

Purchaser : CCTF CORPORATION

INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN.

Thai Benkan Co., Ltd.
58 Soi Watkrusi, Bangru, Prapadaeng,
Samutprakan, 10130 Thailand.

Purchase Order No. 4801278-00

Job No.

D M Y Certificate No.
11/12/2018 T - 2018031649

E-No.		Specification for Material Made from Seamless Pipe		Specification for Inspection		Visual Examination		Dimensional Inspection											
TA-194		ASTM A420-16 / ASME SA420-17 Gr.WPL6 CSA Z46.11-17 Gr. 241 CAT B M45C Sour Service		ASME B16.9-2012,B16.25-2017		Good		Good											
MFG. No.	Product & Size		(T:*)		Quantity		Hardness Actual Data												
61N01M031-1	45 EL WPL6 8 STD				9/10		HBW:115-145												
		Material Heat No.		Item No.															
		185081		7561296															
		Chemical Composition %												*2 Tension Test		transverse		HARDNESS MAX 197 HB : GOOD	
Specifi- cation	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	TS	E	Impact Test (J) for 10 x 7.5 x 2V AT -46 °C		
	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 1000	X 100	MPa.			%		
Min.		15	50											241	415	30	115		
Max.	30	35	135	35	40	40	40	30	12		80	20			585		118	AVE. 118	
	16	25	108	10	4	6	4	5	2		1	1	36	309	480	40	120		

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

The product was manufactured, sampled, tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

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
Form TZ-6/1

Ratana Karmkarn

Quality Assurance Manager

Thai Benkan Co., Ltd.

CLIENTE / Customer / Client
CCTF CORPORATION (ONTARIO)
4151 NORTH SERVICE RD.
UNIT 2
BURLINGTON, ONTARIO
L7L4X6 - CANADA
CAN

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

UNE EN 10204.06 / 3.1
ISO 10474:15 / 3.1

FECHA:
Date:

27/06/2018

N.º

195066

HOJA:
Page:

2

PRODUCTO
Article - Produit

FLANGES

SU PEDIDO N.º
Your Order No.
Votre Cde. N.º

43038605-00 TORONTO

DE
of - de 28/05/2018

NORMAS APLICABLES
Requirements - Normes Applicables

ASME B16.5-17

MATERIAL CORRESPONDIENTE ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-17

MARCA DEL FABRICANTE
Mark of factory
Marque du fabricant

Packing 140699

NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15
Clause 7.2.1.4, Annex A.2 and SSC Region 3.
CSA-Z245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

DEPARTAMENTO QUALITY ASSURANCE

Section
Département

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations	COLADA N.º Heat No. N.º Coulee	RESISTENCIA T. Strength Resist. Rupt. N/mm2	LONGITUD Elongation Allongement Lo-50mm/4g %	RESILIENCIA Impact test Resilience Joules	CHARPY V 10x10mm MEDIA Average Moyenne °C	DUREZA Hardness Dureté HBW
39 7580201	30	WN 1.1/2 150LB XS/80 RF A350LF2	24Y16	NE	A45A6	517	26.00	58	62	152 156
45 7581005	1	BLIND 14 150LB RF A350LF2	02M18G	NE	25AV8	522	30.20	59	64	150 154
46 7581006	1	BLIND 16 150LB RF A350LF2	06J803	NE	69AV8	507	30.40	60	60	147 148
48 7581006	1	BLIND 16 150LB RF A350LF2	19D17	NE	B64A7	499	33.30	45	42	144 148
48 7583949	1	WN 8 300LB STD/40 RF A350LF2	16Y816	NE	97AV8	517	29.80	75	71	150 151
48 7583948	7	WN 8 300LB STD/40 RF A350LF2	04J802	NE	B21A8	515	32.60	69	67	148 150
52 7582780	3	BLIND 8 600LB RF A350LF2	22Y827	NE	73AV8	511	36.30	58	52	147 148
52 7582780	3	BLIND 8 600LB RF A350LF2	23Y809	NE	73AV8	502	38.10	90	62	146 149

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

COLADA N.º Heat No. N.º Coulee	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	B %	CEq %
25AV8	0.190	0.230	1.050	0.005	0.007	0.058	0.090	0.014	0.002	0.004	0.180	0.025	0.002	0.0003	0.40
69AV8	0.184	0.200	1.115	0.012	0.003	0.055	0.147	0.017	0.001	0.001	0.138	0.033	0.001	0.0001	0.40
73AV8	0.190	0.193	1.073	0.011	0.003	0.062	0.075	0.015	0.001	0.001	0.112	0.037	0.002	0.0001	0.40
97AV8	0.190	0.220	1.110	0.005	0.007	0.045	0.072	0.012	0.003	0.005	0.150	0.027	0.002	0.0003	0.40
A45A6	0.195	0.222	0.994	0.007	0.008	0.053	0.103	0.024	0.000	0.001	0.212	0.028	0.001	0.0005	0.40
B21A8	0.170	0.190	1.060	0.011	0.004	0.110	0.090	0.009	0.004	0.000	0.180	0.029	0.001	0.0004	0.39
B64A7	0.190	0.170	1.030	0.011	0.004	0.100	0.060	0.008	0.007	0.006	0.150	0.041	0.001	0.0002	0.40

(*) OBSERVACIONES.

Remarks
Observations

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

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

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

EL INSPECTOR
Works Inspector - L'inspecteur

UULMA
UULMA FORJAS COOP

Dpto. de Garantía de Calidad
Quality Assurance Dept.



UULMA FORJAS COOP

SGI 600236

SGI 600236

SGI 192264

Bº Zubillaga, 3 - Apdo. 14

20560 OMATI (Gipuzkoa) SPAIN

Tel: 34 - 943 780552

Fax: 34 - 943 781808

E-mail: ulma@ulmapipjng.com

Packing 140699

Management Systems certified by LRQA

Certified acc. PED 97/23/EC-AD2000-WD

PED 14/68/UE

by TÜV Rheinland

N.º 01 202 EQ 02 7443

MARCA DEL FABRICANTE

Mark of factory

Marque du fabricant

UULMA

MLTS_6056-18929

Heat# B03238 A07A9 B011568B B05432B



CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 8/8/2019

Mill Test Reports

Invoice: 1599344-00

PO: 2610155

Customer: 27403-261

A.B.F. MINES/2985080

1310 AVE DAVY

ROUYN-NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	b03238	7586832	6 150 RF WN FLG STD A350LF2
2	a07a9	7586824	4 150 RF WN FLG STD A350LF2
3	b01568b	7586509	6 150 RF SO FLG A350LF2
4	b05432b	7586508	4 150 RF SO FLG A350LF2

Heat codes followed by ** have been corrected, change may not show on the packing slip

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION

OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
 PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
 Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
 E-mail : qm@stnhcorp.com



CE

RPS 040209 / 01

Certificate No. MJH0103-10/16

Date : AUG. 27. 2018

Customer CCTF CORPORATION

Contract No. 4038603-00

Spec. For Material ASTM A105N-14, ASME SA105N-17, ASTM/ASME A/SA350 LF2 CL1-17, NACE MR0175/ISO 15156-2-2015, NACE MR0103/ISO 17495-1-2016

Heat Treatment 930°C NORMALIZED & A.C

Dimensional inspection ASME B76.5 - 2017

Certified to ISO9001 / ISO14001:2015, PED2014/68/EC by LRQA

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness Test (HB)	Charpy Impact Test (10X10mm Specimen Size)			
			D mm	GL mm	Y.S MPa	T.S MPa	E.L %	R.A %	Indiv. 16J		Ave. 20J	Natch V	Temp. -46°C	
														Max
12.5	50.0													Ave.(J)
7586502	2	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7586824	50	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7586832	50	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7585267	10	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7580014	5	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7587735	2	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7585259	10	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7581040	25	B03238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110
7581007	2	B03776	12.5	50.0	375	540	38	74.5	152	154	135	80	118	111
7580205	2	B03776	12.5	50.0	375	540	38	74.5	152	154	135	80	118	111

Chemical Composition (%)

Heat No./ Batch No.	Chemical Composition (%)												NDE		
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE	UT	MT	PT
	Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020			
	Min	0.150	0.600												
B03238	H	0.176	0.201	1.060	0.015	0.004	0.032	0.077	0.004	0.050	0.001	0.001	0.374		
	P	0.178	0.216	1.060	0.016	0.002	0.036	0.073	0.007	0.050	0.002	0.001	0.376		
	H	0.172	0.220	1.290	0.013	0.007	0.012	0.045	0.006	0.008	0.004	0.019	0.399		
B03776	P	0.174	0.220	1.290	0.011	0.003	0.012	0.044	0.006	0.008	0.001	0.015	0.400		

BLANK

REMARK * H : Heat Analysis P : Product Analysis

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

ST-801-14-02

Witnessed by / H. J. LEE

Manager of QA Dept. / JAY KIM

ST&H CORPORATION



CLIENTE / Customer / Client
CCTF CORPORATION (ONTARIO)
4151 NORTH SERVICE RD.
UNIT 2
BURLINGTON, ONTARIO
L7L4X6 - CANADA
CAN

CERTIFICADO DE INSPECCION

UNE EN 10204.06 / 3.1
Inspection Certificate - Certificat de Réception ISO 10474.15 / 3.1

FECHA: 21/05/2019 N.º 203034 HOJA: 2
Date: Page:

PRODUCTO SU PEDIDO N.º
Article - Produit Your Order No. 4039198-00
Votre Cde. N.º

NORMAS APLICABLES ASME B16.5-17
Requirements - Normes Applicables

MATERIAL CORRESPONDIENTE ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-18

MATERIAL Correspondent - Qualité
MODO DE FUSION (*)
Steel Making - Elaboration de l'acier
E = Elec. Y = Oxígeno básico

NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15
Clause 7.2.1.4, Annex A.2 and SSC Region 3.
CSA-Z245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No. N.º Coulee	RESISTENCIA Y. Strength T. Résist. Rp0.2 N/mm2	ELONGACION Elongation Lo-50mm/Aq. %	ESTRICCION Red Area Striction %	RESILIENCIA Impact test Résilience Joules	CHARPY V 10x10mm MEDIA Average Moyenne °C	DUREZA Hardness Dureté HBW
15 7586824	56	WN 4 150LB STD/40 RF A350LF2	18M912	NE	A07A9	502	36.44	71.53	102	99	146 148
22 7585496	24	WN 6 300LB STD/40 RF A350LF2	01F901	NE	B88A8	494	36.14	74.27	125	55	136 138
30 7586646	10	BLIND 2 500LB RF A350LF2	09A901	NE	A63A9	512	30.40	72.40	112	100	140 146

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

COLADA N.º Heat No. Ladle - L Product - P	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	B %	Ceq %	Origin of Steel
A07A9 L	0.192	0.206	1.138	0.008	0.004	0.037	0.050	0.017	0.000	0.002	0.053	0.034	0.001	0.0002	0.40	Germany
B88A8 L	0.182	0.206	1.153	0.010	0.005	0.050	0.057	0.014	0.001	0.002	0.061	0.026	0.001	0.0004	0.40	Germany
A63A9 L	0.189	0.223	1.151	0.011	0.005	0.049	0.055	0.012	0.001	0.002	0.094	0.028	0.002	0.0002	0.40	Germany

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



SGI 1922164 Management Systems certified by LRQA

SGI 6000236 Certified acc. PED 97/23/EC-AD2000-WO

PED 14/68/UE by TÜV Rheinland

N.º 01 202 EIO 02 7443

MARCA DEL FABRICANTE

Mark of factory

Marque du fabricant

Packing 148506

DEPARTAMENTO QUALITY ASSURANCE

Section

Département

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

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

EL INSPECTOR
Works Inspector - L'Inspecteur



ULMA FORJAS S. COOP.

