

HENGYANG VALIN STEEL
TUBE CO.,LTD

MILL TEST CERTIFICATE

(ACCORDING TO EN10204 3.1)

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

CUSTOMER	BHD TUBULAR LIMITED	CERTIFICATE NO.	C201138573-1
CONTRACT ITEM NO.	2110002384-04	P.O.NO.	109999
PRODUCT	SEAMLESS STEEL LINE PIPE	DELIVERY CONDITION	N
SPECIFICATION	SEE SPECIFICATION NOTE	HEAT TREATMENT	
GRADE	GR6, B7X42 PS1.2, CSA 2345, 1 GR290	DIMENSIONS(INCH)	2" SCH 40 STD
TOTAL BUNDLES:		TOTAL LENGTH:	MT

NO.	LOT No.	HEAT No.	BUNDLES	PIECES	TENSILE TEST ASTM A370																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					LENGTH FT	WEIGHT		SAMPLE TYPE/ ORIENTATION / SIZE/INCH/ GAUGE LENGTH/INCH/ S&L/IN/50						FLATTENING TEST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
						MT	WT	TS(Psi)		YS(Psi)		Rd.5			EL(%)		R.A. (%)		YS/TS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

NO.	NOTCH TYPE ORIENTATION TEMPERATURE SIZE (mm) :					IMPACT TEST					NON METALLIC INCLUSION	GRAIN SIZE	HARDNESS TEST	
	AK1 (J)	AK2 (J)	AV(%)	% SHEAR AREA	LE	AK1 (J)	AK2 (J)	AV(%)	% SHEAR AREA	LE			NACE MR0175/0103/ISO 15156-2 (REGION 3)	HRC
1	38.0/44.0/45.0	42	70/65/75			48.0/50.0/51.0							1.0/	
2	60.0/62.0/68.0	63	70/70/70			49.0/52.0/53.0							1.0/	
3	62.0/64.0/68.0	64	75/75/70			48.0/51.0/55.0							1.0/	
4	68.0/62.0/63.0	64	70/65/65			51.0/48.0/44.0							1.0/	
5	62.0/65.0/68.0	65	70/70/72			53.0/55.0/58.0							1.0/	

NOTES:
W1-THEORETICAL WEIGHT
W2-ACTUAL WEIGHT
NR-NORMALIZING ROLLED
AK1-ABSORB ENERGY FOR THE FIRST SET
SAMPLE ORIENTATION : L-LONGITUDINAL T-TRANSVERSE
SAMPLE TYPE : S-STRIP C-CUBBED F-FULL-SECTION
Q&T-QUENCHING AND TEMPERING
AX2-ABSORB ENERGY FOR THE SECOND SET
N-NORMALIZING
A-ANNEALING
AV-AVERAGE
LE-SIDE EXPANSION
HE-HOT EXPANDED
HR-HOT ROLLED
N&T-NORMALIZING AND TEMPERING

(ACCORDING TO EN10204 3.1)

Add.: 10 Dalixincun, Hengyang City, Hunan, P.R. China P.C.: 421001

Tel and Fax : +86 734 8873739
E-mail : hsiec@hysteeltube.com

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HENGYANG VALIN STEEL
TUBE CO.,LTD

MILL TEST CERTIFICATE

(ACCORDING TO EN10204 3.1)

Add : 10 Dalixincun, Hengyang City, Hunan, P.R.China
P.O.:421001
Tel and Fax : +86 734 8873739
E-mail : hstecc@hysteelube.com

CUSTOMER		BHD TUBULAR LIMITED		CERTIFICATE NO.		C20113873-1	
CONTRACT-ITEM NO.	2110002284-04	P.O.NO.	10999	DATE:	2011-12-23	PAGE:	3/3
PRODUCT	SEAMLESS STEEL LINE PIPE	DELIVERY CONDITION		N			
SPECIFICATION	SEE SPECIFICATION NOTE	HEAT TREATMENT					
GRADE	GR68/K42 PSL2,CSA 2245,1 GR290	DIMENSIONS(INCH)		2" SCH 40S 20FT			
TOTAL BUNDLES:	TOTAL PIECES:	TOTAL LENGTH:		FT		TOTAL WEIGHT: MT	
HIC TEST	SEE THE ORIGINAL INSPECTION REPORTS	REMARK :					
SSC TEST							

SPECIFICATION NOTE	ASTM/A536 A/SA 333/API 5L/ISO15156-2/MR 0103/CSA Z245.1/SS	Quality Manager:	胡双开
We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.			
This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark JOINTIME light-green coloured at the bottom of the page is stamped. In case the owner of the certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use.			
Any alteration and/or falsification will be subject to the law.			
If you need to assure the authenticity of this certificate, please do not hesitate to contact Hengyang Valin Steel Tube Co.,LTD. E-mail : hstecc@hysteelube.com			
CUSTOMER THIRD PARTY		Certificate-maker:	唐迎娜

HT.# 1323592

PO# 130183

HENGYANG VALIN STEEL
TUBE CO., LTD

MILL TEST CERTIFICATE

(ACCORDING TO EN10204 3.1)

Add: 10 Dalixincun, Hengyang City, Hunan, P. R. China

P.C.: 421001

Tel and Fax: +86 734 8873739

E-mail: hsiac@hystealtube.com

CUSTOMER	BHD TUBULAR LIMITED			CERTIFICATE NO.	C201320452-1		
CONTRACT-ITEM NO.	2111000559-07	P.O.NO.	111625	DATE:	2013-6-7	PAGE:	1/3
PRODUCT	SEAMLESS STEEL LINE PIPE			DELIVERY CONDITION	N		
SPECIFICATION	SEE SPECIFICATION NOTE		HEAT TREATMENT				
GRADE	B,B/X42,PSL1,Grade 290			DIMENSIONS	3/4" x SCH160 x 20FT		
TOTAL BUNDLES:			TOTAL PIECES:			TOTAL LENGTH:	FT
						TOTAL WEIGHT:	MT

NO.	LOT No.	HEAT No.	BUNDLES	PIECES	LENGTH	WEIGHT	TENSILE TEST ASTM A370						COLD BENDING TEST
					FT	MT	SAMPLE TYPE/ ORIENTATION / SIZE(mm)/GAUGE LENGTH(mm):FLA50						
						WT	TS(Psi)	YS(Psi)	Rt0.5	EL(%)	R.A. (%)	YS/TS	
1	513561270	1323592	3	289	5783.775	5.113	67715	47995	30.0		0.71	ACCEPTABLE	

NO.	IMPACT TEST								NON METALIC 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			HV10		
1	/				/						159.3////////		

NOTES:

W1--THEORETICAL WEIGHT

W2--ACTUAL WEIGHT

NR--NORMALIZING ROLLED

AK1--ABSORB ENERGY FOR THE FIRST SET

SAMPLE ORIENTATION: L--LONGITUDINAL T--TRANSVERSE

SAMPLE TYPE: S--STRIP C--CLUBBED F--FULL-SECTION

Q&T--QUENCHING AND TEMPERING

AK2--ABSORB ENERGY FOR THE SECOND SET

N--NORMALIZING

A--ANNEALING

Av.--AVERAGE

LE--SIDE EXPANSION

HE--HOT EXPANDED

HR--HOT ROLLED

N&T--NORMALIZING AND TEMPERING

MILL TEST CERTIFICATE

Add: 10 Dalixincun, Hengyang City, Hunan, P. R. China
P. C. : 421001

E-mail: hsiec@hysteeltube.com

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NOTES:	H-HEAT ANALYSIS	P-PRODUCT ANALYSIS	CE-EQUIVALENT CARBON	R-RATIO	R1=Ca /S	R2=Al /N	R3=Mn /C
	CE(HV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15		CEPCM=C+S/30+(Mn+Cr+Cu)/20+Ni/80+Mo/15+V/10+5*B				
	SUM1=Cr+Cu+Mo+Ni+V		SUM2=Nb+V		SUM3=Nb+V+Ti		
	L4/L3/L2--ACCEPT LEVEL L4/L3/L2 NOTCH DEPTH IS 12.5% /10% /5% THE SPECIFIED WALL THICKNESS.						

