

Certificate of Authorization Permit

Quality Management System

Expiry Date: **December 9, 2013**

Reg. No.: **AQP-5046**

This is to certify that:

**CAMERON
MEASUREMENT SYSTEMS DIVISION
7944 - 10 STREET N.E.
CALGARY, ALBERTA**

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

Manufacture Category 'F' Fittings in accordance with CSA B51

at the above SHOP address.



Dated at Edmonton, this 7th day of December, 2010

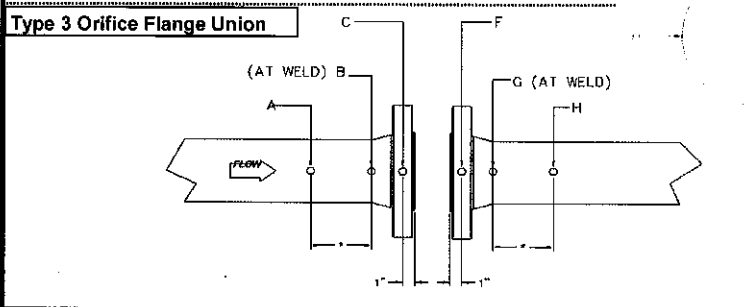
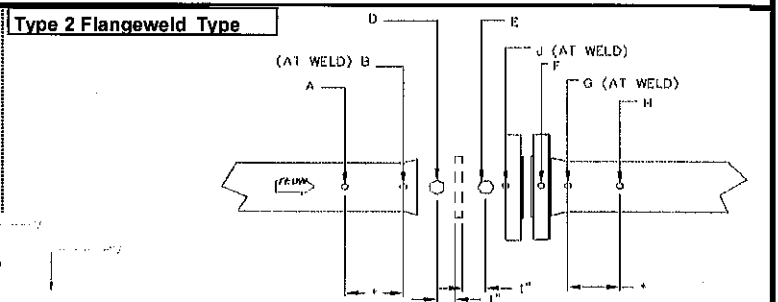
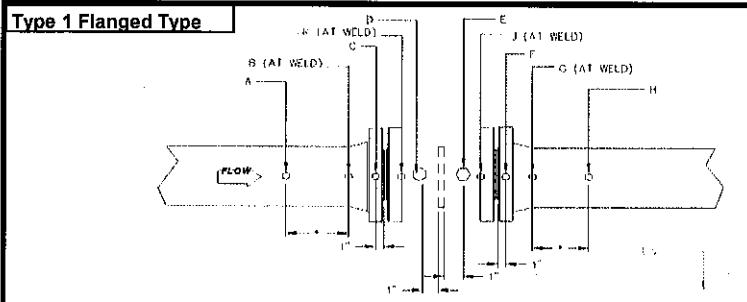
A blue ink signature, appearing to read "Shan", written over a horizontal line.

Chief Inspector and Administrator

Certificate No.: 7735

Meter Tube Calibration Record
General Specifications

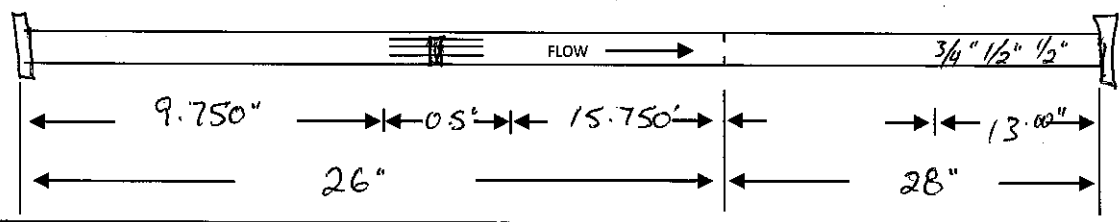
Customer:	RJV Gas Field Svcs	Date:	July 12, 2013
Location:	Husky Energy	P.O. Number:	128512
Serial No.	11282470903	Work Order No.	112824709
Assembly Part No.	9A-MR_52_0133C	Part No.	40552-33221
Orifice Fitting:	2" 600# Sch 80 Dual Chamber Meter Run	Meter Tube Type No.	2
Str. Vane / Flow Cond.:		Yes	X No



Type 4 weldneck Type Valve or Door
 Check Location Point A-B-D on Upstream Tube,
 Point E-G-H on Downstream Tube

*Cross section 'A' and 'H' shall be one pipe diameter
 except if such Cross Section falls within the lifting or weld
 it shall be made 1' inside the pipe

Location	Upstream Meter Tube					Downstream Meter Tube					
	A	B	C	D	K	E	F	G	H	J	
V	1.933	1.943		1.938		1.938	1.951	1.969	1.944	1.937	
LV	1.933	1.942		1.937		1.938	1.951	1.964	1.937	1.936	
RV	1.933	1.941		1.941		1.940	1.951	1.974	1.936	1.940	
H	1.933	1.942		1.942		1.940	1.950	1.964	1.927	1.939	
Average	1.933	1.942		1.940		1.939	1.951	1.968	1.936	1.938	
Upstream Mean Average to Stamp on I.D. Plate	1.940					Downstream Mean Average to Stamp on I.D. Plate	1.939				



AGA/API Figure 3 (2000)	0.70	Meter Tap Location			
		Upstream	N/A	Downstream	N/A

Remarks: **68***

Inspector:

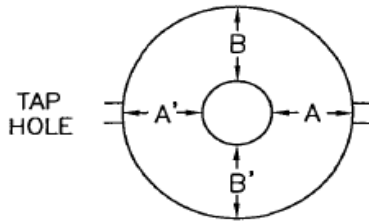


Cameron Measurement Systems
 3707 - 97th Street
 Edmonton, Alberta, Canada T6E 6J2

