	PART NO.			
SOLD TO: CE FRANKLIN P.O. BOX 6776 STATION D CALGARY, ALBERTA T2P 2E8			SHIP TO: CE FRANKLIN LTD. RAIL SPUR 8685 EDMONTON TRANSFER EDMONTON, AB				
SPECIFICATION(S): ASME ASTM SA/A333-05 GR 1 & 6 CERTIFIED NACE MR0175 2003-12-15 & EN 10204 TYPE 3.1 JAN 2005							
GRADE: 1012 M	SIZE: 4.500 X 0.337	DRL	WPF: 15.00	QUALITY: SEAMLESS HOT FINISH			
<b>CHARPY TEST RESULTS</b>							
ASTM E23							
PC #	DIRECTION	SIZE	NOTCH TYPE	TEMP (F)	ENERGY (FT-LBS)	LATERAL EXPANSION (IN)	PERCENT FRACTURE
TK-1	LONGITUDINAL	7MM X 10MM	V	-50	76	0.091	90
TK-2					68	0.087	90
TK-3					82	0.093	90
AVG					75		



**SE**  
 SAN ENG STEEL FORGING CO. LTD  
 311, Jen Hsin Road, Jen Wu, District  
 Tainan City, Taiwan, R.O.C.  
 TEL: 07-3724248; FAX: 07-3712923  
 URL: www.seeng.com.tw  
 e-mail: seeng@mts.sead.net.tw

**MATERIAL TEST CERTIFICATE**

EN 10204 3.1.B(DIN50493 1 B)  
 Customer: VVE F.F. FITTINGS & FLANGES (CANADA)  
 Order No.: 118. P.O. NO. 0498

Certificate No.: SE103139  
 Date: 03/11/2013  
 Page: 1 OF 1

PRODUCT		DIMENSIONAL SPECIFICATIONS														
FORGED CARBON STEEL FLANGES		ASTM A350 LF2-1 CL. 1 / ASME SA350 LF2-1 Cl. 1														
ASME B16.9 CSA Z245.12		DIMENSIONAL SPECIFICATIONS														
Item No.	Heat No.	DESCRIPTION	QUANTITY	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N	CE(%)
1	4573144	150 WNRFS STD 3" LF2	260 PCE	0.300	0.150	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.060	0.020	-	0.390
2	4573144	150 WNRFS XS 3" LF2	50 PCE	0.190	0.210	1.180	0.021	0.007	0.007	0.020	0.010	0.004	0.004	0.001	0.005	0.390
3	4603012	150 WNRFS STD 8" LF2	50 PCE	0.220	0.200	1.170	0.022	0.005	0.006	0.020	0.010	0.003	0.006	0.001	0.006	0.422
4	4603012	300 WNRFS XS 2" LF2	300 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007	0.424
5	4603012	300 WNRFS STD 2" LF2	150 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007	0.424
6	4603012	600 WNRFS STD 2" LF2	175 PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007	0.424

Item No.	Heat No.	T.S.(T) (MPa)	Y.S.(T) (MPa)	EL.(%)	Hardness (HRC)	RA(%)	Impact Test	Material Supplier	REMARKS
1	4573144	522.0	372.0	34.0	153/151	89.5	83.0	ACOMINAS	HEAT TREATMENT (2)
2	4573144	522.0	372.0	34.0	153/151	88.5	93.0	ACOMINAS	CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO 15156 2-08 CLAUSE 7.2.1 4 REGION 3 AND ANNEX A
3	4603012	518.8	373.6	34.0	153/150	70.4	42.0	ACOMINAS	CONFORMS WITH CAT II GR248 SOUR SERVICE-09 (FOR USE AS WELDING NECK AND BLIND FLANGES ONLY)
4	4603012	528.0	356.0	35.0	153/151	71.3	51.0	ACOMINAS	TEST SPECIMEN SIZE: 10X10
5	4603012	529.0	368.0	35.0	153/151	71.3	51.0	ACOMINAS	IMPACT TEST TEMP: -46°C
6	4603012	528.0	356.0	35.0	153/151	71.3	51.0	ACOMINAS	

CONFORMS TO SA 350 LF 2 CL 1  
 YEAR 2010 ED, 2011 ADD  
 JOB # 2013-8440-01  
 ITEM # #37  
 SIGNED BY [Signature] SEP 26 2013  
 Manager of Quality Assurance Dept

2-8440-01  
 20-1333415  
 HT#4573144

1: T.S = Tensile Strength, Y.S = Yield Strength, EL = Elongation, RA = Reduction of Area.  
 \*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S=Solution Treated, SR=Stress Relieved, F=C=Furnace Cooled, WC=Water Cooled, OC=Oil Cooled.  
 \*3: C.E. Value = C + (Mn/8) + (Cr + Mo + V)/6 + (Ni + Cu) / 16  
 We hereby certify that the material has been tested in accordance with the above specifications also with the requirements called for by the above order.



<b>V&amp;M FRANCE</b> TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallourec Group	<b>MATERIAL TEST REPORT - INSPECTION CERTIFICATE</b> 3.1 EN 10204 : 2004 No. : 3645Sv11 Page: 1 / 5 Date: 07.04.2011
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21715 stock

<b>V&amp;M FRANCE</b>	<b>V&amp;M-Order-No. SC0484</b>
<b>Customer</b> VAN LEEUWEN PIPE & TUBE (CANAD) 2875 - 64TH AVENUE EDMONTON, ALBERTA T6P 1R1	<b>Suborder</b> <b>Order-No. VM2527</b>
<b>Orderer</b> VALLOUREC TUBES CANADA INC. / BURLINGTON, ONTARIO L7L 6G4	<b>Order-No. VM2527</b> <b>Date 16.11.2010</b>
<b>Description of the product</b> Hot finished seamless pipes for low-temperature service Sour service Ends bevelled, angle 30° (+5 / -0), root face 1.6 mm (± 0.8) Inside without rust protection Outside dry varnish ASTM A 333 - 10 ASTM A 999 - 04a ASME SA 333, Edition 2010 / ASME SA 999, Edition 2007 ASME Boiler and Pressure Vessel Code, Sect. II, Part. A, Edition 2010 Nace MR 0175 / ISO 15156-2:2003 / COR.1:2005 / EN ISO 15156-2:2003, Annex A.2.1.2 Nace Standard MR 0103-2005, Paragraph 2.1 CSA Z 245.1:2008 Grade 6 Grade 290 acc. to CSA Z 245.1, Cat. II . Carbon equivalent = max. 0.40 . Mn/C ratio min. 3:1	<b>Order-No. 45001381</b> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">         CONFORMS TO SA <u>333-6</u>          YEAR <u>2010 Ed 2011 Act</u>          JOB # <u>2013-0440-01</u>          ITEM # <u>38</u>          SIGNED BY <u>[Signature]</u> <b>123 APR 2014</b> </div>

P418

HT#  
336565  
3" 80

(A13) V&M Item	(A09) Cust. Item	(B14) Item desc	(B09) Dimensions	(B10) Single length
2		Item 1	NPS 3 SCH 80 OD-Tolerance + 0.031 in - 0.031 in WT-Tolerance + 15 % - 12.5 %	Random length from 38 to 44 Ft

APPROVED  
*[Signature]*

<b>V&amp;M FRANCE</b> TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Valloirec Group	<b>MATERIAL TEST REPORT - INSPECTION CERTIFICATE</b> (A02) 3.1 EN 10204 : 2004
		No. : 3845Sv11 (A03) Page: 2 / 5 Date: 07.04.2011

(A13) V&M Item	(A09) Cust. Item	(B07.1) Heat	(B08) Quantity	(B11) Total length ft	(B13) Weight lb
2		336565	28	1.158,040	11.722

CONFORMS TO SA <u>333-6</u> YEAR _____ JOB # _____ ITEM # _____ SIGNED BY _____
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(C71)

**HEAT CHEMICAL ANALYSIS**

For each reduction of 0,01% carbon below 0.30%, an increase of 0,05% manganese above 1.06% would be permitted to a maximum of 1,35% manganese.

(B07.1) Heat	(B15) Process	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Ti %
min	-	-	0,10	0,29	-	-	-	-	-	-	-
max	-	0,26	0,50	1,06	0,025	0,01	-	-	-	-	0,11
336565	Oxygen (BOF)	0,12	0,19	1,29	0,011	0,00	0,080	0,010	0,050	0,040	0,01

(B07.1) Heat	Nb/Cb %	V %	B %	2528	0014 %	1003 %	1099 %				
min	-	-	-	3,00	-	-	-				
max	0,11	0,11	0,001	-	1,00	0,40	0,40				
336565	0,01	0,01	0,000	10,75	0,19	0,36	0,31				

2528	MN/C
0014	CR+CU+MO+NI+V
1003	CE = C+MN/8+(CR+MO+V)/5+(NI+CU)/15
1099	C+F(MN/8+SI/24+CU/16+NI/20+((CR+MO+V+NB)/5)+5*B)

Heats fully killed

(B04)

**HEAT TREATMENT**

NORMALIZED CONDITION MIN 920°C (1688 F) COOLING AIR

**TENSILE TEST RESULTS**

Type (C10.1)	Tube strip specimen
Test temperature (C03)	Room temperature
Direction (C02)	longitudinal

SIMPLE LENGTH

<b>V&amp;M FRANCE</b> TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallourec Group	<b>MATERIAL TEST REPORT - INSPECTION CERTIFICATE</b> 3.1 EN 10204 : 2004 No : 3645SV11 Page: 3 / 5 Date: 07.04.2011
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**TENSILE TEST RESULTS**

(B07.1) Heat	(C00.1) Test Piece	(C10.2) Dimension In / sq In	(C11) YS R <sub>p0.2</sub> psi	(C12) TS R <sub>m</sub> psi	(C13.2) Elong. 2" %						
min		-	42000	60000	33,0						
max		-	-	-	-						
336565	01EC104	0,75x0,31 0,23	45265	66592	38,0						
336565	02EC104	0,76x0,32 0,25	42944	63980	38,0						

(C10.2) Dimension	Test piece dimensions Test piece area
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CONFORMS TO EN <u>333-6</u>
YEAR _____
JOB # _____
ITEM # _____
SIGNED BY _____

**IMPACT TEST RESULTS**

Type (C40)	Charpy V
Test temperature (C03)	-49 °F
Direction (C02)	longitudinal

(B07.1) Heat	(C00.1) Test Piece	(C41) Dimension In / sq In	(C42.1) Impact1 ft-lbf	(C42.1) Impact2 ft-lbf	(C42.1) Impact3 ft-lbf	(C43.1) Mean ft-lbf	(C42.2) Shear fr1 %	(C42.2) Shear fr2 %	(C42.2) Shear fr3 %	(C43.2) Mean %
min		-	8,9	8,9	8,9	13,3	60	60	60	-
max		-	-	-	-	-	-	-	-	-
336565	01EC104	0,26x0,39 0,08	170,0	173,8	164,8	169,6	100	100	100	100
336565	02EC104	0,26x0,39 0,08	178,1	178,8	155,7	171,2	100	100	100	100

(C41) Dimension	Test piece dimensions Test piece area
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**HARDNESS TEST RESULTS**

Method of test (C00)	Brinell
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<b>V&amp;M FRANCE</b> TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallourec Group	<b>MATERIAL TEST REPORT - INSPECTION CERTIFICATE</b> 3.1 EN 10204 : 2004 No. : 36455v11 Page: 4 / 6 Date: 07.04.2011
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**HARDNESS TEST RESULTS**

(B07.1)	(C00.1)	(C31.1)	(C31.1)	(C31.1)	(C32.1)						
Heat	Test Pieces	HB	HB	HB	Mean						
min		-	-	-	-						
max		200,0	200,0	200,0	-						
336666	01EC104	135,0	135,0	135,0	135,0						

(C30)

**TECHNOLOGICAL AND OTHER TESTS ON SPECIMENS**

Test	Conditions	Test rate	Result
Flattening test	Flattening test (specific)		Satisfactory


(D64)

**OTHER TESTS ON PIPE**

Test	Conditions	Test rate	Result
Hydrostatic test	3000 PSI 5 SEC	100% each lot	Satisfactory
Appearance & Dimensions	Aspect & Dimensions (spécifique)	100% each lot	Satisfactory
Eddy Current test	CSA Z245-1	100% each lot	Satisfactory

(A04, B05)

**MARKING, IDENTIFICATION**

2	Paint stenciled on one side		V & M FRANCE A/SA333 Z245.1-07 6 + 290 CAT II HF SCH 80 S LT 50 F 3 1/2 X 0.300 88.90 X 7.62 SS 20.7 MPA 3000 PSI HT HEAT NUMBER LENGTH LENGTH DATE OF MARKING VM2527 45001381
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(Z01)

The supplied products are in compliance with the requirements of the order

(A05, Z02, Z03)

Date	07.04.2011
Validated by	Inspection Representative Valérie DELACROIX 
☎	+ (33) 3 27 23 14 58
☎	+ (33) 3 27 23 15 25
@	valerie.delacroix@vmtubes.fr
Stamp	

<b>V&amp;M FRANCE</b> TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 <b>VALLOUREC &amp; MANNESMANN TUBES</b> Vallorec Group	<b>MATERIAL TEST REPORT -  INSPECTION CERTIFICATE</b> 3.1 EN 10204 : 2004
		No : 3645Sv11 Page: 5 / 5 Date: 07.04.2011

This testimonial and certification respectively may neither be modified nor used for other products. Offences are regarded as falsification of documents and will be subject to criminal prosecution.



**SAN ENG STEEL FORGING CO LTD**  
 311, Jen Hsin Road, Jen Wu District  
 Kaohsiung, Taiwan, R.O.C.  
 TEL: 07-3724248; FAX: 07-3712823  
 URL: www.saneng.com.tw  
 e-mail: saneng@fcis.saneng.net.tw



EN10204-3.1 BURNING ROOM 1 m  
 Customer: J  
 Order No.: Z00851833-CCFE

Certificate No: SESS15C2  
 Date: 05/20/2013  
 Page: 1 OF 1

PRODUCT		MATERIAL SPECIFICATIONS		DIMENSIONAL SPECIFICATIONS												
FORGED CARBON STEEL FLANGES		ASTM A-350 LF2-11 CL.1/ASME SA-350 LF2-11 CL.1		ASME B16.5-08 CSA Z245.12												
Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)											CE(%)	
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb		N
1	150	WNRF STD 3" LF2	300 PCE	0.220	0.230	1.170	0.019	0.006	0.400	0.300	0.400	0.120	0.060	0.020	0.007	0.420
2	150	WNRF S160 2" LF2	50 PCE	0.220	0.230	1.170	0.019	0.006	0.400	0.300	0.400	0.120	0.060	0.020	0.007	0.420
3	150	SORF 3" LF2	50 PCE	0.220	0.250	1.150	0.015	0.004	0.007	0.010	0.010	0.003	0.004	0.001	0.006	0.416
4	150	SORF 8" LF2	28 PCE	0.230	0.200	1.160	0.016	0.008	0.008	0.020	0.010	0.006	0.005	0.001	0.007	0.428
5	150	SORF 6" LF2	54 PCE	0.220	0.200	1.150	0.021	0.003	0.006	0.010	0.010	0.002	0.004	0.001	0.005	0.416
6	150	THRF 3" LF2	90 PCE	0.210	0.220	1.150	0.019	0.006	0.008	0.010	0.010	0.002	0.004	0.001	0.007	0.406

Item No.	Heat No.	T.S.(T)		Y.S.(T)	E.L.(%)	Hardness (HRC)	R.A.(%)	Impact Test Temp. (Joule)	Material Supplier	HEAT TREATMENT(°C)
		Min	Max							
1	4677159	527.0	364.0	364.0	33.8	153/70	70.4	98.0	ACOMINAS	890°C/3HRS
2	4677159	527.0	364.0	364.0	33.8	153/70	70.4	98.0	ACOMINAS	CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15015-2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A
3	4443573	517.8	363.8	363.8	34.8	162/150	71.3	97.0	ACOMINAS	CONFORMS WITH Z245.12 CAT II GR248 SOLR SERVICE-09 (FOR USE AS WELDING NECK AND BLIND FLANGES ONLY)
4	4510829	541.3	395.2	395.2	33.2	166/163	66.6	54.0	ACOMINAS	TEST SPECIMEN SIZE: 10X10
5	4533682	535.0	364.0	364.0	33.8	164/162	68.6	37.0	ACOMINAS	TEST SPECIMEN ORIENTATION: TRANSVERSE
6	4443561	523.7	373.6	373.6	34.0	163/161	70.4	102.0	ACOMINAS	IMPACT TEST TEMP: -46°C MIN TO GR 248 IS GREATER THAN 3.0"

CONFORMS TO SA	3501P2CL1
YEAR	2010ED / 2011 ADD
JOB #	2013-8440-01
ITEM #	#40
SIGNED BY	Jr. SEP 26 2013



\*1: T.S. = Tensile Strength, Y.S. = Yield Strength, E.L. = Elongation, R.A. = Reduction of Area.  
 \*2: In=Normalized, A=Annealed, C=Quenched, T=Tempered, S.T.=Solution Treated, & P=Stress Relieved, A.C.=Air Cooled, F.C.=Furnace Cooled, W.C.=Water Cooled, O.C.=Oil Cooled.  
 \*3: C.E. Value = C + (Mn / 8) + (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.

2-8440-01  
 PO-133415

HT #4677159

Manager of Quality Assurance Dept.



**METALFAR**  
 PRODOTTI INDUSTRIALI S.P.A.  
 VIA G. PARINI, 28  
 239861 CESANA BRIANZA (LC) - Italy  
 Tel. +39 031.655441  
 Fax +39 031.655149  
 quality.mf@farmas.com

SEDE AMMINISTRATIVA E STABILIMENTO:  
 239861 CESANA BRIANZA (LC) - Italy  
 Via G. Parini, 28  
 Tel. +39 031.655441  
 Fax +39 031.655149  
 quality.mf@farmas.com

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

DDT / Del Note N. 1911	Del/Dated 29.04.2013	Fattura / Invoice N. 1640	Del/Dated 29.04.2013
SEYBOLD INTERNATIONAL CORP.		Dest.: VAN LEEUWEN	
20 Holly Street, Suite 205	TORONTO M4S3B1	EDMONTON	ALBERTA
CA	CA	CA	CA

**ALLA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT**

MOD. COL. / HEAT CODE	COLATA / HEAT	POS. ITEM	VS. ORDINE / YOUR REFERENCE	Q.TA' / Q.TY	DESCRIZIONE / DESCRIPTION	Q.TA' / Q.TY	DESCRIZIONE / DESCRIPTION
12/73144	034	034	7005408	69,00	WIN 150 RF 2" XS	69,00	WIN 150 RF 2" XS
MATERIALE / MATERIAL							
STM A350 LF2 CL1/2 (LADLE)					LF2CL1		
ROVETTA / TEST SPECIMEN	FORMA / SHAPE	SNERVAMENTO / YIELD POINT	ALLUNGAMENTO / ELONGATION	CONTRAZIONE / REDUCTION OF AREA	DUREZZA / HARDNESS	RESILIENZA / IMPACT TEST	SNERVAMENTO / YIELD POINT
ECT. mm2	LUNG. mm	N/mm2	%>=	%>=	HBW	°C	N/mm2
126,60	50,80	331,0	31,0	58,0	159,0 - 163,0	KV	0,0

TRATTAMENTO TERMICO / HEAT TREATMENT  
 NORMALIZED AT 930 C - COOLED IN STILL AIR

ORIGINE / ORIGIN OF -  
 EUROPEAN UNION

DIM. IN ACC. A / DIM. ACCORDANCE TO		ASME/ANSI B16.5 - 2009	
SNIERVAMENTO / YIELD POINT		N/mm2	
RESILIENZA / IMPACT TEST		°C	
TIPO / TYPE		10x10mm	
KV		-46	

DIM. IN ACC. A / DIM. ACCORDANCE TO		ASME/ANSI B16.5 - 2009	
SNIERVAMENTO / YIELD POINT		N/mm2	
RESILIENZA / IMPACT TEST		°C	
TIPO / TYPE		10x10mm	
KV		-46	

DIM. IN ACC. A / DIM. ACCORDANCE TO		ASME/ANSI B16.5 - 2009	
SNIERVAMENTO / YIELD POINT		N/mm2	
RESILIENZA / IMPACT TEST		°C	
TIPO / TYPE		10x10mm	
KV		-46	

TRATTAMENTO TERMICO / HEAT TREATMENT  
 NORMALIZED AT 930 C - COOLED IN STILL AIR

ORIGINE / ORIGIN OF STEEL  
 EUROPEAN UNION

CONFORMS TO SA 350LF2CL1  
 YEAR 2013  
 JOB # 2013-8440-01  
 ITEM # 41  
 SIGNED BY [Signature] SEP 26 2013

4-8440-01  
 10-133415



VL QA Approved

NOTE 100% MANUFACTURED IN ITALY	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
NOTES MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION	OFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT	
MATERIAL IN ACCORDANCE WITH NACE MR-0175/2009 ISO 15156-2009 - SOUR SERVICE	[Signature]	
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2012 - SOUR SERVICE		







# INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Number / Número: **680950**  
 Page / Página: **1 / 9**

Date / Día: **September 04, 2012**

Customer / Cliente: <b>VAN LEEUWEN PIPE &amp; TUBE (CANADA) IN - VAN LEE</b>	Customer's Order Item / Orden Cliente - Item: <b>45091527-00007</b>	Customer's Reference / Ref. del Cliente: <b>N/A</b>	Manufacturer's Works Order N° / Confirmación de Venta: <b>5753205</b>
Manufacturing Process / Proceso de Manufactura: <b>SEAMLESS HOT ROLLED</b>	Product Type / Tipo de Producto: <b>CARBON STEEL FOR LOW TEMPERATURE SERVICE</b>	Surface / Superficie: <b>UNT BARE / EXT VARNISHED</b>	
Standard or Specification / Normas o Especificaciones: <b>ASTM/A5ME A/SA333-10+CSA Z245.1-07 CATH-SS+PSP00374+NACE MR0175/103+IPRO LP-006</b>	Steel Grade / Grado de acero: <b>116/359 CAT II SS</b>	Ends / Extremos: <b>BEVELLED AT 30 DEG. ASTM</b>	
Dimensions / Dimensiones: <b>2 3/8 X 0.218 INCH 60.30 X 5.54 MM</b>	Schedule / Cédula: <b>080</b>	Nominal Weight / Peso Nominal: <b>5.02 LB/FT 7.48 KG/M</b>	
	Length / Longitud: <b>SRL (SP)</b>	Quantity / Cantidad: <b>247 Pcs/tpz 4680.87 FT 1426.73 MTS</b>	