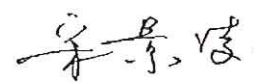
HENGYANG VALIN STEEL
TUBE CO., LTD

MILL TEST CERTIFICATE

(ACCORDING TO EN10204 3.1)

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

CUSTOMER	BHD TUBULAR LIMITED		CERTIFICATE NO.	C201320452-1			
CONTRACT-ITEM NO.	2111000559- 07	P. O. NO.	111625	DATE:	2013-6-7	PAGE:	3/3
PRODUCT	SEAMLESS STEEL LINE PIPE			DELIVERY CONDITION	N		
SPECIFICATION	SEE SPECIFICATION NOTE		HEAT TREATMENT				
GRADE	B,B/X42,PSL1,Grade 290			DIMENSIONS	3/4"x SCH160 x 20FT		
TOTAL BUNDLES:			TOTAL PIECES:	TOTAL LENGTH:	FT	TOTAL WEIGHT:	MT
		REMARK : ORIGIN:NACE IN CHINA					

SPECIFICATION NOTE	ASTM/ASME A/SA106,API 5L PSL1,CSA Z245.1 CAT 1	
We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.		Quality Manager: 
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: hsiiec@hysteeltube.com		
CUSTOMER THIRD PARTY		
		Certificate-maker: 曾黎明

HEAT # 412087913

P.O.#129921



江阴市无缝钢管总厂

JST JIANGYIN CITY SEAMLESS STEEL TUBE FACTORY

产品质量证明书 (EN10204.3.1)

MILL TEST CERTIFICATE

江苏省江阴市夏港镇澄路375号

No. 375, Zhengcheng Rd. Xiangang Town Jiangyin City

Jiangsu Province, China (214442) http://www.cjgg.cn

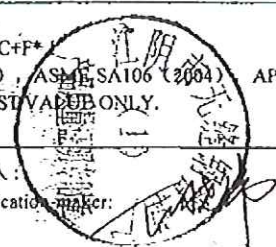
Tel: 86-510-86160723 Fax: 86-510-86160732

总件数 Total Bundles		39		总支数 Total Pieces		730		总重量(t) Total Weight		71.348		日期 Date: 2012年05月23日		№: 0008000088-2																
收货单位 PURCHASER												合同编号 Contract No.																		
产品名称 Product		LOW TEMPERATURE AND SOUR SERVICE OF STEEL PIPE						技术标准 Spec		ASTM/ASME SA333 GR.6/API 5L X42 PSL1, NACE MR-0175/ISO15156-2, CSA Z245.1, CATII GR.290																				
Size O.D×W.T×L (mm)		NPS 3"×SCH80"×6400				钢级 Grade		Gr.6		牌号 Steel Type		交货状态 Delivery Status		NORMALIZED (Temperature 880℃-910℃)																
序号 NO.	炉号 Heat No	批号 Batch No	件数 BDL	支数 PCS	重量 (t) WT	拉伸试验 Tensile Test					冲击试验 Impact Test			Hardness test																
						尺寸 Dimen- sion	标距长度 Gauge Length (mm)	屈服强度 Y.S. PSI	抗拉强度 T.S. PSI	伸长率 E.L. (%)	尺寸 Dimen- sion (*)	温度 (℃) Temper- ature	冲击值(J) Impact Value																	
1	4120879B	A1204-158	28	521	50.921	*1-A3	50.8	48585/50035	70340/71790	30/32	D3	-45℃		21/23/22	73	20														
2	4120893B	B1204-54-2	11	209	20.427	*1-A3	50.8	53660/52935	74690/75420	30/30	D3	-45℃		13/14/15	73	20														
3																														
4																														
序号 NO.	类别 Type #5	化学成分(%) Chemical Composition														低倍组织(级) M.S.			金相分析 Metallogical Analysis											
		C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V	Nb	Ti	B	CE(II W)	CE(CSA)	一般 疏松 Ordinary Porosity	中心 疏松 Central Porosity	偏析 Segregation	显微组 织*6 Microst ructure	晶粒度 (级) Grain size	夹杂物 Inclusion				带状 组织 (级) B.S	脱碳层(mm) D.L			
1	R	.15	.39	1.12	.018	.01	.12	.05	.14	.001	.005	.001	.002	.001	0.37	0.40	/	/	/	F+P	8.5	/	/	/	/	/	/	/	/	/
2	R	.15	.37	1.13	.018	.012	.133	.051	.14	.002	.005	.001	.002	.001	0.38	0.40				F+P	8.5									
3	R																													
4	R																													
压扁 Flattening		冷弯 Cold Bending		扩口 Flaring		超声检验 U.T		涡流检验		E.T		磁粉检验 M.P.I		漏磁检验 L.M.T		通径 N.D		表面&尺寸 S&D		Hydro Test ≥5s		1		2500PSI		OK				
OK						OK		OK				/		/		/						2		2500PSI		OK				
																						3								
																						4								
注释 Notes		*1:纵向条状 Longitudinal Strip: A1-12.7mm, A2-19.05mm, A3-25.4mm, A4-38.1mm, F-全截面 Full-section *2:棒状 Clubbed: B1=12.7mm, B2=8.9mm, B3=8mm, B4=10mm *3:横向条状 Transverse Strip: C1-12.7mm, C2-19.05mm, C3-25.4mm, C4-38.1mm, *4: D1=10×10×55mm, D2=10×7.5×55mm, D3=10×5×55mm, D4=10×2.5×55mm *5: C-成品成分 Product composition R-熔炼成分 Melting composition *6: F-铁素体 Ferrite B-贝氏体 Bainite P-珠光体 Pearlite S-回火索氏体 Tempered Sorbite M-马氏体 Martensite																												
备注 Remark		1. NO WELD REPAIRS WERE PERFORMED; 2. PIPES ARE FREE OF MERCURY AND SILICONE; 3. CE(II W)=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15, CE(CSA)=C+F* Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B; 4. ON THEORETICAL WEIGHT BASIS. 5. ASTM A53 (2002) / ASTM A106 (2007), ASME SA33 (2002), ASME SA106 (2004) API 5L PSL1 (44th EDITION), NACE MR-01-75 (LATEST EDITION) 6. API Certification Number . 0503. 7. SOUR SERVICE GUARANTEE CE AND HARDNESS TEST VALID ONLY.																												