**QUALITY CONTROL
 INSPECTION REPORT**

Customer: RJV Gas Field Svcs Date: August 15, 2013
 Location: Husky Energy Purchase Order No.: 128512
 Serial No.: 11282470903 Orifice Fitting: 2" 600# Sch 80 Dual Chamber Meter Run
 Assembly No.: 9A-MR_52_0133C Hydrostatic Test Pressure: 2225
 Meter Tube Design Standard API 14.3 Duration: 15 Minutes

ECCENTRICITY



Horizontal $(A - A')/2$
 Vertical $(B - B')/2$

0.004"	0.002"
0.003"	0.005"

Measurement Instrument: Mitutoyo Dial Indicator

PRESSURE TAP HOLE VARIATION

Distance from Plate & Hole Diameter

Upstream	Hole	Downstream	Hole
1.000"	0.375"	1.004"	0.376"

Measurement Instrument: PAV Electronic Depth Gauge

SURFACE ROUGHNESS

Roughness Measurement Location

Upstream Tube, One Pipe Diameter from Weld
 Upstream at Pressure Tap Hole
 Downstream at Pressure Tap Hole
 Downstream 1" from End of Flange

Microinches

135
83
131
96

Measurement Instrument: Mitutoyo 212 SurfTester

DIFFERENTIAL TEST

Water Hydrostatic Method at 50 psi
 Duration 5 Minutes Minimum Visual: No Leaks

Measurement Instrument: McDaniels Gauge 0 -100 psi

Work Order #: 112824709

Lorne Dagg / Leigha Jarvis

NUFLO™ DUAL CHAMBER ORIFICE FITTING

PART NO.	<input type="text"/>		
SERIAL NO.	<input type="text"/>		
SIZE	<input type="text"/>	BORE	<input type="text"/>
SWP	<input type="text"/>	FLG	<input type="text"/>
TRIM	<input type="text"/>		

CRN (ASME CODE) 0F01120.2C

 **CAMERON**
EDMONTON, ALBERTA, CANADA

TO REMOVE PLATE FROM CHAMBER

1. CLOSE ORIFICE CHAMBER (INDEX ORIFICE OUT OF OPERATION).
2. OPEN BLEED VALVE.
3. OPEN CHAMBER LID (REMOVE TWO TOP NUTS ONLY).
4. REMOVE ORIFICE PLATE (PRY ON HOLES IN RETAINER HANDLE).

TO PLACE ORIFICE PLATE IN OPERATION

1. REPLACE ORIFICE WITH OUTLET ON PLATE AND SEAL ON RETAINER FACING UPWARD.
2. CLOSE LID.
3. CLOSE BLEED VALVE.
4. OPEN EQUALIZING VALVE.
5. OPEN ORIFICE CHAMBER (INDEX ORIFICE INTO OPERATION).
6. CLOSE EQUALIZING VALVE.

NUFLO™ METER RUN

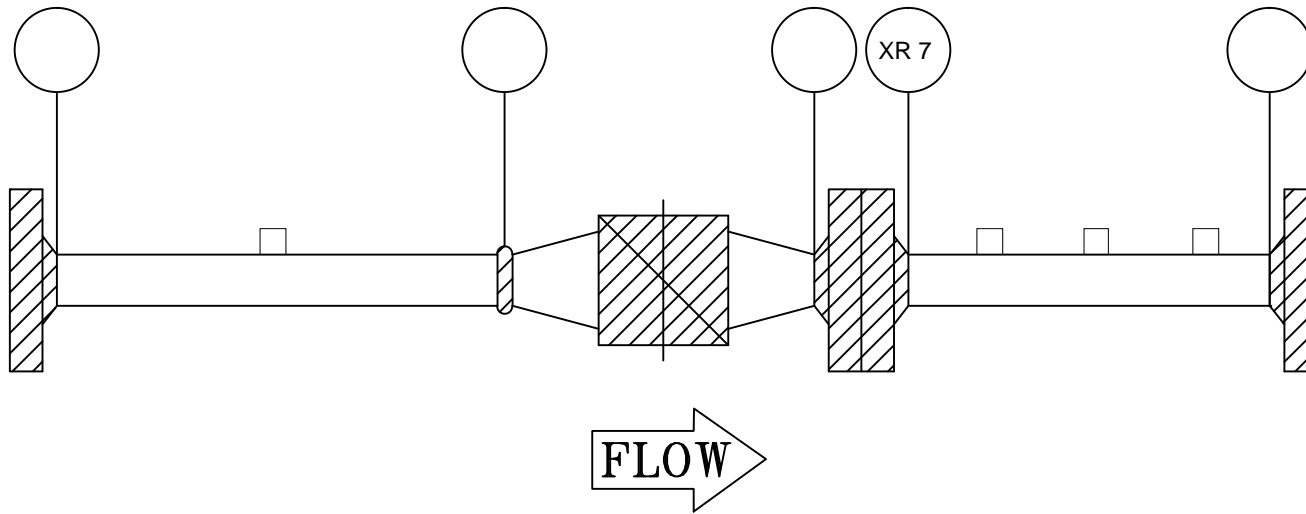
ASSY. NO.

