



Flow Technology

HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 31 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

SPX Flow Technology certifies that the above were manufactured in accordance with API-6D Specifications.

Douglas Hinze

DH/mt

Quality Control Supervisor



ME
10.31.14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com



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HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 31 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

SPX Flow Technology certifies that the above have been fabricated and shipped in accordance with the requirements of Enbridge Specification EES124-2013 Rev. 1.1 and the Purchase Order Number above.

Douglas Hinze

DH/mt

Quality Control Supervisor



ME
10-31-14

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8800 Westplain Drive Houston, TX 77041 USA
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SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 26 2014

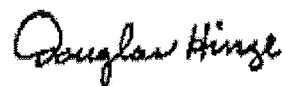
Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

SPX Flow Technology certifies that the attached mill test reports are in conformance with the applicable codes, standards and specifications.



Douglas Hinze

Quality Control Supervisor

DH/mt

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
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Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com

M & J Valve – SPX Flow Technology – Houston, Texas
Material Report

S. O. No.	Quantity	Description
1806857 1	1	42" CL 600, MODEL M303 GATE VALVE.

SERIAL NUMBER	HUB	SIDE PL.	BONNET FLG.	BOTTOM PL.	BONNET	L.C. FLG.	CUPOLA	U.C. FLG.	TRANS. PC.	TRANS. RING		
1000002916560	C									85831		
	H	S16782	SB87119	S18188	S18538	S18188	S17857	HC0059	S18188	812999	MM14104271	
	C											
	H											
		STEM	GATE	SEATS								
	H	120753	5217170	3172467 MM13106112								
	C											
	H											
	C											
	H											
	C											
	H											
	H											
	C											
	H											
	C											
	H											
	C											
	H											

C = Heat Code Number
H = Heat Number (Mill Test Report)



JSW STEEL (USA) INC.
5200, East McKinney Road,
BAYTOWN, TX 77523
METALLURGICAL TEST REPORT

MET-04
TC No.: BR182979-6782-03

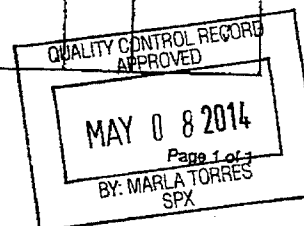
Sold To: 4500969604 SCHILL STEEL 3001 WEST 11TH ST. 7-417676 HOUSTON, TX 77008 HUB 42" 600 871.75		Ship To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008		This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Fine Grain, Si-AL Fully Killed Steel. We certify that delivery of this product with the requirement of the specification and purchase order received from customer.				Bulletin Num. 182979										
Plates Manufactured in the USA		Order No: JSW0069-14																
PLATE NORMALIZED 1650 DEG F @ 115 MINS		Date: 5/6/2013		P.O.: 19985		Shipping Mode: DIRECT TRUCK DIN EN 10204 2004 3.1												
Specifications: HOT ROLLED PLATE CUT EDGE ASME SA516-11A GR70 PLATE NORMALIZED WITH LCVN PRESSURE VESSEL QUALITY				Marking Instructions: Each plate stenciled with, Mfr name, PO, Heat No., length, width, thickness, weight, grade, Plate no.		Insp.												
Item No.	Material Dimensions (in)																	
	Gauge	Width	Length	Qty	Wgt. (Lbs)	Heat No.	Gauge Tested	Test/ Plate Identity	Test Direc.	Test Cond.	Yield Point (KSI)	Tensile Str. (KSI)	YS/UTS Ratio	Elongation in 8"	Elongation in 2"	Yield Strength Determined at	Plates	
14	3.7500	104.00	195.00	1	21,568	S16782	3.7500	07A-A	TRAN	PN	43	72	0.60		35%	0.2%	00851832A	

Charpy Impact Test (LCVN) FULL Energy In FtLb Temp °F

Sample	Temp	Test1	Test2	Test3	Avg
1	-20	90	70	105	88

Test	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	N	V	B	Ti	Nb	Ca	CE
LADLE	0.19	1.09	0.014	0.006	0.30	0.022	0.020	0.020	0.010	0.000	0.037	0.004	0.001	0.0005	0.001	0.001	0.0001	0.38

Country George



**Charpy
Certification
Report**



Tejas Testing & Inspection, Inc.
4601 South Plinmont, Suite 136
Houston, TX 77041
Phone: (713) 939-0440 • Fax: (713) 939-0430

Report: T089303 - 3

Customer: Schill Steel Services

PO Number 20063

Material: A516-70N

HT No. S16782

No. Pieces: 1

Customer Info.: 3.76"

Specification: LCVN @ -50°F PER ASTM E23

Results

Unless otherwise stated, specimens are full size, i. e. 10 mm x 10 mm

Number	1	2	3	4
Temperature:	-50°F			
Location:	LCVN			
F/Lbs	42 37 39			
% Shear	20 20 20			
MLE	21 23 24			

Comments:

Submitted by:

Date:

Randall Tippit

4/19/2013

TPI Representative

Randall Tippit

14610 Sheraton
Houston, TX 77039

[illegible]

POSCO CONFIDENTIAL, sophiesy 72920100743 42954

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:131114-PPSE-002-001
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주문자:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 재강번호	POSITION	Tensile/인장시험 YP TS EL (MPa) (%)	Impact/충격시험 V Notch -46℃ Energy (Joule) SF (%)	Hard- ness 경도 /HB	DIVISION	Chemical Composition/화학성분(%)
										C Si Mn P S Cr Ni B Cu Mo Nb Ti V
										-4 -3 -3 -4 -4 -2 -2 -4 -3 -2 -3 -3 -3
0.75"x121"x480"	PB47775601-5603	3	16,806 37,050	SB87119	T	372 537 28	1:173 2:189 3:181 A:181	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0
*** Sub Total (010) ***		3	16,806 (kg)			37,050 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891℃ 35min. ***										
1.125"x121"x480"	PB47776101-6102	2	16,810 37,060	SB87119	T	358 531 30	1:199 2:186 3:164 A:183	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0
1.125"x121"x480"	PB47776001-6002	2	16,810 37,060	SB87119	T	359 533 32	1:176 2:208 3:185 A:190	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0
*** Sub Total (030) ***		4	33,620 (kg)			74,118 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891℃ 56min. ***										
1.25"x121"x480"	PB47694001	1	9,338 20,586	SB87128	T	370 536 33	1:196 2:266 3:157	152.7	L P	1774 353 1150 85 13 2 26 1 212 1 17 2 2 1750 354 1152 84 1 2 26 1 216 0 16 2 2

- * Position - T : Top, M : Middle, B : Bottom
- * Tensile Test. Direction : Transversal, Gauge Length : 200mm (Rectangular), YP Method : 0.2% off-set
- * Impact Test. Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm, T.L.R.(Trans Longitude Ratio)
- * Division - L:Ladle Analysis, P:Products Analysis
- * Chemical Composition Unit: -2x1/100, -3x1/1000, -4x1/10000, -5x1/100000
- * Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process.

Melted and Manufactured in ROK

No repair welding was performed to the products.

This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.

Test Certificate is issued according to EN10204 3.1.

* This Mill Test Certificate cannot be copied for any purpose.

Surveyor's to:

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing Section Man Soo, Jang

QUALITY CONTROL RECORD
APPROVED

MAY 06 2014

BY: MARLA TORRES
SPX

PO: 4500869578 Line: 10 Order: 1109755 Heat: SB87119 Slab: PB477601-01 Descr: SA516-70 N (S) PART# 7-417675 QTY 2

SIDE PLT 21

POSCO CONFIDENTIAL sophiesy 729201100743 42954

PO: 4500869578 Line: 10 Order: 1108755 Heat: SB87119 Slab: PB477601-01 Descr: SA516-70 N [S] PART# 7-417675 QTY 2

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호: 131114-PPSE-002-002
Date of Issue/발행일자: Feb., 05, 2014

Order No./계약번호: 0005864250

PO No./주문번호: 230447

Supplier/주문자: DAE WOO INTERNATIONAL CORP.

Commodity/품명: PLATE

Customer/고객사: NORTH SHORE STEEL

Spec & Type/규격: SA516-70N/A516-70N(2010)

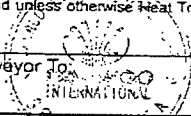
Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험			Impact/충격시험		Hardness /경도 HB	DIVISION	Chemical Composition/화합성분(%)													
						YP (%)	TS (%)	EL (%)	V Notch -46℃ Energy (Joule)	SF (%)			C	Si	Mn	P	S	Cr	Ni	B	Cu	Mo	Nb	Ti	V	
1.25"x121"x480"	PB47668501-8502	2	18,676 41,172	SB87128	T	367	534	32	A:206 1:188 2:279 3:196 A:221		152.7	L P	1774 1760	353 354	1150 1152	85 84	13 1	2 2	26 26	1 1	212 216	1 0	17 16	2 2	2 2	
*** Sub Total (040) ***			3	28,014 (kg)		61,759 (LBS)			* B/L Date ==> 2013/11/20																	
*** HEAT TREATMENT ==> Normalized : 891℃ 61min. ***																										
1.375"x121"x460"	PB47651401-1402	2	19,688 43,404	SB87128	T	361	532	31	1:195 2:163 3:179 A:179		152.7	L P	1774 1760	353 354	1150 1152	85 84	13 1	2 2	26 26	1 1	212 216	1 0	17 16	2 2	2 2	
1.375"x121"x460"	PB48189201	1	9,844 21,702	SB88973	T	345	517	31	1:174 2:199 3:220 A:198		150.7	L P	1811 1777	357 338	1145 1125	95 89	12 11	2 2	28 27	0 1	243 234	0 0	16 14	1 2	0 2	
*** Sub Total (050) ***			3	29,532 (kg)		65,106 (LBS)			* B/L Date ==> 2013/11/20																	
*** HEAT TREATMENT ==> Normalized : 891℃ 66min. ***																										
1.75"x121"x460"	PB47761801	1	12,526 27,615	SB87119	T	342	527	33	1:153 2:155		148.7	L P	1820 1806	342 342	1148 1142	96 90	9 7	2 2	25 24	2 1	207 202	0 0	15 13	3 3	0 0	

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200mm(Rectangular).
YP Method : 0.2% off-set
* Impact Test. Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm,
T.L.R.(Trans Longitude Ratio)
* Division - L:Ladle Analysis, P:Products Analysis
* Chemical Composition Unit: -2x1/100, -3x1/1000, -4x1/10000, -5x1/100000
* Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process.
Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
Test Certificate is issued according to EN10204 3.1.
* This Mill Test Certificate cannot be copied for any purpose.