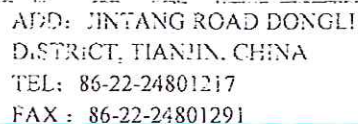
质量管理部负责人: 胡才望
Quality Manager:

审核人: 胡才望
Auditor:

制证人:
Certification maker:



PO# 131281



Licence No.:

No.: 12071916

Contract No.		TPCO-12164E				L.C.No.		Product		SEAMLESS STEEL LINE PIPE		Steel grade		Cat I Gr.290 SS X42/Gr.B.C		Packing		IN BUNDLES												
1	Order	BHID Tubular Limited				P.O. No.		PO # 110733		Port of desti.		Man. Method		HOT ROLLING SEAMLESS		Total pieces														
	P.O. No.	CSA Z245.1-07 API SPEC 5L-2007 ASTM ASME A SA 106-2011				Standard		Length range		5.79-6.40		Total metres				Total Tons														
Heat No.		Lot No.		Quantity		Delivery condition		Sample No.		Tensile test(MPa)								Impact test(J)												
		Pieces	Meters	Bundles	Tons					1*	Tem. °C	T.S.	Type	Y.S	Elong. %	Shrink %	2*	Tem. °C	Size	AK1	Shear %	AK2	Shear %	AK3	Shear %	AVE	Shear %			
	627010	71				As rolled	71-07-0704	23	510	Rt0.5	370	38																		
2	627010	72				As rolled	72-07-0705	23	506	Rt0.5	361	36																		
Total						Note:		strip, l.bo=19.0mm Lo=50mm																						
Heat No.		Lot No.		Sample No.		HV10		Hardness test (inside)					Hardness test (middle)					Hardness test (outside)					NDE		Bend test		Fla. test(1)		Fla. test(2)	
		1	2	3	4	AVE	1	2	3	4	AVE	1	2	3	4	AVE	1	2	3	4	AVE									
	627010	71	71-07-0704	165.0	166.0	165.0	167.0	166.0	164.0	165.0	166.0	165.0	165.0	167.0	166.0	169.0	168.0	168.0	ET+UT/Φ2.2+L3											
3	627010	72	72-07-0705	161.0	166.0	164.0	166.0	164.0	169.0	168.0	167.0	169.0	168.0	169.0	170.0	168.0	169.0	ET+UT/Φ2.2+L3												
Heat No.		Steel speci.		Chemical composition % (L: Ladle analysis P:Product analysis)																		Hydro. Test								
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	CE(CSA)	CE(IIW)									
	627010	L	0.15	0.25	1.050	0.011	0.003	0.05	0.06	0.01	0.06	0.037	0.03	0.01	<0.005	0.0026				0.33	0.35	3010psi/8s								
	14Mn5V	P	0.14	0.24	1.040	0.011	0.003	0.04	0.06	0.01	0.06	0.033	0.03	0.01	<0.005	0.0029				0.32	0.34									
	627010	L	0.15	0.25	1.050	0.011	0.003	0.05	0.06	0.01	0.06	0.037	0.03	0.01	<0.005	0.0026				0.33	0.35	3010psi/8s								
4	14Mn5V	P	0.14	0.24	1.040	0.011	0.003	0.04	0.06	0.01	0.06	0.033	0.03	0.01	<0.005	0.0029				0.32	0.34									
		P	0.15	0.25	1.050	0.011	0.003	0.04	0.06	0.01	0.06	0.033	0.03	0.01	<0.005	0.0030				0.33	0.35									
		L																												
		P																												
		P																												
5	NDE (100%)	Visual and Dimension		Hydro. Test		Pipe End NDE		Pipe End Beveling		Residual Mag. Test		SSCC		HIC		We hereby state that all pipes are manufactured and inspected according to above standards and order.								Seal for certification:						
	G	G		G		G		G		G																				

EN10204-3.1 NACF MR 0175-2003,MR 0103-2007/ISO 15156-2A-2009 CE (CSA) =C+P+ (Mn/6+Si/24+Cu/15+Ni/20+
 Note (Cr+Mo+V+Nb) / 5+5B) CE (W II) =C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15 ALUMINUM KILLED STEEL, EAF-LF-
 CONTINUOUS CASTING Silicon and calcium treated for inclusion morphology control in Steel Melting.

No. OR-11-8.2.4-19 Date:

Page (1)

2012-7-24

Remark: desti.=destination; Tem.=Temperature; speci = specification; Man.=Manufacture; Fla =Flattening; G=Good; Hvdro.=Hydrostatic; Mag=Magnetic

(FOR EXPORT ONLY)

Ht# 13/38554

PO# 131605


METALFAR
 PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

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

 COMPANY WITH
 QUALITY SYSTEM
 CERTIFIED BY DNV
 = ISO 9001 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

Certif. N. 6019 DDT / Del Note N. 4700	Del/Dated 12.11.2013 Del/Dated 12.11.2013	Fattura / Invoice N. 4093 Ns.Ord. / Our ref. N. 0	Del/Dated 12.11.2013 Del/Dated
CE FRANKLIN LTD, A Division of NOV WILSONCANADA ULC 1800, 635 - 8TH Avenue S.W. T2P 3M3 CALGARY, ALBERTA		Dest.: CE Franklin Ltd - DISTRIBUTION CEN. 2803 - 76 Avenue T6P 1P6 EDMONTON, ALBERTA	
CA		C	

Pag. 11 - 1

COD. COL. COLATA HEAT CODE HEAT		POS. ITEM	VS. ORDINE YOUR REFERENCE		Q.TA' Q.TY		DESCRIZIONE DESCRIPTION		DIM. IN ACC. A DIM. ACCORDANCE TO ASME/ANSI B16.5 -2013													VISIVO E DIMENS. VIS. & DIMENS. SATISFACTOR	
13/38554		038	3220811-OR-2100		429,00		W/N 600 RF 2" XS A105N																
MATERIALE / MATERIAL ASTM A105 (LADLE)			C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B %					
			0,195	0,250	0,990	0,010	0,014	0,140	0,060	0,010	0,016	0,160	0,004	0,002	0,009	0,025	0,405	0,000					
PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2		FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%		ROTTURA TENSILE STRENGTH N/mm2 >=		ALLUNGAMENTO ELONGATION %>=		CONTRAZIONE REDUCTION OF AREA %>=		DUREZZA HARDNESS HBW		RESILLENZA / IMPACT TEST - JOULE/cm2				SNERVAMENTO YIELD POINT N/mm2 >=1,0%		Ns. Ref. OUR REF.				
126,60 50,80		1	334,0		516,0		31,0		60,0		154,0 - 156,0		TIPO / TYPE 10x10mm KV 20 1 86 2 92 3 90				0,0						
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO ASTM/ASME A 105/SA 105 M - 13 ASME CODE SECT. II, PART A, ED. 2013										TRATTAMENTO TERMICO / HEAT TREATMENT NORMALIZED AT 920 C - COOLED IN STILL AIR										FORNO / FURNACE ELECTRIC FURNACE		ORIGINE / ORIGIN OF STEEL EUROPEAN UNION	
CSA CAN3 Z245.12-09 GRADE 248 CAT.I SOUR SERVICE																							

COD. COL. COLATA HEAT CODE HEAT	POS. ITEM	VS.ORDINE YOUR REFERENCE	Q.TA' Q.TY		DESCRIZIONE DESCRIPTION		DIM.IN ACC. A DIM. ACCORDANCE TO ASME/ANSI B16.5 -2013												VISIVO E DIMENS VIS. & DIMENS. SATISFACTOR
13/37643	054	3220811-OR-2100	170,00		W/N 600 RF 2" XS LF2CL1														
MATERIALE / MATERIAL		C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	B %		
ASTM A350 LF2 CL1/2 (LADLE)		0,200	0,220	0,980	0,008	0,010	0,130	0,060	0,010	0,017	0,130	0,004	0,002	0,009	0,028	0,405	0,000		
PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	FORMA SHAPE 1=O 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGTH N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HBW		RESILLENZA / IMPACT TEST - JOULE/cm2						SNERVAMENTO YIELD POINT N/mm2 >=1,0%		Ns. Ref. OUR REF.			
126,60	50,80	1	342,0	520,0	30,0	60,0		154,0 - 156,0		TIPO / TYPE 16x10mm KV						°C		1 2 3 4	
																-46		70 68 64	
MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO		TRATTAMENTO TERMICO / HEAT TREATMENT												FORNO / FURNACE		ORIGINE / ORIGIN OF STEEL			
ASTM/ASME A 350/SA 350 M - 13 ASME CODE SECT. II, PART A, ED. 2013		NORMALIZED AT 930 C - COOLED IN STILL AIR												ELECTRIC FURNACE		EUROPEAN UNION			
CSA CAN3 Z245.12-09 GRADE 290 CAT.II 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



HT# 1K22151

PO# 131605

PURCHASER: SEYBOLD INT'L CORP.