SERIAL NO.	<input type="text"/>		U/S DIA.	<input type="text"/>	D/S DIA.	<input type="text"/>
PIPE SIZE	<input type="text"/>		SCH	<input type="text"/>	RATING	<input type="text"/>
AGA / API	<input type="text"/>		MAT'L	<input type="text"/>	DATE	<input type="text"/>
W.O. NO.	<input type="text"/>		CALIBRATION CERT'D BY	<input type="text"/>		

CRN (ASME CODE) 0F01120.2C

 **CAMERON**
EDMONTON, ALBERTA, CANADA

WELD AND RADIOGRAPHY IDENTIFICATION MAP



DESCRIPTION: _____

SERIAL No.: _____

CUSTOMER: _____

P/O No.: _____ TAG No.: _____

W/O No.: _____ END USER: _____

RADIOGRAPHY UNIT: _____

WELDER: _____ FILE No.: _____

DATE: _____

SYMBOL: _____ QUALITY ASSURANCE INSPECTOR



CAMERON MEASUREMENT SYSTEMS

7944 - 10th STREET N.E.

CALGARY, AB. T2E 8W1



WESTERN INSPECTION LTD.
 3231 - 58th Avenue S.E.
 Calgary, Alberta T2C 0B4
 Tel: (403) 279-4540
 Fax: (403) 236-3043

Cameron
 7944-10 Street NE
 Calgary, AB T2E 8W1
 Tel: (403) 291-4814 Fax: (403) 291-5678

Job Number: 112824709
 PO Number: 4503932803

Date of Exam: Sunday, Aug 11 2013
 Job Location: Western's Shop
 Technicians: Clark Mitchell SNT Lev. II

Acc Codes: ASME B31.3 Normal
 Inspected: Pre Heat Treat
 Material: Carbon Steel
 Isotope: IR 192
 Focal Spot: 2x3 mm
 Curies: 64
 Degree: Percentage
 Processing: Automatic
 Units: in

Legend:

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

Note: SFD Does not include reinforcement

Test Information												Result Information		
Comp#	Test#	Tech	IQI	Wldr Dia	Thk	Len	Sch	SFD	*	Films	Type	#	@ Discontinuity	From - To
1	X1	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC		
2	X2	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC		
3	X3	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC	1 Porosity	
4	X4	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC	1 Porosity	
5	X5	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC		
6	X6	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC		
7	X7	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC		
8	X8	RT1	1A	T	2	0.218	80	2.375	S	3	D4-GEV- I	ACC		

RT 1: T.291 g) S.O.D., Nominal Wall Thickness Plus Inside Diameter of Pipe

T.291 h) S.S.O.F.D., Wall Thickness Plus Allowable Weld Reinforcement (Both Sides).

Units:
 Qty Code
 8 2/80/00

Sign Here:

Donald Mitchell CGSB Lev. II Reg# 534, SNT Lev. II

Sign Here:

Customer Representative:



A.O.Q.P. No. 7106 (c)

LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION CARD

Name: **Jeff Harrington** ABSA File No.: **W - 23651**

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with ASME Section IX of the ASME Code and subject to the limitations on the reverse side.

August 10, 2012

Date of Test

Signature of Welder or Machine Operator

Colin Burnette

Welding Examiner

Card No.: **01758**

PERFORMANCE QUALIFICATION

01758

Process(es)	GMAW	SMAW	Materials (P.No)	P1
Filler Metal Group (F.No)	F6	F4	Min. Outside Diameter	1.0 in. O.D.
Max. Deposited Weld Metal	0.110 in.	0.672 in.	Position(s) Qualified	F6: SP 0-45°, Flat F4: Flat
Backing	With or Without	With	Backing Gas	With or Without
Progression	Downhill	N/A		

August 10, 2014

P.Q. Expiry Date

Welding Examiner Signature

E-00391

Examiner File No.



A.O.Q.P. No. 7106 (c)

LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

WELDER PERFORMANCE QUALIFICATION CARD

Name: **Jeff Harrington** ABSA File No.: **W - 23651**

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulation. The performance qualification is in accordance with ASME Section IX of the ASME Code and subject to the limitations on the reverse side.

August 10, 2012

Date of Test

Signature of Welder or Machine Operator

Colin Burnette

Welding Examiner

Card No.: **01759**

PERFORMANCE QUALIFICATION

01759

Process(es)	GMAW	FCAW	Materials (P.No)	P1
Filler Metal Group (F.No)	F6	F6	Min. Outside Diameter	2.875 in. O.D.
Max. Deposited Weld Metal	0.110 in.	MAX	Position(s) Qualified	GM: SP 0-45°, Flat FC: Flat & Horizontal
Backing	With or Without	With	Backing Gas	With or Without
Progression	Downhill	N/A		

August 10, 2014

P.Q. Expiry Date

Welding Examiner Signature

E-00391

Examiner File No.



19699

Grade "B" Pressure Welder's Certificate of Competency

This is to certify that **Jeff Harrington** having complied with provisions of the Safety Codes Act, is authorized to engage in pressure welding in accordance with the prescribed Regulations.

Dated at Edmonton
April 01, 2006



W-23651

File no

Chief Inspector and Administrator



w/ 17091 002

CERTIFICATE OF ANALYSIS & TESTS

DATE: 5.4.2011
CUSTOMER PO #: B101403
CUSTOMER PART #:

DESCRIPTION

HEAT NO: MM09100827
MILL: NUCOR
QTY: 5 PCS
SIZE: 5 1/4" OD X 120-1/2" RLS

GRADE: ASME SA105/SA350-LF-2 CLASS 1
SPEC.: ASME SA105/SA350 LF-2/ASTM A350 LF-2/A105
NACE MR01-75; BS EN10204.3.1
FINISH: HT

CHEMICAL PROPERTIES

C.	Mn.	P.	S.	Si.	Ni.	Cr.	Mo.	Cu.
.19	1.10	.007	.004	.16	.05	.10	.02	.16
Al.	V.	Nb.	Sn.	N.	B.	Ti.		
.026	.004	.001	.009	.0069	.0002	.002		