Dpto. de Garantía de calidad
Quality Assurance Dept.



103 078 0505

ST **ST&H CORPORATION**
OFFICE - 74, Jwadasunhw

OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail : gm@stnhcorp.com

MJH0427-06/08

Certificate No.

Customer
CCTF CORPORATION

4039342-00

ASTM A105M

Heat Treatment 930°C NORMALIZED & A.C.

Heat Treatment 930°C NORMALIZED & A.C.

Certified to ISO9001/ISO14001:2015, PED2014/68/EC by LRQA

F2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015

Dimensional inspection ASME 816.5 - 2017

[illegible][illegible]

0.412
0.420
0.403
0.403

BLANK

REMARK	* H	Heat Analysis	P	Product Analysis	* CMn = 1<5

Product Analysis

*H: Heat Analysis P

REMARK

2-1-1



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

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM

ST-801-14-02

ST&H CORPORATION

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST

ST&H CORPORATION

OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
 PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
 Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
 E-mail : qm@stnhcorp.com



RPS 030008 / 01

Date : JUN. 17. 2019

Certificate No. MJH0427-07/08

Customer CCTF CORPORATION

Contract No. 4039342-00

Spec. For Material ASTM A105N-18, ASME SA105N-17, ASTM A350 LF2 CL1-18, ASME SA350 LF2 CL1-17, NACE MR0175/ISO15156-2:2015, NACE MR0103/ISO17945:2015

Heat Treatment 930°C NORMALIZED & A.C

Certified to ISO9001/ ISO14001:2015, PED2014/68/EC by LRQA

Dimensional inspection ASME B16.5 - 2017

Dimensional inspection ASME B16.5 - 2017

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test				Hardness		Charpy Impact Test (10X10mm Specimen Size)								
			D mm	GL mm	Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB)	Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C						
														Max	Test Result (J)	Ave.(J)			
12.5	50.0	Max	Min	250	485	22.0	30.0	187	137										
7589925	2	B01979E	12.5	50.0			344	541	35	75.5	150	152	60	65	59	61			
7580216	15	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7586504	25	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7586507	50	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7586508	80	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7587602	25	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7587603	25	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7587600	250	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7587604	50	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
7587601	25	B05432B	12.5	50.0			357	515	41	76	150	154	89	86	99	91			
Heat No./ Batch No.	Chemical Composition (%)																NDE		
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE		UT	MT	PT			
Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020								
Min		0.150	0.600																

Chemical Composition (%)

Heat No./ Batch No.	Max Min	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	NDE			
		0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020	CE	UT	MT	PT
801979E	H 0.177	0.212	1.270	0.009	0.003	0.010	0.010	0.061	0.004	0.009	0.001	0.012	0.403			
	P 0.180	0.229	1.280	0.009	0.002	0.012	0.038	0.006	0.012	0.001	0.015	0.015	0.403			
805432B	H 0.175	0.251	1.250	0.014	0.003	0.010	0.010	0.010	0.003	0.016	0.001	0.001	0.387			
	P 0.178	0.249	1.250	0.014	0.003	0.011	0.011	0.011	0.004	0.015	0.001	0.001	0.391			
BLANK																

REMARK * H : Heat Analysis P : Product Analysis * C:Mn = 1±5

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

ST-801-14-02

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM

ST&H CORPORATION



Signature

CERTIFIED MILL TEST REPORT



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

LOG NO. F00000000100245

Page 1 of 2

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: CCTF CORPORATION

DATE 10/04/2017

CUSTOMER

BONNEY ORDER NO. B000229128

ORDER NO.: 4037926-00

SHIP TO: CCTF CORPORATION (BURLINGTON)

4151 NORTH SERVICE ROAD

UNIT 2

BURLINGTON ON L7L 4X6

Canada

ITEM		QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:						
3	50	50196	36-3X1 3M LF2 FLEX T	SA/A350 LF2 CL1						
7690075			Al 0.032 C 0.200 Co 0.002 Cr 0.040 Cu 0.030 Mn 1.050 Mo 0.003 Nb 0.014 Ni 0.020 P 0.005 S 0.019 Si 0.270 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 71,610 Y/S(PSI) 47,449 EL(%) 36.85 RA(%) 57.04 Brinell 135 BHN 135 BHN Charpy -50 F 77/66/56 (Ft-Lbs) Average 66.30							
5	50	50076	36-11/2X3/4 3M LF2 FLEX S	SA/A350 LF2 CL1						
7690149			Al 0.027 C 0.200 Co 0.004 Cr 0.050 Cu 0.100 Mn 0.970 Mo 0.016 Nb 0.013 Ni 0.060 P 0.011 S 0.019 Si 0.220 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 76,500 Y/S(PSI) 53,000 EL(%) 31.00 RA(%) 64.00 Brinell 159 BHN 146 BHN Charpy -50 F 42/58/45 (Ft-Lbs) Average 48.30							
6	50	50196	36-3X1 3M LF2 FLEX S	SA/A350 LF2 CL1						
7690199			Al 0.032 C 0.200 Co 0.002 Cr 0.040 Cu 0.030 Mn 1.050 Mo 0.003 Nb 0.014 Ni 0.020 P 0.005 S 0.019 Si 0.270 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 71,610 Y/S(PSI) 47,449 EL(%) 36.85 RA(%) 57.04 Brinell 135 BHN 135 BHN Charpy -50 F 77/66/56 (Ft-Lbs) Average 66.30							

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

Kylee Ruiz

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT



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

LOG NO. F00000000100245

Page 2 of 2

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: CCTF CORPORATION

DATE 10/04/2017

CUSTOMER

BONNEY ORDER NO. B000229128

ORDER NO.: 4037926-00

SHIP TO: CCTF CORPORATION (BURLINGTON)

4151 NORTH SERVICE ROAD

UNIT 2

BURLINGTON ON L7L 4X6

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 OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4.			THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5.			THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
6.			THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7.			THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8.			THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
9.			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

Kylee Ruiz

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2



CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 8/13/2019

Mill Test Reports

Invoice: 1599535-00

PO: 2610160-00

Customer: 27403-261

A.B.F. MINES

1310 AVE DAVY

ROUYN-NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	b01568b	7583949	8 300 RF WN FLG STD A350LF2
2	b03238	7586832	6 150 RF WN FLG STD A350LF2
3	50313 **	7690199	1 X 3-36 3000 SOL A350LF2

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)



ST&H CORPORATION
 OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
 PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
 Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
 E-mail : qm@stnhcorp.com



ROPS 0740009 / 01
CE

Date : JUN. 17, 2019

Certificate No. MJH0427-06/08
 Customer CCTF CORPORATION
 Contract No. 4039342-00

Spec. For Material ASTM A105N-18, ASME SA105N-17, ASTM A350 LF2 CL1-18, ASME SA350 LF2 CL1-17, NACE MR0175/ISO15156-2:2015, NACE MR0103/ISO17945:2015
 Heat Treatment 930°C NORMALIZED & A.C

Certified to ISO9001/ ISO14001:2015, PED2014/68/EC by LRQA

Dimensional Inspection ASME B16.5 - 2017

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness Test (HB)	Charpy Impact Test (10X10mm Specimen Size)			
			D mm	GL mm	Y.S MPa	T.S MPa	E.L %	R.A %	Indiv. 16J		Ave. 20J	Notch V	Temp. -46°C	
			12.5	50.0	Max	Min	655	485	22.0	30.0	Test Result (J)		Ave.(J)	
7580219	15	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7580220	25	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7586509	70	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7580218	12	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7580200	15	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7586832	45	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7583949	40	B015688	12.5	50.0	356	515	39	76	147	154	83	78	81	80
7580203	4	B01979E	12.5	50.0	344	541	35	75.5	150	152	60	65	59	61
7580204	5	B01979E	12.5	50.0	344	541	35	75.5	150	152	60	65	59	61
7580205	2	B01979E	12.5	50.0	344	541	35	75.5	150	152	60	65	59	61

Heat No./ Batch No.		Chemical Composition (%)													NDE				
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb				CE	UT	MT	PT
		Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020						
	Min	0.150		0.600															
801568B	H	0.172	0.243	1.290	0.011	0.004	0.026	0.094	0.017	0.020	0.001	0.001				0.412			
	P	0.177	0.250	1.300	0.012	0.005	0.029	0.101	0.015	0.020	0.002	0.001				0.420			
801979E	H	0.177	0.212	1.270	0.009	0.003	0.010	0.061	0.004	0.009	0.001	0.012				0.403			
	P	0.180	0.229	1.280	0.009	0.002	0.012	0.038	0.006	0.012	0.001	0.015				0.403			

REMARK * H : Heat Analysis P : Product Analysis * C.Mn = 1±5

[Signature]



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

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM

ST-801-14-02

ST&H CORPORATION

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST
ST&H CORPORATION

OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
 PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
 Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
 E-mail : qm@stnhcorp.com


CE

KQS 040204 / 01

Certificate No. MJH0103-10/16

Date : AUG. 27. 2018

Customer CCTF CORPORATION

Contract No. 4038603-00

Spec. For Material ASTM A105N-14, ASME SA105N-17, ASTM/ASME A/SA350 LF2 CL1-17, NACE MR0175/ISO 15156-2:2015, NACE MR0103/ISO 17495-1:2016

Heat Treatment 930°C NORMALIZED & A.C

Dimensional inspection ASME B16.5 - 2017

Certified to ISO9001/ ISO14001:2015, PED2014/68/EC by LRQA

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness Test		Charpy Impact Test (10X10mm Specimen Size)				
			D mm	GL mm	Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB)	Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C	Ave.(J)		
12.5	50.0	Max	Min	655	485	22.0	30.0	187	Test Result (J)							
7586502	2	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7586824	50	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7586832	50	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7585267	10	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7580014	5	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7587735	2	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7585259	10	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7581040	25	803238	12.5	50.0	375	545	35	67.5	151	153	118	145	68	110		
7581007	2	803776	12.5	50.0	375	540	38	74.5	152	154	135	80	118	111		
7580205	2	803776	12.5	50.0	375	540	38	74.5	152	154	135	80	118	111		

Heat No./ Batch No.	Max Min	Chemical Composition (%)												NDE		
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE	UT	MT	PT
		0.300 0.150	0.300 0.150	1.350 0.600	0.035 0.035	0.040 0.040	0.400 0.400	0.300 0.300	0.120 0.120	0.400 0.400	0.080 0.080	0.020 0.020				
803238	H	0.176	0.201	1.050	0.015	0.004	0.032	0.077	0.004	0.050	0.001	0.001	0.374			
	P	0.178	0.216	1.050	0.016	0.002	0.036	0.073	0.007	0.050	0.002	0.001	0.376			
	H	0.172	0.220	1.290	0.013	0.007	0.012	0.045	0.006	0.008	0.004	0.019	0.399			
803776	P	0.174	0.220	1.290	0.011	0.003	0.012	0.044	0.006	0.008	0.001	0.015	0.400			
BLANK																