STANDARD: ASTM A234 WPB-13

ASME SA234 WPB-04

CSA Z245.11-13 Gr.241 CAT I Sour Service

MATERIALS: ASTM A106 Gr.B

INSP. SPEC.: ASME B16.9 -12



INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8, MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG 83301, TAIWAN
TEL: 886-77310527~8
FAX: 006-77315007

DATE: 2014-01-15

ORDER NO: 7007061/3232394-OR-2100

P.I. NO: 13E02-5

CERTIFI. NO: 14A08-1

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL & DIMENSIONAL INSPECTION	HARDNESS MAX. 197 HB	TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	
15	CON-RED 3X2" XH	1	2J285V	GOOD	133-140	N		
16	CON-RED 3X2" XH	299	1K22151	GOOD	133-145	N		
17	CON-RED 10X4" STD	5	3E242V	GOOD	131-146	N		
18	ECC-RED 10X6" STD	25	3A742V	GOOD	105-115	N		
19	TEE 3" STD	450	13G0398	GOOD	130-140	N	GOOD	
20	TEE 3" XH	48	2J395V	GOOD	135-142	N	GOOD	
21	TEE 4" XH	5	13K8107	GOOD	128-156	N	GOOD	
22	TEE 4" XH	245	13K8213	GOOD	129-140	N	GOOD	

ITEM NO.	MATERIAL CHARGE NO.	CHEMICAL COMPOSITION %											* PHYSICAL TEST				
		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y S	T S	E	**	C.E.
		MIN.	10	29									KSI	KSI	%		X100
	STANDARD	MAX.	30	35	135	50	58	40	40	40	15	8	20	35.0	60.0		
15	1212325V		14	22	83	12	6	8	2	4	1	<1	1	43.8	67.7	31.1	L
16	0814372		14	22	66	8	8	10	3	3	1	<1	1	49.3	64.5	36.5	L
17	1232162V		15	17	84	12	9	6	3	3	1	<1	1	44.1	67.3	30.8	L
18	1232162V		15	17	84	12	9	6	3	3	1	<1	1	44.1	67.3	30.8	L
19	323898		18	24	56	9	4	4	5	3	<1	<1	1	43.5	66.2	31.1	L
20	1212325V		14	22	83	12	6	8	2	4	1	<1	1	43.8	67.7	31.1	L
21	P12602507		12	28	118	10	1	4	4	3	1	1	10	42.7	66.2	31.2	L
22	P12702513		10	25	118	8	3	4	4	5	1	1	10	44.5	65.7	30.6	L

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620°C-980°C, AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880°C X 0.5HR, AIR COOLING.

NACE MR-01-75-09/ISO15156.2 NACE MR 0103-12: 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 L Lan

MANAGER OF Q.A. DEPT.

HT# 393007

PO# 131605



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@kats.wed.net.tw

MILL TEST CERTIFICATE

EN10204-3.1.8(DIN50049/3.1.8)

Customer: SEYBOLD INTERNATIONAL CORP.

Order No.: 7007687(3)-CEF/NOV

Certificate No.: SE7687C1

Date: 12/02/2013

Page: 3 OF 5

e-mail: saneng@kats.sreed.net.tw

Order No.: 7007687(3)-CEFNVO

Page: 3 OF 5

PRODUCT

MATERIAL SPECIFICATIONS

DIMENSIONAL SPECIFICATIONS

FORGED CARBON STEEL FLANGES

ASTM A105-13/ASME SA-105-13

ASME B18.5-13
CSA Z245.12

Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)																	
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N				CE(*)		
21	1075178	300 SORF 2" A105N	50 PCE	0.350	0.100	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020				0.408			
22	1071345	300 SWRF XS 2" A105N	50 PCE	0.210	0.220	1.150	0.021	0.005	0.007	0.020	0.010	0.002	0.006	0.001	0.007			0.408			
23	1073439	300 THRF 1" A105N	50 PCE	0.210	0.220	1.150	0.021	0.005	0.007	0.020	0.010	0.002	0.006	0.001	0.007			0.430			
24	1073762	300 THRF 2" A105N	450 PCE	0.200	0.230	1.090	0.016	0.005	0.020	0.110	0.070	0.028	0.007	0.001	0.009			0.408			
25	1073447	300 THRF 3" A105N	200 PCE	0.210	0.220	1.150	0.021	0.005	0.007	0.020	0.010	0.002	0.006	0.001	0.007			0.408			
26	1074263	600 THRF 2" A105N	400 PCE	0.220	0.210	1.150	0.023	0.005	0.006	0.020	0.010	0.004	0.009	0.001	0.005			0.419			
27	1068517	900/1500 THRF 2" A105N	51 PCE	0.210	0.220	1.150	0.017	0.008	0.007	0.010	0.010	0.003	0.006	0.001	0.006			0.407			
28	1068517	900/1500 THRF 2" A105N	29 PCE	0.200	0.220	1.130	0.022	0.003	0.006	0.030	0.010	0.003	0.004	0.001	0.007			0.397			
29	1070588	150 WNRF STD 20" A105N	15 PCE	0.210	0.220	1.160	0.016	0.004	0.007	0.010	0.010	0.003	0.006	0.001	0.007			0.408			
30	1074132	150 WNRF XS 2" A105N	801 PCE	0.200	0.200	1.100	0.014	0.008	0.130	0.110	0.070	0.020	0.010	0.002	0.008			0.425			
				0.200	0.210	1.080	0.009	0.008	0.070	0.080	0.040	0.010	0.002	0.001	0.006			0.406			

Item No.	Heat No.	T.S.(*) (MPa)	Y.S.(*) (MPa)	E.L.(*) (%)	Hardness (HB)	R.A.(*) (%)	Impact Test Temp: Minimum: Joule			Material Supplier	HEAT TREATMENT(*)	
		Min	Max	Min	Max	Min	1	2	3		N	REMARKS
21	4723460	522.0	358.0	34.2	153/151	69.5				ACOMINAS		880°CX4HRS
22	4723460	522.0	358.0	34.2	153/151	69.5				ACOMINAS		CONFORMS WITH NACE MR0103-12 AND NACE
23	93713	543.0	387.0	33.8	154/152	70.4				WEI CHIH STEEL		MR0175/ISO15156.2-09 CLAUSE 7.2.1.4 REGION 3
24	4723460	522.0	358.0	34.2	153/151	69.5				ACOMINAS		AND ANNEX A
25	4553922	535.0	358.0	34.2	154/151	68.6				ACOMINAS		CONFORMS WITH Z245.12 CAT I GR248 SOUR
26	4573185	531.0	370.0	33.2	154/152	69.5				ACOMINAS		SERVICE-09(FOR USE AS WELDING NECK AND
27	4723478	524.0	348.0	35.6	153/151	70.4				ACOMINAS		BLIND FLANGES ONLY)
28	4677171	518.0	350.0	35.8	153/151	70.4				ACOMINAS		MN TO C RATIO IS GREATER THAN 3.0*
29	292404	525.6	383.4	35.8	154/151	72.1				ACOMINAS		
30	393007	541.0	356.0	30.8	155/152	65.9				SEAH BESTEEL		
										UBE STEEL		

*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 = $C + (Mn/8) + (Cr + Mo + V)/5 + (Ni + Cu)/16$

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

*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 = $C + (Mn/8) + (Cr + Mo + V) / 5 + (Ni + Cu) / 16$

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.