## TENSILE TEST / ENSAYO DE TENSION

Heat N° Código N°	Sample N° Muestra N°	Zone Zona	Lot N° Lote N°	Pipe N° Tubo N°	Specimen condition Condición de la probeta	Specimen dimensions Dimensiones de la probeta		Test Temp. ensayo	Y.S. Eul 0.50 % Min: 359 Max: --	U.T.S. Req. Min: 455 Max: 625	Elongation / Alargamiento	
						La	Sc				Type Tipo	Orf
23593	1926726	E1	25216	5	B AM	18.92 x 5.76	111.32	RT	436	501	50.8	33.8
23593	1926738	E2	25216	25	B AM	19.13 x 5.54	108.29	RT	445	506	50.8	32.7
23593	1926739	E1	25216	90	B AM	19.40 x 5.69	112.88	RT	441	507	50.8	33.7
23593	1926740	E2	25216	75	B AM	19.51 x 5.86	116.97	RT	432	503	50.8	33.5
23593	1926741	E1	25216	85	B AM	19.39 x 5.75	113.83	RT	433	504	50.8	34.7
23593	1926742	E2	25217	104	B AM	18.73 x 5.26	100.93	RT	441	509	50.8	31.9
23593	1926743	E1	25217	108	B AM	18.91 x 5.71	110.29	RT	434	506	50.8	35.2
48635	1703601	E1	21331	5	B AM	19.43 x 5.70	113.26	RT	447	527	50.8	31.6
48635	1703602	E2	21331	12	B AM	18.90 x 5.75	111.01	RT	437	511	50.8	35.4
48635	1714008	E1	21507	5	B AM	19.59 x 5.50	110.21	RT	475	524	50.8	30.8
48635	1714013	E2	21507	25	B AM	19.41 x 5.57	110.55	RT	439	510	50.8	31.7
48635	1714016	E1	21507	45	B AM	19.41 x 5.44	107.95	RT	458	527	50.8	32.8
48635	1714021	E2	21507	65	B AM	19.12 x 5.53	108.04	RT	452	522	50.8	34.7
48635	1714022	E1	21507	85	B AM	19.14 x 5.62	109.92	RT	453	518	50.8	31.0
48635	1724470	E1	21717	5	B AM	19.01 x 5.54	107.58	RT	422	509	50.8	30.0
48635	1724498	E2	21717	25	B AM	18.68 x 5.62	107.17	RT	411	495	50.8	31.6

Stock  
Po-133980

CONFORM TO SA 333-6  
 YEAR 2010 Ed 2011 Add  
 JOB # 2013-0440-011  
 ITEM # 42  
 SIGNED BY 4/12 123 APR 2014

As manufactured / Según proceso de fabricación:	Location of sample / Ubicación de la muestra	Req. Max: Required maximum / Máximo requerido	U.T.S.: Ultimate tensile strength / Resistencia
Body / Cuerpo	Max: Maximum / Máximo	Req. Required / Requerido	Y.S.: Yield strength / Fluencia
E1 / E2: Ends of Sampling / Extremos de Muestra	Min: Minimum / Mínimo	RT: Room temperature / Temperatura ambiente	

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VL QA Approved

FOR03171





# INSPECTION CERTIFICATE

Page / Página: **3 / 9**

Number / Número: **680950**  
 Date / Día: **September 04, 2012**

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Customer / Cliente: <b>VAN LEEUWEN PIPE &amp; TUBE (CANADA) IN - VAN LEE</b>	Customer's Order Item / Orden Cliente - Item: <b>45001527-00007</b>	Customer's Reference / Ref. del Cliente: <b>N/A</b>	Manufacturer's Works Order N° / Confirmación de Venta: <b>57532705</b>
Manufacturing Process / Proceso de Manufactura: <b>SEAMLESS HOT ROLLED</b>	Product Type / Tipo de Producto: <b>CARBON STEEL FOR LOW TEMPERATURE SERVICE</b>	Ends / Extremos: <b>INT BARE TEXT VARNISHED</b>	
Standard or Specification / Normas o Especificaciones: <b>ASTM/A516 A/SA333-10+CSA Z245.1-07 CATH-SS+PSP00374+NACE MR0175103+IPRO LP-006</b>	Steel Grade / Grado de acero: <b>1/6359 CAT II SS</b>	Ends / Extremos: <b>BEVELLED AT 30 DEG. ASTM</b>	
Dimensions / Dimensiones: <b>2 3/8 X 0.218 INCH 60.30 X 5.54 MM</b>	Schedule / Cédula: <b>080</b>	Norma Weight / Peso Nominal: <b>5.02 LB/FT 7.48 KG/M</b>	
	Length / Longitud: <b>SRL (SP)</b>	Quantity / Cantidad: <b>247 Pcs/tpz. 1426.73 MTS 10855 KG</b>	

## CHEMICAL COMPOSITION / COMPOSICION QUIMICA

Heat N° / Colada N°	Sample N° / Muestra N°	Lot N° / Lote N°	Pipe N° / Tubo N°	Composition % / Composición %																																
				C	Mn	Si	Cr	Mo	Al sol	S	P	Ni	V	Cu	Al	Sn	As	Nb	Ti	Pb	Sb	Co	Zr	Bi	Ca	B	N	Mg	W	Co 1	Co 2					
48635	1714022	21507	85	9	105	25	5	4	-	1	9	40	2	119	21	8	4	20	2	1	2	7	20	32	7	3	46	3	10	28	23	-	-	-	-	
48635	1724498	21717	25	P	10	103	24	4	4	-	9	40	2	120	19	7	4	21	2	1	2	7	20	22	5	2	41	3	20	30	24	-	-	-	-	
48635	1714016	21507	45	P	9	105	26	5	4	-	1	9	40	3	120	22	9	5	21	3	4	2	7	46	22	9	3	46	4	10	29	23	-	-	-	-
48635	1714021	21507	65	P	9	105	25	5	4	-	1	9	41	3	119	21	8	4	20	2	2	7	30	22	7	2	48	3	10	29	23	-	-	-	-	
48635	1724470	21717	5	P	10	103	25	5	4	-	1	8	42	2	119	21	7	4	20	2	1	2	7	20	22	10	2	54	7	20	30	24	-	-	-	
48635	1714013	21507	25	P	10	105	25	5	4	-	1	9	42	2	119	21	7	4	20	2	1	2	7	20	22	7	2	46	3	10	30	24	-	-	-	

Ca: P: (Mn)S) (CR+MO+V)S (Ni+Cu)H5  
 C: F: (Mn)S) (SUZ4) (GU+H)S (Ni)20) (CR+MO+V)NB)5+  
 H: Heat / Colada  
 Max: Maximum / Máximo  
 Min: Minimum / Mínimo  
 P: Product / Producto

## THROUGH WALL HARDNESS / DUREZA EN EL ESPESOR

Heat N° / Colada N°	Sample N° / Muestra N°	Zone / Zona	Individuals / Individuales				Average / Promedio				Hardness type HV10	Type of hardness													
			Min	Max	Var. --	Specimen orientation	Min	Max	248.0	Var. --															
23563	1526738	E2	25	25	26	26	1	2	3	4	Avg.	1	2	3	4	Avg.	158.0	156.0	156.0	154.0	156.0	152.0	153.0	155.3	1.3

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the true name, given name and family name is stamped. In case the owner of the original certificate would request a copy of it, he must show its conformity to the original one taking into account the respective date, time, day, month and year. Any alteration in the original certificate will be subjected to the law.  
 Este certificado es emitido por un sistema informático y es válido con firma electrónica. El certificado original posee impreso el nombre, nombre de pila y apellido. En caso de que el poseedor del certificado requiera una copia, deberá garantizar la conformidad con el original haciendo constar el día, hora, mes y año. Cualquier alteración en el original quedará sujeta a la ley.  
 Responsable por cualquier uso ilegítimo o indebido. Cualquier información y/o modificación estará sujeta a la ley.



# INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Page / Página:

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Number / Número:

680950

Date / Día: September 04, 2012

Customer's Reference / Ref. del Cliente:

45001527-00007

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

57532105

Customer's Order Item / Orden Cliente - Item:

N/A

Customer / Cliente: VAN LEEUWEN PIPE & TUBE (CANADA) IN - VAN LEE

Product Type / Tipo de Producto:

CARBON STEEL FOR LOW TEMPERATURE SERVICE

Standard or Specification / Normas o Especificaciones:

ASTM/AISME AISA333-10+CSA Z245.1-07 CAT II-SS+PSP00374+NACE MR01751103+IPRO LP-006

Dimensions / Dimensiones:

2 3/8 X 0.218 INCH

60.30 X 5.54 MM

Schedule / Cédula:

080

Length / Longitud:

SRL (SP)

Quantity / Cantidad: 247 Pcs/lpz

4680.87 FT

1428.73 MTS

23931 LB

10855 KG

Surface / Superficie:

INT BARE / TEXT VARNISHED

Ends / Extremos:

BEVELLED AT 30 DEG. ASTM

Nominal Weight / Peso Nominal:

5.02 LB/FT

7.48 KG/M

## THROUGH WALL HARDNESS / DUREZA EN EL ESPESOR

Heat N° Cebada N°	Samp. N° / Zona Muestra N° / Zona	Lot N° / Tube N° Lote N° / Tubo N°	Individuals / Individuales		Average / Promedio		Hardness type HV10 Tipo de dureza				Var.				
			Min. -	Max. -	1	2	3	4	Avg. -	1		2	3	4	
23593	1926743	E1 25217	108	B	154.0	157.0	184.0	153.0	154.5	156.0	156.0	151.0	152.0	153.8	0.8
48635	1703601	E1 21331	5	B	180.0	182.0	173.0	171.0	176.5	178.0	177.0	176.0	172.0	175.8	0.8
48635	1703602	E2 21331	12	B	166.0	168.0	160.0	159.0	163.3	161.0	159.0	155.0	163.0	159.5	3.8
48635	1714008	E1 21507	5	B	168.0	168.0	158.0	152.0	161.0	165.0	162.0	158.0	157.0	160.5	0.5
48635	1714013	E2 21507	25	B	158.0	164.0	159.0	162.0	161.8	157.0	168.0	162.0	159.0	161.5	0.3
48635	1714016	E1 21507	45	B	165.0	162.0	159.0	161.0	162.0	163.0	159.0	160.0	161.0	160.8	1.3
48635	1714021	E2 21507	65	B	162.0	157.0	157.0	155.0	157.8	148.0	155.0	159.0	151.0	152.8	5.0
48635	1714027	E1 21507	85	B	162.0	157.0	155.0	151.0	156.3	156.0	150.0	154.0	157.0	154.8	1.5
48635	1724470	E1 21717	5	B	153.0	153.0	148.0	152.0	151.8	153.0	159.0	152.0	155.0	154.0	2.3
48635	1724498	E2 21747	25	B	170.0	157.0	162.0	150.0	159.8	185.0	153.0	153.0	143.0	153.5	6.3

Avg. Average / Promedio

B: Body / Cuerpo

E1 / E2: Ends of Sampling / Extremos de Muestra

ID: Internal diameter / Diámetro interno

Os: Location of sample / Ubicación de la muestra

Max: Maximum / Máximo

Min: Minimum / Mínimo

OD: Outside diameter / Diámetro externo

Quad: Quadrant / Cuadrante

Var: Variation / Variación

This certificate is valid only if accompanied by the original signature. On the original certificate the steelmark grain colored "Tenaris" is stamped. In case the original certificate would release a copy of it, the steelmark grain colored "Tenaris" is stamped. In case the original certificate would release a copy of it, the steelmark grain colored "Tenaris" is stamped. Any alteration or modification will be subjected to the law.

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# INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Number / Numero: **680950**  
 Date / Dia: **September 04, 2012**

Page / Pagina: **5 / 9**

0423 5411  
 14 000 4 81 43  
 02224000000000  
 8 00 00 00 00 00 00  
 04 00 00 00 00 00 00  
 04 00 00 00 00 00 00

Customer / Cliente: <b>VAN LEEUWEN PIPE &amp; TUBE (CANADA) INC - VAN LEE</b>	Customer's Order Item / Orden Cliente - Item: <b>45001527-00007</b>	Customer's Reference / Ref. del Cliente: <b>N/A</b>	Manufacturer's Works Order N° / Confirmación de Venta: <b>57532/05</b>
Manufacturing Process / Proceso de Manufactura: <b>SEAMLESS HOT ROLLED</b>	Product Type / Tipo de Producto: <b>CARBON STEEL FOR LOW TEMPERATURE SERVICE</b>	Surface / Superficie: <b>INT BARE TEXT VARNISHED</b>	
Standard or Specification / Normas o Especificaciones: <b>ASTM/A536 A/SA333-10+CSA Z245.1-07 CAT II-SS+PSP00374+NACE MR0175/103+IPRO LP-006</b>	Steel Grade / Grado de acero: <b>1/6359 CAT II SS</b>	Ends / Extremos: <b>BEVELLED AT 30 DEG. ASTM</b>	
Dimensions / Dimensiones: <b>2 3/8 X 0.218 INCH 60.30 X 5.54 MM</b>	Schedule / Cécula: <b>080</b>	Quantity / Cantidad: <b>247 Pcs/lpz</b>	Nominal Weight / Peso Nominal: <b>5.02 LB/FT 7.48 KG/IM</b>

## IMPACT TEST / ENSAYO DE IMPACTO

Type / Tipo: <b>Charpy V</b>	Position / Posición:	Orientation / Orientación: <b>L</b>		Unit / Unidad: <b>J</b>	
		Temp. / Temperatura: <b>-55</b>	Ind. Min. Req. / Requirido Individual: <b>4</b>	Results / Resultados	Req. Min. Avg. / Requirido mínimo promedio: <b>7</b>
Heat N° / Colada N°	Sample N° / Muestra N°	Lot N° / Lote N°	Pipe N° / Tubo N°	Size / Tamaño	T.T.
23593	1926738	25216	25	10.0 x 3.3	-55
23593	1926743	25217	108	10.0 x 3.3	-55
48635	1703601	21331	5	10.0 x 3.3	-55
48635	1714008	21507	5	10.0 x 3.3	-55
48635	1724470	21717	5	10.0 x 3.3	-55

As manufactured / Según proceso de fabricación  
 Ls: Location of sample / Ubicación de la muestra  
 Req. Min. Avg. / Requirido mínimo promedio  
 T.T: Test temperature / Temperatura de ensayo  
 Temp: Temperature / Temperatura

## FLATTENING TEST / ENSAYO DE APLASTAMIENTO

Standard / Norma:	Heat N° / Colada N°		Sample N° / Muestra N°		Result / Resultado	
	Lot N° / Lote N°	Colada N°	Lot N° / Lote N°	Sample N° / Muestra N°	Ls	Result / Resultado
ASTM A536 A/SA333-10+CSA Z245.1-07 CAT II-SS+PSP00374+NACE MR0175/103+IPRO LP-006	23593	1926738	25217	1926742	B	Good / Bueno
	23593	1926743	25217	1926743	B	Good / Bueno
ASTM A536 A/SA333-10+CSA Z245.1-07 CAT II-SS+PSP00374+NACE MR0175/103+IPRO LP-006	48635	1703601	21331	1703601	B	Good / Bueno
	48635	1714008	21331	1703602	B	Good / Bueno
ASTM A536 A/SA333-10+CSA Z245.1-07 CAT II-SS+PSP00374+NACE MR0175/103+IPRO LP-006	48635	1724470	21507	1714008	B	Good / Bueno
	48635	1724470	21717	1724470	B	Good / Bueno

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Este certificado es emitido por el sistema automatizado y es válido con firma electrónica. En caso de que el poseedor del certificado emitido por el sistema quisiera emitir una copia, deberá garantizar la conformidad con el original bajo pena de responsabilidad por cualquier uso ilegal o indebido. Cualquier alteración y/o modificación estará sujeta a la ley.



# INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Number / Número: **680950**  
 Page / Página: **6 / 9**

Date / Día: **September 04, 2012**

Customer / Cliente: <b>VAN LEEUWEN PIPE &amp; TUBE (CANADA), IN - VAN LEE</b>		Customer's Order Item / Orden Cliente - Item: <b>145001527-00007</b>		Manufacturer's Works Order N° / Contratación de Venta: <b>57532/05</b>	
Manufacturing Process / Proceso de Manufactura: <b>SEAMLESS HOT ROLLED</b>		Product Type / Tipo de Producto: <b>CARBON STEEL FOR LOW TEMPERATURE SERVICE</b>		Surfaces / Superficie: <b>INT BARE /EXT VARNISHED</b>	
Standard or Specification / Normas o Especificaciones: <b>ASTM/A533-10+CSA Z245.1-07 CATH-SS+PSP00374+NACE MR0175/103+IPRO LP-006</b>		Steel Grade / Grado de acero: <b>1/61359 CAT II SS</b>		Ends / Extremos: <b>BEVELLED AT 30 DEG. ASTM</b>	
Dimensions / Dimensiones: <b>2 3/8 X 0.218 INCH 60.30 X 5.54 MM</b>		Schedule / Cadena: <b>080</b>		Nominal Weight / Peso Nominal: <b>5.02 LB/FT 7.48 KG/M</b>	
Length / Longitud: <b>SRL (SP)</b>		Quantity / Cantidad: <b>247 Pcs/ps</b>			
		<b>4680.87 FT</b>		<b>23931 LB</b>	
		<b>1426.73 MTS</b>		<b>10855 KG</b>	

## FLATTENING TEST / ENSAYO DE APLASTAMIENTO

Standard / Norma	Heat N°	Lot N°	Sample N°	LS	Result
	Cofada N°	Lote N°	Muestra N°		Resultado
	48635	21717	1724498	B	Good / Bueno

Ls: Location of sample / Ubicación de la muestra

## HYDROSTATIC TEST / PRUEBA HIDRAULICA

Pressure / Presión	Time / Tiempo	Result / Resultado
Unit / Unidad	Value / Valor	Subsidiary / Subsidiario
PSI	3.000	5

## HEAT TREATMENT / TRATAMIENTO TERMICO

Heat Treatment / Tratamiento térmico: <b>Pipe / Tubo</b>	Temperature / Temperatura	Tolerance / Tolerancia	Duration / Duración (Mins.)
Quench media of heat treatment process / Medio de enfriamiento del tratamiento térmico: <b>WATER</b>	830	+10	10
Temperature Soaks / Escala de Temperatura: <b>calcuis</b>			21

This certificate is derived by a computerized system and it is valid with electronic signature. On the original certificate the Tenaris green colored "Tenaris" is stamped. In case the owner of the original certificate would request a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not intended use. Any alteration, deletion, falsification will be subjected to the law.



Calle 14 # 100 - 130  
 Sector Industrial  
 C. 10000000  
 Tel: 595 4382228  
 Fax: 595 4382228

**INSPECTION CERTIFICATE**  
 Number / Número: **680950**  
 Page / Página: **7 / 9**  
 Date / Día: **September 04, 2012**

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)  
 Customer's Order / Item / Orden Cliente - Item: **45001527-00007**  
 Customer's Reference / Ref. del Cliente: **N/A**  
 Manufacturer's Works Order N° / Confirmación de Venta: **57532/05**

Manufacturing Process / Proceso de Manufactura: <b>SEAMLESS HOT ROLLED</b>	Product Type / Tipo de Producto: <b>CARBON STEEL FOR LOW TEMPERATURE SERVICE</b>	Surface / Superficie: <b>INT BARE / EXT VARNISHED</b>
Standard or Specification / Norma o Especificación: <b>ASTM/A533-10+CSA Z245.1-07 CAT II-SS+P9P00374+NACE MR0175/103+IPRO LP-006</b>	Steel Grade / Grado de acero: <b>1/6/359 CAT II SS</b>	Ends / Extremos: <b>BEVELLED AT 30 DEG. ASTM</b>
Dimensions / Dimensiones: <b>2 3/8 X 0.218 INCH          60.30 X 5.54 MM</b>	Length / Longitud: <b>SRL (SP)</b>	Nominal Weight / Peso Nominal: <b>5.02 LB/FT          7.48 KG/M</b>
Schedule / Cédula: <b>080</b>	Quantity / Cantidad: <b>23931 LB          10855 KG</b>	

**HEAT TREATMENT / TRATAMIENTO TERMICO**

Heat Treatment / Tratamiento térmico: <b>Pips / Tubo</b> Media of heat treatment process / Medio de enfriamiento del tratamiento térmico: <b>WATER</b> Temperature Scale / Escala de Temperatura: <b>celcius</b>	Temperature / Temperatura: <b>685</b>	Tolerance / Tolerancia: <b>-5</b>	Duration / Duración (Min): <b>72</b>
Type / Tipo: <b>TEMPERED</b>			

**SPECIAL REQUIREMENTS / REQUERIMIENTOS ESPECIALES**

Condition / Condición: <b>NON LIFTABLE CLOSED PLASTIC PROTECTOR FOR FLAT / BEVELED PIPE SUPPLIER METALCENTRO.</b>
--

**SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA**

Description / Descripción: <b>30 GAUSS          NON LIFTABLE CLOSED PLASTIC PROTECTOR FOR FLAT / BEVELED PIPE SUPPLIER METALCENTRO.</b>
Supplementary Information / Información Suplementaria: <b>MANUFACTURED BY TENARIS SIDERCA          "ACIERAGE PROCESS"          STEEL MAKING PROCESS: E A F J 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</b>

This certificate is issued as a control and system and it is valid with electronic signature. On the original certificate the trade-mark green color logo "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 responsibility for whatever use it is made of. Any addition and/or alteration will be subjected to the law.



# INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Number / Número: **680950**

Page / Página: **8 / 9**

Date / Date: **September 04, 2012**

Customer / Cliente: **VAN LEEUWEN PIPE & TUBE (CANADA) IN - VAN LEE**

Customer's Order Item / Orden Cliente - Item: **45001527-00007**

Manufacturer's Works Order N° / Confirmación de Venta: **5753205**

Product Type / Tipo de Producto: **CARBON STEEL FOR LOW TEMPERATURE SERVICE**

Steel Grade / Grado de acero: **116359 CAT II SS**

Quantity / Cantidad: **247 Pcs/pz**

Weight / Peso: **23931 LB / 10855 KG**

Length / Longitud: **4680.87 FT / 1428.73 MTS**

Schedule / Cédula: **080**

Dimensions / Dimensiones: **2 3/8 X 0.218 INCH / 60.30 X 5.54 MM**

Surface / Superficie: **INT BARE / EXT VARNISHED**

Ends / Extremos: **BEVELLED AT 30 DEG. ASTM**

Normal Weight / Peso Nominal: **5.02 LB/FT / 7.48 KG/M**

## SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

### Supplementary Information / Información Suplementaria

- \*ROLLING PROCESS: MANUFACTURING PROCESS : SEAMLESS HOT ROLLED.
- \*CONTROLS: VISUAL AND DIMENSIONAL INSPECTION : SATISFACTORY.
- \*MATERIAL CONDITIONS: NOT REPAIRED BY WELDING
- \*STANDARDS: EDITION OF REGULATION: ASTM A 333-11
- EDITION OF REGULATION: ASME SA 333/2010
- EDITION OF REGULATION: NACE MR-01-03 EDITION 2010
- EDITION OF REGULATION: NACE MR 01-75 - ISO 15156-2 : 2009
- EDITION OF REGULATION : CSA Z245 : 2007
- \*PROCESO DE LAMINACION: FABRICACION DE TUBO: LAMINADO EN CALIENTE Y SIN COSTURA.
- \*CONTROLES: CONTROL VISUAL Y DIMENSIONAL: SATISFACTORIO.
- \*CONDICIONES DEL MATERIAL: NO REPARADO POR SOLDADURA.
- \*NORMAS: EDICION DE LA NORMA: ASTM A 333-11
- EDICION DE LA NORMA: ASME SA 333/2010
- EDICION DE LA NORMA: NACE MR-01-03 EDICION 2010
- EDICION DE LA NORMA: NACE MR 01-75 - ISO 15156-2 : 2009
- EDICION DE LA NORMA : CSA Z245 : 2007

### Additional Information / Información Adicional

NON DESTRUCTIVE TEST: SATISFACTORY  
INSPECTION METHODS: E.M.I. LONG. (EXT.) NOTCH 5 % (INT.) NOTCH 10 % + E.M.I. TRANSV. (EXT/INT.)