REMARK * H : Heat Analysis P : Product Analysis



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

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM

ST-801-14-02

ST&H CORPORATION

CERTIFIED MILL TEST REPORT

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

LOG NO. F00000000110349

Page 1 of 2

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: CCTF CORPORATION

DATE 07/13/2018

CUSTOMER

BONNEY ORDER NO. B000243044

ORDER NO.: 4038733-00

SHIP TO: CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO.	
			CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:	
3	50	50200	36-3/4 X 1/2 3M LF2 FLEX T	SA/A350 LF2 CL1
7690072			Al 0.024 C 0.200 Co 0.002 Cr 0.030 Cu 0.050 Mn 1.040 Mo 0.005 Nb 0.012 Ni 0.020 P 0.006 S 0.022 Si 0.230 V 0.003 CE(Long Formula) = 0.39 T/S(Psi) 71,500 Y/S(Psi) 48,100 EL(%) 35.00 RA(%) 69.00 Brinell Hardness 137 BHN 135 BHN Charpy -50 F 78/55/52 (Ft-Lbs) Average 61.70	
4	50	50313	36-3X1 3M LF2 FLEX S	SA/A350 LF2 CL1
7690199			Al 0.036 C 0.200 Co 0.002 Cr 0.060 Cu 0.080 Mn 1.000 Mo 0.006 Nb 0.014 Ni 0.030 P 0.006 S 0.023 Si 0.240 V 0.003 CE(Long Formula) = 0.39 T/S(Psi) 73,427 Y/S(Psi) 48,233 EL(%) 35.25 RA(%) 61.22 Brinell Hardness 135 BHN 135 BHN Charpy -50 F 27/28/33 (Ft-Lbs) Average 29.30	
5	100	50295	36-11/2X3/4 3M LF2 FLEX S	SA/A350 LF2 CL1
7690149			Al 0.021 C 0.200 Co 0.002 Cr 0.030 Cu 0.080 Mn 1.020 Mo 0.007 Nb 0.011 Ni 0.030 P 0.005 S 0.023 Si 0.260 V 0.003 CE(Long Formula) = 0.39 T/S(Psi) 73,778 Y/S(Psi) 50,401 EL(%) 36.55 RA(%) 65.23 Brinell Hardness 135 BHN 135 BHN Charpy -50 F 43/68/39 (Ft-Lbs) Average 50.00	

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

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT

LOG NO. F00000000110349

Page 2 of 2

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



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

CUSTOMER: CCTF CORPORATION

DATE 07/13/2018

CUSTOMER

BONNEY ORDER NO. B000243044

ORDER NO.: 4038733-00

SHIP TO: CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
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 17 REVISION.
3. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103/ISO 17945 - 2015 & NACE MRO175/ISO 15156-2 - 2015 EDITION.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
9. 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

Kylee Ruiz

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C.(81460)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : box@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

M L L TEST & I N S P E C T I O N C E R T I F I C A T E

ACCORDING TO EN 10204 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.

CERT NO : 180410

ORDER NO : 7013926

INVOICE NO : 5200011852

L/C NO :

PAGE : 19

DATE : 02/12/2018

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/ GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION % MECHANICAL PROPERTIES.
108	355196 YB0001	100 PCS	UNION NUT (CT) - BODY (RD) LF2 CL1 (N) 1-1/2" 3000# S/W SQ3UI.5-BW C:0.18 Si:0.25 Mn:1.05 P:0.014 S:0.005 Cu:0.04 Cr:0.07 Ni:0.03 Mo:0.01 V:0.003 Nb:0.003 N:0.0099 Ti:0.002 CE:0.38 TS(KSI):73.8 YS 0.2%(KSI):55.5 EL(%):32.5 RA(%):69.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143 IMPACT TEST -46°C (-50.8°F) 1:48 J 2:87 J 3:67 J AVG:67 J

1/2" 3000 FS SW
union A350-LF2

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A350 -15, ASME SA350 -2015ED LF2 CL 1

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-83 - 2014

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION SURFACE & DIM. : GOOD

STANDARD : CHEMICAL COMPOSITION % & MECHANICAL PROPERTIES.

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Co(Nb)
MIN	-	0.15	0.60	-	-	-	-	-	-	-	-
MAX	0.30	0.30	1.35	0.035	0.040	0.40	0.30	0.40	0.12	0.08	0.02
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.47	95	-	-	-	-	197

HEAT TREATMENT : NORMALIZED 900°C(1652°F) A.C.

CONFORM TO NACE MR0175-15/ISO 15156-15/MR0103-15

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

REF#90817ABW

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED,

SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH THE

SPECIFICATIONS SHOWN

C.C. Huang

Q.C. MANAGER

C.L. Ko

INSPECTOR



柏緯鐵工股份有限公司

高雄縣仁武鄉烏林村仁心路 303 號

BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, JEN-HSIN ROAD JEN-WU HSIANG

KAHSIUNG HSIEN, TAIWAN R.O.C.(81480)

TEL: 886-7-371-0497, 371-1536, 372-0260

web site : <http://www.bothwell.com.tw> e-mail: bothwell@www.bothwell.com.tw or box@mail.bothwell.com.tw

An ISO 9001:2000 Registered Manufacturer

ISO 9001

BUREAU VERITAS
Certification

N° TW00091Q



FAX: 886-7-371-3864, 371-3882

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN10204/DIN50049/3.1.B

ORIGIN: TAIWAN

CUSTOMER: WEIFANG STEEL CANADA LTD.

INVOICE NO: BW089706095

DATE: 12/10/08

CERT NO: 83363-2

ORDER NO: AG0031-LF2

L/C NO:

PAGE: 4

ITEM	BOTH WELL HT.CD.	RAW MATERIAL HEAT NO.	DESCRIPTION								QUANTITY	SPECIFICATION: ASTM A350 -04a ASME SA350 -E04 LF2-Class1 DIMENSION: ASME B16.11-2005 SURFACE: BY VISUAL...GOOD			
014	Y050	X1651	TEE 3/4" 3000# NPT								300 PC				
023	Y050	X1651	FULL CPLG 1-1/2" 3000# NPT								1000 PC				
029	Y050	X1651	HALF CPLG 1-1/2" 3000# NPT								300 PC				
035	Y050	X1651	CAP 1-1/2" 3000# NPT								400 PC				
036	Y050	X1651	CAP 2" 3000# NPT								600 PC				
070	Y047	X1653	90D ELBOW 2" 3000# S/W								110 PC				
070	Y047	X1653	90D ELBOW 2" 3000# S/W								50 PC				
ITEM	BOTH WELL HT.CD	CHEMICAL COMPOSITION (%)													
		C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)	N		
Min		-	0.150	0.600	-	-	-	-	-	-	-	-	-		
Max		0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.400	0.120	0.080	0.020	-		
014	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-		
023	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-		
029	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-		
035	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-		
036	Y050	0.200	0.190	1.040	0.007	0.001	0.030	0.060	0.030	0.010	0.001	0.000	-		
070	Y047	0.200	0.220	1.050	0.012	0.001	0.040	0.190	0.040	0.020	0.010	0.000	-		
070	Y047	0.200	0.220	1.050	0.012	0.001	0.040	0.190	0.040	0.020	0.010	0.000	-		
ITEM	BOTH WELL HT.CD	MECHANICAL TEST					Remark: CONFORM TO NACE MR0175-2003/MR0103 STEEL MAKING PROCESS : ELECTRIC FURNACE HEAT TREATED(°C) NORMALIZED: 900°C TEMPERED: 620°C IMPACT VALUE(CHARPY) -50°F(-46.0°C) HEAT NO. HT.CD. JOULE(J) AVG.(J) X1653 Y047 285 272 257 271.333 X1651 Y050 242 188 175 201.667								
		Tensile Strength (KSI)	Yield Strength (KSI)	Elon- Gation (%)	R of A (%)	Hardness (AVG.) (HB)									
Min		70.0	36.0	22.0	30.0	-									
Max		95.0	-	-	-	197									
014	Y050	79.7	60.7	34.6	76.2	151	WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN  Q.C. MANAGER CHIN CHENG HSIEH  INSPECTOR CHUN CHIEH HUANG								
023	Y050	79.7	60.7	34.6	76.2	151									
029	Y050	79.7	60.7	34.6	76.2	151									
035	Y050	79.7	60.7	34.6	76.2	151									
036	Y050	79.7	60.7	34.6	76.2	151									
070	Y047	78.1	58.1	36.2	80.3	144									
070	Y047	78.1	58.1	36.2	80.3	144									

BW-D0839 REV:0



CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Phoenix * Capitol * Camco
CapProducts

Certified Material Test Report

Commanding a Higher Standardsm

Printed: 8/20/2019

Customer

EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

Certified: 12/18/2018

P.O. 2610174-00

Tag 3050060

Heat No 174321

Heat Code 87AH

Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

Part Number

15111512CSA

Description

1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr	C Eq. Long	
0.1300	1.3200	0.0090	0.0050	0.3100	0.0390	0.0200	0.0600	0.3687	
Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0100	0.0040			0.0180					0.0020

Additional Chemical Properties

B					Cr + Cu + Ni	
0.00030					0.1190	

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
72,374	55,985	37.0%		150	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
48	41	49	46.00	-54

* Bend test passed.

We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.

We further certify that this material was inspected using independent inspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

Comments:

Flattening test passed. Ultrasonic test passed.

Charpy V Impact Tested at -54° C. Specimen size - 10 x 3.33 mm

Hot finished, Normalized



CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Phoenix * Capitol * Camco
CapProducts

Certified Material Test Report

Commanding a Higher Standardsm

Printed: 8/20/2019

Certified: 06/07/2019

Customer

EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

P.O. 2610174-00

Tag 3050060

Heat No 608622

Heat Code 87HU

Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

Part Number

15111512CSA

Description

1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr	C Eq. Long	
0.1300	0.7200	0.0140	0.0030	0.2000	0.0900	0.0700	0.0900	0.2833	
Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0200	0.0030			0.0140					0.0020

Additional Chemical Properties

Boron				
0.00010				

Cr + Cu + Ni
0.2500

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
64,107	44,672	34.0%		134	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
44	44	46	44.67	-55

* Hydro test passed. at 3000 psi.

* Bend test passed.

We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.

We further certify that this material was inspected using independent inspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

Comments:

Flattening test passed.

Charpy V Impact Tested at -55° C. Specimen size - 10 x 4 mm.

Normalized

18353-6086



CapProducts, Ltd.
25 Winnipeg St
Vanastra, ON N0M 1L0

Phoenix * Capitol * Camco
CapProducts

Certified Material Test Report

Commanding a Higher Standard_{sm}

Printed: 8/20/2019

Customer

EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

Certified: 06/07/2019

P.O. 2610174-00

Tag 3050060

Heat No 608622

Heat Code 87HU

Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

Part Number

15111512CSA

Description

1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr
0.1300	0.7200	0.0140	0.0030	0.2000	0.0900	0.0700	0.0900

C Eq. Long
0.2833

Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0200	0.0030			0.0140					0.0020

Additional Chemical Properties

Boron				
0.00010				

Cr + Cu + Ni
0.2500

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
64,107	44,672	34.0%		134	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
44	44	46	44.67	-55

* Hydro test passed. at 3000 psi.

* Bend test passed.

We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.

We further certify that this material was inspected using independent inspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

Comments:

Flattening test passed.

Charpy V Impact Tested at -55° C. Specimen size - 10 x 4 mm.