MECHANICAL PROPERTIES

YIELD ST.: 46000
TENSILE ST.: 74000
EL %: 36
RED OF AREA: 62
HARDNESS: 149-149 HBW
GRAIN:

CHARPIES: -50 DEG. F LCVN 84/96/94 FT./LBS.
LATERAL EXPANSION: 36/49/46
SHEAR FRACTURE: 40/40/40
Unless otherwise stated, specimens are full size: 10mm x 10 mm

CE=.41

PAZMAC

MAY 18 2011

APPROVED

HEAT TREATMENT

PRODUCT:
NORMALIZED AT 1650 DEG F FOR 11.75 HOURS, AIR COOLED

TEST BAR: Size: 3 X 6 X 6

HARDNESS: 156-156 HBW (CKED IN 2 PLACES)

Unless otherwise stated, yield stress is .2% stress is .2% offset. Gauge length is 2" for 1/2" specimen or 1" for 1/4" specimen.

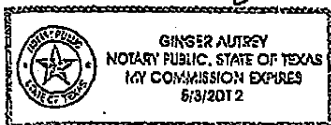
Sworn & Subscribed before me this
4TH Day of MAY, 2011

We hereby certify that the above is the same as
the data furnished us by our suppliers or resulting
from tests performed in a recognized laboratory.

Ginger Autrey
Notary

By *[Signature]*
Representative

Management Systems Registered to ISO 9001:2008



MST1201
1/26/12

Highland Foundry Ltd.
CHEMICAL AND PHYSICAL ANALYSIS

2" O/c Body

Page 1
13:36:28

Product# . . . : 40552-026
Customer Part#: 9A-40552-026-00000
Customer . . . : CAMERON MEASUREMENT SYSTEMS
ACCOUNTS PAYABLE
5003 - 93RD STREET
EDMONTON AB T6E 5S9
CANADA

Order/Item# . . : 36021 / 3
Customer P.O.#: 4503116128

Shauna Puchniak
Approved by: Shauna Puchniak
Quality Assurance Technician

Heat Treatment: 1700F, 3 Hours, Air Cool

Melt#	Quantity	Date	Heat Treat	BATCH #	Specification
6-10803	20	12/21/11		2CY -	ASTM A216 WCB

C H E M I C A L S

C : .2000	MN : .8000	SI : .5300	P : .0100
S : .0200	NI : .0800	CR : .1600	MO : .0300
CU : .1900	V : .0010		

P H Y S I C A L S

YIELD KSI	59	TENSILE KSI	79.7
ELONGATION %	23	RED OF AR. %	45
IMPACT FT LB		IMPACT FT LB	
IMPACT FT LB		TEST TEMP.	

CE = .39



MATERIAL TEST REPORT

9670-187th Street, Surrey, BC Canada V4N 3N6
Phone 604-888-8444 Fax 604-888-3634
www.highlandfoundry.com

ISO 9001:2008

Hardness Test Report



OUR REPUTATION IS STAINLESS™

Customer	Cameron Measurement Systems	PO Number	4503116128
Part Number & Description	40552-026 2" Dual CH. Body 150#-900#	Order Number	36021/3
Material Specification	ASTM A216 Grade WCB	Date	01/18/12
Inspection Method	ASTM E10	Qty	20

Equipment Used: Portable King Brinell Tester

Type of Ball: Regular Carbide

Load: 3000 kg

Holding Time: 10 sec

Hardness Required: 237 Max Brinell Rockwell

Heat No. / Batch No.	% of Batch Tested	Hardness Obtained
6-10803/2CY	10%	152, 156

Remarks:

Tested By:

Jon Stewart *Jon Stewart*
CGSB 48.9712, Level 2, Reg# 16580

Hardness Test Report



OUR REPUTATION IS STAINLESS™

Customer	Cameron Measurement Systems	PO Number	4503093347
Part Number & Description	40701-052 2" Dual Ch. LID	Order Number	35960/7
Material Specification	ASTM A216 Grade WCB	Date	12/29/11
Inspection Method	ASTM E10	Qty	92

Equipment Used: Portable King Brinell Tester

Type of Ball: Regular Carbide

Load: 3000 kg

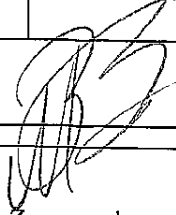
Holding Time: 10 sec

Hardness Required: 237 Max Brinell Rockwell

Heat No. / Batch No.	% of Batch Tested	Hardness Obtained
7-2824/2CD	10%	187, 187, 187, 192, 187
5-10817/3CD	10%	179, 187, 179 179, 183

Remarks:

Tested By:


Max Zanazovsky
Inspector

w/o 17660-001

1/2

ASCOMETAL



Department Métallurgie Qualité
 Unité des Données - Boîte postale 41
 5911 Dauphine (Côte 2)
 7814ème, 02 35 29 40 00
 Téléphone : 02 35 29 40 03