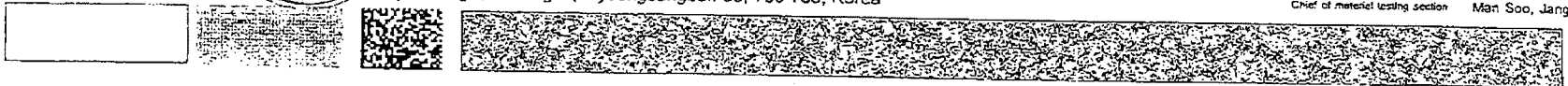
Surveyor



POSCO Pohang Works, Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

M.S. JANG



PO: 4500869578 Line: 10 Order: 1108755 Heat: SB87119 Slab: PB477601-01 Descr: SA516-70 N [S] PART# 7-417675 QTY 2

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호: 131114-PPSE-002-003
Date of Issue/발행일자: Feb., 05, 2014

Order No./계약번호: 0005864250

PO No./주문번호: 230447

Supplier/주문자: DAE WOO INTERNATIONAL CORP.

Commodity/품명: PLATE

Customer/고객사: NORTH SHORE STEEL

Spec & Type/규격: SAS16-70N/A516-70N(2010)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 재질번호	POSITION	Tensile/인장시험 YP TS EL (MPa) (%)	Impact/ 충격시험 V Notch -46°C Energy (Joule)	Hard- ness /경도 HB	DIVISION	Chemical Composition/화학성분(%)
										C Si Mn P S Cr Ni B Cu Mo Nb Ti V
										-4 -3 -3 -4 -4 -2 -2 -4 -3 -2 -3 -3 -3
1.75"x121"x480"	PB47761701	1	12,526 27,615	SB87119	T	358 526 35	3:60 A:129 1:190 2:186 3:235 A:204	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0
*** Sub Total (060) ***		2	25,052 (kg)			55,229 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891°C 81min. ***										
2"x121"x480"	PB47760101	1	14,943 32,943	SB87119	T	344 518 36	1:160 2:139 3:148 A:149	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0
2"x121"x480"	PB47444101	1	14,943 32,943	SB87119	T	352 524 34	1:163 2:151 3:179 A:164	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0
2"x121"x480"	PB47760001	1	14,943 32,943	SB87119	T	344 520 34	1:168 2:178 3:147	148.7	L P	1820 342 1148 96 9 2 25 2 207 0 15 3 0 1806 342 1142 90 7 2 24 1 202 0 13 3 0

- * Position - T : Top, M : Middle, B : Bottom
- * Tensile Test. Direction : Transversal, Gauge Length : 200mm (Rectangular), YP Method : 0.2% off-set
- * Impact Test. Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm, T.L.R (Trans Longitude Ratio)
- * Division - L: Ladle Analysis, P: Products Analysis
- * Chemical Composition Unit: -2x1/100, -3x1/1000, -4x1/10000, -5x1/100000
- * Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process.

Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
Test Certificate is issued according to EN10204 3.1.
* This Mill Test Certificate cannot be copied for any purpose.

Surveyor To: [Signature]

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo. Jang

M.S. JANG

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:131114-PPSE-002-004
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주문자:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 재강번호	POSITION	Tensile/인장시험 YP TS EL (MPa) (%)	Impact/ 충격시험 V Notch -46℃ Energy (Joule)	Hard- ness /경도 HB	DIVISION	Chemical Composition/화학성분(%)
										C Si Mn P S Cr Ni B Cu Mo Nb Ti V
										-4 -3 -3 -4 -4 -2 -2 -4 -3 -2 -3 -3 -3
2"x121"x480"	PB47759801	1	14,943 32,943	SB87119	T	345 522 34	A:164 1:127 2:172 3:172 A:157	148.7	L	1820 342 1148 96 9 2 25 2 207 0 15 3 0
									P	1806 342 1142 90 7 2 24 1 202 0 13 3 0
*** Sub Total (070) ***		4	59,772 (kg)			131,773 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891℃ 91min. ***										
2.5"x121"x380"	PB47444201	1	14,786 32,597	SB87119	T	336 512 36	1:106 2:149 3:226 A:161	148.7	L	1820 342 1148 96 9 2 25 2 207 0 15 3 0
									P	1806 342 1142 90 7 2 24 1 202 0 13 3 0
*** Sub Total (080) ***		1	14,786 (kg)			32,597 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891℃ 112min. ***										

- * Position - T : Top, M : Middle, B : Bottom
- * Tensile Test, Direction : Transversal, Gauge Length : 200mm(Rectangular), YP Method : 0.2% off-set
- * Impact Test, Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm, T.L.R.(Trans Longitude Ratio)
- * Division - L:Ladle Analysis, P:Products Analysis
- * Chemical Composition Unit: -2x1/100, -3x1/1000, -4x1/10000, -5x1/100000
- * Supply Condition : As-Rolled unless otherwise Heat Treated.

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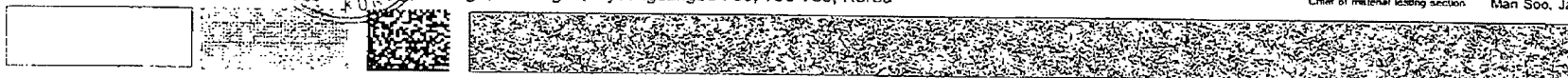
Surveyor/검



POSCO Pohang Works, 5 Gyeongsangbuk-do, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

M.S. JANG

Chief of material testing section Man Soo, Jang



POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:131205-PPSE-009-001
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주조사:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

Spec & Type/규격: SA316-70N/AS16-70N(2010)																										
Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험			Impact/충격시험		Hard- ness /경도 HB	DIVISION	Chemical Composition/화학성분(%)													
						YP	TS	EL	V Notch -45℃	SF (%)			C	Si	Mn	P	S	Cr	Ni	B	Cu	Mo	Nb	Ti	V	
														-4	-3	-3	-4	-4	-2	-2	-4	-3	-2	-3	-3	
1"x121"x240"	PC12383901	1	3,735 8,234	SB89498	T	354	545	29	1:149	160.7	L	1780	346	1175	115	14	3	26	3	203	0	15	2	2		
									2:172		P	1707	360	1166	117	18	3	26	2	206	1	15	2	2		
									3:192																	
									A:171																	
1"x121"x240"	PC12101401-1402	2	7,470 16,468	SF36658	T	372	541	31	1:196	158.7	L	1861	377	1156	90	16	2	26	2	227	0	16	2	1		
									2:166		P	1801	360	1131	87	15	2	26	2	227	0	15	2	3		
									3:140																	
									A:167																	
*** Sub Total (020) ***			3	11,205 (kg)		24,702 (LBS)						* B/L Date ==> 2013/12/13 *														
*** HEAT TREATMENT ==> Normalized : 891℃ 51min. ***																										
1.125"x121"x480"	PB48144701	1	8,405 18,530	SB88942	T	370	538	33	1:211	153.7	L	1800	339	1142	91	11	2	26	1	212	0	15	2	2		
									2:196		P	1799	326	1139	90	9	2	26	1	200	0	14	2	2		
									3:191																	
									A:199																	
*** Sub Total (030) ***			1	8,405 (kg)		18,530 (LBS)						* B/L Date ==> 2013/11/20 *														
*** HEAT TREATMENT ==> Normalized : 891℃ 56min. ***																										
1.375"x121"x450"	PB48189202	1	9,844 21,702	SB88973	T	345	517	31	1:174	150.7	L	1811	357	1145	95	12	2	28	0	243	0	16	1	0		
									2:199		P	1777	338	1125	89	11	2	27	1	234	0	14	2	2		
									3:220																	

- * Position - T : Top, M : Middle, B : Bottom
- * Tensile Test. Direction : Transversal, Gauge Length : 200mm(Rectangular), YP Method : 0.2% off-set
- * Impact Test. Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm, T.L.R.(Trans Longitude Ratio)
- * Division - L:Ladle Analysis, P:Products Analysis
- * Chemical Composition Unit : -2x1/100, -3x1/1000, -4x1/10000, -5:1/100000
- * Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process. Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
Test Certificate is issued according to EN10204 3.1.
* This Mill Test Certificate cannot be copied for any purpose.

Survey To:

POSCO Pohang Works, Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

M.S. JANG

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호:131205-PPSE-009-002
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주문자:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 제강번호	POSITION	Tensile/인장시험 YP TS EL (MPa) (%)	Impact/충격시험 V Notch -46C Energy (Joule)	Hard- ness /경도 HB	DIVISION	Chemical Composition/화학성분(%) C Si Mn P S Cr Ni B Cu Mo Nb Ti V
*** Sub Total { 050 } ***		1	9,844 (kg)			21,702 (LBS)	A:198			* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891°C 66min. ***										
1.75"x121"x460"	PB47761601	1	12,526 27,615	SB87119	T	358 526 34	1:178 2:172 3:187 A:179	148.7	L	1820 342 1148 96 9 2 25 2 207 0 15 3 0
									P	1806 342 1142 90 7 2 24 1 202 0 13 3 0
1.75"x121"x460"	PB48243901	1	12,526 27,615	SB88973	T	358 530 33	1:184 2:172 3:225 A:194	150.7	L	1811 357 1145 95 12 2 28 0 243 0 16 1 0
									P	1777 338 1125 89 11 2 27 1 234 0 14 2 2
*** Sub Total { 060 } ***		2	25,052 (kg)			55,229 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891°C 81min. ***										
2"x121"x480"	PB47759901	1	14,943 32,943	SB87119	T	349 524 35	1:141 2:123 3:172 A:112	148.7	L	1820 342 1148 96 9 2 25 2 207 0 15 3 0
									P	1806 342 1142 90 7 2 24 1 202 0 13 3 0
*** Sub Total { 070 } ***		1	14,943 (kg)			32,943 (LBS)				* B/L Date ==> 2013/11/20
*** HEAT TREATMENT ==> Normalized : 891°C 91min. ***										

- * Position - T : Top, M : Middle, B : Bottom
- * Tensile Test. Direction : Transversal. Gauge Length : 200mm(Rectangular).
- YP Method : 0.2% off-set
- * Impact Test. Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm.
- T.L.R.(Trans Longitude Ratio)
- * Division - L:Ladle Analysis, P:Products Analysis
- * Chemical Composition Unit: -2x1/100, -3x1/1000, -4x1/10000, -5x1/100000
- * Supply Condition : As-Rolled unless otherwise Heat Treated.