Normalized

MLTS_6056-18953-1
Heat# 608622, 174321



CapProducts, Ltd.
25 Winnipeg St
Vancouver, ON N0M 1L0

Phoenix * Capitol * Camco
CapProducts

Certified Material Test Report

Commanding a Higher Standard_{sm}

Printed: 8/20/2019

Customer

EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

Certified: 12/18/2018

P.O. 2610174-00

Tag 3050060

Heat No 174321

Heat Code 87AH

Phoenix Order # 1481945

Material ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

Part Number

15111512CSA

Description

1-1/2X6 XHSM BK STL NIPL A333 GR6 CSA

Chemical Properties

C	Mn	P	S	Si	Cu	Ni	Cr
0.1300	1.3200	0.0090	0.0050	0.3100	0.0390	0.0200	0.0600

C Eq. Long
0.3687

Mo	V	Co	Al	Cb	N	Pb	Sn	Ta	Ti
0.0100	0.0040			0.0180					0.0020

Additional Chemical Properties

B				
0.00030				

Cr + Cu + Ni
0.1190

Mechanical Properties

Tensile (PSI)	Yield (PSI)	Elong. % in 2 in. or 4D	R of A	HBW	HBW2
72,374	55,985	37.0%		150	0

Charpy Minimum Impact - ft/lbs

Test 1	Test 2	Test 3	Average	Test Temp.
48	41	49	46.00	-54

* Bend test passed.

We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.

We further certify that this material was inspected using independent inspectors conforming to the requirements of EN 10204

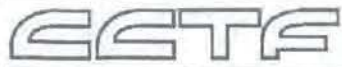
3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

Comments:

Flattening test passed. Ultrasonic test passed.

Charpy V Impact Tested at -54° C. Specimen size - 10 x 3.33 mm

Hot finished, Normalized



CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 9/9/2019

Mill Test Reports

Invoice: 1600715-00

PO: 2610192

Customer: 27403-261

A.B.F. MINES/2985080 CANA 261
1310 AVE DAVY

ROUYN NORANDA, QC J9Y 0A8

Line	Heat#	Product	Description
1	b03459	7585585	6 150 RF BLIND FLG A350LF2

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)



ST&H CORPORATION
 OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
 PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
 Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
 E-mail : qm@stnhcorp.com



Certificate No. MJH0290-01/05

Date : FEB. 14, 2019

Customer CCTF CORPORATION

Contract No. 4039095-00

Spec. For Material ASTM A105N-18, ASME SA105N-17, ASTM A350 LF2 CL1-17, NACE MR0175/ISO 15156-2:2015, NACE MR0103/ISO 17495-1:2016

Heat Treatment 930°C NORMALIZED & A.C

Dimensional inspection ASME B16.5 - 2017

Certified to ISO9001 / ISO14001:2015, PED2014/68/EC by LROA

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test				Hardness Test (HB)	Charpy Impact Test (10X10mm Specimen Size)			
			D mm	GL mm	Y.S MPa	T.S MPa	E.L %	R.A %		Indiv. 16J	Ave. 20J	Notch V	Temp. -46°C
					Max	655							
Min	250	485	22.0	30.0									

7585585	150LBS BL RF 6"	20	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7585860	150LBS BL RF 8"	10	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7580218	150LBS SO RF 8"	20	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7580202	150LBS SO RF 14"	2	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7586502	150LBS TH RF 6"	5	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7586824	150LBS WN RF STD 4"	50	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7586832	150LBS WN RF STD 6"	30	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7586891	150LBS WN RF STD 8"	20	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7583949	300LBS WN RF STD 8"	10	12.5	50.0	330	520	34	76	150	156	80	75	86	80
7585321	150LBS WN RF STD 10"	20	12.5	50.0	330	520	34	76	150	156	80	75	86	80

Heat No./ Batch No.	Max Min	Chemical Composition (%)											NDE		
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	CE		
													UT	MT	PT
		0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020			
			0.150	0.600											

B03459	H	0.163	0.226	1.230	0.012	0.002	0.057	0.138	0.017	0.147	0.001	0.006	0.412			
	P	0.162	0.224	1.240	0.011	0.002	0.054	0.136	0.014	0.138	0.001	0.001	0.411			

BLANK

REMARK * H : Heat Analysis P : Product Analysis

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

ST-801-14-02

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM

ST&H CORPORATION





NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Item No: B3080030F*LCCW27B*****GA
Size/Type: 8" / Swing Check
Quantity: 1
Country of Origin: China
FigNo: 33P--LCC4/2-NC

Material Test Report

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

06/17/19

Cert No: 1087586

Customer: EMCO
Customer Number: 32043
Customer PO: 2610091-00
Cameron SO: QRC SO# 1007020
Project Name:
Valve Serial No:
Description: 300# RF A352-LCC (TRIM 12) BC SWING CHECK
NACE
Customer Tag No:

MLTS_6056-18734
Cert# 1087586

Inspection			
Dimension: Passed			
Visual: Passed			
Valve Materials meet the requirements for NACE MR0103 and NACE MR0175			
Standard: API 598 / ASME B16.34			

Part: Body Type 3.1													
Heat Treatment: QUENCHING+TEMPERING													
Material Code: A352 LCC													
Notes:													
Spec:	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V			
Chem Comp (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Min:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03			
Max:	0.180	0.040	0.018	1.040	0.002	0.014	0.021	0.010	0.520	0.004			

Part: Bonnet/Cap Type 3.1													
Heat Treatment: QUENCHING+TEMPERING													
Material Code: A350 LF2													
Notes:													
Spec:	C	Cr	Cu	Mn	Mo	Nb	Ni	P	S	Si	V		
Chem Comp (%)	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.001	0.00	0.15	0.00		
Min:	0.30	0.30	0.40	1.35	0.12	0.02	0.40	0.035	0.04	0.30	0.08		
Max:	0.220	0.200	0.210	0.900	0.070	0.000	0.220	0.010	0.013	0.210	0.010		

Heat No: N9183W

Heat No: N9183W										
Physical Props										
Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)	Impact Tests @-50 deg F	lb/ftc				
70.0	39.9	22.0	35.0	100.0		# 1: 540				
95.0	999.9	100.0	100.0	225.0		# 2: 38				
79.0	54.4	32.0	66.0	169.0		# 3: 20				
						Avg: 59				

Heat No: LF2-B025

Heat No: LF2-B025										
Physical Props										
Tensile KSI	Yield KSI	Elong %	Reduct %	Hard(HB)	Impact Tests @-50 deg F	lb/ftc				
70.0	36.0	22.0	30.0	1.0		# 1: 56				
95.0	999.9	100.0	100.0	197.0		# 2: 25				
81.2	38.4	35.0	50.0	170.0		# 3: 47				
						Avg: 36				

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: | Gasket: Graphite Spiral Wound (316)
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature
06/17/19



NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Item No: B3080030P*LCCW27B*****GA
Size/Type: 8" / Swing Check
Quantity: 1
Country of Origin: China
FigNo: 33F--LCC4/2-NC

Material Test Report

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

06/17/19

Cert No: 1087587

Customer: EMCO
Customer Number: 32043
Customer PO: 2610091-00
Cameron SO: QRC SO# 1007020
Project Name:
Valve Serial No:
Description: 300# RF A352-LCC (TRIM 12) BC SWING CHECK
NACE
Customer Tag No:

MLTS_6056-18734
Cert# 1087587

Pressure Test Result

Item	Test Pressure (PSI)	Duration (sec)	Test Result
Shell	7.757	120	Passed
Backseat	-	-	-
Seat Hydro	5.688	120	Passed
Seat Air	-	-	-

Standard: API 598 / ASME B16.34

Inspection

Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Part: Body Type 3.1

Heat Treatment: QUENCHING+TEMPERING

Material Code: A352 LCC

Notes:

Spec:	C	Cr	Cu	Mn	Mo	Ni	P	S	SI	V
Chem Comp (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Max:	0.190	0.025	0.015	1.090	0.004	0.014	0.023	0.009	0.550	0.005

Part: Bonnet/Cap Type 3.1

Heat Treatment: QUENCHING+TEMPERING

Material Code: A350 LF2

Notes:

Spec:	C	Cr	Cu	Mn	Mo	Nb	Ni	P	S	SI	V
Chem Comp (%)	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.001	0.00	0.15	0.00
Min:	0.30	0.30	0.40	1.35	0.12	0.02	0.40	0.035	0.04	0.30	0.08
Max:	0.220	0.200	0.210	0.900	0.070	0.000	0.220	0.010	0.013	0.210	0.010

Heat No: N9158W

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard (HB)	Impact Tests @50 deg F	lb/ftc # 1: 30 # 2: 20 # 3: 23 Avg: 25
70.0	39.9	22.0	35.0	100.0	100.0		
85.6	59.5	100.0	100.0	225.0	180.0		

Heat No: LF2-B025

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard (HB)	Impact Tests @50 deg F	lb/ftc # 1: 36 # 2: 45 # 3: 47 Avg: 36
70.0	36.0	22.0	30.0	1.0	1.0		
95.0	999.9	100.0	100.0	197.0	170.0		

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: 1 Gasket Graphite Spiral Wound (316)
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature

06/17/19



HEAT / SERIAL NUMBER RECORD

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

(FORM 4.15.4A)

COMPANY;

EMCO / Equipment - KN for ABE mines

PAGE;

1 OF 1

BRANCH;

Rouyn - Noranda, Q.C.

MAS SALES REGISTER;

1436324

ATTN;

Richard Knight

DATE

June 10 / 19

PO#

26/0090 - 00

ITEM	QTY	SIZE	VALVE NO.	BODY	BONNET#/CAP#	ACTUATOR#	SOLENOID#	INDICATOR#
1	3	8"	Beric	HCNNC	HCNNC	DF-01-105-180206-12		
2			103-RF-AH12-H-N	LDRAC	LDRAC	DF-01-306-180901-12		
3				LDRAC	LDRAC	DF-01-305-180901-12		
7								
8	1	8"	Beric	LDRAC	LDRAC	DF-01-250-180901-12		
9			101-RF-AH12-H-N					
10								
11								
12	2	6"	Beric	GDN71	GDN71	DF-01-216-190116-12		
13			101-RF-AH12-H-N	LDRAC	LDRAC	DF-01-247-180901-12		
14								
15								
16	1	6"	Beric	GDN71	GDN71	DF-01-228-190116-12		
17			301-RF-FH12-X-N					
18								
19								
20								
21								
22								
23								
24								
25								

FAX STAMP



SERIAL NO : DF-01-306-180901-12

Witness Inspector



(CHEMICAL, PHYSICAL & HYDROSTATIC)

Houston, TX 77087

Houston, TX 77087

DATE: FEB. 6. 2018

ARTICLE : 8 GATE VALVE RF 300 TRIM 12

Class Rating:	300
---------------	-----

O'tv 1 Pcs

FIGURE NO : 103-08-RF-AH12-H-N

DIMENSION INSPECTION										(mm)		PRESSURE TEST (ASME B16.34 & API 598)			VISUAL TEST
INSPECTION	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(AIR) (PSIG)	BACK SEAT (PSIG)	VISUAL				
STANDARD	419±1.6	381	330	270	42	12	25	1125	80	825	MSS-SP-55				
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD				

※ W.T : Within Tolerance

[illegible]

IN ACCORDANCE WITH EN 10204.3.1

HEAT TREATMENT: LCC QUENCHED; 930°C X 3HR(W.C)+TEMPERED 700°C X 3HR(A.C)

TO NACE MR0103

Valve design and construction is in accordance with API 600. ASME B16.34

Products supplied are in compliance with the requirements of the purchase order

Jane

ALEX



(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641



DATE : SEP.1.2018
ARTICLE : 6 GATE VALVE RF 150 TRIM 12
FIGURE NO. : 101-06-RF-AH12-H-N
SERIAL NO. : DF-01-247-180901-12

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

Manager, Q.A. Department

Witness Inspector



BERIC

(CHEMICAL, PHYSICAL & HYDROSTATIC)

DATE: SEP. 1. 2018

ARTICLE: 8 GATE VALVE RF 150 TRIM 12

FIGURE NO.: 101-08-RF-AH12-H-N

SERIAL NO.: DF-01-250-180901-12

150

Class Rating:

INSPECTION	DIMENSION INSPECTION					No. of Bolt Hole	Bolt Hole Diameter	PRESSURE TEST (ASME B16.34 & API 698)			VISUAL TEST
	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness			SHELL (PSIG)	SEAT (Air) (PSIG)	BACK SEAT (PSIG)	
STANDARD	292±1.6	343	298.5	270	29	8	22	450	80	315	MSS-SP-55
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	GOOD	GOOD

[illegible]

TO NACE MR0103

Manager, Q.A. Department

Witness Inspector

Products supplied are in compliance with the requirements of the purchase order

BERIC

MATERIAL TEST REPORT

Beric-Davis Companies International, Ltd.