### Additional Information / Información Adicional

NOTCH 10 %  
ONE YELLOW BAND ON EACH END.

## MARKING / MARCACION

### Marking / Marcación

- B = Monogram / Monogram: SIGERCA

### Marking / Marcación

- NNNNN = Número de tubo / Nbr. de pipe

This certificate is voided if it is signed with electronic signature. On the original certificate the identification system and its valid with electronic signature. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking into account the reason justify for any difference or not allowed one. Any alteration and/or falsification will be subjected to the law.

This certificate is voided if it is signed with electronic signature. On the original certificate the identification system and its valid with electronic signature. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking into account the reason justify for any difference or not allowed one. Any alteration and/or falsification will be subjected to the law.





# INSPECTION CERTIFICATE

(BS EN 10204 3.1: 2004 - ISO 10474 3.1B: 1991)

Number / Número: **680950**  
 Page / Pág no: **9 / 9**

Date / Día: **September 04, 2012**

Customer / Cliente: <b>VAN LEEUWEN PIPE &amp; TUBE (CANADA) IN - VAN LEE</b>	Customer's Order Item / Orden Cliente - Item: <b>45001527-00007</b>	Customer's Reference / Ref. del Cliente: <b>N/A</b>	Manufacturer's Works Order N° / Confirmación de Venta: <b>57592705</b>
Manufacturing Process / Proceso de Manufactura: <b>SEAMLESS HOT ROLLED</b>	Product Type / Tipo de Producto: <b>CARBON STEEL FOR LOW TEMPERATURE SERVICE</b>	Surface / Superficie: <b>UNT BARE / EXI VARNISHED</b>	
Standard or Specification / Normas o Especificaciones: <b>ASTM/A516 A/SAS333-10+CSA Z245.1-07 CATHI-SS+PSP00374+NACE MR0175/103+IPRO LP-006</b>	Steel Grade / Grado de acero: <b>1/6359 CAT II SS</b>	Ends, Extremos: <b>BEVELLED AT 30 DEG. ASTM</b>	
Dimensions / Dimensiones: <b>2 3/8 X 0.218 INCH 60.30 X 5.54 MM</b>	Schedule / Espesor: <b>080</b>	Nominal Weight / Peso Nominal: <b>5.02 LB/FT 7.45 KG/M</b>	
	Length / Longitud: <b>SRL (SP)</b>	Quantity / Cantidad: <b>247 Pcs/lpz 4680.87 FT 1426.73 MTS</b>	

## MARKING / MARCACION

LLL = Longitud / Length PPP = Peso / Weight -H = Monogramas / Markings/API	Marking / Marcación  TTTTYY = Mes / AÑO Month / Year YTT = Año / Trimestre Year / Quarter -HNNXXXX = Colada / Heat  SEAMLESS 207KPAX100 NDE CSA Z245.1-07 45001527 MADE IN ARGENTINA HNNXXXX HNNNN LLL PPPPP
TENARIS S/D TTTTYY ASTMA/SAS333 60.3 0.218 2 SCH80 XS T86658 CATHI SS HOT QT MAR5CL1 46C	Stenciling (Pipe) / Estarcido (Tubo)

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

<b>CUSTOMER - THIRD PARTY</b>	<b>TENARIS QUALITY DEPARTMENT SIGNATURE</b>
INSPECTION COMPANY COMPAÑIA DE INSPECCIÓN  Company Name: N/A Employee Name: N/A	 DEPTO. DE CERTIFICACION DE CALIDAD G.AJO Gabriel   C-HEF OF QUALITY CERTIFICATION DEPT RESPONSABLE DEL DEPTO. DE CERTIFICACION DE CALIDAD AYERBE Eduardo

This certificate is issued by a computerized system and it is valid only if the signature is original. On the original certificate the signature must be in blue ink. In case the original certificate would release a copy of it, the original certificate must be released to the original one. The original certificate will be subject to the law.





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

**MILL TEST CERTIFICATE**

EN10204-3.1.B(DIN50049/3.1.B)  
 Customer: SEYBOLD INTERNATIONAL CORP.  
 Order No.: 2008135(3)-VL

Certificate No.: SE-6135C  
 Date: 01/04/2013  
 Page: 2 OF 5

PRODUCT		MATERIAL SPECIFICATIONS												DIMENSIONAL SPECIFICATIONS											
FORGED CARBON STEEL FLANGES		ASTM A350 LF2-11 CL. 1/ASME SA350 LF2-11 CL. 1												ASME B16.5-09 CSA Z245.12											
Item No.	Code No.	Description	Quantity		Chemical Composition (%)										CE(%)										
			Min	Max	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V		Nb	N								
11	22114-LF2	300 BLRF 1" LF2	20	PCE	0.300	0.150	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-	-	0.406							
12	22160-LF2	150 WNRF STD 1" LF2	20	PCE	0.210	0.200	1.150	0.017	0.005	0.010	0.010	0.010	0.001	0.005	0.001	0.005	-	0.424							
13	22145-LF2	150 SWRF XS 1 1/2" LF2	50	PCE	0.210	0.210	1.110	0.013	0.006	0.050	0.060	0.010	0.001	0.009	0.009	0.005	-	0.406							
14	33629-LF2	900/1500 SWRTJ S160 1 1/2" LF2	20	PCE	0.209	0.200	1.020	0.014	0.008	0.008	0.012	0.054	0.002	0.005	0.001	0.005	-	0.387							
15	37602-LF2	300 HUB BLRF 1 1/2" LF2	25	PCE	0.220	0.200	1.150	0.021	0.003	0.006	0.010	0.010	0.002	0.004	0.001	0.005	-	0.416							
16	22115-LF2	300 BLRF 1 1/2" LF2	15	PCE	0.210	0.230	1.160	0.018	0.003	0.006	0.020	0.010	0.003	0.005	0.001	0.007	-	0.410							
17	24618-LF2	300 WNRF XXS 1 1/2" LF2	15	PCE	0.200	0.280	1.110	0.011	0.008	0.060	0.060	0.040	0.045	0.003	0.005	0.010	-	0.407							
18	24721-LF2	1500 WNRTJ S160 1 1/2" LF2	15	PCE	0.222	0.240	1.010	0.015	0.014	0.022	0.083	0.122	0.009	0.015	0.005	0.003	-	0.417							
19	24588-LF2	300 WNRF S160 2" LF2	100	PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007	-	0.424							
20	24705-LF2	600 THRF 2" LF2	50	PCE	0.220	0.220	1.180	0.016	0.006	0.007	0.020	0.020	0.005	0.005	0.001	0.007	-	0.424							

Item No.	Heat No.	T.S.(%)		Y.S.(MPA)	E.L.(%)	Hardness (HB)	RA.(%)	Impact Test			Material Supplier	REMARKS
		Min	Max					Temp: -46°C	Minimum	2		
11	4554034	520.0	565.0	362.0	34.0	153/151	69.5	72.0	39.0	45.0	ACOMINAS	890°CX3HRS CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15156.2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A CONFORMS WITH Z245.12 CAT II GR248 SOUR SERVICE-09 AND GR280 CAT II M45C SS(FOR USE AS WELDING NECK AND BLIND FLANGES ONLY) TEST SPECIMEN SIZE: 10X10 TEST SPECIMEN ORIENTATION: TRANSVERSE IMPACT TEST TEMP: -46°C
12	83623	537.4	570.0	395.1	34.4	155/153	68.6	90.0	64.0	83.0	WEI CHIH STEEL	
13	4554034	520.0	565.0	362.0	34.0	153/151	69.5	72.0	39.0	45.0	ACOMINAS	
14	921027	511.9	565.0	343.2	32.6	155/153	66.0	32.0	37.0	28.0	NTMK	
15	4553962	535.0	570.0	354.0	33.8	154/152	68.6	40.0	37.0	47.0	ACOMINAS	
16	4522439	535.0	570.0	368.0	34.0	154/152	71.3	69.0	80.0	75.0	ACOMINAS	
17	37320	519.8	565.0	348.1	34.2	150/150	65.9	23.0	29.0	25.0	OEMK	
18	931232	617.8	660.0	398.3	32.2	157/154	64.0	35.0	38.0	27.0	NTMK	
19	4603012	529.0	570.0	358.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS	
20	4603012	529.0	570.0	356.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS	

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

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

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

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



CONFORMS TO SA 350LF201  
 YEAR 2008  
 19-8440-01  
 ITEM # #48  
 SIGNED BY SEP 26 2013

19-8440-01  
 PO-133415

Manager of Quality Assurance Dept



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

SEDE AMMINISTRATIVA E SVILUPPIMENTI:  
 23863 CESANA BRIANZA (LC) - Italy  
 Via G. Pardini, 28  
 Tel. +39 031.655441  
 Fax +39 031.655149  
 quality.mff@iacrms.com

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

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Certif. N. 2881	Del/Dated 07.06.2012	Fattura / Invoice N. 1976	Del/Dated 06.06.2012
DDT / Del Note N. 2303	Del/Dated 06.06.2012	Ns.Ord. / Our ref. N.	
SEYBOLD INTERNATIONAL CORP.		Dest.: VAN LEEUWEN	
20 Holly Street, Suite 205 TORONTO M4S3B1	CA	EDMONTON ALBERTA	CA

**SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT**

COD. COL. HEAT	COLATA HEAT	POS. ITEM	VS-ORDINE YOUR REFERENCE	Q.TA' DESCRIPTION	DESCRIZIONE	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm
1449/11	018	018	7005408	W/N 300 RF 2" 160	LF2CL1	166,0 - 170,0	58,0	30,0	1,060	0,220	345,0	1	50,80	50,80	166,0 - 170,0	58,0	30,0	1,060	0,220	345,0	1	50,80	50,80
<p>ASTM A350 LF2 CL1/2 (LADLE) → C% 0,190 S% 0,220 Mn% 1,060 Si% 0,220 P% 0,003 S% 0,003 Cr% 0,070 Ni% 0,110 Mo% 0,026 Ti% 0,017 Cu% 0,120 V% 0,003 Nb% 0,002 N% 0,000 Al% 0,034 C.E.% 0,402 B % 0,000</p> <p>DIM.IN ACC. A VISIVO E DIMENS. DIM. ACCORDANCE TO VIS &amp; DIMENS. SATISFACTORY</p> <p>ASME/ANSI B16.5-2009</p> <p>SNERVAMENTO YIELD POINT N/mm<sup>2</sup> &gt;=1,0%</p>																							
<p>TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 930 C - COOLED IN STILL AIR</p> <p>FORNO / FURNACE ELECTRIC FURNACE</p> <p>ORIGINE / ORIGIN EUROPE</p>																							

COD. COL. HEAT	COLATA HEAT	POS. ITEM	VS-ORDINE YOUR REFERENCE	Q.TA' DESCRIPTION	DESCRIZIONE	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm
10/33022	022	022	7005408	S/O 150 RF 2"	LF2CL1	163,0 - 165,0	60,0	30,0	1,160	0,210	541,0	1	50,80	50,80	163,0 - 165,0	60,0	30,0	1,160	0,210	541,0	1	50,80	50,80
<p>ASTM A350 LF2 CL1/2 (LADLE) → C% 0,190 S% 0,210 Mn% 1,160 Si% 0,210 P% 0,010 S% 0,007 Cr% 0,070 Ni% 0,040 Mo% 0,010 Ti% 0,015 Cu% 0,100 V% 0,000 Nb% 0,000 N% 0,000 Al% 0,029 C.E.% 0,409 B % 0,000</p> <p>DIM.IN ACC. A VISIVO E DIMENS. DIM. ACCORDANCE TO VIS &amp; DIMENS. SATISFACTORY</p> <p>ASME/ANSI B16.5-2009</p> <p>SNERVAMENTO YIELD POINT N/mm<sup>2</sup> &gt;=1,0%</p>																							
<p>TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 930 C - COOLED IN STILL AIR</p> <p>FORNO / FURNACE ELECTRIC FURNACE</p> <p>ORIGINE / ORIGIN EUROPE</p>																							

COD. COL. HEAT	COLATA HEAT	POS. ITEM	VS-ORDINE YOUR REFERENCE	Q.TA' DESCRIPTION	DESCRIZIONE	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm
126.60	50.80	1	362,0	30,0	60,0	541,0	60,0	30,0	1,160	0,210	541,0	1	50,80	50,80	163,0 - 165,0	60,0	30,0	1,160	0,210	541,0	1	50,80	50,80
<p>ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010</p> <p>MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO</p> <p>ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010</p> <p>TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 930 C - COOLED IN STILL AIR</p> <p>FORNO / FURNACE ELECTRIC FURNACE</p> <p>ORIGINE / ORIGIN EUROPE</p>																							

COD. COL. HEAT	COLATA HEAT	POS. ITEM	VS-ORDINE YOUR REFERENCE	Q.TA' DESCRIPTION	DESCRIZIONE	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm	RESILIEZA / IMPACT TEST - JOULE/cm <sup>2</sup>	DUREZZA HARDNESS HBW	CONTRAZIONE REDUCTION OF AREA %>=	ALLUNGAMENTO ELONGATION %>=	ROTTURA TENSILE STRENGTH N/mm <sup>2</sup> >=	SNERVAMENTO YIELD POINT N/mm <sup>2</sup> >=0,2%	FORMA SHAPE	SEZ. mm <sup>2</sup> LENGHT mm	SEZ. mm <sup>2</sup> LENGHT mm
126.60	50.80	1	362,0	30,0	60,0	541,0	60,0	30,0	1,160	0,210	541,0	1	50,80	50,80	163,0 - 165,0	60,0	30,0	1,160	0,210	541,0	1	50,80	50,80
<p>ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010</p> <p>MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO</p> <p>ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010</p> <p>TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 930 C - COOLED IN STILL AIR</p> <p>FORNO / FURNACE ELECTRIC FURNACE</p> <p>ORIGINE / ORIGIN EUROPE</p>																							

3-8440-01  
 Po-133415

CONFORMS TO SA	350LF2CL1
YEAR	2013
JOB #	1013-8440-01
ITEM #	# 48
SIGNED BY	[Signature]
	SEP 26 2013

NOTE	MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION	UFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT	ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY	MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL
NOTES	MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156-2009 - SOUR SERVICE	[Signature]		[MFF Logo]
	MATERIAL IN ACCORDANCE WITH NACE MR-0103/2010 - SOUR SERVICE			



# CHANDAN STEEL LIMITED

(GOVT. OF INDIA RECOGNISED EXPORT HOUSE)

ISO 9001 : 2008 CERTIFICATE No. 04 100 011022-E3  
 AD 2000 - MERKBLATT WU - REGN.No. 07 202 1423 WP 1261 09  
 PED 97 / 23 / EC - CERTIFICATE No. 07 202 1423 WZ 1261/09

**ADM. OFFICE:** 504, SUKH SAGAR, N. S. PATKAR MARG,  
 MUMBAI 400 007, INDIA  
 Tel.: 91-22- 66290600. Fax.: 91-22-66290633/34  
 Website : www.chandansteel.net  
 Email : csl@chandansteel.net  
 L/c. No. : —  
 L/c. Date: —

**WORKS:** Plot No. 35, G. I. D. C., Umbergaon  
 Dist Valsad, Gujarat - 396 171.  
 Tel.: 91-260-256 2066 / 4367 / 1166. Fax.: 91-260-256 2287  
 E-mail : exports@chandansteel.net

F824 QC 09A / 02 / 28.03.2012

## INSPECTION CERTIFICATE 3.1 ACCORDING TO EN 10204

UNIFIED ALLOYS (EDMONTON) 8835 - 50 AVENUE, EDMONTON, ALBERTA, CANADA T6E 5H4							Test Certificate No. : EXP/0250-05/2012-13 Date of Issue : 13.07.2012 P. O. No. : CP-56575 Invoice No. & Date : EXP/0250/2012-13 Dtd. 13.07.2012					
ITEM DESCRIPTION												
STAINLESS STEEL FORGED & FULLY MACHINED FLANGES												
Sr.No.	Heat No.	Pcs	Box No.	Wt.Kgs	Grade	Item	Process Route					
1	12/572	10	21	28.80	F 316/L	2" SORF 300 LBS	Electric Induction Melting, A.O.D. Refining, Continuous Casting & Hot Forging					
2	12/732	28	21	149.52	F 316/L	3" WNRF 150 LBS S-40S						
3	12/535	81	31	216.27	F 316/L	2" WNRF 150 LBS S-10S						
4	12/710	35	31	139.65	F 316/L	3" SORF 150 LBS						
5	12/728	27	31	99.09	F 316/L	2" WNRF 300 LBS S-80S						
CHEMICAL COMPOSITION (Weight %)												
Sr.No.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Ti	N	OTHERS
1	0.024	0.45	1.71	0.036	0.013	17.15	2.02	10.04	-	-	0.0520	-
2	0.022	0.43	1.63	0.036	0.020	17.10	2.02	10.02	-	-	0.0440	-
3	0.028	0.42	1.65	0.043	0.006	17.00	2.02	10.06	-	-	0.0630	-
4	0.026	0.43	1.62	0.044	0.017	16.92	2.02	10.05	-	-	0.0530	-
5	0.024	0.42	1.59	0.035	0.008	17.00	2.04	10.02	-	-	0.0500	-
MECHANICAL PROPERTIES												
Sr.No.	0.2% Yield Strength N/mm <sup>2</sup> (R <sub>p0.2</sub> )		Tensile Strength N/mm <sup>2</sup> (R <sub>m</sub> )		Elongation %		Reduction of Area %		Hardness ( B. H. N. )			
1	267		558		51		74		169-173			
2	269		572		53		76		172-177			
3	271		566		55		70		169-173			
4	274		581		56		72		169-173			
5	308		596		60		76		182-186			
Remarks:												
1. The material is solution annealed at minimum 1050 °C and water quenched.												
2. Material is free from mercury and radio-active contamination and is found within the limits of the background radiation.												
3. PMI test 100% satisfactory.												
4. Micro Structure Reveals Austenitic grains with annealing twins and is free from carbide precipitation ( At 500 X ).												
5. Inter-Granular Corrosion Test as per ASTM A - 262 - 10 (Pr.E) satisfactory.												
6. The material conforms to ASTM A 182 - 11/ ASME SA 182 - 10 & Dimension confirms to ANSI B16.5 - 09 Specification.												
7. Visual and Dimensions inspection 100% satisfactory.												
8. The material conforms to NACE MR 0175 / ISO 15156-1:2009 (E).												



3-8440-01  
 Po-133456

CONFORMS TO SA 182-316L  
 YEAR 2010 ED, 2011 ADD  
 JOB # 2013-8440-01  
 ITEM # #06  
 SIGNED BY [Signature] OCT 01 2013  
 Page 5 of 10

Pratik R. Patel  
 PRATIK R. PATEL  
 WORKS INSPECTOR

We hereby certify that, the material described herein,  
 and supplied are in compliance with the requirements of the order.



# CHANDAN STEEL LIMITED

(GOVT. OF INDIA RECOGNISED EXPORT HOUSE)

ISO 9001: 2008 CERTIFICATE No. 04 100 011022-13  
 AD 2000 - MERKBLATT WU - REGN.No. 07 202 1423 WP 1261 09  
 PED 97/23/EC - CERTIFICATE No. 07 202 1423 WZ 1261/09

**ADM. OFFICE:** 504, SUKH SAGAR, N. S. PATKAR MARG,  
 MUMBAI 400 007, INDIA  
 Tel.: 91-22-66290600. Fax.: 91-22-66290633/34  
 Website : www.chandansteel.net  
 Email : cst@chandansteel.net  
 L/c. No. : ---  
 L/c. Date: ---

**WORKS:** Plot No. 35, G. I. D. C., Umbergaon  
 Dist Valsad, Gujarat - 396 171.  
 Tel.: 91-260-256 2066 / 4367 / 1166. Fax.: 91-260-256 2287  
 E-mail : exports@chandansteel.net

F824 QC 09A / 02 / 28.03.2012

## INSPECTION CERTIFICATE 3.1 ACCORDING TO EN 10204

UNIFIED ALLOYS (EDMONTON) 8835 - 50 AVENUE, EDMONTON, ALBERTA, CANADA T6E 5H4							Test Certificate No. : EXP/0266-19/2012-13 Rev. 01 Date of Issue : 19.07.2012 P. O. No. : EP-96470 Invoice No. & Date : EXP/0266/2012-13 Dtd. 19.07.2012					
<b>ITEM DESCRIPTION</b> STAINLESS STEEL FORGED & FULLY MACHINED FLANGES												
Sr.No.	Heat No.	Pcs	Box No.	Wt.Kgs	Grade	Item	Process Route					
1	12/1061	30	24	110.10	F 316/L	2" WNRF 300 LBS S-80S	Electric Induction Melting, A.O.D. Refining, Continuous Casting & Hot Forging					
<b>CHEMICAL COMPOSITION (Weight %)</b>												
Sr.No.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Ti	N	OTHERS
1	0.024	0.42	1.59	0.035	0.008	17.00	2.04	10.02	-	-	0.0500	←
<b>MECHANICAL PROPERTIES</b>												
Sr.No.	0.2% Yield Strength N/mm <sup>2</sup> (R <sub>p0.2</sub> )		Tensile Strength N/mm <sup>2</sup> (R <sub>m</sub> )		Elongation %		Reduction of Area %		Hardness ( B. H. N. )			
1	308		596		60		76		182-186 ←			
Remarks:												
1. The material is solution annealed at minimum 1050 °C and water quenched.												
2. Material is free from mercury and radio-active contamination and is found within the limits of the background radiation.												
3. PMI test 100% satisfactory.												
4. Micro Structure Reveals Austenitic grains with annealing twins and is free from carbide precipitation ( At 500 X ).												
5. Inter-Granular Corrosion Test as per ASTM A - 262 - 10 (Pr.E) satisfactory.												
6. The material conforms to ASTM A 182 - 11/ ASME SA 182 - 10 & Dimension confirms to ANSI B16.5 - 09 Specification.												
7. Visual and Dimensions inspection 100% satisfactory. ←												
8. The material conforms to NACE MR 0175 / ISO 15156-1:2009 (E).												