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This material has been fully killed and made by basic oxygen process.
Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
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Surveyor To

POSCO Pohang Works, Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang

M.S. JANG

POSCO CONFIDENTIAL. sophiesy 729201100743 42954

POSCO Mill Test Certificate/검사증명서

Certificate No./증명서번호 :131205-PPSE-009-003
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주문자:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

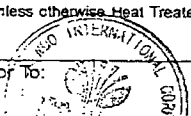
Size/치수	Product No. 제품번호	Quantity 수량	Weight 중량 (kg) (LBS)	Heat No. 재강번호	POSITION	Tensile/인장시험			Impact/ 충격시험 V Notch -45℃ Energy (Joule)	Hard- ness /경도 HB	DIVISION	Chemical Composition/화학성분(%)												
						YP	TS	EL				C	Si	Mn	P	S	Cr	Ni	B	Cu	Mo	Nb	Ti	V
*** Lot Total ***		28	277,031 (kg)			610,740 (LBS)						* LOT NO ==> SLAB:POSCO												
*** Grade Total ***		28	277,031 (kg)			610,740 (LBS)						CEQ (G) + C + Mn/5 + (Ni + Cu)/15 + (Cr + Mo + V)/5												
*** Grand Total ***		28	277,031 (kg)			610,740 (LBS)						*** Last Item ***												

- * Position - T : Top, M : Middle, B : Bottom
- * Tensile Test. Direction : Transversal, Gauge Length : 200mm(Rectangular), YP Method : 0.2% off-set
- * Impact Test. Direction : 1/4T Longitudinal, Full-Size : 10mmX10mm, T.L.R.(Trans Longitude Ratio)
- * Division - L:Ladle Analysis, P:Products Analysis
- * Chemical Composition Unit : -2x1/100, -3x1/1000, -4x1/10000, -5x1/100000
- * Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification. This material has been fully killed and made by basic oxygen process. Melted and Manufactured in ROK

No repair welding was performed to the products. This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel. Test Certificate is issued according to EN10204 3.1.
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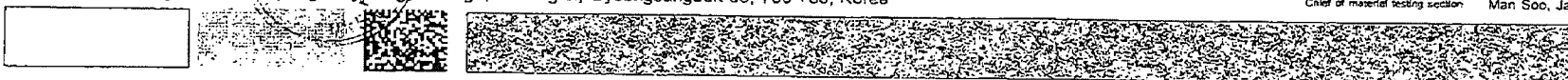
Surveyor To:



POSCO Pohang Works, 5 Dongcho-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

M.S. JANG

Chief of material testing section Man Soo, Jang



POSCO CONFIDENTIAL. sophiesy 729201100743 42954 Descr: SA516-70 N [SI] PART# 7-417675 QTY 2

PO: 4500969578 Line: 10 Order: 1109755 Heat: SB8719 Slab: PB477601-01 Descr: SA516-70 N [SI] PART# 7-417675 QTY 2

POSCO Mill Test Certificate/검사증명서

(Attached-Sheet)

Certificate No./증명서번호 :131114-PPSE-002-001
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주문자:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

Product No. 제품번호	D I V I S I O N	Chemical Composition/화합성분(%) Sol-Al CEQ -3 -3
PB47775601-5603	L P	30 408 31
*** Sub Total	010) ***	3 16,806 (kg) 37,050 (LBS)
*** HEAT TREATMENT	=> Normalized : 891°C 35min. ***	
PB47776101-6102	L P	30 408 31
PB47776001-8002	L P	30 408 31
*** Sub Total	030) ***	4 33,620 (kg) 74,118 (LBS)
*** HEAT TREATMENT	=> Normalized : 891°C 56min. ***	
PB47694001	L P	32 407 31
PB47668501-8502	L P	32 407 31
*** Sub Total	040) ***	3 28,014 (kg) 61,759 (LBS)
*** HEAT TREATMENT	=> Normalized : 891°C 61min. ***	

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process.
Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
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Surveyor To:

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

M.S. JANG

Chief of material testing section Man Soo, Jang



POSCO CONFIDENTIAL, sophiesy 72920100743 42954

POSCO Mill Test Certificate/검사증명서

(Attached-Sheet)

Certificate No./증명서번호:131114-PPSE-002-002
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250 PO No./주문번호:230447
Supplier/주운자:DAE WOO INTERNATIONAL CORP. Commodity/품명:PLATE
Customer/고객사:NORTH SHORE STEEL Spec & Type/규격:SA516-70N/A516-70N(2010)

Product No. 제품번호	D I V I S I O N	Chemical Composition/화합성분(%)					
		Sol-Al	CEQ				
		-3	-3				
PB47651401-1402	L	32	407				
	P	31					
PB48189201	L	31	411				
	P	33					
*** Sub Total (050) ***		3	29.532 (kg)	65.106 (LBS)	* B/L Date ==> 2013/11/20		
*** HEAT TREATMENT ==>		Normalized : 891℃ 66min. ***					
PB47761801	L	30	408				
	P	31					
PB47761701	L	30	408				
	P	31					
*** Sub Total (060) ***		2	25.052 (kg)	55.229 (LBS)	* B/L Date ==> 2013/11/20		
*** HEAT TREATMENT ==>		Normalized : 891℃ 81min. ***					
PB47760101	L	30	408				
	P	31					
PB47444101	L	30	408				
	P	31					
PB47760001	L	30	406				

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process.
Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
Test Certificate is issued according to EN10204 3.1.
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Surveyor To

POSCO Pohang Works, 5-Dongcho-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soc. Jang

M.S. JANG

PO: 4500969578 Line: 10 Order: 1109755 Heat: SB8719 Slab: PB477601-01 Descr: SA516-70 N [S] PART# 7-41/675 QTY 2

POSCO CONFIDENTIAL, sophiesy 72920100743 42954 Descr: SA516-70 N [S] PART# 7-41/675 QTY 2

POSCO CONFIDENTIAL. sophiesy 72920100743 42954

PO: 450086578 Line: 10 Order: 1109755 Heat: SB8719 Slab: PB477601-01 Descr: SA516-70 N [S] PART# 7-417675 QTY 2

POSCO Mill Test Certificate/검사증명서 (Attached-Sheet)

Certificate No./증명서번호:131114-PPSE-002-003
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250

PO No./주문번호:230447

Supplier/주문자:DAE WOO INTERNATIONAL CORP.

Commodity/품명:PLATE

Customer/고객사:NORTH SHORE STEEL

Spec & Type/규격:SA516-70N/A516-70N(2010)

Product No. 제품번호	Chemical Composition/화합성분(%)		
		Sol-Al	CEQ
		-3	-3
PB47759801	P	31	
	L	30	408
	P	31	
	*** Sub Total (070) ***	4	59,772 (kg)
*** HEAT TREATMENT ***		Normalized : 891°C 91min. ***	
		131,773 (LBS)	* B/L Date ==> 2013/11/20
PB47444201	L	30	408
	P	31	
	*** Sub Total (080) ***	1	14,785 (kg)
	*** HEAT TREATMENT ***	Normalized : 891°C 112min. ***	
		32,597 (LBS)	* B/L Date ==> 2013/11/20

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process
Melted and Manufactured in ROK

No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
Test Certificate is issued according to EN10204 3.1.
- This Mill Test Certificate cannot be copied for any purpose.

Surveyor To:



M.S. JANG

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang



POSCO CONFIDENTIAL, supplies 72920100743 42954

PO: 4500969578 Line: 10 Order: 1109755 Heat: SB87119 Slab: PB477601-01 Descr: SA516-70 N (S) PART# 7-417675 QTY 2

POSCO Mill Test Certificate/검사증명서 (Attached-Sheet)

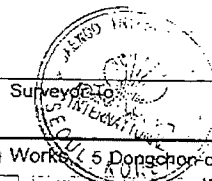
Certificate No./증명서번호 :131205-PPSE-009-001
Date of Issue/발행일자:Feb., 05, 2014

Order No./계약번호:0005864250 PO No./주문번호:230447
Supplier/주운자:DAE WOO INTERNATIONAL CORP. Commodity/품명:PLATE
Customer/고객사:NORTH SHORE STEEL Spec & Type/규격:SA516-70N/A516-70N(2010)

Product No. 제품번호		Chemical Composition/화학성분(%)				
		Sol-Al	CEQ			
		-3	-3			
PC12383901	L	34	411			
	P	34				
PC12101401-1402	L	28	415			
	P	29				
*** Sub Total	020) ***	3	11,205 (kg)	24,702 (LBS)		* B/L Date ==> 2013/12/13
*** HEAT TREATMENT	==> Normalized : 891℃ 51min. ***					
PB48144701	L	33	405			
	P	32				
*** Sub Total	030) ***	1	8,405 (kg)	18,530 (LBS)		* B/L Date ==> 2013/11/20
*** HEAT TREATMENT	==> Normalized : 891℃ 56min. ***					
PB48189202	L	31	411			
	P	33				
*** Sub Total	050) ***	1	9,844 (kg)	21,702 (LBS)		* B/L Date ==> 2013/11/20
*** HEAT TREATMENT	==> Normalized : 891℃ 66min. ***					
PB47761601	L	30	408			
	P	31				

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process.
Melted and Manufactured in ROK

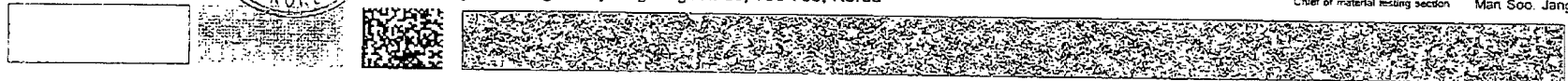
No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
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POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

M.S. JANG

Chief of material testing section Man Soo Jang



PO: 4500969578 Line: 10 Order: 1109755 Heat: SB87119 Slab: PB477601-01 Descr: SA516-70 N (S) PART# 7-417675 QTY 2

POSCO CONFIDENTIAL. supplies 72920100743 42954

POSCO Mill Test Certificate/검사증명서 (Attached-Sheet)

Certificate No./증명서번호:131205-PPSE-009-002
Date of Issue/발행일자:Feb, 05, 2014

Order No./계약번호:0005864250 PO No./주문번호:230447
Supplier/주문자:DAE WOO INTERNATIONAL CORP. Commodity/품명:PLATE
Customer/고객사:NORTH SHORE STEEL Spec & Type/규격:SA516-70N/A516-70N(2010)

Product No. 제품번호	Chemical Composition/화학성분(%)	
	Sol-A1	CEQ
	-3	-3

PB46243901	L	31	411		
	P	33			
*** Sub Total	06D) ***	2	25,052 (kg)	55,229 (LBS)	* B/L Date ==> 2013/11/20
*** HEAT TREATMENT	==> Normalized : 891℃ 81min. ***				

PB47759901	L	30	408		
	P	31			
*** Sub Total	07D) ***	1	14,943 (kg)	32,943 (LBS)	* B/L Date ==> 2013/11/20
*** HEAT TREATMENT	==> Normalized : 891℃ 91min. ***				

*** Lot Total ***	28	277,031 (kg)	610,740 (LBS)	* LOT NO ==> SLAB:POSCO
*** Grade Total ***	28	277,031 (kg)	610,740 (LBS)	CEQ (G) = C + Mn/8 + [Ni + Cu]/15 + {Cr + Mo + V}/5
*** Grand Total ***	28	277,031 (kg)	610,740 (LBS)	

=== Last Item ===

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process.
Melted and Manufactured in ROK

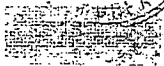
No repair welding was performed to the products.
This material has been made by vacuum degassing, calcium treated process. This material is fine grained steel.
Test Certificate is issued according to EN10204 3.1.
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Surveyor To

M.S. JANG

POSCO Pohang Works, 5 Dongchon-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-785, Korea

Chief of material testing section Man Soo, Jang



PO: 45009695/8 Line: 10 Order: 1109755 Heat: SB8719 Slab: PB477601-01 Descr: SA516-70 N [S] PART# 7-417675 QTY 2

JSW STEEL (USA) INC.