6059 South Loop East

Houston, TX 77087

Phone: 713 673-2073

Fax: 713 673-4641

(CHEMICAL, PHYSICAL & HYDROSTATIC)

BERIC

DATE: JAN.16.2019

ARTICLE: 6 CHECK VALVE RF 150 TRIM 12

FIGURE NO.: 301-06-RF-FH12-X-N

SERIAL NO.: DF-01-228-190116-12

TAG NO.: 301-06-RF-FH12-X-N

Qty: 1

Pcs

150

Class Rating:

PARTS NAME	ASTM	Body (BD)	Bonnet (BN)	Wedge/Disc (WD/DS)	Body Seat Ring	Pin
MATERIAL		A352 LCC	A352 LCC	A350 LF2+316	A350 LF2+HF	A182 F316

INSPECTION	DIMENSION INSPECTION						PRESSURE TEST (ASME B16.34 & API 598)				VISUAL TEST
	Face to Face (End to End)	Flange Diameter	Bolt Circle	Dia. Of Raised Face	Flange Thickness	No. of Bolt Hole	Bolt Hole Diameter	SHELL (PSIG)	SEAT(Hydro) (PSIG)	BACK SEAT (PSIG)	VISUAL
STANDARD	356±1.6	279	241.5	216	26	8	22	450	320	N/A	MSS-SP-55
RESULT	※ W.T	W.T	W.T	W.T	W.T	W.T	W.T	GOOD	GOOD	N/A	GOOD

※ W.T : Within Tolerance

SERIAL NO. BATCH	PARTS	HEAT NUMBER	CHEMICAL COMPOSITION (%) (ASTM STD.)										TENSION TEST (MIN) (ASTM)				HARDNESS	CHARPY
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	T.S (MPa)	Y.P (MPa)	EL %	R.A %		
STANDARD	A352 LCC	Min.	0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.300	0.030	485	275	22.0	35.0		Min≥16J
		Max.	0.15	0.80	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	655	250	22.0	30.0	237	Avg≥20J
		Max.	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	655	250	22.0	30.0		Min≥16J
DF-01-228-190116-12	BODY																	Avg≥20J
		GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002	534	348	32.0	55.0	151	33-37-40
		GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002	534	348	32.0	55.0	151	33-37-40
	BONNET																	
		GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002	534	348	32.0	55.0	151	33-37-40
		GDN71	0.200	0.480	1.140	0.027	0.014	0.015	0.103	0.028	0.028	0.002	534	348	32.0	55.0	151	33-37-40
	WEDGE/DISC																	
		1606106	0.230	0.240	1.210	0.015	0.001	0.010	0.020	0.002	0.010	0.001	535	325	34.0	69.0	165	27-28-29

BLANK

REMARKS:

IN ACCORDANCE WITH EN 10204.3.1
 HEAT TREATMENT: LCC QUENCHED; 930°C X 3HR(W.C.)+TEMPERED 700°C X 3HR(A.C)
 TO NACE MR0103

Manager, Q.A Department

Witness Inspector

Jane

ALEX

Valve design and construction is in accordance with API 594, ASME B16.34
 Products supplied are in compliance with the requirements of the purchase order



HEAT / SERIAL NUMBER RECORD

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

(FORM 4.15.4A)

COMPANY;

EMCO / Equipment - KN (for ABE mines)

PAGE;

1 OF 1

BRANCH;

Rouyn - Noranda, Q.C.

MAS SALES REGISTER;

1436324

ATTN;

Richard Knight

DATE

June 10 / 19

PO#

26/0090 - 00

4						
5	1	8" Powell 3003FK	C5CL54	C5CL54	7F19226	
6		86XXX				
7						

19						
20						
21						
22						
23						
24						
25						

FAX STAMP



2503 Spring Grove Ave.
Cincinnati, OH 45214 U.S.A
Tel: 513-852-2000
info@powellvalves.com

VALVE CERTIFICATION

CERTIFIED MATERIAL TEST REPORT/CERTIFICATE OF CONFORMANCE
CERTIFIED TO ISO 9001 QUALITY STANDARDS

CERTIFICATE
NUMBER: **7F19226**
DATE: **7/15/15**

CUSTOMER: M. A. STEWART & SONS LTD.
CUSTOMER PO #: 1001802
POWELL ORDER: 904159
ITEM NUMBER: 8.0 3003FK8GXXX

PRESSURE TEST
Standard: API-598

SHELL 1125 PASS
SEAT (AIR) 80 PASS
SEAT (HYDRO) N/A N/A
BACKSEAT 825 PASS
(Values are PSI minimums)

INSPECTION

Dimensional: PASS
Operational: PASS
Visual: PASS

We certify that the valve meets the requirements of one or more of the following industry standards:

API 598 Valve Inspection and Testing
API 600 Bolted Bonnet Cast Steel Valves
API 602 Forged Valves
API 603 Bolted Bonnet Cast Stainless Steel Valves
API 622/624 Fugitive Emissions
ASME B16.10 End to End Dimensions
ASME B16.34 Valves
MSS SP25 Valve Markings
MSS SP55 Casting Surface Inspection

COMPONENT DATA (Chemical Properties)

HEAT NO: C5CL54 MATERIAL: A352LCC												PHYSICAL PROPERTIES		
BODY												Tensile (KSI)	Elong%	HB
C	SI	MN	P	S	NI	CR	MO	CU	V			76.4	30.0	152
.19	.432	.86	.019	.011	.214	.047	.015	.031	.001			53.9		

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

HEAT NO: C5CL54 MATERIAL: A352LCC												PHYSICAL PROPERTIES		
BONNET/CAP												Tensile (KSI)	Elong%	HB
C	SI	MN	P	S	NI	CR	MO	CU	V			76.4	30.0	152
.19	.432	.86	.019	.011	.214	.047	.015	.031	.001			53.9		

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

HEAT NO: C5C680 MATERIAL: A352LCC												PHYSICAL PROPERTIES		
DISC												Tensile (KSI)	Elong%	HB
C	SI	MN	P	S	NI	CR	MO	CU	V			91.6	31.0	159
.197	.446	.915	.022	.009	.274	.058	.007	.026	.006			66.1		

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

CHARPY IMPACT RESULT

BODY	BONNET/CAP	DISC	MIN. OF 1 SPECIMEN (FT-LB)
28.7	28.7	34.6	
28.7	28.7	37.6	AVG OF 3 SPEC., MIN. OF 2 SPEC. (FT-LAB)
-50	-50	-50	TEST TEMPERATURE (DEGREES F)

SHELL TEST : 10 MIN MINIMUM DURATION

WE CERTIFY THAT THE ABOVE PRODUCT(S) CONFORM TO THE APPLICABLE REQUIREMENTS OF THE PURCHASE ORDER.
THESE RESULTS ARE IN ACCORDANCE WITH EN 10204 TYPE 3.1. <http://www.powellvalves.com>

CERTIFIED TO ISO 9001 QUALITY STANDARDS

Willard E. Painter Jr.

Quality Manager

THE WM. POWELL COMPANY

Form F.10.6 2/23/11

WE CERTIFY THAT THE ABOVE PRODUCT(S) CONFORM TO THE APPLICABLE REQUIREMENTS OF THE PURCHASE ORDER.
THESE RESULTS ARE IN ACCORDANCE WITH EN 10204 TYPE 3.1. <http://www.powellvalves.com>

CERTIFIED TO ISO 9001 QUALITY STANDARDS



Apollo Valves

Division of Conbraco Industries
Conway, SC 29526
FAX: 843/347-1773
PHONE: 843/347-4666



MLTS_6056-18735
Cert# BV APOLLO

MATERIAL TEST REPORT

We certify that the below listed components were manufactured, tested, and inspected in accordance with the requirements of the procurement documents as stated.

Model Number: 831
Size: 2"
Quantity: 8
Material Specification: ASTM A352-18 LCC(LCC)

Customer Name: Masdom LTD
Customer Order Number: 19503
Valve Part Number: 83L-248-24
User Tag Number: B36652

Heat Code	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Cb	TENSILE		YIELD PSI	%ELO 2"	%RA	HARDNESS S (RB unless noted)
												PSI					
AX	0.1965	1.3639	0.0109	0.0128	0.2577	0.1313	0.0341	0.0134	0.0443	0.0027		81002		54270	25	74	80
BW	0.1901	1.3903	0.0123	0.0138	0.3772	0.064	0.0364	0.0047	0.0433	0.0025		79634		53506	30	65	77
HU	0.197	1.34	0.014	0.008	0.334	0.061	0.038	0.012	0.115	0.003		83872		54730	31	67	81
KW	0.2085	1.314	0.0139	0.0115	0.2952	0.0273	0.0216	0.0052	0.0327	0.0023	0	77629		52937	27	70	79

Charpy Impact Test: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.

Test Temperature: -50F	Heat Code	Average of 3 Test			Test 1		Test 2		Test 3	
		AX	BW	HU	36.52	32.95	29.95	20.4	46.67	21.2
					20.5333	20	20.8	20.8	22.2	22.2
					21.4667	23.2	20.8	20.8	20.4	20.4
					22.8667	22.8	23.6	23.6	22.2	22.2

TESTING PROCEDURE: All Apollo Valves are 100% tested in accordance with their standard of construction. Valves designed to the requirements of ASME B16.34 are tested to meet or exceed the requirements of

We certify that the above listed components meet the requirements of the procurement documents as stated.
This material certificate complies with EN 10204-2004 Type 3.1 (formerly Type F3.1.B).

The above listed information is certified to be true and accurate to the best of my knowledge and belief.

Date: 08/01/19

Signed:



Steve Causey
Quality Assurance Manager



Apollo Valves

Division of Conbraco Industries

Conway, SC 29526

FAX: 843/347-1773

PHONE: 843/347-4666



MATERIAL TEST REPORT

We certify that the below listed components were manufactured, tested, and inspected in accordance with the requirements of the procurement documents as stated.