H# 4703606

PO# 131605



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@ktsa.eeol.net.tw

MILL TEST CERTIFICATE

EN10204-3.1.B/DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7007817(1)-CCTE

Certificate No.: SE7817A2
Date: 12/23/2013
Page: 2 OF 4

PO# 4893970

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								
				Min	0.300	0.150	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020								
				Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020								
11	7585631	300 BLRF 3" LF2	66 PCE		0.210	0.240	1.150	0.019	0.003	0.007	0.020	0.010	0.002	0.007	0.001	0.006						0.409	
12	7585631	300 BLRF 3" LF2	9 PCE		0.220	0.230	1.170	0.019	0.006	0.007	0.010	0.010	0.002	0.006	0.001	0.007						0.420	
13	7585658	300 BLRF 6" LF2	40 PCE		0.200	0.210	1.140	0.022	0.004	0.010	0.030	0.010	0.001	0.004	0.001	0.008						0.398	
14	7580405	300 HUB BLRF 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	
15	7580213	600 WNRF XS 1" LF2	30 PCE		0.190	0.210	1.160	0.021	0.007	0.007	0.020	0.010	0.004	0.004	0.001	0.005						0.390	
16	7581008	600 WNRF XS 2" LF2	300 PCE		0.220	0.230	1.190	0.018	0.004	0.008	0.020	0.010	0.003	0.006	0.001	0.007						0.425	
17	7581033	600 WNRF XS 10" LF2	32 PCE		0.190	0.220	1.100	0.014	0.006	0.120	0.120	0.110	0.020	0.005	0.001	0.007						0.418	
18	7581034	600 WNRF XS 12" LF2	10 PCE		0.190	0.220	1.050	0.018	0.005	0.090	0.110	0.030	0.020	0.001	0.001	0.007						0.399	
19	7587749	600 WNRF XS 2" LF2	20 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	7582500	600 WNRF S160 2" LF2	200 PCE		0.220	0.230	1.190	0.018	0.004	0.008	0.020	0.010	0.003	0.006	0.001	0.007						0.425	

Item No.	Heat No.	T.S.(*) (MPA)	Y.S.(*) (MPA)	E.L.(*) (%)	Hardness (HB)	R.A.(*) (%)	Impact Test Temp: -46°C Minimum: 20.0 Joule			Material Supplier	HEAT TREATMENT(*)		REMARKS
							1	2	3		2	N	
11	4703602	527.0	372.0	36.0	153/169	68.6	109.0	97.0	75.0	ACOMINAS			890°CX4HRS
12	4877159	527.0	364.0	33.8	153/161	70.4	116.0	98.0	73.0	ACOMINAS			CONFORMS WITH NACE MR0103-12 AND NACE
13	4723483	516.0	368.0	37.0	152/150	69.5	124.0	84.0	115.0	ACOMINAS			MR0175/ISO15156.2-09 CLAUSE 7.2.1.4 REGION 3
14	4803012	529.0	368.0	35.0	153/161	71.3	90.0	51.0	84.0	ACOMINAS			AND ANNEX A.
15	4573144	522.0	372.0	34.0	153/151	69.6	82.0	93.0	78.0	ACOMINAS			CONFORMS WITH Z245.12 CAT II GR248 SOUR
16	4703606	529.0	372.0	36.2	154/161	69.5	99.0	109.0	80.0	ACOMINAS			SERVICE-09 (FOR USE AS WELDING NECK AND
17	450527	509.9	359.9	36.4	150/149	72.9	134.0	146.0	118.0	GODO STEEL			BLIND FLANGES ONLY)
18	Y300289	518.0	376.0	36.8	152/150	72.1	106.0	123.0	111.0	KOTOBUKI			TEST SPECIMEN SIZE: 10X10
19	4803012	529.0	368.0	35.0	153/151	71.3	90.0	51.0	84.0	ACOMINAS			TEST SPECIMEN ORIENTATION: TRANSVERSE
20	4703606	529.0	372.0	36.2	154/161	69.5	99.0	109.0	80.0	ACOMINAS			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

H# 4757313

PO# 131605



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

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: SEYBOLD INTERNATIONAL CORP.
Order No.: 7007887(7)-CEF/NOV

Certificate No.: SE7687G2

Date: 01/20/2014

Page: 2 OF 2

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(*3)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
11	1652393	900/1500 HUB BLRF(1"NPT TAP) 2" LF2	25 PCE	0.300	0.150	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

HT# 56E00123

PO# 131605



Purchaser: CE FRANKLIN LTD. A DIVISION OF NOV WILSON CANADA

INSPECTION CERTIFICATE

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

TO EN10204 3.1/ISO 10474 3.1B

E-No. Purchase Order No. Job No.

MD-212 P/O 3232263-OR-2100

D M Y Certificate No.

16/12/2013 T- 2013200853

No.	Hardness Actual data	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 Z345-11-09 Gr.241 CAT1 SS NACE MR0175/ISO 15156-2 R3-09&MR0103-12		ASME B16.9-2007 ,B16.25-2007		Good	Good
			Product & Size (T*1)	Quantity	Heat Treatment (Note 1)	Boron(%)	Item No.	
1	HB:123-128	56E20139-1	RC WPB 4 X 3 XS	13/150	N	0.0000	7514123	
2	HB:125-132	56E20139	RC WPB 4 X 3 XS	137/150	N	0.0000	7514123	
3	HB:127-130	56E00121	90 EL WPB 2 XS	482/3.000	A	<0.0001	7510900	
4	HB:128-133	56E00126-2	90 EL WPB 3 XS	48/350	A	0.0002	7511035	
5	HB:133-145	56E00123	90 EL WPB 3 XS	226/500	A	0.0001	7510942	

Specification		Chemical Composition %												Tension Test #2			HARDNESS MAX
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
		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.		%	
Min.																	
Max.			10	29										240	415	30	197 HBW : GOOD
Base Material Heat No.		30		106	50	58	40	40	40	15	80	20	42		655		
1	J3L2464	20	17	85	12	7	1	0	4	1	TR	1	35	312	477	41	
2	J2LA443	18	17	82	11	5	2	2	4	1	TR	TR	33	305	475	40	
3	980430	15	18	77	13	3	16	9	12	5	TR	TR	33	307	480	34	
4	29412	16	23	84	13	1	9	3	5	2	2	1	33	287	457	40	
5	J2KC037	20	16	80	17	7	1	2	5	1	TR	TR	35	281	479	55	

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling

The fittings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

* 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 0.01% 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%

Rungrapa Kampranon

Quality Assurance Manager
Thai Benkan Co., Ltd.

HT# 56E10129

PO# 131355

Purchaser: CE FRANKLIN LTD. A DIVISION OF NOV WILSON CANADA

INSPECTION CERTIFICATE



Thai Benkan Co., Ltd.
58 Soi Waikrumai, Bangkok, Prapedseng,
Samutprakarn, 10130 Thailand.

TO EN10204 3.1

E-No. Purchase Order No. Job No.