5200 East McKinney Road,
BAYTOWN, TX 77523

METALLURGICAL TEST REPORT

MET-04

Page 1 of 3

TC No.: BR205064-8188-01

Date: 2/6/2014

Sold To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008 4500969692				Ship To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008				This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Fine Grain, S1-AL Fully Killed Steel. We certify that delivery of this product with the requirement of the specification and purchase order received from customer.				Bulletin Num. 205064					
Places Manufactured in the USA				Order No: JSW1934-16													
PLATE NORMALIZED 1650 DEG F @ 95 MINS				P.O.: 20964 Insp.				Shipping Mode: DIRECT TRUCK DIN EN 10204 2004 3.1									
Specifications: HOT ROLLED PLATE CUT EDGE ASME SA516-11A GR70 PLATE NORMALIZED WITH LCYN PRESSURE VESSEL QUALITY																	
Marking Instructions: Each plate stenciled with, Mfr name, PO, Heat No., length, width, thickness, weight, grade, Plate no. 7-417782-BRN ① BNT BRN 42"600 7-417787-① UC FLG 7-41778-BRN ① BDY BNT FLG BRN 42"600																	
Item No.	Material Dimensions (in)					Heat No.	Gauge Tested	Test/Plate Identify	Test Dirac.	Test Cond	Yield Point (KSI)	Tensile Str. (KSI)	YS/UTS Ratio	Elongation		Yield Strength Determined at	Plates
	Gauge	Width	Length	Qty	Wgt. (Lbs)									in 8"	in 2"		
16	3.2500	415.00	216.00	1	22,895	S18188	3.2500	04A-A	TRAN	FN	43	71	0.61		33%	0.2%	00895713A

Charpy Impact Test (LCVN) FULL Energy in FULL Temp °F									
Sample	Temp	Test1	Test2	Test3	Avg	Test1	Test2	Test3	Avg
1	-20	58	70	50	59	75%	85%	70%	77%

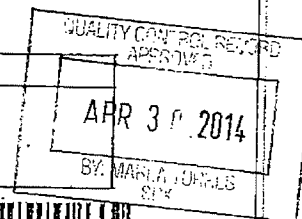
LAT. EXP. NB (No Break) -			
Test 1	Test 2	Test 3	Avg
63	74	57	85

SHEAR % AND LAT. EXP FOR REFERENCE ONLY

[illegible]

Made By:

John McIntyre



TQS, Inc.
The Quality Source

Phone: 281-449-5228
Fax: 281-449-6699.

14610 Sheraton
Houston, TX 77039

Charpy Impact Test Report

Date Received: 4/9/2014		Specification: A370		Rev. 12	Report#: 140791	
Date Completed: 4/14/2014		Procedure: WI 4.18		Rev. A	Revision: 21255	
Customer: Schill Steel Services		Deviations: N/A		Page 1 of 1		
Address: 3001 West 11th Street Houston, TX 77008		Temperature Measuring Device: Tegam		Direction: LCVN		
		Serial #: T-159722		Temp.: See Below		
		Cal Due: 8/23/2014				

Material Tested	Temp	Size	CVN Size	Heat #	Units	Results			
						A	B	C	Avg.
A516-70N	-50F	3-1/4"	10 X 10mm	S16768	FT/LB	56	37	29	40.7
A516-70N	-50F	3-1/4"	10 X 10mm	* S18188	FT/LB	58	24	17	33.0
A516-70N	-50F	2-3/4"	10 X 10mm		FT/LB				

Additional Data		Percent Shear				Lateral Expansion			
Material Tested	Heat #	A	B	C	Avg.	A	B	C	Avg.
A516-70N	S16768	30%	20%	15%	21.7%	.049	.031	.025	0.035
A516-70N	S18188	35%	10%	0%	15.0%	.042	.021	.016	0.026

Comments:					Impact Tester: SI-1K3
					Serial #: 1768
					Cal Due: 4/19/2014

All tests are performed using calibrated equipment on samples provided by the customer above, unless noted in the data section. This data applies only to samples tested by TQS, Inc. This test report may be reproduced in its entirety without permission from TQS, Inc. All requirements of TQS, Inc. Quality Assurance Program, Rev. B, Dated 8/2011 have been fulfilled.

Inspected by: J.R. Harris Date: 4/14/2014

Signature: 



**LABORATORY
ACCREDITATION
BUREAU**
ACCREDITED ISO/IEC 17025
Certificate # L2309 Testing

14610 Sheraton
Houston, TX 77039

UT CERTIFIED TEST REPORT

[illegible]

Page 1 of 1
TC No.: BR211761-8538-02
Date: 4/21/2014

Sold To: 4500969681 SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008 BIM PL 42" 600				Ship To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008				This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Fine Grain, Si-AL Fully Killed Steel. We certify that delivery of this product with the requirement of the specification and purchase order received from customer.				Bulletin Num. 211761			
Plates Manufactured in the USA				Order No: JSW2400-01											
PLATE NORMALIZED 1650 DEG F @ 85 MINS				P.O.: 21243				Insp.				Shipping Mode: DIRECT TRUCK DIN EN 10204 2004 3.1			
Specifications: HOT ROLLED PLATE CUT EDGE ASME SA516-11A GR70 PLATE NORMALIZED WITH LCYN PRESSURE VESSEL QUALITY															
Marking Instructions: Each plate stencilled with, Mfr name, PO, Heat No., length, width, thickness, weight, grade Plate no.															

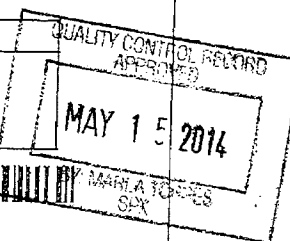
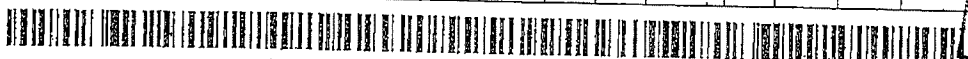
Item No.	Material Dimensions (in.)					Heat No.	Gauge Tested	Test/ Plate Identity	Test - Direc.	Test Cond	Yield Point (KSI)	Tensile Str. (KSI)	YS/UTS Ratio	Elongation		Yield Strength Determined at	Plates
	Gauge	Width	Length	Qty	Wgt. (Lbs)									in 8"	in 2"		
01	2.7500	121.00	234.00	1	22,082	S18538	2.7500	03A-A	TRAN	PN	44	74	0.59		32%	0.2%	00907547A

Charpy Impact Test (LCVN) FULL Energy in Ft/Lb Temp °F					
Sample	Temp	Test1	Test2	Test3	Avg
1	-30	92	90	92	91

Test	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	N	V	B	Ti	Nb	Ca	CE					
LADLE	0.20	1.13	0.011	0.003	0.38	0.035	0.018	0.026	0.002	0.000	0.040	0.0030	0.005	0.0004	0.003	0.001	0.0016	0.40					

Made By:

Felicia McIntyre



TQS, Inc.
The Quality Source

Phone: 281-449-5228
Fax: 281-449-8699

14610 Sheraton
Houston, TX 77039

Charpy Impact Test Report

Date Received: 4/23/2014			Specification: A370 Rev 12			Report#: 140921			
Date Completed: 4/26/2014			Procedure: WI 4 18 Rev A			Revision: 21290			
Customer: Schill Steel Services			Deviations: N/A			Page 1 of 1			
Address: 3001 West 11th Street Houston, TX 77008			Temperature Measuring Device: Tegan			Direction: LCVN			
			Serial #: T-159722			Temp.: See Below			
			Cal Due: 8/23/2014						
						Results			
Material Tested	Temp	Size	CVN Size	Heat #	Units	A	B	C	Avg.
A516-70N	-50F	2-3/4"	10 X 10mm	S18188	FT/LB	16	20	42	26.0
A516-70N	-50F	2-3/4"	10 X 10mm	S18166	FT/LB	41	32	19	30.7
A516-70N	-50F	2-3/4"	10 X 10mm	* S18538	FT/LB	65	24	46	45.0
A516-70N	-50F	3-3/4"	10 X 10mm		FT/LB				
A516-70N	-50F	3-3/4"	10 X 10mm	S16781	FT/LB	65	80	52	65.7
Additional Data		Percent Shear				Lateral Expansion			
Material Tested	Heat #	A	B	C	Avg.	A	B	C	Avg.
A516-70N	S18188	10%	10%	20%	13.3%	.015	.018	.032	0.027
A516-70N	S18166	20%	15%	10%	15.0%	.033	.030	.012	0.025
A516-70N	S18538	35%	10%	25%	23.3%	.049	.017	.000	0.022
A516-70N									
A516-70N	S16781	35%	40%	30%	35.0%	.040	.057	.053	0.050
Comments:					Impact Tester: SI-1K3				
					Serial #: 1768				
					Cal Due: 4/19/2015				
All tests are performed using calibrated equipment on samples provided by the customer above, unless noted in the data section. This data applies only to samples tested by TQS, Inc. This test report may be reproduced in its entirety without permission from TQS, Inc. All requirements of TQS, Inc. Quality Assurance Program, Rev. B, Dated 8/2011 have been fulfilled.									
Inspected by: Ty Bertrand					Date: 4/28/2014				
Signature: 					 LABORATORY ACCREDITATION BUREAU ACCREDITED ISO/IEC 17025 Certificate # L2008-000001				

14610 Sheraton
Houston, TX 77039

UT CERTIFIED TEST REPORT

[illegible]

JSW STEEL (USA) INC.