Model Number: 831

Size: 1"

Quantity: 8

Material Specification: ASTM A352-18 LCC(LCC)

Customer Name: Masdom LTD
Customer Order Number: 19503
Valve Part Number: 83L-245-24
User Tag Number: B36652

Heat Code	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	V	Cb	TENSILE		YIELD	%ELO	%RA	HARDNES
												PSI	PSI				
AX	0.1965	1.3639	0.0109	0.0128	0.2577	0.1313	0.0341	0.0134	0.0443	0.0027		81002		54270	25	74	80
KW	0.2085	1.314	0.0139	0.0115	0.2952	0.0273	0.0216	0.0052	0.0327	0.0023	0	77629		52937	27	70	79
LW	0.1848	1.3624	0.0111	0.002	0.2961	0.1055	0.0326	0.0114	0.0266	0.0021		77277		50671	27.2	71.7	79

Charpy Impact Test: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.	
Test Temperature: -50F	Heat Code
	AX
	KW
	LW
Average of 3 Test	Test 1
36.52	32.95
22.8667	22.8
25.6	20
Test 2	Test 3
29.95	46.67
23.6	22.2
21.1	35.7

Charpy Impact Test: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.

Test Temperature: -50F

Heat Code

AX

KW

LW

Average of 3 Test

36.52

22.8667

25.6

Test 1

32.95

22.8

20

Test 2

29.95

23.6

21.1

Test 3

46.67

22.2

35.7

TESTING PROCEDURE: All Apollo Valves are 100% tested in accordance with their standard of construction. Valves designed to the requirements of ASME B16.34 are tested to meet or exceed the requirements of API 598, ASME B16.34, MSS SP-61 and MSS SP-72. Valves designed to the requirements of MSS SP-110, are tested to meet or exceed the requirements of MSS SP-110. Specification sheets are available at www.apollovalves.com.

We certify that the above listed components meet the requirements of the procurement documents as stated.

This material certificate complies with EN 10204-2004 Type 3.1 (formerly Type F3.1.B).

Date:

08/01/19

Signed:

The above listed information is certified to be true and accurate to the best of my knowledge and belief.



Steve Causey
Quality Assurance Manager

Certificate of Compliance (QC-02)**FARRIS ENGINEERING
DIV. OF CURTISS-WRIGHT FCC
10195 BRECKSVILLE RD
BRECKSVILLE OH 44141
UNITED STATES**

Date: 07/10/2019

Sales Order No.: 1SL047059

Customer:

Customer Order No.: 00026111

CRN No.: CSA-0G11969.5CL

**MLTS_6056-18735
Cert# PRV FARRIS**

Line	Tag Number	Model Number	Serial Number
1		27EA34-M20	942333-1-KE
1		27EA34-M20	942333-2-KE
1		27EA34-M20	942333-3-KE
1		27EA34-M20	942333-4-KE

We hereby certify that the valve(s) indicated above have been designed, manufactured and tested in accordance with ASME Section VIII, Division 1 by Curtiss-Wright Flow Control Corp.- Farris Engineering in accordance with the company's Quality Control Program. The Brecksville Facility's Quality Control Program is registered to ISO 9001:2015, Certificate Identity No. 10076249. We hereby certify that they were produced in conformance with the contract and Farris Worldwide Quality Manual Revision N, dated 13-Sep-18.

The representative signing the document states that the above information is correct and true.

Anthony Korinek



Certified Individual

Date:07/10/2019

Material Test Reports (QC-04)

FARRIS ENGINEERING
DIV. OF CURTISS-WRIGHT FCC
10195 BRECKSVILLE RD
BRECKSVILLE OH 44141
UNITED STATES

Sales Order No.: 1SL047059 Line No.: 1 Qty: 4
Customer:
Customer Order No.: 00026111
Model No.: 27EA34-M20
Serial No.: 942333-1-KE, 942333-2-KE, 942333-3-KE, 942333-4-KE
Tag No.:

Serial No.	Component	Item Number	Lot Number	Material Description
942333-1-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-1-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-1-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB
942333-2-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-2-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-2-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB
942333-3-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-3-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-3-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB
942333-4-KE	BODY 1 X 1/2 MNPT 2700	325737X1-010	872-0118	ASME SA-479 316SS
942333-4-KE	DISC 2700	325742-010	900758	ASME SA-479 316SS
942333-4-KE	BONNET 2700	326076X2-023	640G	ASME SA-216 WCB

Note: Traceability of individual parts to their NDE and special process reports is maintained through Lot Codes created by serializing the lot number shown on the material manufacturer's Material Test Report.

福建省明溪县长虹精密铸钢有限公司
Fujian Mingxi Changhong Precision
Steel Casting Co., Ltd.
Address: Pingpu industrial Park Mingxi
county, Fujian, China. Tel: 0598-2866208, Fax: 0598-
2867736

材料质量证明书

Material Inspection

EN 10204 3.1



CHHJZ

Customer: Curtiss-wright Flow Control
Farris Engineering

Address: No. 3 Quanhui Road, Wuqing Development
Area, Tianjin China. Tel: 86-22-82166100, Fax: 86-22-
82166160

证书编号 Cert. No.: 201901085

No.	产品名称 Product	零件号 Part No.	执行标准 Product Std.	材质 Material	数量 Quantity	炉号 Heat No.	订单号 Order No.
1	Bonnet	326076X2-023	ASME SA216-2015	WCB	12	637G	6PR002478
2	Bonnet	326076X2-023	ASME SA216-2015	WCB	10	638G	6PR002478
3	Bonnet	326076X2-023	ASME SA216-2015	WCB	10	639G	6PR002478
4	Bonnet	326076X2-023	ASME SA216-2015	WCB	25	640G	6PR002478
5	Bonnet	326076X2-023	ASME SA216-2015	WCB	22	641G	6PR002478
6	Bonnet	326076X2-023	ASME SA216-2015	WCB	17	642G	6PR002478/2480
7	Bonnet	326076X2-023	ASME SA216-2015	WCB	20	752G	6PR002480

化学成分 Chemical Compositions

Spec.	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	N
标准值	≤0.3	≤0.6	≤1.0	≤0.04	≤0.045	≤0.5	≤0.5	≤0.2	≤0.3	≤0.03	
637G	0.222	0.197	0.772	0.017	0.007	0.071	0.024	0.004	0.011	0.001	
638G	0.213	0.210	0.703	0.020	0.008	0.071	0.017	0.002	0.010	0.002	
639G	0.215	0.212	0.703	0.020	0.008	0.071	0.017	0.002	0.010	0.001	
640G	0.261	0.204	0.672	0.022	0.008	0.099	0.026	0.003	0.011	0.002	
641G	0.212	0.230	0.675	0.018	0.006	0.096	0.030	0.003	0.011	0.002	
642G	0.212	0.229	0.677	0.019	0.006	0.096	0.029	0.003	0.011	0.002	
752G	0.220	0.218	0.689	0.021	0.006	0.057	0.030	0.004	0.011	0.002	

	抗拉强度 Tensile	屈服强度 Yield	延伸率 Elongation	断面收缩率 Reduction	冲击功 Charpy Impact Test (J)	硬度 Hardness
Spec.	Strength (MPa)	Strength (MPa)	%	%	Temp. °C	HB
标准值	485-655	≥250	≥22	≥35	-29	≤237
637G	550	360	37	60		159
638G	553	350	36	62		158
639G	555	363	36	60		157
640G	546	357	38	59		156
641G	549	352	37	61		156
642G	549	348	36	60		153
752G	537	361	35	63		158

热处理 Heat Treatment

序号 No.	热处理炉号 Heat Lot.	浇注炉号 Heat No.	入炉时间 Charging time	入炉温度 Charging Temp.	到温时间 Start Time	到温温度 Hold Temp.	出炉时间 Finished Time	出炉温度 Finish Temp.	保温时间 H Soak time (H)	冷却方式 Cooling
1	181030-1	637G	7:25	413	9:20	905	11:20	907	2:00	Air 空气
2	181030-1	638G	7:25	413	9:20	905	11:20	907	2:00	Air 空气
3	181030-1	639G	7:25	413	9:20	905	11:20	907	2:00	Air 空气
4	181108-1	640G	7:16	520	9:00	902	11:00	906	2:00	Air 空气
5	181106-1	641G	8:00	368	10:00	901	12:00	905	2:00	Air 空气
6	181106-1	642G	8:00	368	10:00	901	12:00	905	2:00	Air 空气
7	180830-1	752G	7:25	425	9:20	908	11:20	910	2:00	Air 空气

其他信息 Other Informations

序号 No.	外观尺寸检查 Visual & Dimension	无损探伤 NDT MT/PT UT RT	交货状态 Delivery Condition
1	OK	OK	正火状态 Normalized

- We hereby certify that the materials described herein have been manufactured, inspected and tested in accordance with the customer's specification(s), and that they satisfy the requirements.
- All of casting visual inspection according to MSS-SP-55.
- The material supplied meets the requirements of the current version of NACE MR0103 and MR0175/ISO 15156.

APPROVE

编制 Prepared By:
谢海荣 2019-1-25

审批 Approved By: 2019-01-30
易娟 2019-1-25 FARRIS ENGINEERING
QUALITY CONTROL
BY QC 03

Sidenor

MILL TEST CERTIFICATE

Basauri Plant

ISO 9001; ISO-TS 16949; ISO 14001 Y OHSAS 18001



Product Made in Spain

CUSTOMER:MAGELLAN CORPORATION	WORKS REFERENCE:1910594
REFERENCE:211222	SALES ORDER:299090-2
PRODUCT NR:	HEAT NUMBER:900758
	ROLLED:04.01.2017
	MASTER REFERENCE:215719

REQUIRED PRODUCT			
AISI316/316L ROUND BARS TURNED SOLUTION ANNEALED 0.8750" SPECIFICATION'S TOLERANCE 12'-12'2" NORMAL			
EXPEDITION	DELIVERY:0080571873	WEIGHT (KG):4.614	BUNDLES:6
			UNITS:400

MADE ACCORDING TO	
AISI STAINLESS STEELS - 01.03.1999; ASME SA182-SA182M SECTION II, PART A -2015	
ASME SA193-SA193M/SECTION II, PART A -2015; ASME SA320-SA320M/SECTION II, PART A 20132013	
ASME SA479-SA479M SECTION II, PART A -2015; ASTM A182-A182M 2015 01.06.2015	
ASTM A193-A193M 2015 01.06.2015; ASTM A276/A276M 15 01.01.2015; ASTM A314 2015 15.07.2015	
ASTM A320-A320M 2015 01.05.2015; ASTM A370 2014 15.05.2014; ASTM A473 13 01.11.2013	
ASTM A479-A479M 2015 15.07.2015; ASTM A484-A484M 15 01.03.2015; ASTM A751 2014 01.03.2014	
EN 10204 :2004 OCT. 2004 3.1; MAGELLAN MIC 1751 AMD12.3 21.12.2016	
MAGELLAN MIC 1751 SUPP AISI316/AISI316L - 24.06.2015; NACE MR0103-2005 - 2005	
NACE MR0175/ISO 15156-1 3* EDICION 23.11.2015; NACE MR0175/ISO 15156-3 3* EDICION 23.11.2015	
SAE AMS 5648 L . .09.2012; SAE AMS 5653 H . .11.2012; SAE AMS-QQ-S-763 D 03.2015	

CHEMICAL ANALYSIS OF HEAT									U:% HEAT NUMBER:900758		
	C	Mn	Si	P	S	Cr	Ni	Mo	V	W	Co
Min.		1,250			0,020	16,500	10,000	2,000			
Max.	0,030	2,000	0,750	0,040	0,030	18,000	13,000	2,500	0,100	0,100	0,3000
cer.	0,015	1,490	0,488	0,026	0,025	16,700	10,120	2,030	0,060	0,082	0,2280
	Cu	Al	Ti	Nb	N						
Min.											
Max.	0,750	0,100	0,1000	0,1000	0,1000						
cer.	0,337	0,006	0,0050	0,0160	0,0730						