DOCUMENT DE CONTROLE

Inspection Documents / Prüfbescheinigungen

Inspection Certificate 3.1
 NEN 10214 DIN EN 10214 ISO 9-401
 2004 2004 2004

Livraison : 80162405 / 0300037
 N° Contrôle : 030050171858

Date : 21.04.2011
 Date d'édition : 17.05.2011

ORDRE DE FABRICATION : H2081AB <i>PRODUCTION ORDER / HERSTELLUNG</i>	COULÉE : H2081 <i>CAST SYSTEM</i>	DESTINAIRE DOCUMENT : <i>DOCUMENT FOR EMPLOYEE</i>
AFFAIRE SUIVIE PAR : ORPHELY GINETTE <i>RUN CONTACT / BEWACHTER</i>		Société ENCORE METAIS EDMONTON ALBERTA T6E 0A1 Canada
N°REFERENCE : 501046034 / 000010 (78047196) <i>ORIGINAL ORDER / HERSTELLUNG</i>		MARQUE :
V#REFERENCE : SOC-13240 527F102440 (5497 <i>YOUR ORDER / BESTELLEN</i>	NUANCE : A105 <i>GRADE / BEZEICHNUNG</i>	
QUANTITE : 8,675 TONNE <i>QUANTITY / MENGE</i>	PRODUIT : A105 RON ECR 6,750 IN NOR <i>PRODUCT DESCRIPTION / BEWEISUNG</i>	CCI : D000092218
SPECIFICATION CLIENT : CORUS 0376-010R <i>OPERATION SPECIFICATION</i>	END : SANS <i>BY / DATUM</i>	
SPECIFICATIONS SUPP. : SANS	DATE : 05.11.2002 <i>DATE / DATUM</i>	

Analyse chimique de coulée / Ladie analysis / Schmelzanalyse

Élément (%)	Élément	Teil	C	Mn	Si	Cr	Ni	Mo	Cu	P	S	Al
Min	Spec min	Min		0,600	0,150							
Valeur	Actual	Werte	0,170	1,177	0,195	0,149	0,155	0,023	0,150	0,019	0,018	0,024
Max	Spec max	Max	0,270	1,330	0,300	0,300	0,400	0,120	0,400	0,035	0,040	

Élément	Élément	Teil	V	Cb
Min	Spec min	Min		
Valeur	Actual	Werte	0,006	0,0000
Max	Spec max	Max	0,030	0,0300

Contraintes groupées

Élément	Min	Valeur	Max
Cteq		0,422	0,450
Si+Cr+Mo+Cu		0,476	1,050
Cr-Mn		0,171	0,326

Caractéristiques mécaniques / Mechanical properties / Mechanische Kennwerte

Traction / tensile test / Zugversuch
 Nappe / Batch number / Loss number : N431
 Diameter of test specimen (in) : 0.50
 Mod radius tested
 Longitudinal test
 Tensile test temperature (°F) : 70

Élément	Élément	Teil	Y _{2.0%}	UTS	E (2m)	RA
Unité	Unit	Meinheit	PSI	PSI	%	%
Min	Spec min	Min	45000	76000	23,0	30
Valeur	Actual	Werte	46806	73385	30,9	62
Max	Spec max	Max		95000		

Résilience / impact test / Kerbschlagproben
 Nappe / Batch number / Loss number : N431
 notch test 10 x 10
 Mod radius testing
 Charpy V notch
 Longitudinal test
 Impact test temperature (°F) : -50

Élément	Élément	Teil	FuLbs	FuLbs	FuLbs	% shear	% shear	% shear	Mills LE	Mills LE	Mills LE
Unité	Unit	Meinheit	FuLbs <td>FuLbs <td>FuLbs <td>% <td>% <td>% <td>MILLS <td>MILLS <td>MILLS </td></td></td></td></td></td></td></td>	FuLbs <td>FuLbs <td>% <td>% <td>% <td>MILLS <td>MILLS <td>MILLS </td></td></td></td></td></td></td>	FuLbs <td>% <td>% <td>% <td>MILLS <td>MILLS <td>MILLS </td></td></td></td></td></td>	% <td>% <td>% <td>MILLS <td>MILLS <td>MILLS </td></td></td></td></td>	% <td>% <td>MILLS <td>MILLS <td>MILLS </td></td></td></td>	% <td>MILLS <td>MILLS <td>MILLS </td></td></td>	MILLS <td>MILLS <td>MILLS </td></td>	MILLS <td>MILLS </td>	MILLS
Min	Spec min	Min	15,0	15,0	15,0	1,0	1,0	1,0	15,0	15,0	15,0
Valeur	Actual	Werte	93,5	103,5	98,0	100,0	100,0	100,0	53,3	56,7	55,7
Max	Spec max	Max									

Nous certifions que les produits mentionnés sont conformes aux prescriptions de la commande, respectant la directive européenne 2001/95/CE de la Commission du 4 Décembre 2001 en matière de responsabilité au plus égal à la responsabilité de fabricant.

We hereby certify the above mentioned products are conforming with the order requirements, are respectful of the September, 12th 2001 - 2001/95/CE - European directive, and have a manufacturer level which does not exceed that present in the order statement.

Wir bestätigen hiermit dass die obengenannten Erzeugnisse den Bestellevorgaben, der EU-Richtlinie 2001/95/CE vom 12 September 2001 entsprechen und die gesetzliche Produkthaftung bis zur Verantwortlichkeit der Fabrik mit der gesetzlichen Haftung des Anwerbers entsprechen.

ASCOMETAL
 SA à direction et conseil de surveillance
 au capital de 65 285 450 EUR
 131 045 132 RCS Nanterre

Siège social : Immeuble Le Colisée - Avenue de l'Arche, Frubourg de l'Arche, 92419 COURBEVOIE Cedex

P1026410 I-549763
 117# H2081
 R109259
 8711

ASCOMETAL



Département Métallurgie Qualité
 Usine des Dunes - Boile postale 43
 10011 Drumbois Cedex 2
 Téléphone : 07 35 79 69 60
 Télécopie : 03 34 29 00 02