5200 East McKinney Road,
BAYTOWN, TX 77523

METALLURGICAL TEST REPORT

MET-04

Page 1 of 1

TC No.: BR205064-8188-01

Date: 2/6/2014

Sold To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008 4500969692		Ship To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008		This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Fine Grain, S1-AL Fully Killed Steel. We certify that delivery of this product with the requirement of the specification and purchase order received from customer.				Bulletin Num. 205064									
Places Manufactured in the USA		Order No: JSW1934-16															
PLATE NORMALIZED 1650 DEG F @ 95 MINS		P.O.: 20964 Insp.		Shipping Mode: DIRECT TRUCK DNYEN 10204 2004 J.I													
Specifications: HOT ROLLED PLATE CUT EDGE ASME SA516-11A GR70 PLATE NORMALIZED WITH LCYN PRESSURE VESSEL QUALITY																	
Marking Instructions: Each plate stenciled with, Mfr name, PO, Heat No., length, width, thickness, weight, grade. Plate no.																	
7-417782-BRN ① BNT BRN 42"600 7-417787-① UC FLG 7-417778-BRN ① BDY BNT FLG BRN 42"600																	
Item No.	Material Dimensions (in)					Heat No.	Gauge Tested	Test/Plate Identity	Test Dfrec.	Test Cond	Yield Point (KSI)	Tensile Str. (KSI)	YS/UTS Ratio	Elongation		Yield Strength Determined at	Plates
	Gauge	Width	Length	Qty	Wgt. (Lbs)									in 8"	in 2"		
16	3.2500	115.00	216.00	1	22,895	S18188	3.2500	04A-A	TRAN	PN	43	71	0.61		33%	0.2%	00895713A

Charpy Impact Test (LCVN) FULL Energy in F/Lb Temp °F									
Sample	Temp	Test1	Test2	Test3	Avg	Test1	Test2	Test3	Avg
1	-20	58	70	50	59	75%	85%	70%	77%

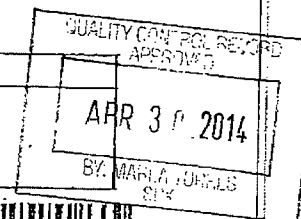
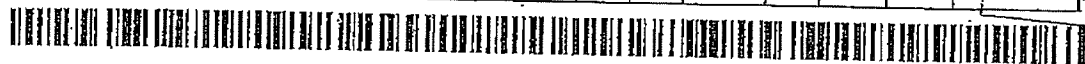
LAT. EXP. NB (No Break) -			
Test 1	Test 2	Test 3	Avg
63	74	57	85

SHEAR % AND LAT. EXP FOR REFERENCE ONLY

[illegible]

Made By:

John McIntyre



TQS, Inc.
The Quality Source

Phone: 281-449-5228
Fax: 281-449-6699

14610 Sheraton
Houston, TX 77039

Charpy Impact Test Report

Date Received: 4/9/2014		Specification: A370		Rev. 12	Report#: 140791					
Date Completed: 4/14/2014		Procedure: WI 4.18		Rev. A	Revision: 21255					
Customer: Schill Steel Services		Deviations: N/A		Page 1 of 1						
Address: 3001 West 11th Street Houston, TX 77008		Temperature Measuring Device: Tegam		Direction: LCVN						
		Serial #: T-159722		Temp.: See Below						
		Cal Due: 8/23/2014								
Material Tested		Temp	Size	CVN Size	Heat #	Units	Results			
A516-70N	-50F	3-1/4"	10 X 10mm	S16768	FT/LB	A	B	C	Avg.	
A516-70N	-50F	3-1/4"	10 X 10mm	* S18188	FT/LB	56	37	29	40.7	
A516-70N	-50F	2-3/4"	10 X 10mm		FT/LB	58	24	17	33.0	
Additional Data		Percent Shear				Lateral Expansion				
Material Tested	Heat #	A	B	C	Avg.	A	B	C	Avg.	
A516-70N	S16768	30%	20%	15%	21.7%	.049	.031	.025	0.035	
A516-70N	S18188	35%	10%	0%	15.0%	.042	.021	.016	0.026	
Comments:						Impact Tester: SI-1K3				
						Serial #: 1768				
						Cal Due: 4/19/2014				
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Inspected by: J.R. Harris		Date: 4/14/2014				 LABORATORY ACCREDITATION BUREAU ACCREDITED ISO/IEC 17025 Certificate # L2308 Testing				
Signature: 										

14610 Sheraton
Houston, TX 77039

[illegible]

JSW STEEL (USA) INC.

5200 East McKinney Road,
BAYTOWN, TX 77523
METALLURGICAL TEST REPORT

MKT-04

Page 1 of 1

TC No.: BR201298-7857-02

Date: 12/23/2013

Sold To: 4500969692 SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008 LC FLG.	Ship To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008	This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Fine Grain, St-AL Fully Killed Steel. We certify that delivery of this product with the requirement of the specification and purchase order received from customer.		Bulletin Num. 201298
Plates Manufactured in the USA	Order No: JSW1650-07			
PLATE NORMALIZED 1650 DEG F @ 85 MINS	P.O.: 20827 Insp.	Shipping Mode: DIRECT TRUCK DIN EN 10204 2004 3.1		
Specifications: HOT ROLLED PLATE CUT EDGE ASME SA516-11A GR70 PLATE NORMALIZED WITH LCVN PRESSURE VESSEL QUALITY				
Marking Instructions: Each plate stenciled with, Mfr name, PO, Heat No., length, width, thickness, weight, grade, Plate no.				

Item No.	Material Dimensions (in)					Heat No.	Gauge Tested	Test/Plate Identity	Test Dirce.	Test Cond	Yield Point (KSI)	Tensile Str. (KSI)	YS/UTS Ratio	Elongation		Yield Strength Determined at	Plates
	Gauge	Width	Length	Qty	Wgt. (Lbs)									in 8"	in 2"		
07	2.7500	121.00	266.00	1	25.102	S17857	2.7500	02A-A	TRAN	PN	38	71	0.54		35%	0.2%	00886205A

Charpy Impact Test (LCVN) FULL Energy In Full Temp °F

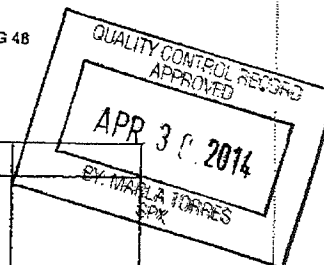
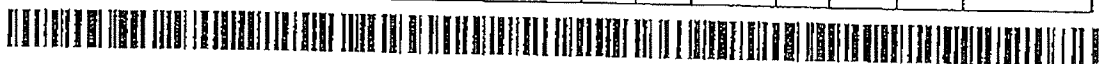
Sample	Temp	Test1	Test2	Test3	Avg				
1	-30	28	30	28	29				

FOR REFERENCE ONLY
LAT. EXP. 46 52 48 AVG 48

[illegible]

Made By:

Courtney Johnson



TQS, Inc.
The Quality Source

Phone: 281-449-5228
Fax: 281-449-6699

14610 Sheraton
Houston, TX 77039

Charpy Impact Test Report

Date Received: 1/13/2014		Specification: A370		Rev. 12		Report#: 140054	
Date Completed: 1/13/2014		Procedure: WI 4.18		Rev. A		Revision:	
Customer: Schill Steel Services		Deviations: N/A				Page 1 of 1	
Address: 3001 West 11th Street Houston, TX 77008		Temperature Measuring Device: Tegam				Direction: LCVN	
		Serial #: T-159722				Temp.: See Below	
		Cal Due: 8/23/2014					

Material Tested	Temp	Size	CVN Size	Heat #	Units	Results			
						A	B	C	Avg.
A516-70N	-50 F	2 3/4"	10 X 10mm	S17609	FT/LB	43	64	14	40.3
A516-70N	-50 F	2 3/4"	10 X 10mm	* S17857	FT/LB	77	63	42	60.7
A516-70N	-50 F	2 3/4"	10 X 10mm	S17846	FT/LB	26	50	19	31.7
A516-70N	-50 F	2 3/4"	10 X 10mm		FT/LB				
A516-70N	-50 F	2 3/4"	10 X 10mm		FT/LB				

Additional Data		Percent Shear				Lateral Expansion			
Material Tested	Heat #	A	B	C	Avg.	A	B	C	Avg.
A516-70N	S17609	20%	40%	5%	21.7%	.038	.049	.013	0.033
A516-70N	S17857	40%	30%	20%	30.0%	.055	.049	.035	0.046
A516-70N	S17846	10%	20%	5%	11.7%	.022	.053	.018	0.031
A516-70N		0%	5%	0%	1.7%	.007	.016	.013	0.012
A516-70N		0%	0%	5%	1.7%	.010	.010	.013	0.011

Comments:	Impact Tester:	SI-1K3
	Serial #:	1768
	Cal Due:	4/19/2014

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Inspected by: Jarrod Harris Date: 1/13/2014

Signature: 



**LABORATORY
ACCREDITATION
BUREAU**
ACCREDITED ISO/IEC 17025
Certificate # L2308 Testing

TQS, Inc.
The Quality Source

Phone: (281) 449-5229
Fax: (281) 449-6699

14610 Sheridan
Houston, TX 77039

UT CERTIFIED TEST REPORT

Date Received: 12/30/2013		Specification: A578 LVI C		Report #: 132439	
Date Complete: 12/30/2013		Procedure: TQS-UT-01		PO #: 20883	
Customer: Schil Steel Services		Deviations: N/A		Page 1 of 1	
Address: 3001 West 11th Street Houston, TX 77006		UT Instrument: RFD2000		Serial#: A00212011203	
		Couplant: Water		Cal Due 10/7/2014	
		Batch #: N/A			

Material Tested	Size	PIN	Heat #	RESULTS		
				Recordable	Reject	Acceptable
A516-70 N	2 3/4" x 121 x 265		S17857	0	0	1
A516-70 N	2 3/4" x 121 x 268		S17856	0	0	1
A516-70 N	2 3/4" x 121 x 234		S17850	0	0	1
A516-70 N	2 3/4" x 121 x 234		S17849	0	0	3
A516-70 N	2 3/4" x 121 x 234		S17602	0	0	2
A516-70 N	2 3/4" x 121 x 234		S17817	0	0	1
A516-70 N	2 3/4" x 121 x 234		S17859	0	0	1
A516-70 N	2 3/4" x 121 x 234		S17848	0	0	1

DBS				TRANSDUCERS					
Cal.	Serial #	Reflector size	Serial #	Brand	Size	Degree	Frequency		
Logitudinal									
73	FBH	TQS-UT05	1/8" FBH	S-5094	Technisonic	1"	N/A		
		TQS-UT06							

SKETCH: (If applicable)

Technique Used

Transducer

Sound

Plate

Comments: Material corrected

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Signed By: Jarrod Harris Level II Date: 1/3/2014

Signature:

TEX-FAB, INC

BUS (281)373-0855 FAX (281)373-5317



PRESSURE VESSELS

P.O. BOX 40508 HOUSTON, TEXAS 77240-0508

DATA PACKAGE FOR: SPX FLOW TECHNOLOGY SYSTEMS INC.