4-8440-01  
 Po - 133456

CONFORMS TO SA	182-316L
YEAR	2010ED, 2011ADD
JOB #	2013-8440-01
ITEM #	#bb
SIGNED BY	[Signature] OCT 01 2013

*[Signature]*  
**V. Y. NARAYAN**  
 SR. MANAGER Q.A.



We hereby certify that, the material described herein,  
 and supplied are in compliance with the requirements of the order.



**SHANGHAI MAX FITTINGS CO., LTD**  
 No. 9885 Puwei Road, Fengxian District, Shanghai, China  
 MILL TEST CERTIFICATE IN ACC. WITH EN 10204/3.1

ISO 9001:2008  
 Directive 97/23/EC  
 AD 2000-Merkblatt WC

Cert. No.: 01 100 106091  
 Cert. No.: 01 202 CHI/Q-10 0410  
 Cert. No.: 01 202 CHI/Q-10 0410

Client		UNIFIED ALLOYS		Certificate No		20130624-003				
Contract No.		MF20130215		EP-103638		Solution Annealed, pickled and passivated				
Product		STAINLESS STEEL COLD FORMED BUTT WELD FITTINGS						ASME SA403-10, ASTM A403-10A ASME B16.9-07 MSS SP-25-2008		
Item	Quantity	Size	Description	Grade	Heat No.	Heat treatment	Quenching			
40	11	1/2"	SCH80S	Long Radius Elbows 90°	ZJD1204-331	1050° 15 min.	RWQ			
42	241	2"	SCH80S	Long Radius Elbows 90°	YY12-90	1050° 15 min.	RWQ			
47	5	2"	SCH160	Long Radius Elbows 90°	JMS1109-797	1050° 15 min.	RWQ			
48	2	4"	SCH160	Equal Tees	JMS1111-1081	1050° 15 min.	RWQ			
53	11	3"	SCH10S	STUB END "TYPE A" SHORT PATTERN	J1012-061	1050° 15 min.	RWQ			
54	11	3"	SCH10S	Long Radius Elbows 45°	ZA1211020	1050° 15 min.	RWQ			
56	2	12"	SCH10S	Long Radius Elbows 45°	130277	1050° 15 min.	RWQ			
Chemical Composition (%)								CONFORMS TO SA 403-316L		
Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo	YES	
ZJD1204-331	0.023	0.76	0.038	0.006	0.29	16.35	10.04	2.05	NO	
YY12-90	0.019	0.99	0.035	0.002	0.46	16.79	10.07	2.06	NO	
JMS1109-797	0.020	0.79	0.039	0.002	0.32	16.14	10.05	2.05	NO	
JMS1111-1081	0.022	0.79	0.039	0.003	0.34	16.37	10.05	2.05	NO	
J1012-061	0.018	1.02	0.031	0.001	0.35	18.08	8.09	2.05	NO	
ZA1211020	0.020	1.18	0.039	0.003	0.37	18.28	8.05	2.05	NO	
130277	0.019	1.14	0.038	0.006	0.44	18.17	8.02	2.05	NO	
Mechanical Properties								ITEM # 9-8440-01		
Heat No.	TS(Mpa)	YS (Mpa)	Hardness		NACE MR0175	IC Test ASTM A262E	Impact Test	PMI	Visual	Dimensional
			EL(%)/longitudinal	Rockwell						
ZJD1204-331	570	260	65	N/A	OK	OK	N/A	OK	OK	OK
YY12-90	560	270	60	N/A	OK	OK	N/A	OK	OK	OK
JMS1109-797	565	260	60	N/A	OK	OK	N/A	OK	OK	OK
JMS1111-1081	570	260	65	N/A	OK	OK	N/A	OK	OK	OK
J1012-061	580	290	63	N/A	OK	OK	N/A	OK	OK	OK
ZA1211020	565	250	62	N/A	OK	OK	N/A	OK	OK	OK
130277	565	270	60	N/A	OK	OK	N/A	OK	OK	OK



Signed: \_\_\_\_\_  
 Date: 24-Jun-13

- MARKINGS: MAX - SPEC -GRADE -SIZE - SCH - HEAT NO CHINA
- Materials have been manufactured in complete accordance with the purchasers order
  - Free of weld repair as per ASTM A 980 Supplementary Requirement S66
  - Free of mercury
  - Free of radiation
  - 100% PMI test
  - Material complies with NACE MR0103-2010, NACE MR0175-2009, and ISO 15156-2009
  - Product also satisfies the requirements of ASTM A 403-10
  - Manufacturing and inspection process complies with BS EN10204 type "3.1"
  - We hereby state that the fittings are made in CHINA



**SHANGHAI MAX FITTINGS CO., LTD**  
 No. 9885 Puwei Road, Fengxian District, Shanghai, China  
 MILL TEST CERTIFICATE IN ACC.WITH EN 10204/3.1

ISO 9001:2008  
 Directive 97/23/EC  
 AD 2000-Merkblatt WC

Cert. No.: 01 100 106091  
 Cert. No.: 01 202 CHI/Q-10 0410  
 Cert. No.: 01 202 CHI/Q-10 0410

Client		UNIFIED ALLOYS				Certificate No		20130523 -005					
Contract No.		MF20130215	PO No.	EP-103638	Delivery Conditions		Solution Annealed, pickled and passivated						
Product		STAINLESS STEEL COLD FORMED BUTT WELD FITTINGS											
Item	Quantity	Size	Description	Grade	Heat No.	Heat treatment	Quenching						
39	5	2"	Short Radius Elbows 90°	WP316/316L-S	3185	1050° 15 min.	RWQ						
41	20	1 1/2"	Long Radius Elbows 90°	WP316/316L-S	463	1050° 15 min.	RWQ						
41	21	1 1/2"	Long Radius Elbows 90°	WP316/316L-S	YY12-498	1050° 15 min.	RWQ						
42	34	2"	Long Radius Elbows 90°	WP316/316L-S	FK1208-120	1050° 15 min.	RWQ						
43	27	3"	Long Radius Elbows 90°	WP316/316L-S	FK1212-134	1050° 15 min.	RWQ						
44	22	4"	Long Radius Elbows 90°	WP316/316L-S	YD12-396	1050° 15 min.	RWQ						
45	11	3"	Long Radius Elbows 45°	WP316/316L-S	HT12-0612	1050° 15 min.	RWQ						
Chemical Composition (%)													
Heat No.	C	Mn	P	S	Si	Cr	Ni	Mo					
3185	0.019	0.88	0.039	0.003	0.43	16.17	10.06	2.05	CONFORMS TO SA 403-316L				
463	0.013	0.98	0.038	0.003	0.44	16.88	10.18	2.09	YEAR 2010 EP, 2011 A00				
YY12-498	0.018	0.84	0.035	0.005	0.44	16.3	10.06	2.06	JOB # 2013-8440-01				
FK1208-120	0.019	0.694	0.033	0.003	0.33	16.22	10.10	2.08	ITEM # #07				
FK1212-134	0.015	0.62	0.039	0.003	0.35	16.37	10.07	2.07	STARTED BY J. OCT 01 2013				
YD12-396	0.016	0.90	0.039	0.005	0.37	16.50	10.05	2.04					
HT12-0612	0.022	1.11	0.044	0.004	0.33	16.11	10.03	2.06					
Mechanical Properties													
Heat No.	TS(Mpa)	YS (Mpa)	EL(%) longitudinal		Hardness	Impact Test		Non-destructive Test					
			EL(%) longitudinal	Hardness		PT	PMI	Visual	Dimensional				
3185	565	255	56	N/A	NACE MR0175	OK	N/A	OK	OK	OK	OK	OK	OK
463	580	265	50	N/A	ASTM A262E	OK	N/A	OK	OK	OK	OK	OK	OK
YY12-498	577	273	53	N/A	IC Test	OK	N/A	OK	OK	OK	OK	OK	OK
FK1208-120	580	265	50	N/A	ASTM A262E	OK	N/A	OK	OK	OK	OK	OK	OK
FK1212-134	565	250	60	N/A	ASTM A262E	OK	N/A	OK	OK	OK	OK	OK	OK
YD12-396	580	285	56	N/A	ASTM A262E	OK	N/A	OK	OK	OK	OK	OK	OK
HT12-0612	575	295	55	N/A	ASTM A262E	OK	N/A	OK	OK	OK	OK	OK	OK



- MARKINGS: MAX - SPEC - GRADE - SIZE - SCH - HEAT NO CHINA
- Materials have been manufactured in complete accordance with the purchasers order
  - Free of weld repair as per ASTM A 960 Supplementary Requirement S66
  - Free of mercury
  - Free of radiation
  - 100% PMI test
  - Material complies with NACE MR0103-2010, NACE MR0175-2009, and ISO 15156-2009
  - Product also satisfies the requirements of ASTM A 403-10
  - Manufacturing and inspection process complies with BS EN10204 type "3.1"
  - We hereby state that the fittings are made in CHINA

Signed: \_\_\_\_\_  
 Date: 29-May-13





# ZHEJIANG STELLAR PIPE INDUSTRY CO.,LTD

XIAOZHI INDUSTRY PARK, QINGTIAN ZHEJIANG 323900 CHINA

## MILL TEST CERTIFICATES to EN 10204/3.1 PED 97/23

PED Certificate no.:331/2007/MUC

Customer : UNIFIED ALLOYS  
 Contract No. : EP-93405  
 Specification : ASTM/ASME A/SA312-2009  
 Steel Grade : TP316/316L  
 Goods : SEAMLESS STAINLESS STEEL PIPES

Cert No. : ST111024-48  
 Delivery Condition : A & P  
 Appearance : Solution Treated

**Alco # P 969**

Heat No.		Chemical Composition (%)									
Spec.		C	Si	Mn	P	S	Cr	Ni	Mo	Ti	
Min.							16.00	11.00	2.00		
Max.		0.035	1.00	2.00	0.045	0.030	18.00	14.00	3.00		
Ladle Analysis		0.020	0.34	1.05	0.038	0.004	16.75	11.08	2.06		
Product Analysis		0.020	0.37	1.06	0.038	0.004	17.06	11.09	2.07		
Batch No.		Size			Quantity			Visual Examination			
C110712068		2"*SCH80S*20'FT			30 PCS			1382 KGS 182.88 M 600 FT			OK
Test No.		Tensile Test			Technological Tests						
		Tensile Strength	Proof Strength	Elongation	Flattening Test	Ring Tensile Test	Drift Expanding Test	Ring Expanding Test	Impact Test	Hardness Test	
Spec.		MPa	MPa	A(%)						HRB	
Min.		515	205	35							
Max.		560	285	59	GOOD	/	/	/	/	90	
L58										77.6	
Leak Tightness Test		Non-destructive Testing			Intergranular Corrosion Test						
Hydrostatic Test		Eddy Current Test			Ultrasonic Test			Acc to ASTM A262-E			
Acc to ASTM A 995		Acc to ASTM E426			Acc to ASTM E213						
/		GOOD			/			/			
Additional Remarks:		<p>1. Country of Origin: China    2. No weld repair    3. 100% PMI    4. Hardness acc. to NACE MR 0175-2003, MR 0103-2003</p> <p>5. Solution Temperature: 1050°C. Hold 30 minutes. Rapid Water Cooling.</p> <p>We hereby certify that the material described above has been tested and complies with the terms of the Contract &amp; the specification, and we confirm that P.M.I has been done.</p> <p>24/10/2011 Data</p> <p><i>[Signature]</i> Quality Technology Director</p>									

CONFORMS TO SA **312-316L**  
 YEAR **2010 EP, 2011 ADD**  
 JOB # **2013-8440-01**  
 ITEM # **# 68, 69, 70**  
 SIGNED BY *[Signature]* **SEP 24 2013**

**8440-01**  
**PO-133419**

EP-93405    2S80316LSP



**ZHEJIANG STELLAR PIPE INDUSTRY CO.,LTD**  
 XIAOZHI INDUSTRIAL PARK, QINGTIAN ZHEJIANG 323900 CHINA  
**MILL TEST CERTIFICATES to EN 10204/3.1 PED 97/23**  
 PED Certificate no. 331/2007/MUC

Customer :	ARMOR ALLOYS LTD	Order No. :	PE1110462
Contract No :	T13YKZ0419-02	Cert No. :	ST130522-10
Specification :	ASTM A312/ASME SA312	Delivery Condition :	Solution Treated
Steel Grade :	TP316/316L	Appearance :	Pickling
Goods :	STAINLESS STEEL SEAMLESS PIPES		

Heat No		Chemical Composition (%)								
		C	Si	Mn	P	S	Cr	Ni	Mo	Ti
Spec.	Min.						16.00	11.00	2.00	
	Max.	0.035	1.00	2.00	0.045	0.030	18.00	14.00	3.00	
Ladle Analysis		0.015	0.43	0.84	0.036	0.001	16.61	11.06	2.06	
Product Analysis	1301-048	0.017	0.38	0.82	0.034	0.003	16.58	11.04	2.03	
Batch No.	Size	Quantity				Visual Examination				
C130419050	60 33*5.54 2**SCH80S*18-24'FT	68 PCS		3414 KGS		461 61 M 1514 46 FT		OK		
Mechanical Properties (Acc to ASTM A370)										
Test No	Tensile Strength	Yield Strength	Elongation	Flattening	Ring	Faring	Ring	Impact	Hardness	
	MPa	MPa	G L 50mm	Test	Tensile	Test	Expanding	Test	Test	
Spec.	Min	MPa	A(%)		Test		Test		HRB	
	Max	MPa								
		515	205	35					90	
	L40	575	280	59	GOOD	/	/	/	74.3	
Leak Tightness Test		Non-destructive Testing			Intergranular Corrosion Test					
Hydrostatic Test Acc to ASTM 999		Eddy Current Test Acc to ASTM E426		Ultrasonic Test Acc to ASTM E213		Acc to ASTM A262-E				
/		GOOD		/		GOOD				
				PA-157		8440-01 STOCK PO-135102			CONFORMS TO SA 312 TP316L YEAR 2010 ED 201009 JOB # 2013-8440-01 ITEM # mk Page 1 Rev 1, 6/21/13 SIGNED BY: [Signature]	
Additional Remarks:										
1 Country of Origin China			2 100% PMI			3 No weld repair				
4 Hardness acc to NACE MR 0175 latest edition /ISO 15158- 2009					5 Solution Temperature 1050°C Hold 30minutes Rapid Water Cooling					
We hereby certify that the material described above has been tested and complies with the terms of the Contract & the specification, and we confirm that PMI has been done										
Aug/21/2013 _____ Data										

浙江泰明钢管有限公司  
 ZHEJIANG STELLAR PIPE INDUSTRY CO., LTD  
 Quality Technology Director  
 质量技术总监  
 SPECIAL BADCP OF QUALITY



# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GM14216

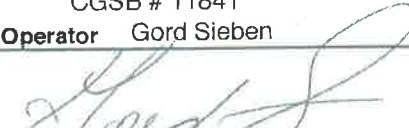

## MAGNETIC PARTICLE INSPECTION REPORT

<b>Client</b>	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	<b>Page</b>	1-1
<b>Test Method</b>	ASME V SE 709-06	<b>Time</b>	11:00 AM
<b>Acceptance Criteria</b>	ASME VIII Div. 1 App. 6	<b>Date</b>	May 06, 2014
<b>Object</b>		<b>P.O. No.</b>	
		<b>Job No.</b>	2013-8440-01A

Procedure-MT-General and MT- 1V Rev. 4	<input type="checkbox"/> Pre Heat Treatment	<input type="checkbox"/> Post Heat Treatment	<input type="checkbox"/> Post Hydrotest
<b>Test Equipment</b> ES-X Flex Ferrous Probe S/N - 16512	<input type="checkbox"/> Blacklight	<input type="checkbox"/> B/L Meter XR-1000 S/N - 1815543	
Black on White Contrast - Magnaflux	<input type="checkbox"/> WCP 2 White Contrast Batch #	<input type="checkbox"/> 7HF Prepared Bath Batch #	
<b>Medium- Magnaflux - Type</b> <input type="checkbox"/> 14 A	<b>partical batch #</b>	<input checked="" type="checkbox"/> 8R 12F008	<b>Other</b>
<input checked="" type="checkbox"/> Dry	<input type="checkbox"/> Wet	<input type="checkbox"/> Fluorescent	<input checked="" type="checkbox"/> Red
<input type="checkbox"/> Grey	<input type="checkbox"/> B/White	<input type="checkbox"/> Other	
<input checked="" type="checkbox"/> Yoke	<input type="checkbox"/> Prod	<input type="checkbox"/> Coil	<input checked="" type="checkbox"/> A/C
<input type="checkbox"/> D/C	<input checked="" type="checkbox"/> Continuous		
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Ground	<input type="checkbox"/> Machined	<input type="checkbox"/> Painted
<input type="checkbox"/> Shot Blasted	<input type="checkbox"/> Central Cond.		
<input type="checkbox"/> Demag			
Viewing Light Source in excess of 100fc.	<input type="checkbox"/> Ambient	<input type="checkbox"/> Trouble Light	<input checked="" type="checkbox"/> Flashlight
<input checked="" type="checkbox"/> W/L Meter S/N B100448			
<b>Material - P1</b>	<b>Thickness -</b>	<b>Temp. - 10° C to 52° C</b>	<b>Surface Condition - Clean Bare Steel</b>

All Internal and External Fillet welds on the Vessel were tested.

No relevant indications were found.

CGSB # 11841							
<b>Operator</b> Gord Sieben		<b>St</b>	<b>OT</b>	<b>KM</b>	<b>Client Representative</b>		
	ASNT II CGSB II	2					

# ALCO GAS & OIL RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: DEVON CANADA CORP.	DESCRIPTION: 78"ID X 20' DRAIN VESSELS	ALCO JOB NUMBER: 2013-8440-01A
DATE: NOV 20 2013	TECHNIQUE # USED: RT P#4 REV # 5	CODE: SECTION VIII DIV 1
MATERIAL: P1	MAT'L THICKNESS: 3/8"	EDITION: 2010      ADDENDA: 2011 ACCEPTANCE: UW-51 UW-11a FULL

1 NO. OF FILMS PER CASSETTE

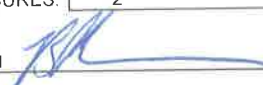
LEGEND: \* - WELDER SYMBOL      HL - HI LO      S - SLAG      CRACK       SINGLE WALL EXPOSURE  
 IP - INCOMPLETE PENETRATION      LC - LOW COVER      P - POROSITY      (1) SLIGHT       DOUBLE WALL EXPOSURE  
 BT - BURN THROUGH      UC - UNDER CUT      I - ICICLE      (2) MEDIUM       SINGLE WALL VIEWING  
 IC - INTERNAL CONCAVITY      AS - ARC STRIKE      C - CRATER      (3) SEVERE       DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
M1L1	0-8"	10												✓	
M2L1	0-8"	17												✓	

**COSTING**

SOURCE TYPE:	IR 192	HRS.	@		\$0.00
STRENGTH:	36 Ci	2	@		\$0.00
SOD:	19.250"		@		\$0.00
OFD:	750"		@		\$0.00
FILM TYPE:	AGFA D5 CLASS 1		@		\$0.00
FOCAL SPOT SIZE:	11"		@		\$0.00
			@		\$0.00

COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 2 TOTAL COSTS \$0.00

PAGE 1 OF 1 EXAMINER: BARRY RASMUSSEN  LEVEL SNT III CGSB II #235





# ALCO GAS & OIL RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: DEVON CANADA CORP.	DESCRIPTION: 78"ID X 20' DRAIN VESSELS	ALCO JOB NUMBER: 2013-8440-01A
DATE: MAR 10 2014	TECHNIQUE # USED: RT P#7 REV # 5	CODE: SECTION VIII DIV 1
MATERIAL: P1	MAT'L THICKNESS: SCH 80/160	EDITION: 2010      ADDENDA: 2011 ACCEPTANCE: UW-51 UW-11a FULL

1 NO. OF FILMS PER CASSETTE

LEGEND: \* - WELDER SYMBOL      HL - HI LO      S - SLAG      CRACK       SINGLE WALL EXPOSURE  
 IP - INCOMPLETE PENETRATION      LC - LOW COVER      P - POROSITY      (1) SLIGHT       DOUBLE WALL EXPOSURE  
 BT - BURN THROUGH      UC - UNDER CUT      I - ICICLE      (2) MEDIUM       SINGLE WALL VIEWING  
 IC - INTERNAL CONCAVITY      AS - ARC STRIKE      C - CRATER      (3) SEVERE       DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
N1	6" SCH 80	10												✓	
N3	4" SCH 80	10												✓	
N8	2" SCH 160	10												✓	
N9	2" SCH 160	10												✓	

**COSTING**

SOURCE TYPE:	IR 192	HRS.	@		
STRENGTH:	52 Ci	8" FILM	@		
SOD:	2.031"	17" FILM	@		
OFD:	.344"	PIPE	@		
FILM TYPE:	AGFA D4 CLASS 1	1      4" SCH 80	@		
FOCAL SPOT SIZE:	.11"	2      2" SCH 160	@		
		1      6" SCH 80	@		

COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 14      \$0.00

TOTAL COSTS

PAGE 1 OF 1      EXAMINER: BARRY RASMUSSEN      LEVEL SNT III      CGSB II #235



# RADIOGRAPHY REPORT

<b>CUSTOMER:</b> DEVON CANADA CORP.	<b>DESCRIPTION:</b> 78"ID X 20' DRAIN VESSELS	<b>ALCO JOB NUMBER:</b> 2013-8440-01A
<b>DATE:</b> MAR 18 2014	<b>TECHNIQUE # USED:</b> RT P#10 REV # 5	<b>CODE:</b> SECTION VIII DIV 1
<b>MATERIAL:</b> P1	<b>MAT'L THICKNESS:</b> 3/8"	EDITION: 2010      ADDENDA: 2011 ACCEPTANCE: UW-51 UW-11a FULL

1	NO. OF FILMS PER CASSETTE	HL - HI LO	S - SLAG	CRACK	<input type="checkbox"/>	SINGLE WALL EXPOSURE
LEGEND: * - WELDER SYMBOL		LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input checked="" type="checkbox"/>	DOUBLE WALL EXPOSURE
IP - INCOMPLETE PENETRATION		UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING
BT - BURN THROUGH		AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING
IC - INTERNAL CONCAVITY						