2/2

DOCUMENT DE CONTROLE

Inspection Documents / Prüfbescheinigungen

Inspection Certifiée 3.1
 NEN 10204 DIN EN 10204 ISO 9001
 2004 2004 2004

Livraison : 80162405 / 000007
 N° Contrôle : 036000171858

Date : 21.04.2011
 Date d'édition : 17.06.2011

ORDRE DE FABRICATION : H2031AB <small>WORK ORDER NUMBER / VERGABESTÄLLUNG</small>	COULÉE : H2031 <small>CAST NUMBER</small>	DESTINATAIRE DOCUMENT : <small>DOCUMENT FOR EMPLOYEE</small>
AFFAIRE SUIVIE PAR : ORPHÉE CINETTE <small>WORKING AGENT / BEARBEITER</small>		Société ENCORE METALS EDMONTON ALBERTA T6E 0A1 Canada
REFERENCE : S01056004 / 000010 (70047195) <small>ASTMETAL ORDER / VERGABESTÄLLUNG</small>		MARQUE :
REFERENCE : SOC-13248 527P102649 (5407 <small>WORK ORDER / BEZUGS-NUMMER</small>		
QUANTITE : 5,075 TO <small>QUANTITY / MENGE</small>	NUANCE : A105 <small>GRADE / BEZUGSNUMMER</small>	
PRODUIT : A105 RON ECR 6,750 IN NOR <small>PRODUCT IDENTIFICATION / BEZUGSNUMMER</small>		
SPECIFICATION CLIENT : CORUS 0576-010R <small>IDENTIFICATION / BEZUGSNUMMER</small>		
IND : SANS <small>REV. STATUS</small>	DATE : 06.11.2003 <small>DATE PARTI</small>	CCII : D0005R221S
SPECIFICATIONS SUPP. : SANS		

Traitement Norm. temp.	T Min	T 1652 °F	T Max	Durée 3,30 hrs	Refroidissement Normalized air cooled
---------------------------	-------	--------------	-------	-------------------	------------------------------------------

Dureté de surface sur barres / Bars surface hardness / Stäbe Randhärte			
Élément Min	Élément Spec min	Test Min	BHN top
Valeur Maxi	Actual Spec max	Werte Max	163
			187

Autres résultats / Other results / Andere Prüfergebnisse			
Élément	Mini	Valeur	Maxi
Grain size M-Quaid Eht	5	7	8
Electric furnace - vacuum degassed Conforms to NACE MR01-75 Ultrasonic testing 100% satisfactory Conforms to ASTM A105 - A330LF2 Conforms to ASTM A696 gr C - ASME SA696 gr C Conforms to API 6A type 45K - PSL1-3 cl.1 Conforms to ASME SA 105/SA350LF2			
L1N Produit en France / Product of France / In Frankreich hergestellt N451			

Visa du chef de service
 Stamp of inspection supervisor
 Der Werksachverständige
 Anne Fasquella

A Fasquella

Nous certifions que les produits mentionnés dans ce document ont été réceptionnés de la commande, inspectés et acceptés conformément aux spécifications de la norme NACE MR01-75 et présentés en tant que produits conformes au plus haut de la technologie actuelle.

We hereby certify the above mentioned products are complying with the order requirements, are inspected of the September, 1989 NACE - MR01-75 - exception clause, and have a satisfactory test result, unless stated otherwise.

Wir bestätigen hiermit dass die obengenannten Erzeugnisse den Bestellevorgaben, der EU-Richtlinie 2000/13/EG von 18 September 2000 entsprechen und die geprüften Produkte keine Radialrisse, etc. (1) mit der als normische Streifen der Arm abk. enthalten.

ASCOMETAL
 SA à direction et conseil de surveillance
 au capital de 65 285 430 EUR
 331 048 132 RCS Nanterre

Siège social : Immeuble le Cailissé - Avenue de l'Arche, Fribourg de l'Arche, 93419 COURBEVOIE Cedex



METALFAR
PRODOTTI INDUSTRIALI S.P.A.

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

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
= ISO 9001 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

Certif. N. 2809	Del/Dated 16.05.2013	Fattura / Invoice N. 1902	Del/Dated 15.05.2013
DDT / Del Note N. 2185	Del/Dated 15.05.2013	Ns.Ord. / Our ref. N.	Del/Dated
FORGED FLANGES & FITTINGS LTD		Dest.: F.F.F. c/o C.E. FRANKLIN LTD	
CASTLE HOUSE - STATION ROAD EN5 1PE NEW BARNET/HERTFORD		GR	EDMONTON, ALBERTA

COD. COL HEAT CODE	COLATA HEAT	POS. ITEM	VS. ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION														DIM. ACC. A DIM. ACCORDANCE TO	VS. E DIMENS. VIS. & DIMENS.		
✓ 13/35878		107	3810/FR	185,00	W/N 600 RF 2" XS A105N ✓	1068728													ASME/ANSI B16.5-2009	SATISFACTORY		
MATERIALE / MATERIAL ASTM A105 (LADLE)						C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B%	
						0,195	0,240	0,990	0,008	0,008	0,100	0,050	0,010	0,017	0,140	0,001	0,001	0,009	0,025	0,395	0,000	
PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HBW	RESILLENZA / IMPACT TEST - JOULE/cm2			SNERVAMENTO YIELD POINT N/mm2 >=1,0%			No. REF. OUR REF.								
126,60	50,80	1	343,0	519,0	31,0	59,0	159,0 - 163,0	TIPO / TYPE 10x10mm °C			20 87 81 84			0,0								
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO					TRATTAMENTO TERMICO / HEAT TREATMENT					FORNO / FURNACE					ORIGINE / ORIGIN OF STEEL							
ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010					NORMALIZED AT 920 C - COOLED IN STILL AIR					ELECTRIC FURNACE					EUROPEAN UNION							
ADD. 2011a																						
CSA CAN3 Z245.12-09 GRADE 248 CAT.I SOUR SERVICE																						