TEX-FAB, INC. S/O NO. 14-380

P.O. NO. 4500969522

ITEM NO. 7-417785

①

DESCRIPTION: (1) FORMED AND WELDED CHANNELS.

PLEASE FIND ATTACHED ORIGINALS AND/OR COPIES OF THE FOLLOWING DATA AS REQUIRED:

ASME DATA REPORT: _____

MTR'S FOR MATERIAL: _____ X

RT REPORT: _____ X

UT REPORT: _____ X

MT REPORT: _____

PT REPORT: _____

HARDNESS REPORT: _____

HEAT TREAT CHART: _____

HYDRO CHART/REPORT: _____

NAME PLATE: _____

PRODUCTION WELD TEST: _____ X

REMARKS:

CHANNELS 1" THK x 8.75" WIDE x 24.13" TALL x 6.06" LONG.

SA-537 CL 1 MATERIAL. HEAT CODE HC0059

CHANNEL CUPOLA TUBE (CHNL), 42" 600# M303A*

THANK YOUR FOR YOUR ORDER AND IF THERE ARE ANY QUESTION CONCERNING THIS DATA
PLEASE CALL ME AT (281) 373-0855 EXT. 14. *DESIGN AND CALCULATIONS NOT BY TEX-FAB, INC.

JAY JOHNSON
QUALITY CONTROL MANAGER



04/25/2014 From:AMERICAN ALLOY STEEL, INC.

To: TEX-FAB, INC.

P.O.#: VB14-380

S.O.#: 481493

AA PL#: 8057312

Item: 1 (1 PC) 1" X 7" X 90" (MARK DOR)

TAG: PO# VB14-380

HC0059

TEST CERTIFICATE

SHIP TO: ARCELORMITTAL PLATE LLC

AMERICAN ALLOY STEEL
6230 N HOUSTON ROSSLYN RD
NORTH HOUSTON TX 77091PAGE NO: 01 OF 02
FILE NO: 0284-01-32
MILL ORDER NO: 22919-001
MELT NO: C9468
SLAB NO: 4B
DATE: 12/09/13SOLD TO:
AMERICAN ALLOY STEEL, INC
P. O. BOX 40469
HOUSTON TX 77240-0469SEND TO:
AMERICAN ALLOY STEEL, INC
P. O. BOX 40469
ATTN: HOMER GARZA
HOUSTON, TX 77240-0469

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
1	1"	120"	360"	RECTANGLE	12252#

CUSTOMER INFORMATION

CUSTOMER PO: 96929

PART NO. 10

Certified a true copy of the
original, retained in our file.
AMERICAN ALLOY STEEL

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE
ORDER REQUIREMENTS AND SPECIFICATION(S).API 2H-9TH-EDITION YR 06 GR 50 S1 S3 S4
SUPPL. PARA. S5 APPLIES. ASTM A537 08 CLASS 1 MOD
TO .04 MAX CB AND ASME SA537 ED 10 11A ADDENDA
CLASS 1 MOD TO .04 MAX CB ABS PART-2-SECT-3 2011
GR.DH/EH36, ASTM A131 08 GR.DH/EH36, ASTM A633 01
GR.C, & MIL-S-22698C(SH) GR.DH36THE MANAGEMENT SYSTEMS FOR MANUFACTURE OF THIS PRODUCT ARE CERTIFIED
TO ISO 9001:2008 (CERTIFICATE NO. 30130) AND ISO 14001 (CERTIFICATE
NO. 009496).

CHEMICAL COMPOSITION

MELT:C9468	C	MN	P	S	CU	SI	NI	CR	MO
	.12	1.36	.010	.001	.18	.28	.11	.17	.04

MELT:C9468	V	TI	B	AL	CB	CA	N	CEF	PCM
	.001	.002	.0003	.043	.028	.0017	.0055	.41	.220

CARBON EQUIVALENT FORMULA (CEF)

CEF = C + (MN * .1667) + ((CR + MO + V) * .2000) + ((CU + NI) * .0667)

PCM FORMULA (PCM)

PCM = C + (SI / 30) + ((MN + CU + CR) / 20)
+ (NI / 60) + (MO / 15) + (V / 10) + (S * B)

MANUFACTURE

FINELINE - VACUUM DEGASSED - FINE GRAIN PRACTICE

TEX-FAB, INC.

THIS CARBON SECTION WAS FORMED IN
ACCORDANCE WITH ASME CODE SECTION
VIII DIV. 1, UCS 79 (d) AND UG-80.

14-380

MTH'S SUPPLIED BY TEX-FAB, INC.

CUST. SPX

P.O. # 4502969522

ITEM # 2-417785

PA2513080

RECEIVED
PLATE # 14-380
DATE 4/28/14WE HEREBY CERTIFY THE ABOVE
INFORMATION IS CORRECT:ARCELORMITTAL PLATE LLC
QUALITY ASSURANCE LABORATORY
139 MODENA ROAD
COATESVILLE, PA 19320SUPERVISOR - TEST REPORTING
ELINORE ZAPLITNY

MTR. CHECKED

DATE 4-28-14

BY: [Signature]

04/25/2014 From: AMERICAN ALLOY STEEL, INC.

To: TEX-FAB, INC.

P.O.#: VB14-380

S.O.#: 481493

AA PL#: 8057312

Item: 1 (1 PC) 1" X 7" X 90" (MARK DOR)

TAG: PO# VB14-380

HC0059

TEST CERTIFICATE

PAGE NO: 02 OF 02
 FILE NO: 0284-01-32
 MILL ORDER NO: 22919-001
 MELT NO: C9468
 SLAB NO: 4B
 DATE: 12/09/13

HEAT TREAT CONDITION

MATL OR TEST	HEAT TREAT DESCRIPTION	NOM TEMP	HOLD MINS	COOL MTHD
PL/TEST	NORMALIZE	1650F	27	AIR COOL

TENSILE PROPERTIES

SLAB NO.	LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%R.A.
4B	BOT.	THRU GA.				
4B	TOP	THRU GA.				43.0
4B	BOT.	TRANS.	581	774	2.00" 32.0	35.0

CHARPY V-NOTCH IMPACT RESULTS

SLAB	LOC	DIR	TEMP	SIZE	FT. LBS.
4B	BOT.	TRANS.	-50F	FULL	147 191 195

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.
 A.B.S. Q.A. CERTIFICATE 10-MMPQA-586.
 MATERIAL HAS BEEN VACUUM DEGASSED AND CALCIUM TREATED
 FOR SULFIDE SHAPE CONTROL.
 FINELINE MOD FOR SULPHUR
 TEST CERTS. ARE PREPARED IN ACCORD. WITH PROCEDURES
 OUTLINED IN EN 10204:2004 TYPE 3.1.
 MERCURY OR MERCURY COMPOUNDS ARE NOT USED IN THE
 MANUFACTURE OF ARCELORMITTAL PLATE LLC PRODUCTS.
 ACID SOLUBLE ALUMINUM
 FOR MORE INFORMATION AND PROCESSING GUIDELINES, REFER TO
 WWW.ARCELORMITTAL.COM/PLATEINFORMATION

B/L#37800 BVRY 63051

WE HEREBY CERTIFY THE ABOVE
 INFORMATION IS CORRECT:

ARCELORMITTAL PLATE LLC
 QUALITY ASSURANCE LABORATORY
 139 MODENA ROAD
 COATESVILLE, PA 19320

Elinore Zaplitny

SUPERVISOR - TEST REPORTING
 ELINORE ZAPLITNY

RADIOGRAPHY REPORT

6

PAGE 1 of 1

TECHNIQUE USED: 5

Manufacturer: TEX FAB, INC. Date: 5-6-14 S/O No: 14-380 S/N: 7-417285
Diameter: 2 1/4" Thickness: 1" Material Type: CS Weld Thickness: 1" Weld Reinforcement: N/A
Distance: Source to Object (MIN) 17 1/2" Source to Film (MAX) 18 1/2" Source side of obj. to film: 1"
Film in cassette: _____ Wall Exposure: Single ☒ Double ☐ Viewing: Single ☐ Double ☐ Wall
Spec. ASME SEC.8 ☐ B31.1 ☐ B31.3 ☐ API 1104 ☐ UW51 ☒ UW52 ☐
☐ FED (97/23/EC) AWS D1.1 ☐ Radiation: IR-192 ☒ CO-60 ☐ Curies: _____ Focal Size: 1X.1
Film Mfg: Kodak Type: M X-Ray ☐ Voltage: N/A Amperage: N/A Procedure No.: 2000 Rev.: 14-2
Penetrameter Size: B Placement: Source Side ☒ Film Side ☐ Shim Thickness: _____
Markers: Source Side ☐ Film Side ☒ Lead Screens: F .005 B .010



BT-Burn Thru BFA-Burn Thru Area C-Crack P-Porosity NW-Narrow Weld LC-Low Crown SI-Slag Inclusion SL-Slag Line
 NF-Non Fusion GP-Gas Pocket IU-Internal Undercut OU-Outside Undercut IP-Inadequate Penetration

Accepted by:

Representative of: Tex Fab, Inc.

Date:

Level II Radiographer: JASON BREWER

Level II Interpreter:

The results reported represent opinions only and are not to be considered as warranties or guarantees of quality classification or usability of material examined. In no event shall the liability of Goodisby Testing, Inc. as to any items inspected or tested (including any liability as to selection and/or results of such tests) exceed the charge of Goodisby Testing, Inc. for the inspection of such items. We shall assume no responsibility following the acceptance by the customers.

04/25/2014 From: AMERICAN ALLOY STEEL, INC.

To: TEX-FAB, INC.

P.O.#: VB14-380

S.O.#: 481493

AA PL#: 8057312

Item: 1 (1 PC) 1" X 7" X 90" (MARK DOR)

TAG: PO# VB14-380

HC0059

AMERICAN ALLOY STEEL INC.