MD-212

P/O 3232283-OR-2100

D M Y Certificate No.

08/11/2013 T- 2013200788

				08/11/2013		T- 2013200788		
No.	Hardness Actual data	MFG. No.	Specification for Material Made from Seamless Pipe		Specification for Inspection		Visual Examination	Dimensional Inspection
			ASTM A234-11/ASME SA234-10 Gr.WPB CSA Z46-11-08 Gr.241 CAT1 SS HACE MR0175XSO 15158-2 R3-08/MFQ103-12		ASME B16.9-2007,B16.25-2007		Good	Good
			Product & Size (T*1)	Quantity	Heat Treatment (Note 1)	Doron(%)	Rem No.	
1	HB:127-133	56E10124	T WPB 2 STD	200	N	0.0000	7511736	
2	HB:130-145	56E10134	T WPB 6 XS	9/100	N	0.0000	7512171	
3	HB:138-152	56E10125	T WPB 3 STD	400/750	N	0.0000	7511779	
4	HB:139-155	56E10129	T WPB 2 XS	1,200	N	0.0001	7512040	
5								

Specification		Chemical Composition %												Tension Test *2			HARDNESS MAX
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
		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.		%	
Min.																	
Max.			10	29										240	415	30	197 HB :
Material Heat No.		30		106	50	58	40	40	40	15	80	20	42		655		GOOD
1	J3K4437	19	19	80	12	5	3	2	4	2	TR	TR	34	295	470	57	
2	52158	16	23	82	10	1	8	3	6	2	3	1	33	340	474	41	
3	24132	16	24	83	11	1	11	8	7	3	3	1	34	325	474	35	
4	J2L9087	19	22	78	16	5	1	2	5	1	TR	TR	33	318	475	57	
5																	

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR, Air Cooling

The fittings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY:

* 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 T7-6A/4

[Signature]
Rungnapa Kampranon
Quality Assurance Manager
Thai Benkan Co., Ltd.

GOOD

HT# 56K00096

PO# 131605

Purchaser: CE FRANKLIN LTD. A DIVISION OF NOV WILSON CANADA INC.

INSPECTION CERTIFICATE

TO EN10204 3.1



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

D M Y Certificate No.

23/11/2015 T- 2013200818

E-No. Purchase Order No. Job No.
A-033 P/O 3284120-OR-2160

No.	MFG. No.	Specification for Material Made from Seamless Pipe		Specification for Inspection		Visual Examination	Dimensional Inspection
		ASTM A234-11/ASME SA234-10 Gr.WPB CSA Z746-11-05 Gr.241 CAT1 SS KACE NR017M/ED 15156-2 R3-09EJF0103-12		ASME B16.9-2007 .316.25-2007		Good	Good
		Product & Size (T*1)	Quantity	Heat Treatment (Note 1)	Hardness Actual Data	Bores(%)	
1	56K00086	45 EL WPB 1 STD 1175208	15	A	HB : 130 - 137	0.000%	
2	56K00093	45 EL WPB 10 XS 1171995	5	A	HB : 134 - 138	0.000%	
3	56K00098	90 ES WPB 3 XS 1175013	15	A	HB : 119 - 122	0.000%	
4	56K00099	90 EL WPB 2 1/2 STD 1175259	50	A	HB : 140 - 145	0.000%	
5	56K00100	80 EL WPB 4 STD 1174969	150/1,500	A	HB : 130 - 145	0.000%	

Specification		Chemical Composition %												Tension Test #2			HARDNESS MAX
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
		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.		%	
Min.																	
Max.			10	29										240	415	30	197 HB : GOOD
Material Heat No.		30		106	50	58	40	40	40	15	80	20	42		655		
1	2-89522	19	27	85	13	4	<1	1	2	1	<1	<1	34	398	522	47	
2	02196	16	18	79	12	1	1	2	5	1	TR	TR	33	363	498	38	
3	J3L8364	19	18	65	11	3	1	3	5	1	TR	TR	35	306	481	60	
4	979860	16	20	75	12	1	1	8	1	5	TR	TR	30	324	497	35	
5	J2K8142	19	18	80	7	4	2	2	4	1	TR	TR	34	298	480	40	

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling

The above were manufactured, processed 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)/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 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 T7-6A/14

Signature

Quality Assurance Manager
Thai Benkan Co., Ltd.

H# 56K01058

PO# 131605

Purchaser: CE FRANKLIN Ltd., A division of NOV Wilson Canada

INSPECTION CERTIFICATE

TO EN10204 3.1



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

Purchase Order No.
4810358-00

Job No.
P/O 3284120-OR-2100

D M Y Certificate No.
15/01/2014 T- 2014030220

E-No.		Specification for Material Made from Seamless Pipe								Specification for Inspection				Visual Examination			Dimensional Inspection	
A-033		ASTM A420-13 / ASME SA420-13 Gr.WPL6 CSA Z45.11-08 Gr.280 CAT II UNSC Sour Service								ASME B16.9-2012,B16.25-2012				Good			Good	
MFG. No.		Product & Size (T:*1)										Quantity			Hardness Actual Data			
56K01058		90 EL WPL6 3 XS										300			HB:120-150			
Material Manufacturer						Material Heat No.								Boron : Max 0.0005 (%)				
						J3L8473								0.0001				
Specifi- cation	Chemical Composition % :													*2 Tension Test			Hardness Max 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J)	
	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 1000	X 100	MPa.		%	10 X 5.0 X 2V AT -45 °C	
Min.		15	50											290	415	30	131	
Max.	23	40	135	35	40	40	40	30	12		80	20	42		585		129	
	10	27	134	15	0.7	1	2	11	1		3	3	28	317	456	66	126	
AVE. 129																		

NORMALIZING 910 C X 0.5 HR. AIR COOLING

The fittings was manufactured, sampled, tested, and inspected in accordance with the specification, and was found to meet the requirements.

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2009 & MR0103-2012

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

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

HT# 59177

PO# 131327

CERTIFIED MILL TEST REPORT



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LOG NO. F00000000049835

Page 1 of 1

BONNEY FORGE CORPORATION

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(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906

www.bonneyforge.com

CUSTOMER: MRC CANADA ULC

DATE 10/18/2013

CUSTOMER

BONNEY ORDER NO. B000153528

ORDER NO.: S759231666

SHIP TO: MRC CANADA ULC - BRCH 759

502-25 AVENUE

NISKU AB T9E 0K6

Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO.		REMARKS:
			CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:		
37	350	6470	1 3000 A105N HCP T		SA/A105N
18C10945			Al 0.037	C 0.210	Co 0.004
			Cr 0.030	Cu 0.060	Mn 0.990
			Mo 0.004	N 0.007	
			Nb 0.016	Ni 0.020	P 0.005
			S 0.019	Si 0.230	V 0.004
			CE(Long Formula) = 0.39		
			T/S(PSI) 71,651	Y/S(PSI) 49,983	EL(%) 33.50
			RA(%) 65.88		
			Brinell 130 BHN		132 BHN
109	300	59177	31/2-3 X 1 3000 A105N THRD T		SA/A105N
18C13291			Al 0.022	C 0.210	Co 0.005
			Cr 0.030	Cu 0.050	Mn 1.040
			Mo 0.005	N 0.003	
			Nb 0.016	Ni 0.020	P 0.004
			S 0.018	Si 0.200	V 0.003
			CE(Long Formula) = 0.40		
			T/S(PSI) 79,000	Y/S(PSI) 50,000	EL(%) 28.00
			RA(%) 65.00		
			Brinell 163 BHN		165 BHN