COD. COL HEAT CODE	COLATA HEAT	POS. ITEM	VS. ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION														DIM. ACC. A DIM. ACCORDANCE TO	VS. E DIMENS. VIS. & DIMENS.		
12/35051		108	3810/FR	222,00	W/N 600 RF 3" XS A105N	1075223													ASME/ANSI B16.5-2009	SATISFACTORY		
MATERIALE / MATERIAL ASTM A105 (LADLE)						C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B%	
						0,195	0,230	0,950	0,010	0,008	0,100	0,060	0,010	0,016	0,150	0,001	0,001	0,010	0,026	0,390	0,000	
PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HBW	RESILLENZA / IMPACT TEST - JOULE/cm2			SNERVAMENTO YIELD POINT N/mm2 >=1,0%			No. REF. OUR REF.								
126,60	50,80	1	339,0	515,0	32,0	60,0	159,0 - 163,0	TIPO / TYPE 10x10mm °C			20 87 85 86			0,0								
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO					TRATTAMENTO TERMICO / HEAT TREATMENT					FORNO / FURNACE					ORIGINE / ORIGIN OF STEEL							
ASTM/ASME A 105/SA 105 M - 11a ASME CODE SECT. II, PART A, ED. 2010					NORMALIZED AT 920 C - COOLED IN STILL AIR					ELECTRIC FURNACE					EUROPEAN UNION							
ADD. 2011a																						
CSA CAN3 Z245.12-09 GRADE 248 CAT.I SOUR SERVICE																						

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 DEPARTEMENT

ENTE UFFICIALE DI COLLAUDO
INSPECTION AUTHORITY

MARCHIO PRODUZIONE
MANUFACTURER'S SYMBOL

H. S. Erigida



313365

CLIENTE / Customer / Client
 COTEC CORPORATION (EDMONTON)
 5407 - 53 AVENUE NW
 EDMONTON, AB T6B 3G2
 CANADA

CERTIFICADO DE INSPECCION
 Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
 ISO 10474 / 3.1

FECHA: 15/11/2011 No. 143123 HOJA: 1



ULMA FORJA, S.COOP.

PRODUCTO
 Article - Produit
FLANGES

NORMAS APLICABLES
 Requirements - Normes Applicable:
ASME B16.5-03

MATERIAL CORRESPONDIENTE
 Material Correspondent - Quai:
**ASTM A105N-10
 ASME SA105N-10**

MODO DE FUSION (1)
 Steel Making - Elaboration de l'acier:
E = ELEC. Y = Oligoeno Induct.

SU PEDIDO N.º
 Your Order No. **4889947-00**
 Votre Cde. N.º

DE - de 27/06/2011

Certified acc. PED 97/23/EC-AD2000-WK
 by TDV Rheinland
 N.º 01 302 E/O 02 7442

B2256

MARCA DEL FABRICANTE
 Mark of Factory
 Marquage du fabricant



DEPARTAMENTO QUALITY ASSURANCE
 Department

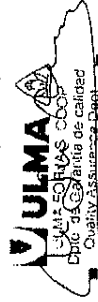
PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations	COLADA N.º Head No. N.º Coulees	RESISTENCIA T. Strength Résist. Tens. Minim. / Maxim.	ALARGAMIENTO Elongation Allongement Lo. 4 d	RESILIENCIA Impact Test Résistance	DUREZA Hardness Dureté		
									ASDA Proveer Approver	Temperatura Temp. °C
30 7530024	300	WN 2 800LB SBD RF A105N	NE	615T1	514	302	28.70	55.20	149 157	

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

COLADA N.º Head No. N.º Coulees	C %	SI %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
615T1	0.200	0.170	0.920	0.015	0.015	0.070	0.100	0.020	0.001	0.001	0.250	0.000	0.000	0.000	0.381

- Las dimensiones y la condición superficial en Nibson satisfactoria
 - Les dimensions et surface condition were found acceptable
 - Los materiales citados cumplen las normas aplicables
 - Manufacturing requirements are satisfied
 - Les normes applicables sont respectées

EL INSPECTOR
 Works Inspector - L'inspecteur



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

CERTIFIED MILL TEST REPORT



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

LOG NO. 331957 PAGE 1

BONNEY FORGE
P.O. BOX 330 • 14486 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: VAN LEEUWEN PIPE & TUBE

Date 03/06/09

CUSTOMER'S Order No.: 45001277

Bonney Order No.

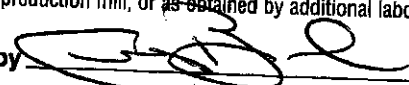
SHIPPED TO: WILL ADVISE

B000047347

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
SA/A105N			
015	2311	57761 / 36-11/2X3/4 3M A105N FLEX T	
	37201		C .200 MN 1.000 P .006 S .016 SI .230 NI .040 CU .140 CD .003 CR .040 MO .010 V .000 AL .019 NB .012 CE(LONG FORMULA) = 0.39 T/S 74000 Y/S 49600 EL 31.00 RA 64.00 BRINELL HARDNESS1: 141 HARDNESS2: 141
045	20	57707 18-10 X 2 XXS A105N WELD B	
	37671		C .190 MN 1.080 P .006 S .018 SI .200 NI .030 CU .100 CD .003 CR .030 MO .010 V .000 AL .020 NB .014 CE(LONG FORMULA) = 0.39 T/S 77250 Y/S 52625 EL 31.75 RA 64.90 BRINELL HARDNESS1: 137 HARDNESS2: 135
046	49	57709 18-10X2 S160 A105N WELD B	
	22783		C .190 MN 1.080 P .006 S .018 SI .200 NI .030 CU .100 CD .003 CR .030 MO .010 V .000 AL .020 NB .014 CE(LONG FORMULA) = 0.39 T/S 77250 Y/S 52625 EL 31.75 RA 64.90 BRINELL HARDNESS1: 137 HARDNESS2: 135

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

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

by 
Cris Boozel

CERTIFIED MILL TEST REPORT



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

LOG NO. 331957 PAGE 1

BONNEY FORGE
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: VAN LEEUWEN PIPE & TUBE

Date 03/06/09

CUSTOMER'S Order No.: 45001277

Bonney Order No.