6230 N.HOUSTON ROSSLYN RD.

P.O. BOX 40469

HOUSTON, TX. 77240-0469

(713) 462-8081

FAX: (713) 462-8342

MARCH 12, 2014

ULTRASONIC EXAMINATION REPORT

SPECIFICATION: ASME SA578 LEVEL A,B&C (2,1,3) AND SA435

EQUIPMENT: NEWSONIC MACH-1T SERIAL NO.M1426-0208

TRANSDUCER: PANAMETRICS; 1" DIAMETER; 2.25 MHz

GRID PATTERN: 100% SCAN EXAMINATION METHOD: CONTACT

COUPLANT: WATER BEAM ANGLE: 0 DEGREES

CERTIFICATION

The plates listed below have been ultrasonically examined and comply with the acceptance criteria of the above specification(s). Unless otherwise noted by an * following the plate number, there were no recordable indications observed.

PLATE NO.	SPECIFICATION	THICKNESS	WIDTH	LENGTH	HEAT NO.	SLAB NO
5138826	SA516-70	5/8"	144"	480"	H677427	2308H428
5143272	SA516-70	1/2"	96"	242"	U0002	2FB
8058306	API 2H-50	2"	96"	240"	E3L171	B11
→ 8057312	API 2H-50	1"	120"	360"	C9468	4B
8058293	API 2H-50	1-1/4"	96"	480"	W4A641	A10
8058288	API 2H-50	1-1/4"	96"	480"	W4A641	A09
8058289	API 2H-50	1-1/4"	96"	480"	W4A641	A10
8057304	API 2H-50	1"	96"	480"	C9257	1EA

EXAMINATION CONDUCTED BY
VICTOR MORENO
SNT-TC-1A LEVEL II

APPROVED BY
ALEX GARZA

SNT-TC-1A LEVEL III
ISO 9712/EN473 LEVEL II PCN NO.313592

14-380

**GOOLSBY TESTING, INC.**

2620 WILSON ROAD - P.O. BOX 1416
HUMBLE, TEXAS 77347-1416
(281) 640-1255 FAX (281) 640-8125



CLIENT: TEX FAB	DATE RECEIVED: 5/5/14
PO BOX 40608	DATE TESTED: 5/6/14
HOUSTON, TX 77240	REPORT DATE: 5/6/14
PURCHASE ORDER: 14-380	LABORATORY TEST NO: 14-05-87948
GT# :0801 SHOP ORDER#:14-380	TECHNICIAN: RICHARD CLAY
HEAT #: HC0059 SLAB #: N/A	PROCEDURE: #15 #16
HUMIDITY: 43.1	LIGHTING: 205 FC
ENVIRONMENTAL CONDITIONS: BP: 29.9	TEMP: 69.1° F
MATERIAL THICKNESS: 1" X 12" X 12"	
MATERIAL/DESCRIPTION: SA537-1(N) WELD PLATE	
SPECIFICATIONS: ASME SECT. VIII DIV. 1 PER UG 84	
SPECIAL REQUIREMENTS: N/A	

CHARPY IMPACT TEST

TESTING MACHINE: BALDWIN SATEC S1-1 K3 S/N 1706					
LINEAR VELOCITY OF HAMMER: 17 FT/SEC.			TEST METHOD: SIMPLE BEAM CHARPY		
COOLANT BATH: FTS SYSTEMS S/N G6-1			EFFECTIVE ENERGY: 300 FT/LBS./406.7 JOULES		
SPECIMEN TYPE: ASTM TYPE A LVNC			SPECIMEN SIZE: 10 MM X 10 MM		
SPECIMEN TEMP: -50° F			ACCEPTANCE CRITERIA: 18/12 FT/LBS.		
SPECIMEN LOCATION	WIDTH	EFFECTIVE SECTION SIZE	IMPACT VALUES FOOT POUNDS	% SHEAR FRACTURE	LATERAL EXPANSION
WELD	.394	.315	63	50	.046
WELD	.394	.315	69	50	.050
WELD	.394	.315	72	50	.051
HAZ	.394	.315	60	40	.037
HAZ	.394	.315	68	40	.044
HAZ	.394	.315	66	40	.042
BASE	.394	.315	260	80	.076
BASE	.394	.315	257	80	.074
BASE	.394	.315	265	80	.081

ACCEPTABLE [☒] REJECTABLE [☐] N/A [☐] PER APPLICABLE SPECIFICATIONS

GOOLSBY TESTING, INC

PER:

Richard Clay
APPROVED SIGNEE

Our letters and reports are for the use of our client to whom they are addressed. Our name may be used only with our prior written approval. Our letters and reports apply only to the sample tested and/or inspected, and do not necessarily represent the quality of other apparently similar or identical materials. The results recorded represent opinions only and are not to be considered as warranties or guarantees of quality, classification or usability of material examined. In no event shall the liability of Goolsby Testing, Inc. as to any items inspected or tested (including liability as to selection and/or results of such tests) exceed the charge of Goolsby Testing, Inc. for the inspection of such items. We shall assume no responsibility following the acceptance by the customer's field representative upon signing of field ticket. Goolsby Testing reporting and certification are completed in accordance with ISO 17025.

JSW STEEL (USA) INC.

5200, East McKinney Road,
BAYTOWN, TX 77523

METALLURGICAL TEST REPORT

MET-04

Page 1 of 3

TC No.: BR205064-8188-01

Date: 2/6/2014

Sold To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008 4500969692			Ship To: SCHILL STEEL 3001 WEST 11TH ST. HOUSTON, TX 77008			This is to certify that the product described herein was manufactured, sampled, and tested in accordance with the specifications and requirements in such specifications. Fine Grain, Si-AL Fully Killed Steel. We certify that delivery of this product with the requirement of the specification and purchase order received from customer.					Bulletin Num. 205064						
Places Manufactured in the USA			Order No: JSW1934-16														
PLATE NORMALIZED 1650 DEG F @ 95 MINS			P.O.: 20964 Insp.			Shipping Mode: DIRECT TRUCK DNEN 10204 2004 3.1											
Specifications: HOT ROLLED PLATE CUT EDGE ASME SA516-11A GR70 PLATE NORMALIZED WITH LOVN PRESSURE VESSEL QUALITY																	
Marking Instructions: Each plate stenciled with, Mfr name, PO, Heat No., length, width, thickness, weight, grade. Plate no.																	
7-417782-BRN ① BNT BRN 42"600 7-417787-① UC FLG 7-417778-BRN ① BDY BNT FLG BRN 42"600																	
Item No.	Material Dimensions (in)			Qty	Wgt. (Lbs)	Heat No.	Gauge Tested	Test/Plate Identify	Test Direc.	Test Cond	Yield Point (KSI)	Tensile Str. (KSI)	YS/UTS Ratio	Elongation		Yield Strength Determined at	Plates
	Gauge	Width	Length											in 8"	in 2"		
16	3.2500	115.00	216.00	1	22,895	S18188	3.2500	04A-A	TRAN	TN	43	71	0.61		33%	0.2%	00895713A

Charpy Impact Test (LCVN) FULL Energy in FULb Temp °F									
Sample	Temp	Test1	Test2	Test3	Avg	Test1	Test2	Test3	Avg
1	-20	58	70	50	59	75%	85%	70%	77%

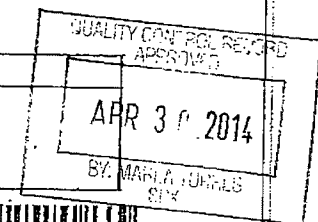
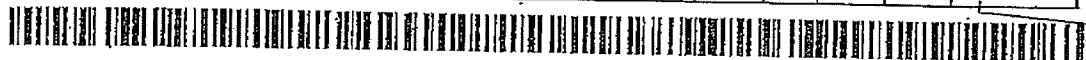
LAT. EXP. NB (No Break) -			
Test 1	Test2	Test3	Avg
63	74	57	85

SHEAR % AND LAT. EXP FOR REFERENCE ONLY

[illegible]

Made By:

John McIntyre



TQS, Inc.
The Quality Source

Phone: 281-449-5228
Fax: 281-449-6699

14610 Sheraton
Houston, TX 77039

Charpy Impact Test Report

Date Received: 4/9/2014		Specification: A370		Rev. 12	Report#: 140791	
Date Completed: 4/14/2014		Procedure: WI 4.18		Rev. A	Revision: 21255	
Customer: Schill Steel Services		Deviations: N/A		Page 1 of 1		
Address: 3001 West 11th Street Houston, TX 77008		Temperature Measuring Device: T-159722		Direction: LCVN		
		Cal Due: 8/23/2014		Temp.: See Below		

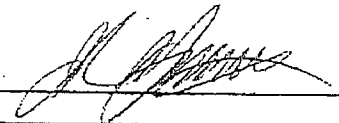
Material Tested	Temp	Size	CVN Size	Heat #	Units	Results			
						A	B	C	Avg.
A516-70N	-50F	3-1/4"	10 X 10mm	S16768	FT/LB	56	37	29	40.7
A516-70N	-50F	3-1/4"	10 X 10mm	* S18188	FT/LB	58	24	17	33.0
A516-70N	-50F	2-3/4"	10 X 10mm		FT/LB				

Additional Data		Percent Shear				Lateral Expansion			
Material Tested	Heat #	A	B	C	Avg.	A	B	C	Avg.
A516-70N	S16768	30%	20%	15%	21.7%	.049	.031	.025	0.035
A516-70N	S18188	35%	10%	0%	15.0%	.042	.021	.016	0.026
A516-70N									

Comments:	Impact Tester: SI-1K3
	Serial #: 1768
	Cal Due: 4/19/2014

All tests are performed using calibrated equipment on samples provided by the customer above, unless noted in the data section. This data applies only to samples tested by TQS, Inc. This test report may be reproduced in its entirety without permission from TQS, Inc. All requirements of TQS, Inc. Quality Assurance Program, Rev. B, Dated 8/2011 have been fulfilled.