INCLUSIONS (MICROINCLUSIONS)	
Standard(ASTM E45 20132013); Type/method(A); A(t):2,5; A(h):1; B(t):0,5; B(h):0,5; C(t):1,5	
C(h):1; D(t):0,5; D(h):0,5	

MECHANICAL PROPERTIES AS SUPPLIED (TEST)	
Sample:Supply section (bar prolongation); Specimen Test location:Nucleus	
Standard(1) (ASTM A370 2014 15.05.2014); Standard(2) (ASTM E8/E8M 2015A 15.05.2015)	
Tensile direction:Longitudinal; Tensile test Temp.(Room temperature):Room temperature	
Ts(83.000/120.000PSI):88.605PSI; Ys(0,2% >=30.000PSI):0,2% 44.089PSI; El.(2" >=40%):2" 57,2%	
Z(>=50%):74,9%; Standard(ASTM E23 07-AE1 2007)	
Notch impact direction:Longitudinal; Notch Impact sample type(CHARPY-V):CHARPY-V	
Notch Impact Temp.(68°F):68°F; K(1):203Ft.Lb; K(2):206Ft.Lb; K(3):205Ft.Lb; K (average):204,67	
K (single)(>=75Ft.Lb):203Ft.Lb; Hardness Standard(1) (ASTM A370 2014 15.05.2014)	
Hardness Standard(2) (ASTM E10 2015 01.05.2015)	
Surface hardness(of the bar 140/223HB):of the bar 208HB	
Hardness at(at 1/2 radius of the bar 140/223HB):at 1/2 radius of the bar 162HB	

ADDITIONAL TESTS	
Standard(ASTM A262 - 01.07.2014); Type / Method(Practice E):Practice E	
Standard(ASTM E112 2013 01.10.2013); Grain size:Austenitic 6; Standard(ASTM E381 2001 R2006)	
macroetching(1):S 1; macroetching(2):R 1; macroetching(3):C 1; Intercrystalline Corrosion:0.K.	

APPROVED
PARRIS ENGINEERING - QUALITY CONTROL

NOV 14 2018

BY N° 1005557

JH 7722

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER'S SPECIFICATION

APPROVED BY:ALBERTO CUBERO ZABALA

SIGN:

DATE:21.02.2017

Page 1 of 2

REF.:1002484420000

Analyst of Quality certificates



MILL TEST CERTIFICATE

Basauri Plant

ISO 9001; ISO-TS 16949; ISO 14001 Y OHSAS 18001



Product Made in Spain

CUSTOMER: MAGELLAN CORPORATION	WORKS REFERENCE: 1910594
REFERENCE: 211222	SALES ORDER: 299090-2
PRODUCT NR:	HEAT NUMBER: 900758
MASTER REFERENCE: 215719	ROLLED: 04.01.2017

NON DESTRUCTIVE TESTS

U.T. standard(1) (ASTM A388-A388M 2015 15.07.2015); U.T. type/method(1) (FBH)
 U.T. standard(2) (API SPEC 6A 20th ED.+ER1&2+AD12.3 . . 03.2013); U.T. type/method(2) (PSL3)
 U.T. standard(3) (ISO 10423 4th ED.2009 15.12.2009); U.T. type/method(3) (PSL3)
 ULTRASONIC INSPECTION 100% : O.K. (1) $\leq 1,5$ mm. (according to Suplem.1 ASTM A388)
 ULTRASONIC INSPECTION 100% : O.K. (2) according to: API 6A/ISO-10423 "PSL3"
 ULTRASONIC INSPECTION 100% : O.K. (3); CRACKS CONTROL 100% : O.K.

ADDITIONAL INFORMATION

Reduction ratio: 49,7; "Macrostructure: Satisfactory"
 Ultrasonic Inspection Results ("ASTM A388: Satisfactory"); DFARS Compliant
 HEAT MELTED AT OUTOKUMPU (UK) AND PROCESSED AT SIDENOR (SPAIN); RoHS Compliant
 Material Cold Finished, Peeled and Reeled; CONTINUOUS CASTING 150 X 150 mm.
 SOLUTION ANNEALED at 1922°F - IN AIR; .; .

Material manufactured through the Electric Arc Furnace and AOD.

Steel not exposed to Mercury, or to any other metal alloy that is liquid, at ambient temperatures during processing or while in Sidenor's possession.

Steel is free from Uranium or any other harmful radioactive contamination.

Steel products were not repaired by welding.

100% anti mix test: performed by spectrometry.

APPROVED
 FARRIS ENGINEERING - QUALITY CONTROL

NOV 14 2018

BY 1005557

JH7722

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER'S SPECIFICATIONS

APPROVED BY: ALBERTO CUBERO ZABALA

SIGN:

DATE: 21.02.2017

Page 2 of 2

REF.: 100243420000

Analyst of Quality Certificates





M.A. Stewart & Sons Ltd.

PICK TICKET

MAS Edmonton Branch
1315473

PICK DATE	PICK TICKET	ORDER NUMBER
8/20/2019	1315473	1452662

SHIP TO NO	CUSTOMER NO	PAGE
103449	103449	1 of 1

PICKED BY:

CHECKED BY:

MTR'S WHEN APPLICABLE

ABF MINES CANADA INC. (2985080)
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8
CANADA

EMCO LTD WESTLUND (261) ROUYN-NORANDA
PO BOX 5300 STN A
WESTLUND
LONDON, ON N6A 4N7
CANADA

Ordered By: Chantal Gregoire

EX EDM
MTL

ORDER DATE	CUSTOMER PO / ORDER NUMBER	CARRIER			TAKER	
8/20/2019	DO2610173-00	Purolator			ANDREN	
Delivery / Quick Notes		QTY	Item		Box ID	Skid ID

Delivery Instructions: EX: EDMONTON / PUROLATOR # 7334590

18 FF

4

014-53208 MAS LSSF3-HDFS-N
1 3000WOG FP LCC IP 3PC FS NACE BALL

18 FF 185K

1

014-53214 MAS LSSF3-HDFS-N
2 2000WOG FP LCC IP 3PC FS NACE BALL

Total Lines: 2
Total Pieces: 5
Total Weight: 32.891

Total Skids / Boxes:

Shipment Weight:

MLTS_6056-18953
Cert# BV MAS

JY VALVE & MFG. CO., LTD.

(Qianguo Village, Huangtang Town) Chengxi Taiwanese Business Base
Huian County, Quanzhou, Fujian, China 362101
TEL : (0595) 2730-1335 FAX : (0595) 2730-1336

MESSRS.: M. A. STEWART & SONS LTD.

DELIVER TO: VANCOUVER

SHEET NO.: LSSF3HDFS-N-F181206-1

P.O. NO. #1011686

DATE : DEC. 26, 2018

CERTIFICATE OF COMPLIANCE

WE, JY VALVE & MFG. CO., LTD. HEREBY CERTIFY THAT OUR
PRODUCTS AS SHOWN ON DRAWINGS OF OUR MODEL LSSF3-HDFS-N ARE
MANUFACTURED, INSPECTED AND TESTED FULLY IN ACCORDANCE WITH THE
FOLLOWING STANDARDS:

PRESSURE-TEMPERATURE RATING	1/4" TO 1"	3000 PSIG @100°F
	1-1/4" TO 2"	2000 PSIG @100°F
	2-1/2" TO 3"	1000 PSIG @100°F
BODY & CAP	ASTM A352-LCC	
SEAT MATERIAL	R-PTFE	
VALVE TESTING	API 598 ※	
FIRE TEST STANDARD	API 607 5TH EDITION	
END CONNECTION	NPT THREADS TO ANSI B1.20.1	

※ HIGH PRESSURE SHELL TEST AND LOW PRESSURE SEAT TEST ARE
PERFORMED 100%.

- NACE MR-0175-2002 AND MR-0103 COMPLIANCE

JY VALVE & MFG. CO., LTD.



CHARLES CHAN, PRESIDENT

(Qianguo Village, Huangtang Town) Chengxi Taiwanese Business Base Huian County, Quanzhou, Fujian, China 362101
Tel: 86-595-27301335 Fax: 86-595-27301336

MESSRS.: M. A. STEWART & SONS LTD.
T O : VANCOUVER
P.O. NO.: #1011686
SHEET NO. : LSSF3HDFSN-F181206-2
EXPORT NO. : F181206
DATE : DEC. 26, 2018

JASON HUANG, QC MANAGER

[illegible]

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-3
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE
REVIEWED BY : QUAN ZHOU JING YING VALVE CO., LTD.

SIZE : 1"

MATERIAL: ASTM-A352 GRADE LCC

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Si	Mn	P	S	Ni	Cr	Mo	V	
SPEC (MAX.)		0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.030	
Production No	Parts Name	B For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.28%									
18FF	BODY & CAP	0.2010	0.4400	0.6900	0.0150	0.0048	0.3230	0.4000	0.0740	0.0120	
TENSILE REQUIREMENTS		Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (%)	Reduction of area (%)	Hardness (HB)	Charpy V-Notch Energy value				
Production No	Parts Name	485 - 655	Min. 275	Min. 22	Min. 35	Max. 187	Min. 20				
18FF	BODY & CAP	524	288	36	45	160	52				
Heat treatment	NORMALIZED @890 DEGREE C - 1H AIR COOLING AND TEMPERED										

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED ARE SATISFACTORY IN ACCORDANCE WITH THE SPECIFICATION.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
 TO : VANCOUVER
 P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-4
 EXPORT NO : F181206
 DATE : DEC. 26, 2018

Jason Huang

VALVE MODEL : LSSF3-HDFS-N SIZE : 1"
 3000/2000/1000 WOG BALL VALVE MATERIAL: ASTM-A351 GRADE CF8M
 REVIEWED BY : FUZHOU SHI GANG VALVE MANUFACTURE CO.,LTD

JASON HUANG, QC MANAGER
 JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	Si	S	P	Cr	Ni	Mo		
SPEC (MAX.)											
Production No	Parts Name										
B-1118	BALL	0.0510	0.7900	0.5090	0.0083	0.0383	18.0900	9.0400	2.0700		
TENSILE REQUIREMENTS		Tensile Stength (MPa)		Yield Strength (MPa)		Elongation (%)		Hardness (HB)			
Production No	Parts Name	Min.485		Min. 205		Min. 30		Max. 187			
B-1118	BALL	515		225		35		165			
Heat treatment	SOLUTION TREATMENT: @1080 DEGREE C - 1H WATER QUENCHING										

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED ARE SATISFACTORY IN ACCORDANCE WITH THE SPECIFICATION.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
 TO : VANCOUVER
 P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-5
 EXPORT NO : F181206
 DATE : DEC. 26, 2018

Jason Huang

VALVE MODEL : LSSF3-HDFS-N SIZE : 1"
 3000/2000/1000 WOG BALL VALVE MATERIAL: ASTM-A276 TYPE 316
 REVIEWED BY : GAOYOU WEI DA STAINLESS STEEL CO., LTD.

JASON HUANG, QC MANAGER
 JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	P	S	Si	Cr	Ni	Mo		
SPEC (MAX.)											
Production No	Parts Name										
S-1118	STEM	0.080	2.000	0.045	0.030	1.000	16.0-18.0	10.0-14.0	2.00-3.00		
		0.0780	0.9800	0.0020	0.0210	0.6500	16.6200	10.8000	2.0800		
TENSILE REQUIREMENTS		Tensile Strength (MPa)		Yield Strength (MPa)		Elongation (%)		Reduction of area (%)		Hardness (HB)	
Production No	Parts Name	Min. 515		Min. 205		Min. 40		Min. 50		Max. 187	
S-1118	STEM	518		218		48		53		166	
Heat treatment	HOT-FINISHED										

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED ARE SATISFACTORY IN ACCORDANCE WITH THE SPECIFICATION.

JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base
Huian County,Quanzhou,Fujian,China 362101
TEL : (0595) 2730-1335 FAX : (0595) 2730-1336

MESSRS.: M. A. STEWART & SONS LTD.

DELIVER TO: VANCOUVER

SHEET NO.: LSSF3HDFS-N-F190403-1

P.O. NO. #1011686

DATE : APR. 24, 2019

CERTIFICATE OF COMPLIANCE

WE, JY VALVE & MFG. CO., LTD. HEREBY CERTIFY THAT OUR
PRODUCTS AS SHOWN ON DRAWINGS OF OUR MODEL LSSF3-HDFS-N ARE
MANUFACTURED, INSPECTED AND TESTED FULLY IN ACCORDANCE WITH THE
FOLLOWING STANDARDS:

PRESSURE-TEMPERATURE RATING	1/4" TO 1"	3000 PSIG @100°F
	1-1/4" TO 2"	2000 PSIG @100°F
	2-1/2" TO 3"	1000 PSIG @100°F
BODY & CAP	ASTM A352-LCC	
SEAT MATERIAL	R-PTFE	
VALVE TESTING	API 598 ※	
FIRE TEST STANDARD	API 607 5TH EDITION	
END CONNECTION	NPT THREADS TO ANSI B1.20.1	

※ HIGH PRESSURE SHELL TEST AND LOW PRESSURE SEAT TEST ARE
PERFORMED 100%.

- NACE MR-0175-2002 AND MR-0103 COMPLIANCE

JY VALVE & MFG. CO., LTD.



CHARLES CHAN, PRESIDENT

(Qianguo Village, Huangtang Town)Chengxi Taiwanese Business Base Huian County, Quanzhou, Fujian, China 362101
Tel: 86-595-27301335 Fax: 86-595-27301336

MESSRS.: M. A. STEWART & SONS LTD.
T O : VANCOUVER
P.O. NO.: #1011686
SHEET NO. : LSSF3HDFSN-F190403-2
EXPORT NO. : F190403
DATE : APR. 24, 2019

Talim Huang

JASON HUANG, QC MANAGER

[illegible]

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
 TO : VANCOUVER
 P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-3
 EXPORT NO : F190403
 DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE
 REVIEWED BY : QUAN ZHOU JING YING VALVE CO., LTD.

SIZE : 2"

MATERIAL: ASTM-A352 GRADE LCC

Jason Huang

JASON HUANG, QC MANAGER
 JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)												
ELEMENT		C	Si	Mn	P	S	Ni	Cr	Mo	V		
SPEC (MAX.)		0.250	0.600	1.200	0.040	0.045	0.500	0.500	0.200	0.030		
Production No	Parts Name	B For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.25%										
18FF	BODY	0.2010	0.4400	0.6900	0.0150	0.0048	0.3230	0.4000	0.0740	0.0120		
18JF	CAP	0.2010	0.4400	0.6900	0.0150	0.0048	0.3230	0.4000	0.0740	0.0120		
TENSILE REQUIREMENTS		Tensile Stength (MPa)		Yield Strength (MPa)		Elongation (%)		Reduction of area (%)		Hardness (HB)		Charpy V-Notch Energy value
Production No	Parts Name	485 - 655		Min. 275		Min. 22		Min. 35		Max. 187		Min. 20
18FF	BODY	524		288		36		45		160		52
18JF	CAP	524		288		36		45		160		52
Heat treatment	NORMALIZED @890 DEGREE C - 1H AIR COOLING AND TEMPERED											

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED ARE SATISFACTORY IN ACCORDANCE WITH THE SPECIFICATION.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
 TO : VANCOUVER
 P.O. NO. : #1011686

SHEET NO. : LSSF3HDFS-N-F190403-4
 EXPORT NO : F190403
 DATE : APR. 24, 2019

Jason Huang

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE
 MATERIAL: ASTM-A351 GRADE CF8M
 REVIEWED BY : FUZHOU SHI GANG VALVE MANUFACTURE CO.,LTD

SIZE : 2"

JASON HUANG, QC MANAGER
 JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)										
ELEMENT		C	Mn	Si	S	P	Cr	Ni	Mo	
SPEC (MAX.)		0.080	1.500	1.500	0.040	0.040	18.0-21.0	9.0-12.0	2.0-3.0	
Production No	Parts Name									
B-0319	BALL	0.0503	0.6880	0.4740	0.0065	0.0378	18.3200	9.1600	2.0500	
TENSILE REQUIREMENTS		Tensile Stngth (MPa)		Yield Strength (MPa)		Elongation (%)		Hardness (HB)		
Production No	Parts Name	Min.485		Min. 205		Min. 30		Max. 187		
B-0319	BALL	545		245		47		140		
Heat treatment	SOLUTION TREATMENT: @1080 DEGREE C - 1H WATER QUENCHING									

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED ARE SATISFACTORY IN ACCORDANCE WITH THE SPECIFICATION.

MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
 TO : VANCOUVER
 P.O. NO. : #1011686

SHEET NO. : LSSF3HDFS-N-F190403-5
 EXPORT NO : F190403
 DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
 3000/2000/1000 WOG BALL VALVE

SIZE : 2"

MATERIAL: ASTM-A276 TYPE 316

REVIEWED BY : GAOYOU WEI DA STAINLESS STEEL CO., LTD.

Jason Huang

JASON HUANG, QC MANAGER
 JY VALVE & MFG. CO., LTD.

CHEMICAL REQUIREMENT (%)											
ELEMENT		C	Mn	P	S	Si	Cr	Ni	Mo		
SPEC (MAX.)		0.080	2.000	0.045	0.030	1.000	16.0-18.0	10.0-14.0	2.00-3.00		
Production No	Parts Name										
S-0319	STEM	0.0700	0.9600	0.0020	0.0230	0.7500	16.8200	10.6000	2.2500		
TENSILE REQUIREMENTS		Tensile Strength (MPa)		Yield Strength (MPa)		Elongation (%)		Reduction of area (%)		Hardness (HB)	
Production No	Parts Name	Min. 515		Min. 205		Min. 40		Min. 50		Max. 187	
S-0319	STEM	518		218		48		53		166	
Heat treatment	HOT-FINISHED										

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED ARE SATISFACTORY IN ACCORDANCE WITH THE SPECIFICATION.



NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Item No: B1060015FHLCCW27RF**GZA
Size/Type: 6" / Gate
Quantity: 1
Country of Origin: China
FigNo: 11F-LCC4/2-NC

Material Test Report

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

09/09/19

Cert No: 1101809

Customer: EMCO
Customer Number: 32043
Customer PO: 2610191-00
Cameron SO: QRC SO# 1010576
Project Name:
Valve Serial No:
Description: 150# RF A352-LCC (TRIM 12) OS&Y BB GATE
NACE
Customer Tag No:

MLTS_6056-18971
Cert# 1101809

Pressure Test Result

Item	Test Pressure (Mpa)	Duration (sec)	Test Result
Shell	3.103	450	60
Backseat	2.241	325	60
Seat Hydro	-	-	-
Seat Air	0.552	80	60

Standard: API 598 / ASME B16.34

Inspection

Dimension: Passed
Visual: Passed
Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Part: Body Type 3.1

Heat Treatment: QUENCHING+TEMPERING

Material Code: A352 LCC

Notes:

Spec:	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Chem Comp (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Max:	0.180	0.063	0.018	1.070	0.007	0.016	0.027	0.008	0.440	0.004
Val:	0.180	0.063	0.018	1.070	0.007	0.016	0.027	0.008	0.440	0.004

Part: Bonnet/Cap Type 3.1

Heat Treatment: QUENCHING+TEMPERING

Material Code: A352 LCC

Notes:

Spec:	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Chem Comp (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Max:	0.180	0.063	0.018	1.070	0.007	0.016	0.027	0.008	0.440	0.004
Val:	0.180	0.063	0.018	1.070	0.007	0.016	0.027	0.008	0.440	0.004

Heat No: N86718

Notes:

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard (HB)	Impact Tests @-58 deg F	lb/ft
	70.0	39.9	22.0	35.0	100.0		# 1: 45
	95.0	999.9	100.0	100.0	225.0		# 2: 58
	80.5	53.7	30.0	65.0	174.0		# 3: 33
							AVG: 45

Heat No: N86718

Notes:

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard (HB)	Impact Tests @-58 deg F	lb/ft
	70.0	39.9	22.0	35.0	100.0		# 1: 45
	95.0	999.9	100.0	100.0	225.0		# 2: 58
	80.5	53.7	30.0	65.0	174.0		# 3: 33
							AVG: 45

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements. No Asbestos is contained in this product. Packing: Flexible Graphite | Gasket: Corrugated (316) W/ Graftol Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature

09/09/19



NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Item No: B1060015FHLCCW27RF**GZA
Size/Type: 6" / Gate
Quantity: 1
Country of Origin: China
FigNo: 11F-LCC4/2-NC

Material Test Report

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

09/09/19

Cert No: 1101813

Customer: EMCO
Customer Number: 32043
Customer PO: 2610191-00
Cameron SO: QRC SO# 1010576
Project Name:
Valve Serial No:
Description: 150# RF A352-LCC (TRIM 12) OS&Y BB GATE
NACE
Customer Tag No:

MLTS_6056-18971
Cert# 1101813

Pressure Test Result

Item	Test Pressure (Hpa)	Test Pressure (PSI)	Duration (sec)	Test Result
Shell	3.103	450	60	Passed
Backseat	2.241	325	60	Passed
Seat Hydro	-	-	-	-
Seat Air	0.552	80	60	Passed

Inspection
Dimension: Passed
Visual: Passed
Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

Standard: API 598 / ASME B16.34

Part: Body Type 3.1

Heat Treatment: QUENCHING+TEMPERING

Material Code: A352 LCC

Notes:

Spec:	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Chem Comp (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Max:	0.190	0.034	0.017	1.030	0.002	0.017	0.033	0.012	0.520	0.004

Part: Bonnet/Cap Type 3.1

Heat Treatment: QUENCHING+TEMPERING

Material Code: A352 LCC

Notes:

Spec:	C	Cr	Cu	Mn	Mo	Ni	P	S	Si	V
Chem Comp (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min:	0.25	0.50	0.30	1.20	0.20	0.50	0.040	0.05	0.60	0.03
Max:	0.190	0.052	0.018	1.120	0.006	0.016	0.029	0.007	0.490	0.004

Heat No: N86708

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard (HB)	Impact Tests @-58 deg F	lb/ft
	70.0	39.9	22.0	35.0	100.0		# 1: 22
	95.0	999.9	100.0	100.0	225.0		# 2: 30
	80.5	52.9	28.0	55.0	181.0		# 3: 19
							Avg: 24

Heat No: N86707

Physical Props	Tensile KSI	Yield KSI	Elong %	Reduct %	Hard (HB)	Impact Tests @-58 deg F	lb/ft
	70.0	39.9	22.0	35.0	100.0		# 1: 31
	95.0	999.9	100.0	100.0	225.0		# 2: 46
	80.5	56.6	29.0	60.0	172.0		# 3: 31
							Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: Flexible Graphite | Gasket: Corrugated (316) W/ Grafol
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature

09/09/19