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
L1	0-14	6												✓	
	14-28													✓	
	28-42													✓	
	42-56													✓	
	56-70													✓	
	70-84													✓	
	84-98													✓	
	98-112													✓	
L2	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:	49 Ci	8" FILM	
SOD:	29.825"	17" FILM	18
OFD:	375"	PIPE	
FILM TYPE:	AGFA D5 CLASS 1	PIPE	
FOCAL SPOT SIZE:	.11"	PIPE	
		PIPE	

@		
@		
@		
@		
@		
@		
@		

COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 10 \$0.00

# ALCO GAS & OIL RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: DEVON CANADA CORP.		DESCRIPTION: 78"ID X 20' DRAIN VESSELS		ALCO JOB NUMBER: 2013-8440-01A	
DATE: MAR 23 2014		TECHNIQUE # USED: RT P#7 REV # 5		CODE: SECTION VIII DIV 1	
MATERIAL: P1		MAT'L THICKNESS: 3/8"		EDITION: 2010      ADDENDA: 2011 ACCEPTANCE: UW-52 UW-11a-5b SPOT	

1 NO. OF FILMS PER CASSETTE

LEGEND:	* - WELDER SYMBOL	HL - HI LO	S - SLAG	CRACK	<input type="checkbox"/>	SINGLE WALL EXPOSURE
	IP - INCOMPLETE PENETRATION	LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input checked="" type="checkbox"/>	DOUBLE WALL EXPOSURE
	BT - BURN THROUGH	UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING
	IC - INTERNAL CONCAVITY	AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
C2	0-6	22/19												✓	

**COSTING**

SOURCE TYPE:	IR 192	HRS.	@
STRENGTH:	47 Ci	1	@
SOD:	19.625"	8" FILM	@
OFD:	375"	17" FILM	@
FILM TYPE:	AGFA D5 CLASS 1	PIPE	@
FOCAL SPOT SIZE:	11"	PIPE	@
		PIPE	@

@		
@		
@		
@		
@		
@		
@		

COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 1 TOTAL COSTS \$0.00

# ALCO GAS & OIL RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: DEVON CANADA CORP.		DESCRIPTION: 78"ID X 20' DRAIN VESSELS		ALCO JOB NUMBER: 2013-8440-01A	
DATE: APRIL 24 2014		TECHNIQUE # USED: RT P#7 REV # 5		CODE: SECTION VIII DIV 1	
MATERIAL: P1		MAT'L THICKNESS: SCH 80/160		EDITION: 2010      ADDENDA: 2011 ACCEPTANCE: UW-51 UW-11a FULL	

1 NO. OF FILMS PER CASSETTE						
LEGEND: * - WELDER SYMBOL		HL - HI LO	S - SLAG	CRACK	<input type="checkbox"/>	SINGLE WALL EXPOSURE
IP - INCOMPLETE PENETRATION		LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input checked="" type="checkbox"/>	DOUBLE WALL EXPOSURE
BT - BURN THROUGH		UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING
IC - INTERNAL CONCAVITY		AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
N6	2" SCH 80	10												✓	
N8	2" SCH 160	10												✓	

**COSTING**

SOURCE TYPE:	IR 192	HRS.	@		
STRENGTH:	34 Ci	8" FILM	@		
SOD:	2.157"	17" FILM	@		
OFD:	.218"	PIPE	@		
FILM TYPE:	AGFA D4 CLASS 1	1      2" SCH 80	PIPE	@	
FOCAL SPOT SIZE:	.11"	1      2" SCH 160	PIPE	@	
			PIPE	@	

COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 7 TOTAL COSTS: \$0.00

PAGE 1 OF 1 EXAMINER: BARRY RASMUSSEN LEVEL SNT III CGSB II #235





# ALCO GAS & OIL RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: DEVON CANADA CORP.	DESCRIPTION: 78" ID X 20' DRAIN VESSELS	ALCO JOB NUMBER: 2013-8440-01A
DATE: APRIL 27 2014	TECHNIQUE # USED: RT P#7 REV # 5	CODE: SECTION VIII DIV 1
MATERIAL: P1	MAT'L THICKNESS: SCH 80/160	EDITION: 2010      ADDENDA: 2011 ACCEPTANCE: UW-51 UW-11a FULL

1 NO. OF FILMS PER CASSETTE

LEGEND: \* - WELDER SYMBOL      HL - HI LO      S - SLAG      CRACK       SINGLE WALL EXPOSURE  
 IP - INCOMPLETE PENETRATION      LC - LOW COVER      P - POROSITY      (1) SLIGHT       DOUBLE WALL EXPOSURE  
 BT - BURN THROUGH      UC - UNDER CUT      I - ICICLE      (2) MEDIUM       SINGLE WALL VIEWING  
 IC - INTERNAL CONCAVITY      AS - ARC STRIKE      C - CRATER      (3) SEVERE       DOUBLE WALL VIEWING

Film #	Location	*	IP	S	C	BT	LC	UC	HL	P	I	IC	REMARKS	ACC	REJECT
N2	6" SCH 80	10												✓	
N4	3" SCH 80	10												✓	
N5	2" SCH 80	11												✓	
N7	4" SCH 80	11												✓	
N10A	2" SCH 160	11												✓	
N10B	2" SCH 160	11												✓	
N11A	2" SCH 160	10												✓	
N11B	2" SCH 160	10												✓	
N12A	2" SCH 160	10												✓	
N12B	2" SCH 160	10												✓	
N13	2" SCH 160	10												✓	
N14	2" SCH 160	10												✓	

**COSTING**

SOURCE TYPE:	IR 192	HRS.	@		
STRENGTH:	34 Ci	8" FILM	@		
SOD:	2.157"	4" SCH 80	@		
OFD:	218"	3" SCH 80	@		
FILM TYPE:	AGFA D4 CLASS 1	2" SCH 80	@		
FOCAL SPOT SIZE:	11"	2" SCH 160	@		
		6" SCH 80	@		

COMMENTS: \_\_\_\_\_ TOTAL EXPOSURES: 44 \$0.00

# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GU13874

## ULTRASONIC INSPECTION REPORT

Client **Alco Gas & Oil**  
5203 - 75 St.  
Edmonton, Alberta

Page 1-1

Test Method **ASME V Article 4**

Time 1:00 PM

Acceptance Criteria **ASME VIII Div. 1 App. 12**

Date Mar 21, 2014

Object

P.O. No.

Job No. 2013-8440-01A

Procedure UT- General and UT- 8 Rev. 4

Calibration Standards ASME 1/2" T 1/16" N

Couplant Light oil

Instrument Olympus Epoch 600 S/N 120404409

Calibration Due - 4 Oct 2014

Reference Gain - 64 dB

- Panametrics 12.5 S/N 170279  Panametrics 25 S/N 677551  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 - 3/8" Temp - 10° C to 52°C Surface Condition - Clean / As welded

Transducer	Frequency	Size	FSH or %	Scan	Range	Cable Type
0°	2.25 MHz	12.5 mm	80 %	+6 dB	25 mm	Coaxial BCM6'
60°	2.25 MHz	12.5 mm	80 %	+6 dB	125 mm	"
70°	2.25 MHz	12.5 mm	80 %	+6 dB	200 mm	"

The following Cat "D" welds were scanned.

0° Lamination scan  
60° Full and Half skip as available  
70° Full and Half skip as available

Nozzles: N9, N11A, N11B, N12A, N12B, N13, N14 and M2.

No relevant indications were found.

CGSB # 11841

Operator Gord Sieben

St OT KM

Client Representative

ASNT II  
CGSB II

1



# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GU14064

## ULTRASONIC INSPECTION REPORT

<b>Client</b>	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	<b>Page</b>	1-1
<b>Test Method</b>	ASME V Article 4	<b>Time</b>	1:00 PM
<b>Acceptance Criteria</b>	ASME VIII Div. 1 App. 12	<b>Date</b>	Apr 14, 2014
<b>Object</b>		<b>P.O. No.</b>	
		<b>Job No.</b>	2013-8440-01A

<b>Procedure</b> UT- General and UT- 8 Rev. 4	<b>Calibration Standards</b> ASME 1/2" T 1/16" N	<b>Couplant</b> Light oil
<b>Instrument</b> Olympus Epoch 600 S/N 120404409	<b>Calibration Due - 4 Oct 2014</b>	<b>Reference Gain - 64 dB</b>
<input checked="" type="checkbox"/> Panametrics 12.5 S/N 170279	<input checked="" type="checkbox"/> Panametrics 25 S/N 677551	<input checked="" type="checkbox"/> Pana-wedges 45/60/70 ABWM-5T
<input type="checkbox"/> Panametrics 12.5 S/N 174928	<input type="checkbox"/> Panametrics 12.5 S/N 579307	<input type="checkbox"/> Panametrics 5x5xD S/N 505065
<input type="checkbox"/> Panametrics .25" S/N 97250	<input type="checkbox"/> DAC Block S/N 22539 thru 22548	<input type="checkbox"/> ASME V Block S/N 22608
<input type="checkbox"/> IIW Block S/N 11091	<input type="checkbox"/> Step Block S/N A03412	


Material - P1	Thickness - 1/2"	Temp - 10° C to 52°C	Surface Condition - Clean / As welded			
Transducer	Frequency	Size	FSH or %	Scan	Range	Cable Type
0°	2.25 MHz	12.5 mm	80 %	+6 dB	25 mm	Coaxial BCM6'
60°	2.25 MHz	12.5 mm	80 %	+6 dB	125 mm	"
70°	2.25 MHz	12.5 mm	80 %	+6 dB	200 mm	"

The following Cat "D" welds were scanned.

- 0° Lamination scan
- 60° Full and Half skip as available
- 70° Full and Half skip as available

Nozzles: N1, N2, N3, N4,N5, N7 and M1A.

No relevant indications were found.

CGSB # 11841							
Operator Gord Sieben	St	OT	KM	Client Representative			
	ASNT II CGSB II	,5					



# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GU14117

## ULTRASONIC INSPECTION REPORT

<b>Client</b>	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	<b>Page</b>	1-1
<b>Test Method</b>	ASME V Article 4	<b>Time</b>	1:00 PM
<b>Acceptance Criteria</b>	ASME VIII Div. 1 App. 12	<b>Date</b>	Apr 17, 2014
<b>Object</b>		<b>P.O. No.</b>	
		<b>Job No.</b>	2013-8440-01A

<b>Procedure</b> UT- General and UT- 8 Rev. 4	<b>Calibration Standards</b> ASME 1/2" T 1/16" N	<b>Couplant</b> Light oil
<b>Instrument</b> Olympus Epoch 600 S/N 120404409	<b>Calibration Due - 4 Oct 2014</b>	<b>Reference Gain - 64 dB</b>
<input checked="" type="checkbox"/> Panametrics 12.5 S/N 170279 <input checked="" type="checkbox"/> Panametrics 25 S/N 677551 <input checked="" type="checkbox"/> Pana-wedges 45/60/70 ABWM-5T <input type="checkbox"/> Other <input type="checkbox"/> Panametrics 12.5 S/N 174928 <input type="checkbox"/> Panametrics 12.5 S/N 579307 <input type="checkbox"/> Panametrics 5x5xD S/N 505065 <input type="checkbox"/> Panametrics .25" S/N 97250 <input type="checkbox"/> DAC Block S/N 22539 thru 22548 <input type="checkbox"/> ASME V Block S/N 22608 <input checked="" type="checkbox"/> IIW Block S/N 11091 <input type="checkbox"/> Step Block S/N A03412		

Material - P1	Thickness - 3/8"	Temp - 10° C to 52°C	Surface Condition - Clean / As welded			
<b>Transducer</b>	<b>Frequency</b>	<b>Size</b>	<b>FSH or %</b>	<b>Scan</b>	<b>Range</b>	<b>Cable Type</b>
0°	2.25 MHz	12.5 mm	80 %	+6 dB	25 mm	Coaxial BCM6'
60°	2.25 MHz	12.5 mm	80 %	+6 dB	125 mm	"
70°	2.25 MHz	12.5 mm	80 %	+6 dB	200 mm	"

The following Cat "D" welds were scanned.

- 0° Lamination scan
- 60° Full and Half skip as available
- 70° Full and Half skip as available

Nozzles: N10A and N10B.

No relevant indications were found.

CGSB # 11841							
Operator <i>Gord Sieben</i>	St	OT	KM	Client Representative <i>[Signature]</i>			
<i>[Signature]</i>	ASNT II CGSB II	1					

# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GU14203

## ULTRASONIC INSPECTION REPORT

<b>Client</b>	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	<b>Page</b>	1-1
<b>Test Method</b>	ASME V Article 4	<b>Time</b>	1:00 PM
<b>Acceptance Criteria</b>	ASME VIII Div. 1 App. 12	<b>Date</b>	May 01, 2014
<b>Object</b>		<b>P.O. No.</b>	
		<b>Job No.</b>	2013-8440-01A

<b>Procedure</b> UT- General and UT- 8 Rev. 4	<b>Calibration Standards</b> ASME 1/2" T 1/16" N	<b>Couplant</b> Light oil
<b>Instrument</b> Olympus Epoch 600 S/N 120404409	<b>Calibration Due - 4 Oct 2014</b>	<b>Reference Gain - 64 dB</b>
<input checked="" type="checkbox"/> Panametrics 12.5 S/N 170279 <input checked="" type="checkbox"/> Panametrics 25 S/N 677551 <input checked="" type="checkbox"/> Pana-wedges 45/60/70 ABWM-5T <input type="checkbox"/> Other <input type="checkbox"/> Panametrics 12.5 S/N 174928 <input type="checkbox"/> Panametrics 12.5 S/N 579307 <input type="checkbox"/> Panametrics 5x5xD S/N 505065 <input type="checkbox"/> Panametrics .25" S/N 97250 <input type="checkbox"/> DAC Block S/N 22539 thru 22548 <input type="checkbox"/> ASME V Block S/N 22608 <input checked="" type="checkbox"/> IIW Block S/N 11091 <input type="checkbox"/> Step Block S/N A03412		

Material - P1	Thickness - 3/8"	Temp - 10° C to 52° C	Surface Condition - Clean / As welded			
Transducer	Frequency	Size	FSH or %	Scan	Range	Cable Type
0°	2.25 MHz	12.5 mm	80 %	+6 dB	25 mm	Coaxial BCM6'
60°	2.25 MHz	12.5 mm	80 %	+6 dB	125 mm	"
70°	2.25 MHz	12.5 mm	80 %	+6 dB	200 mm	"

The following Cat "D" welds were scanned.

- 0° Lamination scan
- 60° Full and Half skip as available
- 70° Full and Half skip as available

Nozzles: N6 and N8.

No relevant indications were found.

CGSB # 11841							
Operator Gord Sieben	St	OT	KM	Client Representative			
	ASNT II CGSB II	1					



QUALITY ASSURANCE INSPECTION SUMMARY (ABOVE-GRADE)

Po# 133932  
8440-01

DATE: MAY 22/14	LOAD# N/A	TRAILER# N/A
PRODUCT: MANWAY COVERS	PROJECT: N/A	
CUSTOMER: ALCO	OWNER: DEVON	
CUSTOMER Ref.No.: QUOTE 94139 REV1	NORPOINT Ref.No.: 13-0261	
CUSTOMER REPRESENTATIVE: MTL INSPECTION	NORPOINT REPRESENTATIVE: MANDY M'CAFFREY	

COMPRESSOR: 900 CFM	DRYER: Desiccant
NO. OF NOZZLES: 1	PRESSURE @ NOZZLE: 115 psi
ABRASIVE: Silica	SIZE: # 7
CLEAN STND: SSPC -SP 5	PH N/A

Testex PRESS-O-FILM™ HT  
www.testextape.com  
X-Coarse  
1.5 to 4.5 mil  
38 to 115 µm  
Made in USA  
115 µm  
4.1 mil

HYGROMETER 12040840 ST-TEMP PROBE S/N 092513026-35100-K

ENVIRONMENT	AIR	WET BULB	STEEL	RH %	DEW POINT	WEATHER	DATE	RELEASED BY
BLAST	25.2°C	13.0°C	26.1°C	21.5%	2.9°C	BLAST PIT	MAY 22/14	MM
COAT #1	26.9°C	15.3°C	24.7°C	21.2%	4.5°C	SHOP 2	MAY 22/14	MM
COAT #2	29.7°C	15.7°C	30.1°C	17.9%	3.5°C	SHOP 2	MAY 23/14	MM
COAT #3								
COAT #4								

PAINT SYSTEM - ALCO ABOVE GRADE INTERNAL / EXTERNAL.

COATING	MANUFACTURER	PRODUCT	BATCH NUMBER	APPLICATION METHOD	COLOR
COAT #1	HIGHLAND	74	B-1404-31477 C-1401-31242	CONVENTIONAL	GREEN
COAT #2	HIGHLAND	74	B-1404-31477 C-1401-31242	CONVENTIONAL	GREEN
COAT #3			B- C-		
COAT #4			B- C-		

DFT GAUGE 727140

COATINGS	DFT BEFORE THIS COAT		WFT MEASUREMENTS		DFT MEASUREMENTS	
COAT #1	MIN: 0	MAX: 0	MIN: 4	MAX: 8.5	MIN: 5.1	MAX: 6.7
COAT #2	MIN: 3.1	MAX: 4.7	MIN: 4	MAX: 8.5	MIN: 9.4	MAX: 12.1
COAT #3	MIN	MAX	MIN	MAX	MIN	MAX
COAT #4	MIN	MAX	MIN	MAX	MIN	MAX
NUMBER OF READINGS			14		AVERAGE DFT	
					10.95	

MIXING	TYPE	AMOUNT	BATCH #	METHOD	SWEAT IN	CHECKED BY, PLEASE PRINT NAME
COAT #1	740	5%	1403-31343	Power Mix	N/A	NELSON
COAT #2	740	5%	1403-31343	Power Mix	N/A	NELSON
COAT #3				Power Mix		
COAT #4				Power Mix		

HOLIDAY TEST: Low Voltage - 67.5 volts: YES:  NO:  SCAT TEST PASSED <3 PPM

GENERAL COMMENTS: 2 x Manway covers for Vessel 002-V-10-1010  
COATING IS ACCEPTABLE MM

FINAL ACCEPTANCE & WORK RELEASE

Norpoint Acceptance: MANDY M'CAFFREY M/7/14/14	Customer Release: NATHAN KENNEDY (REVIEW ONLY)
Date: MAY 27/14 NACE 42852.	Date: MAY 27/2014



QUALITY ASSURANCE INSPECTION SUMMARY (ABOVE-GRADE)

DATE: <b>MAY 22/14</b>	LOAD# <b>N/A</b>	TRAILER# <b>N/A</b>
PRODUCT: <b>MANWAY COVERS.</b>	PROJECT: <b>N/A</b>	
CUSTOMER: <b>ALCO</b>	OWNER: <b>DEVON</b>	
CUSTOMER Ref.No.: <b>QUOTE 86138 REV 1</b>	NORPOINT Ref.No.: <b>13-0261</b>	
CUSTOMER REPRESENTATIVE: <b>MTL INSPECTION</b>	NORPOINT REPRESENTATIVE: <b>MANDY M'CAFFREY</b>	

COMPRESSOR: 900 CFM	DRYER: Desiccant	
NO. OF NOZZLES: <b>1</b>	PRESSURE @ NOZZLE: 115 psi	
ABRASIVE: Silica	SIZE: # <b>7</b>	
CLEAN STND: SSPC - SP 10	PH <b>N/A</b>	

Hydrometer 1204090 ST. TEMP PROBE 3/4 092513026-35100-K

ENVIRONMENT	AIR	WET BULB	STEEL	RH %	DEW POINT	WEATHER	DATE	RELEASED BY
BLAST	25.2°C	13.0°C	26.1°C	21.5%	2.8°C	BLAST PIT	MAY 22/14	MM
COAT #1	21.1°C	15.5°C	23.2°C	52.3%	10.9°C	SHOP 2	MAY 26/14	MM
COAT #2								
COAT #3								
COAT #4								

PAINT SYSTEM - **ALCO ABOVE GRADE EXTERNAL.**

COATING	MANUFACTURER	PRODUCT	BATCH NUMBER	APPLICATION METHOD	COLOR
COAT # 1	<b>CLOVERDALE</b>	<b>CLOVALINE</b>	B- <b>W1338022</b> C- <b>W13K8798</b>	<b>AIRLESS.</b>	<b>MED. GREY</b>
COAT # 2			B- C-		
COAT #3			B- C-		
COAT #4			B- C-		

DFT GAUGE 727140

COATINGS	DFT BEFORE THIS COAT		WFT MEASUREMENTS		DFT MEASUREMENTS	
COAT #1	MIN: <b>0</b>	MAX: <b>0</b>	MIN: <b>8</b>	MAX: <b>10</b>	MIN: <b>4.1</b>	MAX: <b>8.7</b>
COAT #2	MIN:	MAX:	MIN:	MAX:	MIN:	MAX:
COAT #3	MIN	MAX	MIN	MAX	MIN	MAX
COAT #4	MIN	MAX	MIN	MAX	MIN	MAX
NUMBER OF READINGS			<b>22</b>		AVGERAGE DFT	
					<b>6.74</b>	

MIXING	TYPE	AMOUNT	BATCH #	METHOD	SWEAT IN	CHECKED BY, PLEASE PRINT NAME
COAT #1	<b>C25</b>	<b>10%</b>	<b>W13K8499</b>	Power Mix	<b>N/A</b>	<b>NELSON</b>
COAT #2				Power Mix		
COAT #3				Power Mix		
COAT #4				Power Mix		

HOLIDAY TEST: Low Voltage – 67.5 volts: YES:  NO:  SCAT TEST PASS <3PPM  
M/I S/N 20211 CAL DUE 07/03/15

GENERAL COMMENTS: **EXTERNAL MANWAY COVERS FOR VESSEL 002-V-10-1010.**  
**COATING IS ACCEPTABLE mm**

FINAL ACCEPTANCE & WORK RELEASE

Norpoint Acceptance: <b>MANDY M'CAFFREY</b> <i>MJM</i>	Customer Release: <b>NATHAN KENNEDY</b> <i>NK</i> (REVIEW ONLY)
Date: <b>MAY 27/14</b> NACE 42952	Date: <b>MAY 27/2014</b>



QUALITY ASSURANCE INSPECTION SUMMARY (ABOVE-GRADE)

DATE: MAY 15, 2013	LOAD#	N/A	TRAILER#	N/A
PRODUCT: VESSEL	PROJECT: MIN		OWNER: DEVON	
CUSTOMER: ALCO	NORPOINT Ref.No.: 13-0261		NORPOINT REPRESENTATIVE: MANDY M'CAFFREY	
CUSTOMER Ref.No.: QUOTE 86138 REV 1				
CUSTOMER REPRESENTATIVE: MIL INSPECTION				

COMPRESSOR: 900 CFM	DRYER: Desiccant
NO. OF NOZZLES: 1	PRESSURE @ NOZZLE: 115 psi
ABRASIVE: Silica	SIZE: # 7
CLEAN STND: SSPC -SP9	PH N/A

Testex PRESS-O-FILM™ HT  
www.testextape.com  
ALCO  
002-V-10-1010

MICROMETER  
S/N  
PNT 673  
3.9 MIL

HYDROMETER / ST. TEMP GAUGE S/N 130707672.