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. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2010 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
7. 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

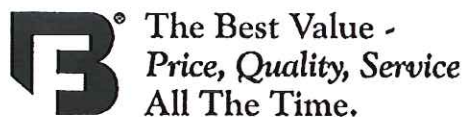
QUALITY PROCESS MANAGER

CMTR: REV2

H# 59180

Pot# 131633

CERTIFIED MILL TEST REPORT



LOG NO. F00000000049197

Page 1 of 1

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: MRC CANADA ULC

DATE 10/03/2013

CUSTOMER

BONNEY ORDER NO. B000151844

ORDER NO.: S759227858

SHIP TO: MRC CANADA ULC - BRCH 759
502-25 AVENUE
NISKU AB T9E 0K6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO.	CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
80	250	59180	8 -3 X 1/2 3000 A105N THRD T	SA/A105N
18C13243			Al 0.022 C 0.210 Co 0.005 Cr 0.030 Cu 0.050 Mn 1.040 Mo 0.005 N 0.003 Nb 0.016 Ni 0.020 P 0.004 S 0.018 Si 0.200 V 0.003 CE(Long Formula) = 0.40 T/S(PSI) 79,000 Y/S(PSI) 50,000 EL(%) 28.00 RA(%) 65.00 Brinell 163 BHN 165 BHN	
		59162	8 -3 X 1/2 3000 A105N THRD T	SA/A105N
18C13243			Al 0.018 C 0.200 Co 0.004 Cr 0.070 Cu 0.130 Mn 0.980 Mo 0.008 N 0.004 Nb 0.012 Ni 0.040 P 0.012 S 0.019 Si 0.190 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 73,000 Y/S(PSI) 49,900 EL(%) 31.00 RA(%) 63.00 Brinell 143 BHN 140 BHN	

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. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2010 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
7. 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

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LOG NO. F0000000053764

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www.bonneyforge.com

CUSTOMER: MRC CANADA ULC

DATE 02/05/2014

CUSTOMER

BONNEY ORDER NO. B000160325

ORDER NO.: S759248161

SHIP TO: MRC CANADA ULC - BRCH 759

502-25 AVENUE

NISKU AB T9E 0K6

Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO.	CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
53 18C12583	100	6592	2 X 1 3M/6M A105N HXBU T	SA/A105N Al 0.027 C 0.200 Co 0.004 Cr 0.040 Cu 0.070 Mn 1.020 Mo 0.005 N 0.004 Nb 0.013 Ni 0.020 P 0.009 S 0.019 Si 0.210 V 0.004 CE(Long Formula) = 0.39 T/S(Psi) 76,230 Y/S(Psi) 52,852 EL(%) 34.45 RA(%) 65.00 Brinell 147 BHN 144 BHN
61 18C12907	30	58839	1 6000 A105N TEE T	SA/A105N Al 0.024 C 0.201 Co 0.003 Cr 0.030 Cu 0.090 Mn 1.050 Mo 0.007 N 0.003 Nb 0.014 Ni 0.030 P 0.009 S 0.021 Si 0.210 V 0.004 CE(Long Formula) = 0.39 T/S(Psi) 74,312 Y/S(Psi) 49,214 EL(%) 36.35 RA(%) 61.19 Brinell 135 BHN 132 BHN
62 18C12979	10	6037	2 6M A105N UNAR T	SA/A105N Al 0.025 C 0.160 Cb 0.001 Co 0.006 Cr 0.120 Cu 0.190 Mn 1.030 Mo 0.030 N 0.010 Ni 0.080 P 0.010 S 0.019 Si 0.220 V 0.021 CE(Long Formula) = 0.38 T/S(Psi) 72,429 Y/S(Psi) 49,950 EL(%) 34.60 RA(%) 64.24 Brinell 132 BHN 132 BHN
18C12979		6176	2 6M A105N UNAR T	SA/A105N Al 0.028 C 0.150 Cb 0.001 Co 0.006 Cr 0.100 Cu 0.180 Mn 1.000 Mo 0.040 N 0.009 Ni 0.100 P 0.010 S 0.023 Si 0.230 V 0.023 CE(Long Formula) = 0.37 T/S(Psi) 70,721 Y/S(Psi) 46,749 EL(%) 36.40 RA(%) 65.88 Brinell 130 BHN 132 BHN

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 *Billie Jo Clemens*

Billie Jo Clemens

QUALITY PROCESS MANAGER

CMTR: REV2

H# 95738

PO# 131605



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

MILL TEST CERTIFICATE

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

Customer: SEYBOLD INTERNATIONAL CORP.

Order No.: 7007687(3)-CEE/NOV

Certificate No.: SE7687C1

Date: 12/02/2013

Page: 5 OF 5

PRODUCT

FORGED CARBON STEEL FLANGES

Order No.: 2007687(3)-CEE/NOV

MATERIAL SPECIFICATIONS

ASTM A105-13/ASME SA-105-13

Page: 5 OF 5

DIMENSIONAL SPECIFICATIONS

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								
				Mn Max	0.350	0.100 0.350	0.600	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-	-	-	-	-	-	-	-
41	1074301	600 WNRF XS 4" A105N	433 PCE		0.200	0.210	1.020	0.013	0.005	0.110	0.090	0.060	0.010	0.003	0.001	0.007							0.402
42	1074901	600 WNRF XS 4" A105N	217 PCE		0.190	0.200	1.020	0.012	0.005	0.120	0.090	0.050	0.010	0.003	0.001	0.008							0.392
43	1454186	600 WNRF S80 12" A105N	10 PCE		0.200	0.230	1.120	0.012	0.002	0.080	0.120	0.120	0.020	0.004	0.001	0.006							0.429
44	1068728	600 WNRF XS 2" A105N	900 PCE		0.210	0.220	1.150	0.021	0.005	0.007	0.020	0.010	0.002	0.006	0.001	0.007							0.408
45	1075223	600 WNRF XS 3" A105N	100 PCE		0.190	0.210	1.070	0.017	0.004	0.210	0.080	0.060	0.014	0.001	0.002	0.007							0.405
46	1069131	600 WNRF S160 2" A105N	400 PCE		0.210	0.220	1.150	0.021	0.005	0.007	0.020	0.010	0.002	0.006	0.001	0.007							0.408
47	1074298	600 WNRF S160 4" A105N	15 PCE		0.210	0.220	1.160	0.018	0.004	0.007	0.010	0.010	0.003	0.006	0.001	0.007							0.408
48	1074757	1500 WNRTJ XS 3" A105N	150 PCE		0.190	0.180	1.070	0.016	0.004	0.140	0.080	0.050	0.015	0.009	0.001	0.010							0.402
49	1074677	1500 WNRTJ S160 3" A105N	175 PCE		0.230	0.190	1.120	0.018	0.007	0.006	0.020	0.010	0.002	0.004	0.001	0.007							0.423
50	1074802	1500 WNRTJ S160 4" A105N	30 PCE		0.220	0.200	1.150	0.024	0.009	0.007	0.020	0.010	0.003	0.004	0.001	0.007							0.418