SHIPPED TO: WILL ADVISE

B000047347

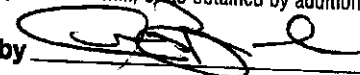
ITEM QUANTITY LOT NO.

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

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. CERTIFYING ASTM A105-05 / ASME SA105-04 EDITION.
4. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
5. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
6. CERTIFYING TO ASTM A350 LF2 07 REVISION.
7. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
8. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.
9. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
10. THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF BOTH NACE MR0103-2007 AND NACE MR0175/ISO 15156.

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

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

by 
Cris Boozel

CMTR: REV 1

QUALITY PROCESS MANAGER

CERTIFIED MILL TEST REPORT



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

LOG NO. F00000000016376 Page 1 of 7

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: VAN LEEUWEN PIPE & TUBE

DATE 07/01/2011

**CUSTOMER
ORDER NO.:** 45001428

BONNEY ORDER NO. B000099429

SHIP TO: VAN LEEUWEN PIPE & TUBE
2875 - 64TH AVENUE
EDMONTON AB T6P1R1
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
8	10	56667	1-3/4 X3/8 3000 A105N THRD T SA/A105N Al 0.021 C 0.190 Cr 0.050 Cu 0.130 Mn 1.000 Mo 0.010 Nb 0.015 Ni 0.040 P 0.010 S 0.023 Si 0.200 V 0.002 CE(Long Formula) = 0.38 T/S(PSI) 72,500 Y/S(PSI) 49,500 EL(%) 36.00 RA(%) 70.00 Brinell 144 BHN 144 BHN
10	25	3737	36-3/4 X 3/8 STD A105N FLEX B SA/A105N Al 0.018 C 0.200 Co 0.002 Cr 0.040 Cu 0.090 Mn 1.070 Mo 0.010 Nb 0.013 Ni 0.020 P 0.007 S 0.019 Si 0.230 V 0.000 CE(Long Formula) = 0.40 T/S(PSI) 75,875 Y/S(PSI) 53,375 EL(%) 32.70 RA(%) 67.45 Brinell 137 BHN 135 BHN
12 5456	2,798	58293	36-3/4 X 1/2 3M A105N FLEX T SA/A105N Al 0.026 C 0.200 Co 0.004 Cr 0.060 Cu 0.140 Mn 1.020 Mo 0.010 N 0.005 Nb 0.014 Ni 0.040 P 0.011 S 0.023 Si 0.190 V 0.003 CE(Long Formula) = 0.40 T/S(PSI) 73,750 Y/S(PSI) 48,750 EL(%) 32.05 RA(%) 63.95 Brinell 135 BHN 135 BHN
19	4	57495	2-11/4X1/2 6M A105N SOCK S SA/A105N Al 0.017 C 0.210 Co 0.003 Cr 0.040 Cu 0.120 Mn 1.080 Mo 0.010 Nb 0.014 Ni 0.030 P 0.011 S 0.015 Si 0.230 V 0.000 CE(Long Formula) = 0.41 T/S(PSI) 76,000 Y/S(PSI) 51,500 EL(%) 35.00 RA(%) 64.00 Brinell 141 BHN 144 BHN

APPROVED BY



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

by Meloney Specht
Meloney Specht
QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT



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

LOG NO. F0000000016376 Page 7 of 7

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: VAN LEEUWEN PIPE & TUBE

DATE 07/01/2011

**CUSTOMER
ORDER NO.:** 45001428

BONNEY ORDER NO. B000099429

SHIP TO: VAN LEEUWEN PIPE & TUBE
2875 - 64TH AVENUE
EDMONTON AB T6P1R1
Canada

ITEM QUANTITY LOT NO.

**GRADE OR SPECIFICATION NO.
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:**

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
4. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
5. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
6. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
7. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
8. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
9. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
10. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
11. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
12. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

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

by

Meloney Specht

Meloney Specht
QUALITY PROCESS MANAGER

CMTR: REV2



3020 FORON RD.
1121 HARRISON AV PMB 293
CENTRALIA WA 98531

Material Test Report

Customer Order No: 4503249229

Scot Order No: 760008.02

CAMERON MEASUREMENT SYSTEMS
5003-93RD STREET
EDMONTON AB T6E 5S9

Material Supplier: 99129.00
Part Number: 9A-C1609-016-04200
Scot Rec. No: 10108319

Heat Number: 9011769772	Grade: A106-B	Dimensions: 2.375" OD X 1.939" ID X 25R30
Scot Spec: MS-	ASTM Spec: A106-11	Other Spec: MS00022
Description: CDS NORMALIZED STEEL TUBING		

Chemical Analysis										
C	Mn	P	S	Si	Cu	Ni	Cr	Mo	CE	
0.17	0.754	0.009	0.003	0.195	0.134	0.067	0.193	0.051	0.3579	

Mechanical Test Results				
Yield Strength:(PSI)	Tensile Strength:(PSI)	Elongation:(%) in 2" G.L	ROA:(%)	Hardness
51053	71938	34.45	()	

Charpy Impact Energy				
Temp	1	2	3	Avg

Eddy Current
OK

Yung Woo Lee
Quality Assurance

07/12/13

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.