ENVIRONMENT	AIR	WET BULB	STEEL	RH %	DEW POINT	WEATHER	DATE	RELEASED BY
BLAST	17.5°C	9.1°C	15°C	41.4%	3.9°C	TENT	MAY 15/14	MM
COAT #1	22.2°C	11.8°C	25.7°C	25.6%	1.1°C	ALCO SHOP	MAY 16/14	MM
COAT #2	21.4°C	10.9°C	22.6°C	23.2%	4.2°C	ALCO SHOP	MAY 17/14	MM
COAT #3	24.3°C	12.2°C	25.3°C	32.3%	5.1°C	ALCO SHOP	MAY 19/14	MM
COAT #4								

PAINT SYSTEM - ALCO ABOVE GRADE INTERNAL SPEC.

COATING	MANUFACTURER	PRODUCT	BATCH NUMBER	APPLICATION METHOD	COLOR
COAT # 1	HIGHLAND	74	B-1401-31243 C-1404-31475	AIRLESS + CONVENTIONAL	GREEN
COAT # 2	HIGHLAND	74	B-1403-31344 C-1404-31475	AIRLESS + CONVENTIONAL	YELLOW
COAT #3	HIGHLAND	74	B-1401-31243 C-1404-31475	AIRLESS + CONVENTIONAL	GREEN
COAT #4			B- C-		

DFT GAUGE 727140.

COATINGS	DFT BEFORE THIS COAT		WFT MEASUREMENTS		DFT MEASUREMENTS		
COAT #1	MIN: 6	MAX: 6	MIN: 4	MAX: 6	MIN: 3	MAX: 7	
COAT #2	MIN: 3	MAX: 7	MIN: 4	MAX: 6	MIN: 6	MAX: 12	
COAT #3	MIN: 6	MAX: 12	MIN: 3	MAX: 5	MIN: 9.5	MAX: 16.5	
COAT #4	MIN	MAX	MIN	MAX	MIN	MAX	
NUMBER OF READINGS			1000		AVGERAGE DFT		12.82

MIXING	TYPE	AMOUNT	BATCH #	METHOD	SWEAT IN	CHECKED BY, PLEASE PRINT NAME
COAT #1	740	5%	1403-31343	Power Mix	5 min	NELSON
COAT #2	740	5%	1403-31343	Power Mix	5 min	NELSON
COAT #3	740	5%	1403-31343	Power Mix	5 min	NELSON
COAT #4				Power Mix		

HOLIDAY TEST: Low Voltage - 67.5 volts: YES:  NO:  - 11 hot found. Repaired May 21/14.  
SCAT TEST PASSED <3PPM. KITAGAWA TUBE # 252143.

GENERAL COMMENTS: VESSEL 002-V-10-1010.  
\* MANWAY COVERS ARE BEING BLASTED AND COATED AT SHOP (NORPOINT) mm.  
COATING IS ACCEPTABLE mm

FINAL ACCEPTANCE & WORK RELEASE

Norpoint Acceptance: MANDY M'CAFFREY M-M-444	Customer Release: NATHAN KENNEDY (REVIEW ONLY)
Date: MAY 22 / 14 NACE 42852.	Date: MAY 22 / 2014



QUALITY ASSURANCE INSPECTION SUMMARY (ABOVE-GRADE)

DATE: <b>MAY 20/14</b>	LOAD# <b>N/A</b>	TRAILER# <b>N/A</b>
PRODUCT: <b>VESSEL</b>	PROJECT: <b>N/A</b>	
CUSTOMER: <b>ALCO</b>	OWNER: <b>DEVON</b>	
CUSTOMER Ref.No.: <b>QUOTE 86138 REV1</b>	NORPOINT Ref.No.: <b>13-0261</b>	
CUSTOMER REPRESENTATIVE: <b>MTL INSPECTION</b>	NORPOINT REPRESENTATIVE: <b>MANDY M'CAFFREY</b>	

COMPRESSOR: 900 CFM	DRYER: Desiccant	
NO. OF NOZZLES: <b>1</b>	PRESSURE @ NOZZLE: 115 psi	
ABRASIVE: Silica	SIZE: # <b>7</b>	
CLEAN STND: SSPC - SP 10	PH <b>N/A</b>	

HYDROMETER/ST. TEMP GAUGE 3/N 130707672

ENVIRONMENT	AIR	WET BULB	STEEL	RH %	DEW POINT	WEATHER	DATE	RELEASED BY
BLAST	22.2°C	11.4°C	25.2°C	25.4%	1.1°C	BLAST TON	MAY 20/14	MM
COAT #1								
COAT #2								
COAT #3								
COAT #4								

PAINT SYSTEM - **ALCO ABOVE GRADE EXTERNAL SPEC**

COATING	MANUFACTURER	PRODUCT	BATCH NUMBER	APPLICATION METHOD	COLOR
COAT #1	<b>CLOVERDALE</b>	<b>CLUVALINE 8329</b>	<b>B- W1338072</b> <b>C- WBK 8798</b>	<b>AIRLESS</b>	<b>GREY</b>
COAT #2			B- C-		
COAT #3			B- C-		
COAT #4			B- C-		

DFT GAUGE 727140

COATINGS	DFT BEFORE THIS COAT		WFT MEASUREMENTS		DFT MEASUREMENTS		
COAT #1	MIN: <b>0</b>	MAX: <b>0</b>	MIN: <b>8</b>	MAX: <b>10</b>	MIN: <b>5.7</b>	MAX: <b>9.9</b>	
COAT #2	MIN:	MAX:	MIN:	MAX:	MIN:	MAX:	
COAT #3	MIN:	MAX:	MIN:	MAX:	MIN:	MAX:	
COAT #4	MIN:	MAX:	MIN:	MAX:	MIN:	MAX:	
NUMBER OF READINGS			<b>86</b>		AVGERAGE DFT		<b>7.87</b>

MIXING	TYPE	AMOUNT	BATCH #	METHOD	SWEAT IN	CHECKED BY, PLEASE PRINT NAME
COAT #1	<b>C 25</b>	<b>10%</b>	<b>W1338072</b>	Power Mix	<b>N/A</b>	<b>NELSON</b>
COAT #2				Power Mix		
COAT #3				Power Mix		
COAT #4				Power Mix		

HOLIDAY TEST: Low Voltage – 67.5 volts: YES:  NO:  - SCAT TEST PASSED <3PPM - KITAGAWA TUBE #252143.

GENERAL COMMENTS: **EXTERNAL VESSEL 002 - V - 10 - 1010.**  
**COATING IS ACCEPTABLE.**

FINAL ACCEPTANCE & WORK RELEASE

Norpoint Acceptance: <b>MANDY M'CAFFREY M7M yhm</b>	Customer Release: <b>NATHAN KENNEDY NR 2 (REVIEW ONLY)</b>
Date: <b>MAY 22 / 14 NACE 42452</b>	Date: <b>MAY 22 / 2014</b>



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

## CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-01A

**DESCRIPTION:** HEATING COIL

**NAME OF AUTHORIZED INSPECTION AGENCY:** ABSA

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 320 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 & G9

**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.**

4/24/2014

QC INSPECTOR/ ALCO GAS & OIL

DATE

4/24/2014

3<sup>RD</sup> PARTY INSPECTOR

DATE

4/24/2014

AUTHORIZED INSPECTOR

DATE



5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-01A

**DESCRIPTION:** CLOSED HYDROCARBON DRAIN VESSEL

**NAME OF AUTHORIZED INSPECTION AGENCY:** ABSA

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 65 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL




**TEST FLUID:** Water **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

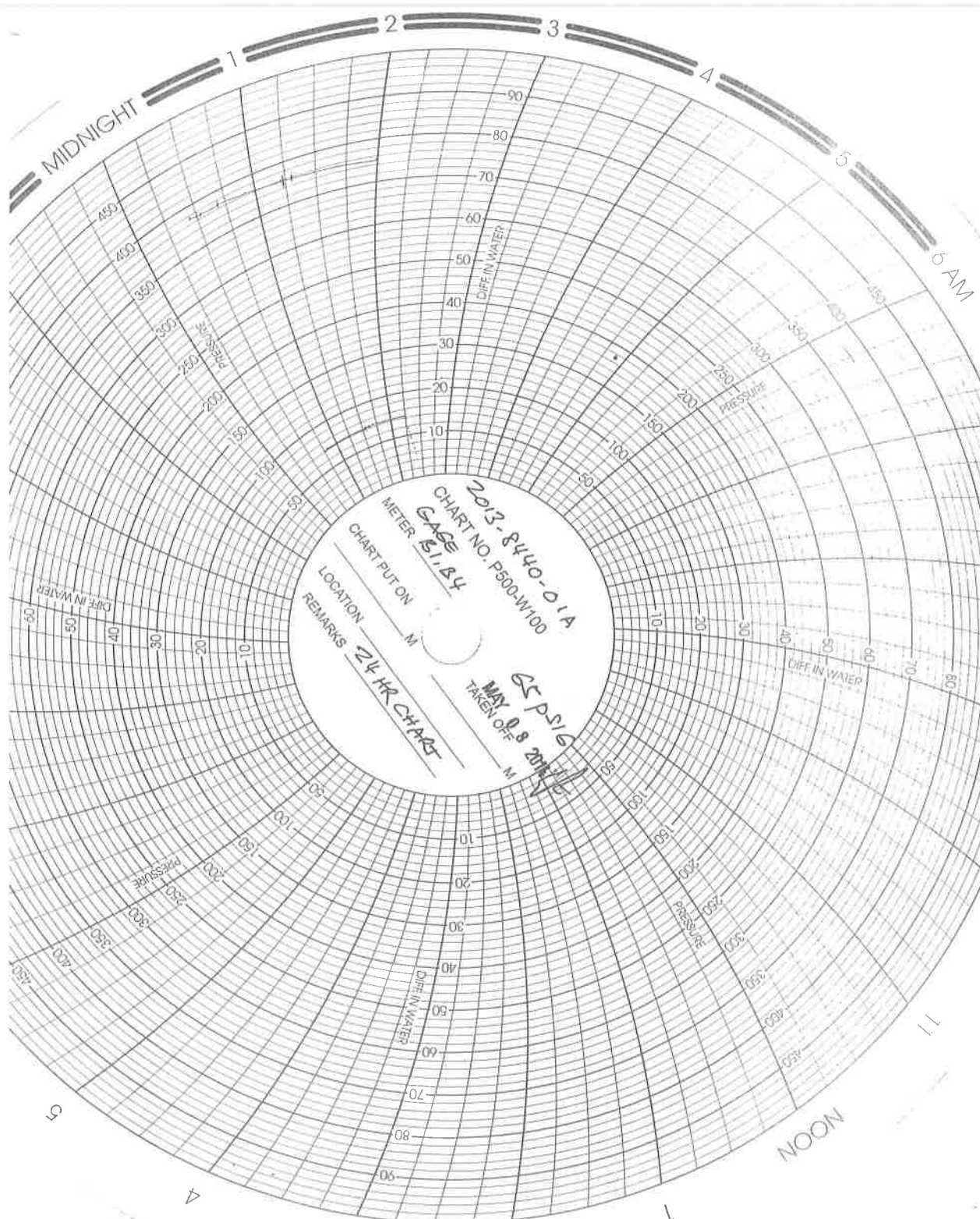
**PRESSURE GAUGE(S) NUMBER:** B1 & B4

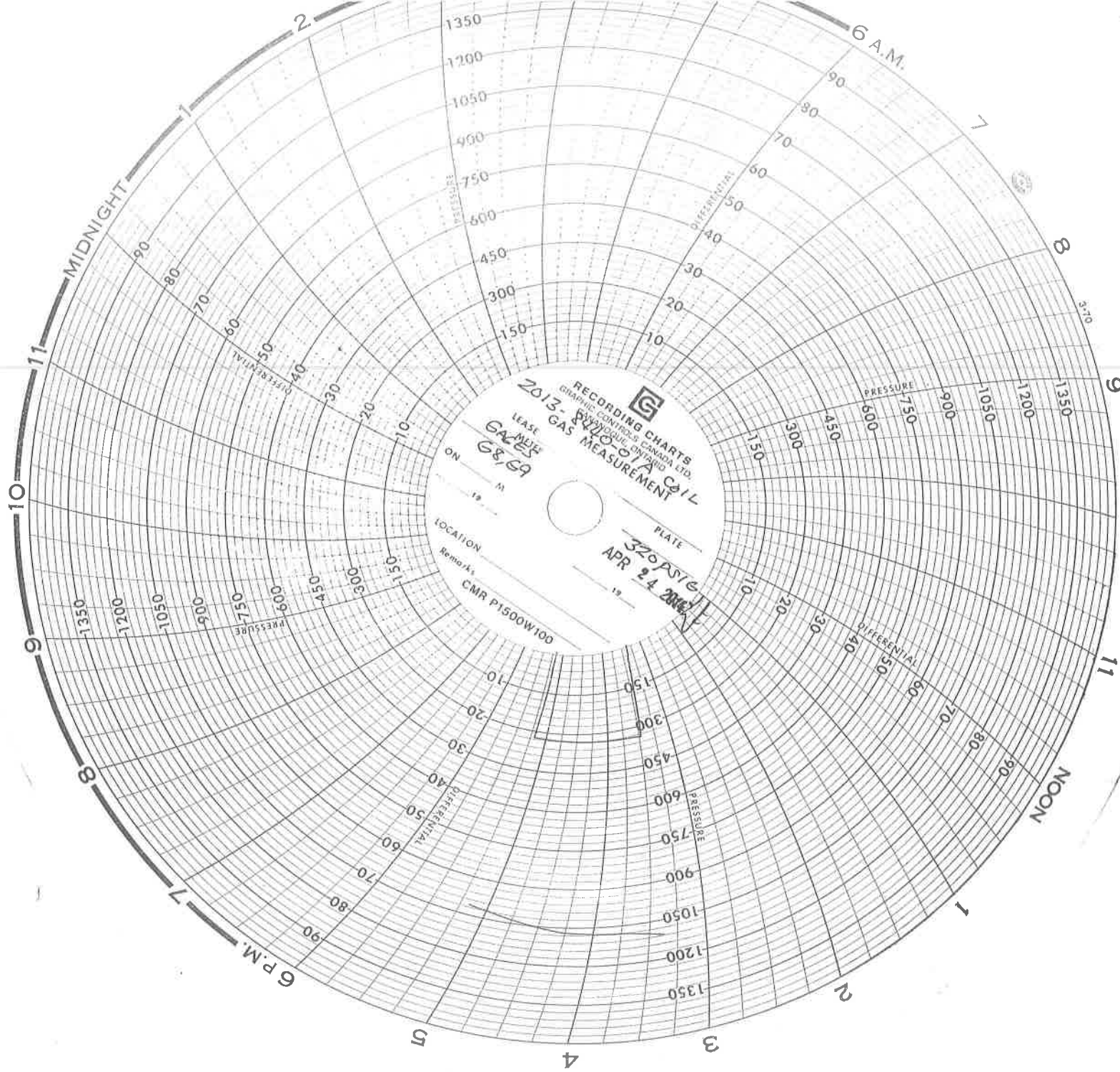
**PRESSURE TEST CHART RECORDED:** YES  NO

**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	5/8/2014 _____ DATE
 _____ 3 <sup>RD</sup> PARTY INSPECTOR	5/8/2014 _____ DATE
 _____ AUTHORIZED INSPECTOR	5/8/2014 _____ DATE







PRESSURE  
1350  
1200  
1050  
900  
750  
600  
450  
300  
150

DIFFERENTIAL  
90  
80  
70  
60  
50  
40  
30  
20  
10

PRESSURE  
1350  
1200  
1050  
900  
750  
600  
450  
300  
150

DIFFERENTIAL  
90  
80  
70  
60  
50  
40  
30  
20  
10

PRESSURE  
1350  
1200  
1050  
900  
750  
600  
450  
300  
150

DIFFERENTIAL  
90  
80  
70  
60  
50  
40  
30  
20  
10

PRESSURE  
1350  
1200  
1050  
900  
750  
600  
450  
300  
150

DIFFERENTIAL  
90  
80  
70  
60  
50  
40  
30  
20  
10

6 P.M.

NOON

MIDNIGHT

6 A.M.

**Phase # :** 2013-8440-02B  
**Phase Title:** Structural Steel Skid

### 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		N/A
5. Impact Test Reports		N/A
6. Material Control		N/A
7. Material Reports		N/A
8. MTR's		N/A
9. NDE      MPT	X	
LPT		N/A
RADIOGRAPHY		N/A
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.		N/A

# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GM14538

## MAGNETIC PARTICLE INSPECTION REPORT

<b>Client</b>	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	<b>Page</b>	1-1
<b>Test Method</b>	ASME V SE-709-06 / Dry Powder	<b>Time</b>	11:00 AM
<b>Acceptance Criteria</b>	ASME VIII Div. 1 App. 6	<b>Date</b>	May 13, 2014
<b>Object</b>		<b>P.O. No.</b>	
		<b>Job No.</b>	2013-8440-02B

Procedure-MT-General and MT- 1V Rev. 4       Pre Heat Treatment       Post Heat Treatment       Post Hydrotest

Test Equipment ES-X Flex Ferrous Probe       Blacklight       B/L Meter XR-1000 S/N - 1815543  
S/N - 16512

Black on White Contrast - Magnaflux     WCP 2 White Contrast Batch #       7HF Prepared Bath Batch #

Medium- Magnaflux - Type     14 A partical batch #      carrier batch #       8R 12F008      Other

<input checked="" type="checkbox"/> Dry	<input type="checkbox"/> Wet	<input type="checkbox"/> Fluorescent	<input checked="" type="checkbox"/> Red	<input type="checkbox"/> Grey	<input type="checkbox"/> B/White	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Yoke	<input type="checkbox"/> Prod	<input type="checkbox"/> Coil	<input checked="" type="checkbox"/> A/C	<input type="checkbox"/> D/C	<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Residual
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Ground	<input type="checkbox"/> Machined	<input type="checkbox"/> Painted	<input type="checkbox"/> Shot Blasted	<input type="checkbox"/> Central Cond.	<input type="checkbox"/> Demag

Viewing Light Source in excess of 100fc.     Ambient       Trouble Light     Flashlight     W/L Meter S/N B100448

Material - P1      Thickness - 1-3/8"      Temp. - 10° C to 52°C      Surface Condition - Clean

The (8) Lift Lug welds on the Skid were tested.

No relevant indications were found.

CGSB # 11841

Operator Gord Sieben

St    OT      KM

Client Representative

	ASNT II CGSB II	.5			
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**Phase # :** 2013-8440-03B  
**Phase Title:** Level Transmitter 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	X	
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart	X	
13. PSV & Valve Cert.		N/A

## TRAVEL SHEET

Authorized Inspector (Signature) \_\_\_\_\_

Date \_\_\_\_\_

CUSTOMER / LOCATION		SERIAL NUMBER / UNIT		(A) NUMBER :			
DEVON CANADA CORPORATION		2013-8440-03B		DRAWING NUMBER			
FERRIER CPF PROJECT, AB		LSD: 11-02-039-08 W5M		C-2013-8440-03-001/001			
ITEMS:		COMMENTS:		INITIALS		HOLD A.I.	
LEVEL TRANSMITTER CAGE FOR GWR ROSEMOUNT 5300 NPS 4 CL300 STD				HOLD QC		CUSTOMER HOLD (AGENT)	
Repair Procedure Approved							
Approved Drawings / CRN							
Material Checked / Heat Verified		REVIEWED					
MTR Checked		REVIEWED 14 MAR 2014		[Signature]			
Impact Test		EXEMPT TABLE A-1 SEP 23 2013					
Unit Layout		[Signature] Mar 13, 2014		[Signature]			
Weld Procedure Approved		REVIEWED SEP 23 2013					
Welder(s) Qualifications		REVIEWED 14 MAR 2014		[Signature]			
Fit-Up: Shell & Heads		TYPE 1 14 MAR 2014					
Nozzles & Fittings		14 MAR 2014		[Signature]			
Internals							
Externals		14 MAR 2014		[Signature]			
Connections: Location		14 MAR 2014					
Rating		CL300 CL3000 14 MAR 2014		[Signature]			
Internal Inspection							
Internals Installed				[Signature]			
Weld Profile, Sizes & ID		CHECKED 14 MAR 2014					
Radiographs		10% TO ASME B31.3		[Signature]			
Other NDE		MPI 10% ON FILLET WELDS					
Stamping		CHECKED 14 MAR 2014		[Signature]			
External Upon Completion of Welding		CHECKED 14 MAR 2014					
Alternative Test				[Signature]			
PWHT Charts Checked		NONE					
Hydrostatic Test - CHART RECORD		75 PSIG GAGE #B-1, B-4		MAR 18 2014			
MDR							
Name Plate							
PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads	SA-420 WPL6	0.237" NOM	12H33101	Repads			
Shell	SA-333-6	0.237"	P-912				
				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: 2013-8440-03B  
 CUSTOMER: DEVON CANADA CORPORATION  
 DATE: MARCH 31, 2014

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT	MPI FILLET WELDS		
#1 RF HUB BLIND	NPS 4 CL300	SA-350 LF2 CL1	4401629	✓				
#4 RFWN (N1)	NPS 4 CL300 STD	SA-350 LF2 CL1	12/34030	✓				
#6 WELD CAP	NPS 4 STD	SA-420 WPL6	12H33101	✓				
#7 SMLS PIPE	NPS 4 STD	SA-333-6	4120885B	✓				
#11 WOL	NPS 2 STD	SA-350 LF2 CL1	58912	✓		✓		
N2A RFWN	NPS 2 CL300 STD	SA-350 LF2 CL1	12/30722	✓				
N2B RFWN	NPS 2 CL300 STD	SA-350 LF2 CL1	12/30722	✓				
C1 DRILL & TAPPED	NPT 1 1/2	-----	-----					
C2 TOL	NPT 1/2 CL3000	SA-350 LF2 CL1	59172	✓				

PREPARED BY 





PO# 1334431  
 Header / # 1334431  
 P. On / # 1334431  
 T. On / # 1334431  
 Rev 1  
 By: JES  
 Date: 12/19/2011  
 Page: 3 of 4  
 Certificate No.: SE101455



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

**MILL TEST CERTIFICATE**

EN10204-3.1.(Q1NS0049/3.1.B)  
 W.F.F. FITTINGS & FLANGES (CANADA)  
 Customer: LTD.  
 Order No.: E000117