Item No.	Heat No.	T.S.(*) (MPA)	Y.S.(*) (MPA)	E.L.(*) (%)	Hardness (HB)	RA.(*) (%)	Impact Test Temp: Minimum: Joule			Material Supplier	HEAT TREATMENT(*)		REMARKS
							1	2	3		☒ N		
41	C10753	520.0	376.0	36.8	153/151	70.4				SEAH BESTEEL	☒ N	880°C X4HRS	
42	C10754	512.0	364.0	34.0	152/150	69.5				SEAH BESTEEL	☒ N	CONFORMS WITH NACE MR0103-12 AND NACE	
43	652897	531.0	374.0	34.8	154/152	71.3				GODO STEEL	☒ N	MR0176/ISO15156 2-09 CLAUSE 7.2.1.4 REGION 3	
44	4723460	522.0	358.0	34.2	153/151	69.5				ACOMINAS	☒ N	AND ANNEX A	
45	95738	525.0	376.0	35.0	153/150	71.3				WEI CHIH STEEL	☒ N	CONFORMS WITH Z245.12 CAT I GR248 SOUR	
46	4723460	522.0	358.0	34.2	153/151	69.5				ACOMINAS	☒ N	SERVICE-09(FOR USE AS WELDING NECK AND	
47	4677171	518.0	350.0	35.8	153/151	70.4				ACOMINAS	☒ N	BLIND FLANGES ONLY)	
48	94409	520.0	372.0	36.4	153/150	70.4				WEI CHIH STEEL	☒ N	MN TO C RATIO IS GREATER THAN 3.0"	
49	4573180	527.0	368.0	35.6	154/151	72.1				ACOMINAS	☒ N		
50	4510882	535.4	389.3	33.8	163/151	70.4				ACOMINAS	☒ N		

*1: T.S. = Tensile Strength, Y.S.=Yield Strength, E.L.=Elongation, RA.=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 /16) + (Cr + Mo +V) /5 + (Ni + Cu) / 15

Manager of Quality Assurance Dept

ALL THE PEOPLE WELDING CO., LTD.
T.B.O.3
QUALITY ASSURANCE DEPT

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.

*1: T.S. = Tensile Strength, Y.S. = Yield Strength, E.L. = Elongation, RA = 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 = $C + (Mn/8) + (Cr + Mo + V) / 5 + (Ni + Cu) / 15$

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

H# B30T3

PO# 131605

1075223

CLIENTE / Customer / Client

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

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1FECHA:
Date:

06/09/2013

N.º
No.

159617

HOJA:
Page: 1

SGI 1522184



SGI 6000238



SGI 6009987



ULMA FORJA, S.COOP.

PRODUCTO
Article - Produit

FLANGES

SU PEDIDO N.º

Your Order No. 4893119-00
Votre Cde. N.ºDE
of. - de 31/05/2013

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

Bº Zubilaga, 3 - Apdo. 14
20560 Oñati (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmaproing.com

NORMAS APLICABLES
Requirements - Normes Applicables

ASME B16.5-13

MATERIAL CORRESPONDIENTE ASME SA105-10 add.11, ASTM A105N-12

Material Correspondent - Qualité

MODO DE FUSION (*)

Steel Making - Elaboration de l'acier
E = Elec. Y = Origeno básico

NACE MR0175/ISO15156-2-09 & MR0103-12
Clause 7.2.1.4, Annex A.2 and SSC Region 3.
CSA-Z245.12-09 Gr.248 CAT I-SS (WN & BLIND FLANGES ONLY)

MARCA DEL FABRICANTE
Mark of factory
Marque du fabricant



Packing List: 104607

DEPARTAMENTO QUALITY ASSURANCE
Section
Département

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No. N.º Coudée	RESISTENCIA T.Strength Resist Tens N/mm2	LIMITE ELAST. Y.Strength 0.2 % N/mm2	ALARGAM. Elongation A10.4 d %	ESTRICCION Red. Area Striction %	RESILIENCIA Impact test Résistance Joules	CHARPY V 10x10mm MEDIA Average Mean	DUREZA Hardness Dureté HBW
21 7530250	420	WN 3 600LB XS/80 RF A105N	NE	B29T3	516	320	33,20	52,90			154 159
21 7530250	560	WN 3 600LB XS/80 RF A105N	NE	B30T3	519	309	31,70	53,40			152 167
22 7530277	288	WN 6 600LB XS/80 RF A105N	NE	B28T3	508	315	31,80	52,60			147 153
30 7531079	72	BLIND 6 600LB RF A105N	NE	B02T3	607	303	29,70	56,90			150 155

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE																
COLADA N.º Heat No. N.º Coudée	C %	SI %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %	
B02T3	0,210	0,160	0,890	0,012	0,012	0,050	0,130	0,018	0,006	0,001	0,290	0,000	0,000	0,000	0,400	
B28T3	0,210	0,160	0,860	0,014	0,013	0,060	0,130	0,022	0,004	0,001	0,270	0,000	0,000	0,000	0,387	
B29T3	0,200	0,150	0,910	0,013	0,012	0,060	0,090	0,019	0,006	0,001	0,340	0,000	0,000	0,000	0,396	
B30T3	0,190	0,160	0,880	0,012	0,012	0,080	0,110	0,032	0,008	0,002	0,360	0,000	0,000	0,000	0,391	

- 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.

(*) OBSERVACIONES:
Remarks
Observations

N NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR

EL INSPECTOR
Works Inspector - L'inspecteur



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

H# W20209 ZZ

PO# 131604

WESTBROOK

MATERIAL TEST REPORT

Sold To: **MRC CANADA ULC.**
 Order No.: **585138** Order Date: **11/11/2013**

Purchase Order: **S759237764**Printed: **11/27/2013**

Line: **Description:**
11 2 X 1 1/2 S160 A234WPB SP95 BLK CONC SWG
TBE

***** Specifications - Heat Code **W20983 CI: *******
A106-10 GR.B, SA106 GR.B, A234-11 WPB, SA234 WPB, A530,
A733, ASME B36.10, B1.20.1, MSS SP-25, SP-95
STARTING MATERIAL: A106B PIPE & TUBE
A234-11 WPBN, SA234 WPBN

Chemical Composition:

C:	Mn:	P:	S:	Si:	Cr:	Ni:	Mo:
0.170	0.760	0.007	0.006	0.200	0.097	0.087	0.040
Cu:	V:	Al:	Cb:	Ti:	B:	C.E.:	
0.236	0.002	0.002	0.001	0.001	<.001	.345	

Mechanical Properties:

Tensile(PSI):	Yield(PSI):	Elong(%):	Hardness:	Bend:	Hydro(PSI):
74325	44301	38.00	HRB 80	OK	3000

Comments:

Normalized @ 920C - 9 min.
 Hot finished.
 MEETS NACE MR-01-75/2009, MR-01-03/2010 & ISO 15156/2009.

Line: **Description:**
12 2 X 1 S80 X S160 A234WPBN SP95 CONC SWG
BXT

***** Specifications - Heat Code **W20209 ZZ: ****
A105/A105M-09, SA105, A234-07 WPB, SA234 WPB, ASME B16.5,
B16.9, B16.11, B16.36, MSS SP-25, SP-44, SP-79, SP-83,
SP-95, API-605, A.W.W.A.
STARTING MATERIAL: BAR/BILLET/FORGING
A234-07 WPBN, SA234 WPBN

Chemical Composition:

C:	Mn:	P:	S:	Si:	Cr:	Ni:	Mo:
0.170	0.830	0.027	0.027	0.210	0.020	0.010	0.000
Cu:	V:	Al:	Cb:	Sn:	Ti:	C.E.:	
0.000	0.004	0.031	0.001	0.009	0.002	.313	

Mechanical Properties:

Tensile(PSI):	Yield(PSI):	Elong(%):	RA(%):	Hardness:
70400	43700	38.50	69.50	BHN 124

Comments:

Normalized.
 Meets Nace MR-01-75/2009, MR-01-03/2010 & ISO 15156/2009.