PRODUCT			MATERIAL SPECIFICATIONS		DIMENSIONAL SPECIFICATIONS															
FORGED CARBON STEEL FLANGES			ASTM A350 LF2-11 CL.1/ASME SA350 LF2-11 CL.1		ASME B16.5-09															
Item No.	Code No.	Description	Quantity		Chemical Composition (%)															CE(%)
			Min	Max	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N				
21		150 THRF 2"X1" A105N/LF2N	50 PCE		0.300	0.150	0.800	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.060				0.415	
22		150 THRF 2"X1 1/2" A105N/LF2N	25 PCE		0.220	0.250	1.150	0.015	0.004	0.007	0.010	0.010	0.003	0.004	0.001				0.415	
23		300 THRF 2"X1 1/2" A105N/LF2N	25 PCE		0.220	0.250	1.150	0.015	0.004	0.007	0.010	0.010	0.003	0.004	0.001				0.415	
24		300 THRF 2"X1" A105N/LF2N	31 PCE		0.220	0.250	1.150	0.015	0.004	0.007	0.010	0.010	0.003	0.004	0.001				0.415	
25		150 THRF 4"X1" A105N/LF2N	25 PCE		0.210	0.220	1.150	0.019	0.006	0.008	0.010	0.010	0.002	0.004	0.001				0.405	
26		150 THRF 4"X1 1/2" A105N/LF2N	25 PCE		0.210	0.220	1.150	0.019	0.006	0.008	0.010	0.010	0.002	0.004	0.001				0.405	
27		150 THRF 4"X2" A105N/LF2N	10 PCE		0.210	0.220	1.150	0.019	0.006	0.008	0.010	0.010	0.002	0.004	0.001				0.405	
28		150 THRF 4"X3" A105N/LF2N	10 PCE		0.210	0.220	1.150	0.019	0.006	0.008	0.010	0.010	0.002	0.004	0.001				0.405	
29		300 THRF 4"X1" A105N/LF2N	10 PCE		0.210	0.220	1.120	0.020	0.008	0.007	0.020	0.010	0.002	0.003	0.001				0.402	
30		300 THRF 4"X1 1/2" A105N/LF2N	10 PCE		0.210	0.220	1.120	0.020	0.008	0.007	0.020	0.010	0.002	0.003	0.001				0.402	

Heat No.	T.S.(MPa)	Y.S.(MPa)	E.L.(%)	Hardness (HB)	R.A.(%)	Impact Test			
						Temp: 49°C	Minimum: 20.0 Joule	Material Supplier	
21	465.0	250.0	22.0	197	30.0	1	2	3	ACOMINAS
22	517.8	363.8	34.6	152/150	71.3	87.0	97.0	44.0	ACOMINAS
23	517.8	363.8	34.6	152/150	71.3	87.0	97.0	44.0	ACOMINAS
24	517.8	363.8	34.6	152/150	71.3	87.0	97.0	44.0	ACOMINAS
25	523.7	373.6	34.0	153/151	70.4	102.0	97.0	76.0	ACOMINAS
26	523.7	373.6	34.0	153/151	70.4	102.0	97.0	76.0	ACOMINAS
27	523.7	373.6	34.0	153/151	70.4	102.0	97.0	76.0	ACOMINAS
28	515.8	365.8	34.0	148/151	69.5	85.0	77.0	86.0	ACOMINAS
29	515.8	365.8	34.0	148/151	69.5	85.0	77.0	86.0	ACOMINAS
30	515.8	365.8	34.0	148/151	69.5	85.0	77.0	86.0	ACOMINAS

T.S. = Tensile Strength, Y.S. = Yield Strength, E.L. = Elongation, R.A. = Reduction of Area.  
 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 =  $C + (Mn/8) + (Cr + Mo + V) / 5 + (Ni + Cu) / 15$   
 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.



Manager of Quality Assurance Dept

CONFORMS TO SA 350LF2CL1
YEAR 2010 ED, MAIL ADD
JOB # 1613-8440-03
ITEM # #1
SIGNED BY <i>[Signature]</i> OCT 02 2013

2-8440-03  
 P0-133431





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

# INSPECTION CERTIFICATE

TRANS-AM PIPING PRODUCTS LTD.

TO EN10204 3.1

Purchase Order No. CI-12-258 C/O  
Job No. 2009/2012  
Certificate No. T-2012060659

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection														
MC-700	ASTM A420-10/ASME SA420-10-WPL6 CSA Z245.11 & Z245-03 CAT II SS ANSINACE MR0175 ISO 15168-2:2008	ASME B16.9-2007, B16.25-2007	Good	Good														
MFG. No. (Heat Identification No.)	Product & Size C WPL6 4 S40		Quantity	Harross Actual Date														
12H33101		CONFORMS TO SA 420 WPL6	27/50	HB 125-145														
Material Manufacturer	Material Heat No: J2K3479	YEAR 2012-11-01 ADD JOB # 2012-11-01-03 ITEM # 6 SIGNED BY 001122013	1-8440-02 Pc-133431	<b>ORIGINAL</b>														
Chemical Composition %																		
Specification	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.*	Y.S.	TS	E	Impact Test (J)	
X	100	100	100	X	1000	X	100	X	100	X	1000	X	100	X	MPa	%		10, X-7.5, X-ZV AT -45 °C
Min.	30	15	50											240	415	30	192	
Max.	12	40	35	40	30	12	40	30	12	80	80	20	36	300	585	50	209 AVE 208 222	

NORMALIZING 810°C X 0.5 HR. AIR COOLING

The fittings was manufactured, sampled, tested, and inspected in accordance with this specification, and was found to meet the requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/13

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.

\* 1:  $\sigma_{TS}$  symbolized wall thickness in mm. \* 2: YS Yield strength TS = Tensile strength E = Elongation  
Form TZ 6C/7

*[Signature]*  
Rungnada Kampanon  
Quality Assurance Manager  
Thai Benkan Co., Ltd.



江苏恒安无缝钢管厂  
JIANGSU HUANAN STEEL PIPE FACTORY

# 产品质量证明书 (EN10204.3.1) MILL TEST CERTIFICATE

本公司生产的所有产品均符合  
EN10204.3.1 标准  
本公司生产的所有产品均符合  
EN10204.3.1 标准

炉批号 Heat No	412088510	总支数 Total Pieces	407	总重量 Total Weight	75.743	日期 Date	2012年05月14日	交货状态 Delivery Status	NORMALIZED (Temperature 880°C) 919 C
-------------	-----------	------------------	-----	------------------	--------	---------	-------------	----------------------	--------------------------------------

买方名称 BUYER	ALCOA	合同编号 Contract No	ALCOA# P918
买方地址 BUYER ADDRESS	ALUMINA 2000 NORTH AVENUE WEST, ALUMINA, ALABAMA 35005, USA	交货状态 Delivery Status	NORMALIZED (Temperature 880°C) 919 C

炉批号 Heat No	规格 Size	长度 Length (mm)	重量 Weight (kg)	屈服强度 Yield Strength (MPa)	抗拉强度 Tensile Strength (MPa)	尺寸 Dimension (mm)		伸长率 Elongation (%)	冲击功 Charpy Impact Value (J)	交货状态 Delivery Status	交货温度 Temperature (°C)
						外径 Outer Diameter	壁厚 Wall Thickness				
412088510	NPS 1" SCH40 #11580	50.8	75.743	351	575	41	107	38.29	27	45	-45

炉批号 Heat No	化学成分 (%) Chemical Composition											
	C	Mn	P	S	Cr	Mo	V	Nb	Ti	B	N	O
412088510	0.18	0.05	0.015	0.012	0.15	0.001	0.007	0.002	0.001	0.01	0.045	0.001

炉批号 Heat No	规格 Size	力学性能 Mechanical Properties				金相分析 Metallography Analysis			
		屈服强度 Yield Strength (MPa)	抗拉强度 Tensile Strength (MPa)	伸长率 Elongation (%)	冲击功 Charpy Impact Value (J)	晶粒度 Grain Size	显微组织 Microstructure	缺陷 Defect	其他 Other
412088510	NPS 1" SCH40 #11580	351	575	38.29	27	8.5	F 8.5	无缺陷	合格

1. 化学成分 (Chemical Composition): C=0.18, Mn=0.05, P=0.015, S=0.012, Cr=0.15, Mo=0.001, V=0.007, Nb=0.002, Ti=0.001, B=0.01, N=0.045, O=0.001.  
 2. 力学性能 (Mechanical Properties): Yield Strength (MPa) = 351, Tensile Strength (MPa) = 575, Elongation (%) = 38.29, Charpy Impact Value (J) = 27.  
 3. 金相分析 (Metallography Analysis): Grain Size = 8.5, Microstructure = F 8.5, Defect = No defect.  
 4. 交货状态 (Delivery Status): NORMALIZED (Temperature 880°C) 919 C.  
 5. 交货温度 (Temperature): -45°C.

SEAFOR ID: 333-6  
 日期 Date: 2010-10-20  
 数量 Quantity: 2013-0440-03  
 日期 Date: 13 MAR 2014

胡才毅 胡才毅  
 839050  
 Stock  
 Po-132594

胡才毅  
 胡才毅



**METALFAR**

PRODOTTI INDUSTRIALI S.P.A.

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

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

Certif. N. 4071	Del/Dated 03.09.2012	Fattura / Invoice N. 2772	Del/Dated 31.08.2012
DDT / Del Note N. 3244	Del/Dated 31.08.2012	No.Ord. / Our ref. N.	
TRANS AM PIPING PRODUCTS LTD		Desct: TRANS AM PIPING PRODUCTS LTD	
9335 ENDEAVOR DRIVE S.E.	CA	9335 - Endeavor Drive S.E.	CA
T3S 0A1 - CALGARY, ALBERTA		T3S 0A1 - CALGARY, ALBERTA	

Page 3 - 32

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM	VS. ORDINE YOUR REFERENCE	C% S% Mn% Si%	ALLUNGAMENTO ELONGATION	CONTRAZIONE REDUCTION OF AREA	DUREZZA HARDNESS	RESILLENZA / IMPACT TEST - JOULE/cm <sup>2</sup>	SHVERNAMENTO YIELD POINT	FORMA SHAPE	PROVETTA / TEST SPECIMEN	MATERIALE / MATERIAL	DESCRIZIONE DESCRIPTION	Q.TA' Q.TY	TRATTAMENTO TERMICO / HEAT TREATMENT	FORNO / FURNACE	ORIGINE / ORIGIN OF STEEL
12/30722	018	CI-12-311	0,195 0,230	31,0	58,0	156,0 - 159,0	64 66 64	340,0	1-O 2-O	126,60	ASTM A350 LF2 CL1/2 (LADLE)	WIN 300 RF 2" STD LF2CL1	132,00	NORMALIZED AT 930 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPEAN UNION
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010																
CSA Z245.12 GRADE 248 CAT.II																

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM	VS. ORDINE YOUR REFERENCE	C% S% Mn% Si%	ALLUNGAMENTO ELONGATION	CONTRAZIONE REDUCTION OF AREA	DUREZZA HARDNESS	RESILLENZA / IMPACT TEST - JOULE/cm <sup>2</sup>	SHVERNAMENTO YIELD POINT	FORMA SHAPE	PROVETTA / TEST SPECIMEN	MATERIALE / MATERIAL	DESCRIZIONE DESCRIPTION	Q.TA' Q.TY	TRATTAMENTO TERMICO / HEAT TREATMENT	FORNO / FURNACE	ORIGINE / ORIGIN OF STEEL
12/32023	024	CI-12-311	0,195 0,220	31,0	58,0	159,0 - 163,0	64 66 62	340,0	1-O 2-O	126,60	ASTM A350 LF2 CL1/2 (LADLE)	WIN 300 RF 8" STD LF2CL1	54,00	NORMALIZED AT 930 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPEAN UNION
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010																
CSA Z245.12 GRADE 248 CAT.II																

CONFORMS TO SA 350LF2CL1  
 YEAR 2012  
 JOB # 2013-8440-03  
 ITEM # #10-N2015  
 SIGNED BY [Signature] OCT 02 2013

4-8440-03  
 Po-133431

NOTE 100% MANUFACTURED IN ITALY NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION MATERIAL IN ACCORDANCE WITH NACE MR-0175/2009 ISO 15156-2009 MATERIAL IN ACCORDANCE WITH NACE MR-0103/2010	UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT [Signature]	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL 
--	---	--	---

CL FORM 300 W/350-LT/N T/LN/CL 1  
STAMPING A HOT  
Heat Numb 133431  
Item # 1023  
Date 10/2/13  
Revised By: SB



Manufacturer of Piping and Pressure Vessel Components

4404 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 #: 248,632

PO #: CI-13-217

Sales Order #: C001303122

Date: 03/04/2013

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.

Material: A/SA350 00a LF2 CL1

Item	Quantity	Description
28	50	6 - 3 1/2 X 2 STD BWP A350LF2 CL1

Certified Material Test Report

Heat Code: 58912

CONFORMS TO SA	350LF2CL1
YEAR	LABELED 2011 A00
JOB #	2013-8440-03
ITEM #	#11 - N2A/B
SIGNED BY	[Signature] OCT 02 2013

4-8440-03  
 Po-133431

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.195	0.04	0.090	1.05	0.007	0.015	0.03	0.012
	S	SI	V					
	0.021	0.20	0.003					
Carbon Equivalency:		Ladle		0.39				

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
	73,292	48,638	29.15	61.34	130 BHN
Charpy V-Notch Properties:			Test Temperature:		-50 F
FT LBS: 49/43/29		% Shear: NB/NB/NB			MLE: NB/NB/NB

Normalized

IAW NACE MR0175/ ISO 15156-2009

Marie Dehmer  
 Quality Assurance Representative



Manufacturer of Piping and Pressure Vessel Components

4404 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 #: 261,037

PO #: CI-13-502

Sales Order #: C001313455

Date: 09/12/2013

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.

Certified Material Test Report

Heat Code: 59172

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.

CONFORMS TO SA	350LF2CL1
YEAR	2008, 2011 ADD
JOB #	203-8440-03
ITEM #	# 13 - C2
SIGNED BY	[Signature] OCT 02 2013

2-8440-03  
 Po-133431

Material: A/SA350 11 LF2 CL1

Item	Quantity	Description
48	300	36 - 3/4 X 1/2 3M THP A350LF2 CL1

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.050	1.04	0.005	0.016	0.02	0.004
	S	SI	V					
	0.018	0.20	0.003					

Carbon Equivalency: Ladle 0.40

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
Charpy V-Notch Properties:	79,000	50,000	28.00	65.00	163 BHN
			Test Temperature:		165 BHN
					-50 F

FT LBS: 45/32/23

% Shear: NB/NB/NB

MLE: NB/NB/NB

Normalized

LAW NACE MR0175/ ISO 15156-2009

# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GM13827

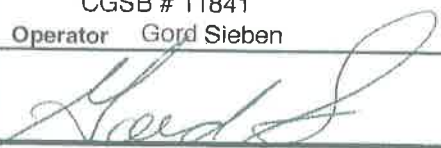

## MAGNETIC PARTICLE INSPECTION REPORT

<b>Client</b>	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	<b>Page</b>	1-1
<b>Test Method</b>	ASME V SE-709-01 / Dry Powder	<b>Time</b>	11:00 AM
<b>Acceptance Criteria</b>	ASME VIII Div. 1 App. 6	<b>Date</b>	Mar 18, 2014
<b>Object</b>		<b>P.O. No.</b>	
		<b>Job No.</b>	2013-8440-03

Procedure-MT-General and MT- 1V Rev. 4	<input type="checkbox"/> Pre Heat Treatment	<input type="checkbox"/> Post Heat Treatment	<input type="checkbox"/> Post Hydrotest
Test Equipment ES-X Flex Ferrous Probe S/N - 16512	<input type="checkbox"/> Blacklight	<input type="checkbox"/> B/L Meter XR-1000 S/N - 1815543	
Black on White Contrast - Magnaflux	<input type="checkbox"/> WCP 2 White Contrast Batch #	<input type="checkbox"/> 7HF Prepared Bath Batch #	
Medium- Magnaflux - Type <input type="checkbox"/> 14 A	partical batch #	carrier batch #	<input checked="" type="checkbox"/> 8R 12F008 Other
<input checked="" type="checkbox"/> Dry	<input type="checkbox"/> Wet	<input type="checkbox"/> Fluorescent	<input checked="" type="checkbox"/> Red
<input checked="" type="checkbox"/> Yoke	<input type="checkbox"/> Prod	<input type="checkbox"/> Coil	<input checked="" type="checkbox"/> A/C
<input checked="" type="checkbox"/> Base Metal	<input type="checkbox"/> Ground	<input type="checkbox"/> Machined	<input type="checkbox"/> Painted
Viewing Light Source in excess of 100fc. <input type="checkbox"/> Ambient		<input type="checkbox"/> Trouble Light	<input checked="" type="checkbox"/> Flashlight
<b>Material - P1</b>	<b>Thickness -</b>	<b>Temp. - 10° C to 52° C</b>	<b>Surface Condition - Clean / As welded</b>

A better than 10% of the fillet welds on the Level Transmitter Cage were tested.

No relevant indications were found.

CGSB # 11841 Operator Gord Sieben		St	OT	KM	Client Representative
	ASNT II CGSB II	1			







5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

**CERTIFICATE OF PRESSURE TEST**

**SERIAL NUMBER:** 2013-8440-03B

**DESCRIPTION:** 4" CL300 LEVEL TRANSMITTER CAGE

**NAME OF AUTHORIZED INSPECTION AGENCY:** N/A

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 75 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL

**TEST FLUID:** Water **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** B-1 & B-4

**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

3/18/2014  
\_\_\_\_\_  
DATE

\_\_\_\_\_  
3<sup>RD</sup> PARTY INSPECTOR

3/18/2014  
\_\_\_\_\_  
DATE

\_\_\_\_\_  
AUTHORIZED INSPECTOR

\_\_\_\_\_  
DATE

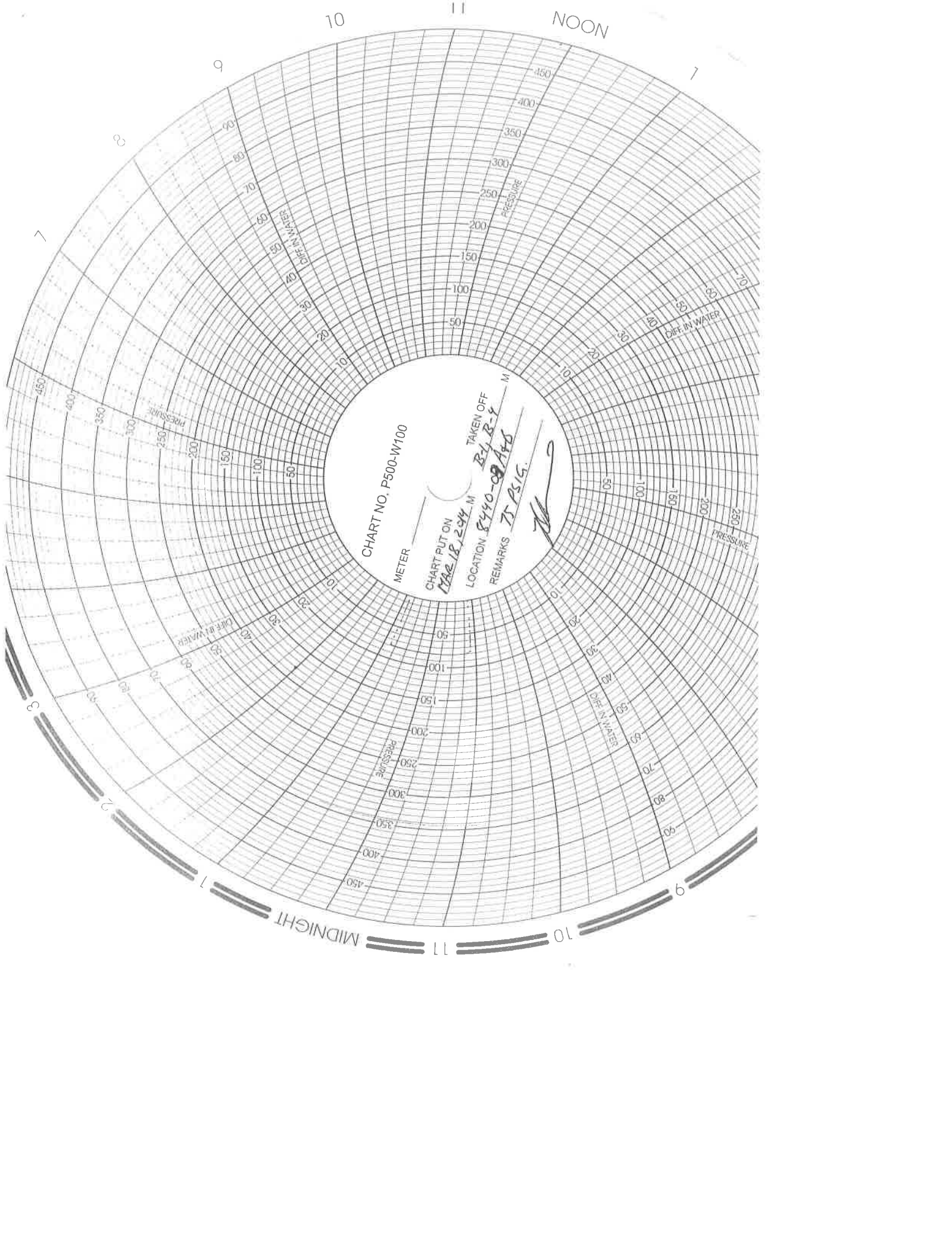


CHART NO. P500-W100

METER

CHART PUT ON

MAR 18 12:34 M

LOCATION 8440-08145

TAKEN OFF BY B-Y

REMARKS 75 PSI

*[Signature]*

**Phase # :** 2013-8440-04B  
**Phase Title:** Level Transmitter 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	X	
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts		N/A
11. Hydrotest Report(s)	X	
12. Hydro Chart	X	
13. PSV & Valve Cert.		N/A

## TRAVEL SHEET

Authorized Inspector (Signature) \_\_\_\_\_

Date \_\_\_\_\_

CUSTOMER / LOCATION	SERIAL NUMBER / UNIT	(A) NUMBER :					
DEVON CANADA CORPORATION	2013-8440-04B	DRAWING NUMBER					
FERRIER CPF PROJECT, AB	LSD: 11-02-039-08 W5M	C-2013-8440-04-001/001					
ITEMS: <b>LEVEL TRANSMITTER CAGE FOR GWR ROSEMOUNT 5300 NPS 4 CL300 STD</b>	COMMENTS:	INITIALS					
		HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.			
Repair Procedure Approved							
Approved Drawings / CRN							
Material Checked / Heat Verified	REVIEWED 11 MAR 2014						
MTR Checked	REVIEWED 14 MAR 2014						
Impact Test	EXEMPT TABLE A-1 SEP 23 2013						
Unit Layout	Mar 13 2014						
Weld Procedure Approved	REVIEWED SEP 28 2013						
Welder(s) Qualifications	REVIEWED 11 MAR 2014						
Fit-Up: Shell & Heads	TYPE 1 14 MAR 2014						
Nozzles & Fittings	14 MAR 2014						
Internals							
Externals	14 MAR 2014						
Connections: Location							
Rating	CL300 CL3000		MAR 18 2014				
Internal Inspection							
Internals Installed							
Weld Profile, Sizes & ID	CHECKED 14 MAR 2014						
Radiographs	10% TO ASME B31.3		MAR 18 2014				
Other NDE	MPI 10% ON FILLET WELDS						
Stamping	CHECKED						
External Upon Completion of Welding	CHECKED		MAR 18 2014				
Alternative Test							
PWHT Charts Checked	NONE		MAR 18 2014				
Hydrostatic Test - CHART RECORD	75 PSIG GAGE#D-12, D-10		MAR 18 2014				
MDR							
Name Plate							
<b>PART</b>	<b>MATERIAL SPEC</b>	<b>THICKNESS</b>	<b>HEAT NO.</b>	<b>PART</b>	<b>MATERIAL SPEC</b>	<b>THICKNESS</b>	<b>HEAT NO.</b>
Heads	SA-420 WPL6	0.237" NOM	12A33101	Repads			
Shell	SA-333-6	0.237"	P-912				
				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: 2013-8440-04B  
 CUSTOMER: DEVON CANADA CORPORATION  
 DATE: MARCH 31, 2014

NONDESTRUCTIVE TESTING WHEN REQUIRED

ITEM	SIZE / RATING	MATERIAL	HEAT NUMBER	MTR	RT	MPI FILLET WELDS		
#1 RF HUB BLIND	NPS 4 CL300	SA-350 LF2 CL1	4401629	✓				
#4 RFWN (N1)	NPS 4 CL300 STD	SA-350 LF2 CL1	12/34030	✓				
#6 WELD CAP	NPS 4 STD	SA-420 WPL6	12H33101	✓	✓			
#7 SMLS PIPE	NPS 4 STD	SA-333-6	4120885B	✓				
#11 WOL	NPS 2 STD	SA-350 LF2 CL1	58912	✓		✓		
N2A RFWN	NPS 2 CL300 STD	SA-350 LF2 CL1	12/30722	✓				
N2B RFWN	NPS 2 CL300 STD	SA-350 LF2 CL1	12/30722	✓				
C1 DRILL & TAPPED	NPT 1 1/2	-----	-----					
C2 TOL	NPT 1/2 CL3000	SA-350 LF2 CL1	59172	✓				
C3A TOL	NPT 3/4 CL3000	SA-350 LF2 CL1	58337	✓				
C3B TOL	NPT 3/4 CL3000	SA-350 LF2 CL1	58337	✓				

PREPARED BY 

Serial Number: 8440-04 B Filled By: Wans

Customer: Devon Canada Date: 11 March 2014

MATERIAL REPORT

Type of vessel \_\_\_\_\_ Vertical \_\_\_\_\_ Horizontal \_\_\_\_\_

Title	Diameter	Item #	ALCO ID #	Heat #	Slab #	Mat'l Spec	Min Thk (in)
Head	4"	6		✓ 12H33101		SA-420-WPL6	Std
Shell	4"	7	✓ P912			SA-333 GR.6	Std
Repad							
Nozzle							
Skirt / Saddle							
Miscellaneous							

8440-04XR

SAN ENG STEEL FORGING CO. LTD  
 311, Jen Hsin Road, Jen Wu District  
 Kaohsiung, Taiwan, R.O.C.  
 TEL: 07-3724249; FAX: 07-3717923  
 URL: www.saneng.com.tw  
 e-mail: saneng@ksks.seead.net.tw



**MILL TEST CERTIFICATE**  
 EN10204-3.1(B)(INS00493.1.B)  
 Customer: W.F. FITTINGS & FLANGES (CANADA)  
 LTD.  
 Order No.: E000117

Certificate No.: SE101455  
 Date: 12/19/2011  
 Page: 3 OF 4

PRODUCT		MATERIAL SPECIFICATIONS										DIMENSIONAL SPECIFICATIONS									
FORGED CARBON STEEL FLANGES		ASTM A360 LF2-11 CL.1/ASME SA360 LF2-11 CL.1										ASME B16.5-09									
Item No.	CODE NO	DESCRIPTION	QUANTITY		CHEMICAL COMPOSITION (%)										CE(%)						
			Min	Max	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V		Nb	N				
21		150 THRF 2"X1 1/2" A105NLF2N	50 PCE		0.220	0.250	0.300	0.150	0.800	0.035	0.040	0.400	0.120	0.080	0.001	0.005	0.415				
22		150 THRF 2"X1 1/2" A105NLF2N	25 PCE		0.220	0.250	0.300	0.150	1.350	0.015	0.004	0.010	0.003	0.004	0.001	0.005	0.415				
23		300 THRF 2"X1 1/2" A105NLF2N	25 PCE		0.220	0.250	0.300	0.150	1.150	0.015	0.004	0.010	0.003	0.004	0.001	0.005	0.415				
24		300 THRF 2"X1 1/2" A105NLF2N	31 PCE		0.220	0.250	0.300	0.150	1.150	0.015	0.004	0.010	0.003	0.004	0.001	0.005	0.415				
25		150 THRF 4"X1 1/2" A105NLF2N	25 PCE		0.210	0.220	0.220	0.220	1.150	0.019	0.008	0.010	0.002	0.004	0.001	0.007	0.405				
26		150 THRF 4"X1 1/2" A105NLF2N	25 PCE		0.210	0.220	0.220	0.220	1.150	0.019	0.008	0.010	0.002	0.004	0.001	0.007	0.405				
27		150 THRF 4"X2" A105NLF2N	10 PCE		0.210	0.220	0.220	0.220	1.150	0.019	0.008	0.010	0.002	0.004	0.001	0.007	0.405				
28		150 THRF 4"X3" A105NLF2N	10 PCE		0.210	0.220	0.220	0.220	1.120	0.020	0.008	0.010	0.002	0.003	0.001	0.009	0.402				
29		300 THRF 4"X1 1/2" A105NLF2N	10 PCE		0.210	0.220	0.220	0.220	1.120	0.020	0.008	0.010	0.002	0.003	0.001	0.009	0.402				
30		300 THRF 4"X1 1/2" A105NLF2N	10 PCE		0.210	0.220	0.220	0.220	1.120	0.020	0.008	0.010	0.002	0.003	0.001	0.009	0.402				

Item No.	Heat No.	T.S.(%)		Y.S.(MPa)	E.L.(%)	Hardness (HB)	R.A.(%)	Impact Test Temp: -46°C Minimum: 20.0 Joule	Material Supplier	REMARKS
		Min	Max							
21	4443573	517.8	363.8	34.6	152/150	197	71.3	97.0	ACOMINAS	890 C X3HRS CONFORMS WITH NACE MR0103-07 AND NACE MR0175/ISO15156.2-03 TEST SPECIMEN SIZE: 10X10 TEST SPECIMEN ORIENTATION: TRANSVERSE IMPACT TEST TEMP.: -46°C
22	4443573	517.8	363.8	34.6	152/150	197	71.3	97.0	ACOMINAS	
23	4443573	517.8	363.8	34.6	152/150	197	71.3	97.0	ACOMINAS	
24	4443573	517.8	363.8	34.6	152/150	197	71.3	97.0	ACOMINAS	
25	4443561	523.7	373.6	34.0	153/151	197	70.4	97.0	ACOMINAS	
26	4443561	523.7	373.6	34.0	153/151	197	70.4	97.0	ACOMINAS	
27	4443561	523.7	373.6	34.0	153/151	197	70.4	97.0	ACOMINAS	
28	4401529	515.8	365.8	34.0	149/151	197	69.5	77.0	ACOMINAS	
29	4401529	515.8	365.8	34.0	149/151	197	69.5	77.0	ACOMINAS	
30	4401529	515.8	365.8	34.0	148/151	197	69.5	77.0	ACOMINAS	



CONFORMS TO SA 350LF2CL1  
 YEAR 2010 E.D. 2011 100  
 JOB # 1013-8440-04  
 ITEM # 1  
 SIGNED BY [Signature] OCT 02 2013

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.

2-8440-04  
 Po-133431

SAN ENG STEEL FORGING CO. LTD  
 Quality Assurance Dept  
 Manager of Quality Assurance Dept







# INSPECTION CERTIFICATE

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

Purchaser: TRANS-AM PIPING PRODUCTS LTD.

TO EN10204 3.1

Buyer's Certificate No: 2012080559  
 Date: 20/09/2012

Purchase Order No: Cl-12-258 (10/1)  
 Job No: 20092012

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection														
MC-780	ASTM A420-106 / ASME SA420-10-WPL6 CSA Z46.11 & Z41.08 CATT 65 ASSINACE MRO1765015158-2-2009	ASME B16.9-2007, B16.25-2007	Good	Good														
MFG. No. (Heat Identification No.)	Product & Size C WPL6 4" S40	Quantity	Hardness Actual Data															
12H33101	Material Heat No. J2K3479	2750	HB: 125-145 ←															
TENSILE TEST CONFORMS TO SA 420 WPL6 TESTED BY: 268440-04 ITEM: 8413-8440-04 # 6 SIGNED BY: OCT 02 2012 ORIGINAL																		
CHEMICAL COMPOSITION %																		
Specification	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	1000	X	100	X	X	X	X	X	X	100	MPa	%		10.X 7.5 X ZV AT 45 °C ←
Min.		15	50											240	415	30	192	
Max.		40	135		35	40	30	12		80		20		585	585	50	209 AVE 208	
		12	26	8	6	3	2			0	0	0	36	300	558	50	222	

NORMALIZING 610°C X 9.5 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 FEE ONLY  
 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.  
 \* 1: "T" symbolized wall thickness in mm. \* 2: YS Yield strength, TS - Tensile strength, E - Elongation.  
 Form T2 6C/2

Signature  
 Rinchanap Komparitorn  
 Quality Assurance Manager  
 Thai Benkan Co., Ltd.



CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

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



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

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

Certif. N. 4071 Del/Dated 09.09.2012 Fattura / Invoice N. 2772 Del/Dated 31.08.2012  
DDT / Del Note N. 3244 Del/Dated 31.08.2012 Ms.Ord. / Our ref. N.  
TRANS AM PIPING PRODUCTS LTD Dest.: TRANS AM PIPING PRODUCTS LTD  
9335 ENDEAVOR DRIVE S.E. 9335 - Endeavor Drive S.E.  
T3S 0A1, CALGARY, ALBERTA CA T3S 0A1, CALGARY, ALBERTA CA

Table with columns: COD. COL. COLATA POS. VS. ORDINE POS. DESCRIZIONE Q.TA' Q.TY. W/N 300 RF 2" STD LF2CL1. Includes chemical composition (C%, S%, Mn%, P%, Cr%, Ni%, Nb%, Cu%, Ti%, Mo%, N%, As%, C.E.%), mechanical properties (Tensile strength, Yield point, Elongation, Reduction of area, Impact test), and heat treatment details.

Table with columns: COD. COL. COLATA POS. VS. ORDINE POS. DESCRIZIONE Q.TA' Q.TY. W/N 300 RF 8" STD LF2CL1. Includes chemical composition, mechanical properties, and heat treatment details.

CONFORMS TO SA 350 LF2CL1  
YEAR 2013-8440-04  
JOB # 2013-8440-04  
ITEM # #10, N2A1B  
SIGNED BY [Signature] OCT 02 2013

4-8440-04  
Po-133431

Table with columns: OFFICIO CONTROLLO QUALITA' (Quality Control Department), ENTE UFFICIALE DI COLLAUDO (Inspection Authority), and MARCHIO PRODUZIONE (Manufacturer's Symbol) with MFF logo.

NOTE 100% MANUFACTURED IN ITALY  
NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION  
MATERIAL IN ACCORDANCE WITH NACE MR-0176/2009 ISO 15156-2009  
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2010



Manufacturer of Piping and Pressure Vessel Components  
 4404 Hrygood 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 #: 248,632

PO #: CI-13-217

Sales Order #: C001303122

Date: 03/04/2013

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: 58912

Material: A/SA350 00a LF2 CL1

Item	Quantity	Description
28	50	6 - 3 1/2 X 2 STD BWP A350LF2 CL1

CONFORMS TO SA	350LF2CL1
YEAR	2010 ED, 2011 ADD
JOB #	2013-8440-04
ITEM #	#11 - N2A1B
SIGNED BY	[Signature] OCT 02 2010

4-8440-04  
 Po-133431

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.195	0.04	0.090	1.05	0.007	0.015	0.03	0.012
	S	SI	V					
	0.021	0.20	0.003					

Carbon Equivalency: Ladle 0.39

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
	73,292	48,638	29.15	61.34	130 BHN
Charpy V-Notch Properties:			Test Temperature:		-50 F
	FT LBS: 49/43/29	% Shear: NB/NB/NB		MLE: NB/NB/NB	

Normalized

IAW NACE MR0175/ ISO 15156-2009



Manufacturer of Piping and Pressure Vessel Components  
 4404 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 #: 261,037  
 PO #: CI-13-502

Sales Order #: C001313455 Date: 09/12/2013

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.

Certified Material Test Report

Heat Code: 59172

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.

CONFORMS TO SA	3505LF2CL1
YEAR	2010ED, 2011ADD
JOB #	2013-8440-04
ITEM #	#13 - C2
SIGNED BY	[Signature] OCT 02 2013

2-8440-04  
 Po-133431

Material: A/SA350 11 LF2 CL1

Item	Quantity	Description
48	300	36 - 3/4 X 1/2 3M THP A350LF2 CL1

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.03	0.050	1.04	0.005	0.016	0.02	0.004
	S	SI	V					
	0.018	0.20	0.003					

Carbon Equivalency: Ladle 0.40

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
Charpy V-Notch Properties:	79,000	50,000	28.00	65.00	163 BHN
					165 BHN
					-50 F
FT LBS: 45/32/23		% Shear: NB/NB/NB			MLE: NB/NB/NB

Normalized

IAW NACE MR0175/ ISO 15156-2009



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 #: 219,786  
 PO #: CI-11-671

Sales Order #: C001115548 Date: 12/01/2011

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: 58337

CONFORMS TO SA	350LF2 CL1
YEAR	LOADED, 2011 ADD
JOB #	2013-8440-04
ITEM #	#14-C3A/B
SIGNED BY	OCT 02 2013

4-8440-04  
 Po - 133431

Material: A/SA350 00a LF2 CL1

Item	Description
40	36 - 1 1/2 X 3/4 3M THP LF2 A350LF2 CL1

Chemical Composition

Ladle	C	CR	CU	MN	MO	NB	NI	P
	0.210	0.04	0.080	1.06	0.000	0.012	0.03	0.008
	S	SI	V					
	0.017	0.19	0.004					
Carbon Equivalency:	Ladle		0.40					

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
Charpy V-Notch Properties:	81,250	51,875	31.00	64.20	153 BHN
			Test Temperature:		156 BHN
					-50 F
	FT LBS: 30/68/35	% Shear: NB/NB/NB			MLE: NB/NB/NB

Normalized

LAWNACE MR0175/ ISO 15156-2009

Marie Dehmer  
 Quality Assurance Representative

# T H Consulting Services

109 Grand Meadow Crescent  
Edmonton, Alberta T6L 1X1  
Telephone: (780) 909-5470  
gord@thcs.net

Report - GM13828

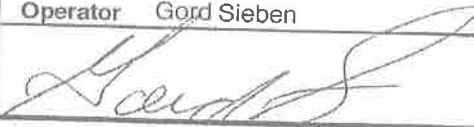

## MAGNETIC PARTICLE INSPECTION REPORT

Client	Alco Gas & Oil 5203 - 75 St. Edmonton, Alberta	Page	1-1
Test Method	ASME V SE-709-01 / Dry Powder	Time	11:00 AM
Acceptance Criteria	ASME VIII Div. 1 App. 6	Date	Mar 18, 2014
Object		P.O. No.	
		Job No.	2013-8440-04

Procedure-MT-General and MT- 1V Rev. 4	<input type="checkbox"/> Pre Heat Treatment	<input type="checkbox"/> Post Heat Treatment	<input type="checkbox"/> Post Hydrotest
Test Equipment ES-X Flex Ferrous Probe S/N - 16512	<input type="checkbox"/> Blacklight	<input type="checkbox"/> B/L Meter XR-1000 S/N - 1815543	
Black on White Contrast - Magnaflux	<input type="checkbox"/> WCP 2 White Contrast Batch #	<input type="checkbox"/> 7HF Prepared Bath Batch #	
Medium- Magnaflux - Type	<input type="checkbox"/> 14 A partial batch #	carrier batch #	<input checked="" type="checkbox"/> 8R 12F008 Other
<input checked="" type="checkbox"/> Dry	<input type="checkbox"/> Wet	<input type="checkbox"/> Fluorescent	<input checked="" type="checkbox"/> Red
<input checked="" type="checkbox"/> Yoke	<input type="checkbox"/> Prod	<input type="checkbox"/> Coil	<input checked="" type="checkbox"/> A/C
<input checked="" type="checkbox"/> Base Metal	<input type="checkbox"/> Ground	<input type="checkbox"/> Machined	<input type="checkbox"/> Painted
Viewing Light Source in excess of 100fc.		<input type="checkbox"/> Ambient	<input type="checkbox"/> Trouble Light
Material - P1		Thickness -	Temp. - 10° C to 52° C
Surface Condition - Clean / As welded			

A better than 10% of the fillet welds on the Level Transmitter Cage were tested.

No relevant indications were found.

CGSB # 11841							
Operator Gord Sieben	St	OT	KM	Client Representative			
	ASNT II CGSB II	1					









5203-75 Street,  
Edmonton, Alberta, Canada T6E 5S5

### CERTIFICATE OF PRESSURE TEST

**SERIAL NUMBER:** 2013-8440-04B

**DESCRIPTION:** 4" CL300 LEVEL TRANSMITTER CAGE

**NAME OF AUTHORIZED INSPECTION AGENCY:** N/A

**TYPE OF TEST:** HYDROSTATIC   
PNEUMATIC   
HYDROTATIC-PNEUMATIC

**TEST PRESSURE:** 75 psig

**POSITION OF THE UNIT TESTED** HORIZONTAL   
VERTICAL


**TEST FLUID:** Water **TEST TEMPERATURE** > 60 F

**TEST PROCEDURE:** ALCO QCP-71

**PRESSURE GAUGE(S) NUMBER:** D-12 & D-10

**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	3/18/2014 _____ DATE
_____ 3 <sup>RD</sup> PARTY INSPECTOR	3/18/2014 _____ DATE
_____ AUTHORIZED INSPECTOR	_____ DATE

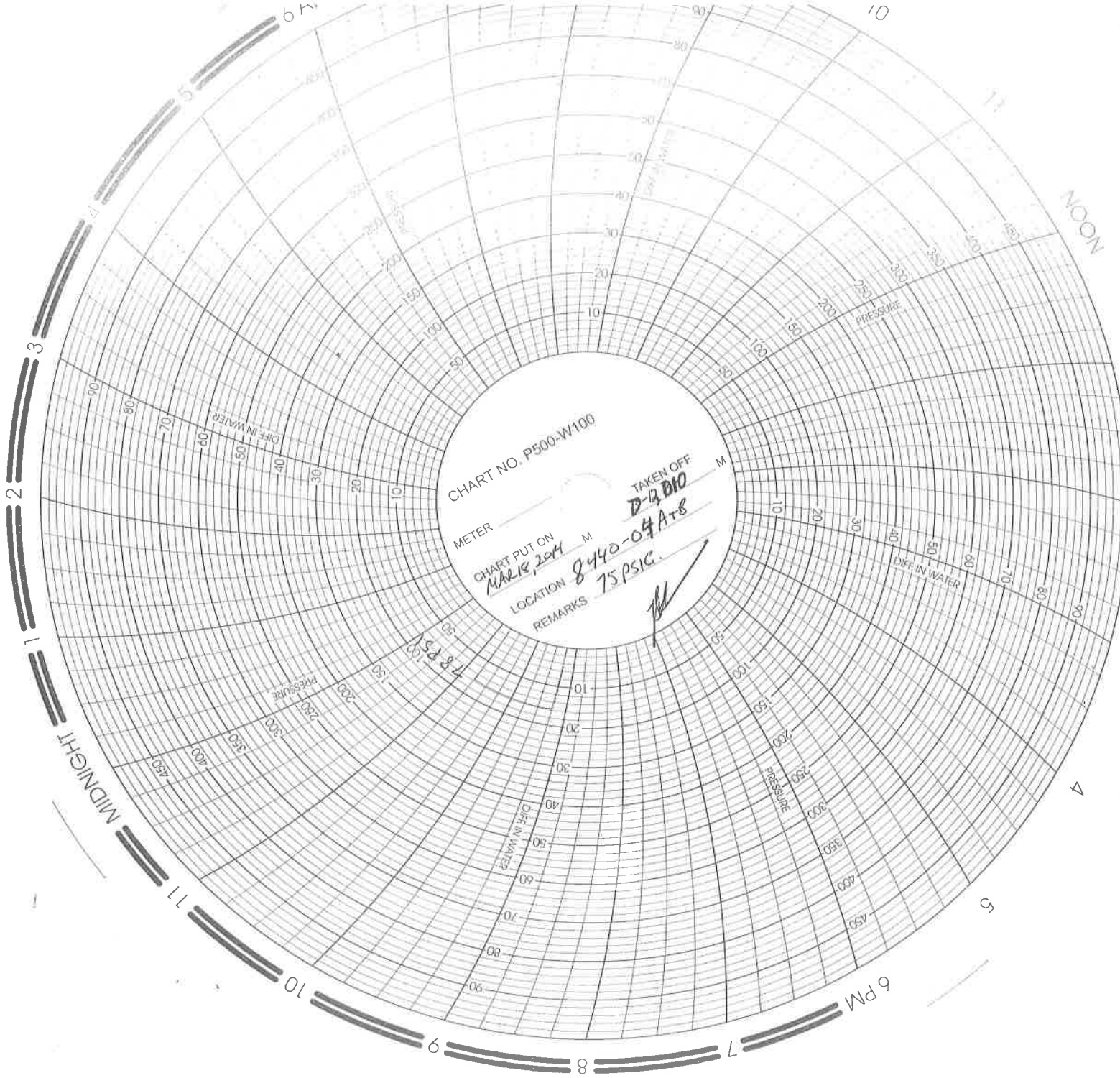


CHART NO. P500-W100

METER \_\_\_\_\_

CHART PUT ON  
MAR 18, 2011

LOCATION  
8440-04A+B

REMARKS  
75 PSIG

TAKEN OFF  
D-Q, D10

MIDNIGHT

NOON

6 PM