Inspected by: J.R. Harris Date: 4/14/2014

Signature: 



**LABORATORY
ACCREDITATION
BUREAU**
ACCREDITED ISO/IEC 17025
Certificate # L2309 Testing

TQS, Inc.
The Quality Source

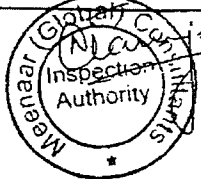
Phone: (281) 449-5228
Fax: (281) 449-6699

14610 Sheraton
Houston, TX 77039

UT CERTIFIED TEST REPORT

[illegible]

BAW PIPE
4500972375
7-082721 (81")

 WELSPUN GUJARAT STAHL ROHREN LTD. BHARUCH - GUJARAT (INDIA) L SAW PIPE DIVISION		MILL TEST CERTIFICATE (AS PER EN 10204 type 3.2)		WGSRL/LS/QA/28 (REV.7) MTC NO. : WGSRL/LS/2010/1428 DATE : 12.03.2010	
CUSTOMER					
TECH. SPEC. : LONGITUDINAL SEAM SUBMERGED ARC WELDED (LSAW) LINE PIPES AS PER API 5L 44TH EDITION PSL 2 (X70M) 2007 & CUST SPEC NO. : PL-SPC-0300 REV.4 & AS PER TECHNICAL MEETING HELD AT WELSPUN ANJAR DATED 08-12-2009				P.O. NO : 0183000 PIPE SIZE : 42" (1067 mm) OD x 0.75" (19.05 mm) WT	
RELEASED QTY : 735 NOS. 29490.00 FTS		REFER ATTACHED ANNEXURE-A (PIPE TALLY SHEET) (NOS. OF PAGES - 18)			
REMARKS:					
1 100% VISUAL & DIMENSIONAL INSPECTION OF EACH PIPE CARRIED OUT, FOUND SATISFACTORY.					
2 HYDROSTATIC TEST OF EACH PIPE AT PRESSURE 2440 PSI (168 BAR) FOR HOLDING TIME 20 SECONDS MINIMUM CARRIED OUT & FOUND SATISFACTORY.					
3 NON-DESTRUCTIVE EXAMINATION : NON-DESTRUCTIVE EXAMINATION WAS PERFORMED IN ACCORDANCE WITH CUSTOMER SPECIFICATION PL-SPC-0300 REV.4, API 5L 44TH EDITION AND APPROVED PROCEDURE.					
(a) PLATE ULTRASONIC EXAMINATION : 50MM BOTH EDGES OF EACH PLATE UT TESTED ALONG A WIDTH OF 100% BODY COVERAGE CARRIED OUT & FOUND SATISFACTORY.					
(b) WELD SEAM ULTRASONIC EXAMINATION : FULL LONGITUDINAL WELD SEAM AUTO UT EXCEPT UNTESTED LENGTH FROM BOTH ENDS & FOUND SATISFACTORY.					
(c) MANUAL ULTRASONIC EXAMINATION : EACH PIPE UNTESTED WELD LENGTH & INDICATIONS MARKED BY AUTO UT & 204 MM END CIRCUMFERENCE OF BOTH ENDS FOR LAMINAR TYPE DEFECTS & 100 MM END CIRCUMFERENCE OF BOTH ENDS BY ANGLE PROBE FOR CRACK DETECTION & FOUND SATISFACTORY.					
(d) X-RAY EXAMINATION : X-RAY OF BOTH ENDS OF EACH PIPE UP TO 203 MM MINIMUM CARRIED OUT, & FOUND SATISFACTORY.					
(e) MAGNETIC PARTICLE EXAMINATION - MPI OF BOTH BEVELLED FACES OF PIPE CARRIED OUT AND FOUND SATISFACTORY.					
(f) RESIDUAL MAGNETISM : RESIDUAL MAGNETISM CHECKED 3 PIPES/ SHIFT BY USING GAUSS METER & IT IS FOUND SATISFACTORY.					
4 EACH PIPE COLD EXPANSION DONE: RESULTS FOUND OK.					
5 MECHANICAL & CHEMICAL TESTS CARRIED OUT AS PER APPROVED QAP & CUSTOMER SPEC. & FOUND SATISFACTORY.					
MARKING					
WELSPUN 03-2010, 42 INCH(1067 mm) x 0.75 INCH(19.05 mm), 330.72 LBS /FT X 70M PSL2 SAWL  TESTED PRESSURE 2440 PSI (168 Bar) P.O. NO 0183000 P.O. LINE ITEM NUMBER 3 PROJECT NAME HAYNESVILLE-ACADIAN BUYER'S NAME ENTERPRISE PRODUCTS OPERATING, L.P. PIPE NO.: HEAT NO. LENGTH FT ASL NO WEIGHT LBS					
5L-0291 MADE IN INDIA					
COLOUR BAND :					
A BLUE COLOUR BAND OF 50 MM WIDE AT NON-STENCILING END ON INSIDE SURFACE OF EACH PIPE AT A DISTANCE OF 200 MM FROM PIPE END. (FOR THICKNESS IDENTIFICATION)					
We certify that the pipes have been manufactured as per the above requirements of the above mentioned order detail and conform to API 5L 44TH EDITION PSL 2 (X70M) 2007 SPEC. & Approved QAP NO. WGSRL/LS/HAYNESVILLE/01 REV.01 DTD 21.01.2010					
 H.O.D (QA&C)		 G.M (QA&C)		 INSPECTION AUTHORITY	
					

WELSPUN GUJARAT STAHL ROHREN LTD.
BHARUCH - GUJARAT (INDIA)
L SAW PIPE DIVISION

MILL TEST CERTIFICATE

(AS PER EN 10204 type 3.2)

WGSRL/LS/0428 (REV 7)

MTC NO. : WGSRL/LS/2010/1428
DATE : 12.03.2010

CUSTOMER :

P.O. NO. : 0183000

PIPE SIZE : 42" (1067 mm) OD x 0.75" (19.05 mm) WT

TECH. SPEC. : LONGITUDINAL SEAM SUBMERGED ARC WELDED (LSAW) LINE PIPES
AS PER API SL 44TH EDITION PSL 2 (X70M) 2007 & CUST. SPEC NO. :- PL-SPC-0300 REV.4 &
AS PER TECHNICAL MEETING HELD AT WELSPUN ANJAR DATED 08-12-2009

CHEMICAL PROPERTIES

CHEMICAL PROPERTIES																									
SR. NO.	HEAT NO.	SAMPLE PIPE NO.			C	Si	Mn	P	S	Al	Cr	Ni	Mo	Cu	V	Nb	Ti	Ca	N	B	Al/N	Ni+Cu+Cr+Mo	V+Nb+Ti	CE Pcm	CE C=0.12%
					MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
1	812991	L10002804	PRODUCT		0.100	0.350	1.70	0.018	0.008	0.020	0.250	0.250	0.250	0.300	0.080	0.080	0.020	0.004	0.0090	0.0005	2	0.60	0.15	0.210	--
		L10002806	PRODUCT		0.080	0.229	1.53	0.012	0.002	0.037	0.173	0.007	0.002	0.011	0.047	0.045	0.015	0.003	0.0052	0.0002	7.1	0.193	0.107	0.179	--
2	812999	L10002096	PRODUCT		0.081	0.231	1.56	0.014	0.004	0.040	0.171	0.009	0.003	0.010	0.054	0.047	0.014	0.002	0.0049	0.0003	8.2	0.193	0.115	0.183	--
		L10002103	PRODUCT		0.086	0.212	1.43	0.014	0.002	0.045	0.182	0.013	0.002	0.013	0.053	0.053	0.015	0.001	0.0048	0.0002	9.4	0.210	0.121	0.181	--
3	813000	L10002821	PRODUCT		0.088	0.211	1.41	0.014	0.004	0.042	0.179	0.012	0.001	0.012	0.054	0.054	0.016	0.003	0.0051	0.0002	8.2	0.204	0.124	0.182	--
		L10003237	PRODUCT		0.076	0.231	1.56	0.013	0.005	0.043	0.159	0.011	0.003	0.010	0.046	0.044	0.015	0.002	0.0045	0.0003	9.6	0.183	0.105	0.177	--
4	813001	L10002650	PRODUCT		0.079	0.229	1.53	0.010	0.004	0.040	0.161	0.010	0.001	0.011	0.048	0.045	0.016	0.002	0.0040	0.0002	10.0	0.183	0.109	0.178	--
		L10003329	PRODUCT		0.082	0.232	1.59	0.012	0.002	0.033	0.158	0.008	0.004	0.013	0.049	0.048	0.012	0.002	0.0053	0.0002	6.2	0.183	0.109	0.184	--
5	813003	L10002628	PRODUCT		0.077	0.229	1.57	0.015	0.004	0.033	0.161	0.010	0.002	0.012	0.052	0.050	0.016	0.003	0.0049	0.0002	6.7	0.185	0.118	0.178	--
		L10002763	PRODUCT		0.068	0.253	1.57	0.013	0.003	0.034	0.172	0.011	0.004	0.010	0.046	0.047	0.015	0.002	0.0051	0.0003	6.7	0.197	0.108	0.171	--
6	813005	L10002634	PRODUCT		0.073	0.249	1.55	0.011	0.002	0.033	0.168	0.009	0.002	0.010	0.048	0.048	0.016	0.003	0.0052	0.0002	6.3	0.189	0.112	0.174	--
		L10003178	PRODUCT		0.085	0.241	1.52	0.011	0.002	0.034	0.152	0.009	0.002	0.009	0.045	0.046	0.015	0.003	0.0033	0.0003	10.3	0.172	0.106	0.183	--
					0.081	0.242	1.51	0.013	0.003	0.031	0.148	0.011	0.004	0.009	0.046	0.043	0.014	0.003	0.0029	0.0002	10.7	0.172	0.103	0.178	--
FORMULA: CE(%) = C + Mn/5 + (Cr+Mo+V)/5 + (Ni+Cu)/15, CE(Pcm) = C + Si/30 + (Mn + Cu + Cr)/20 + Nb/60 + Mo/15 + V/10 + Sb																									
ABBREVIATION: MIN.: MINIMUM SPECIFIED REQUIREMENT																									

FORMULA : CE(IW) = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15 , CE(Pcm) = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + Sb

ABBREVIATION : MIN. : MINIMUM SPECIFIED REQUIREMENT, MAX. : MAXIMUM SPECIFIED REQUIREMENT.

H.O.D (QA&C)

G.M (QA&C)

INSPECTION AUTHORITY

MILL TEST CERTIFICATE

(AS PER EN 10204 type 3.2)

WGSRL/LS/2010 (REV. 7)

MTC NO. : WGSRL/LS/2010/1428
DATE : 12.03.2010

CUSTOMER

PIPE SIZE : 42" (1067 mm) OD x 0.75" (19.05 mm)WT

P.O. NO. : 0183000

TECH. SPEC. : LONGITUDINAL SEAM SUBMERGED ARC WELDED (LSAW) LINE PIPES
AS PER API 5L 44TH EDITION PSL 2 (X70M) 2007 & CUST.SPEC NO. :- PL-SPC-0300 REV.4 &
AS PER TECHNICAL MEETING HELD AT WELSPUN ANJAR DATED 08-12-2009

MECHANICAL PROPERTIES

SR. NO.	HEAT NO.	SAMPLE PLATE NO. / PIPE NO.	MIN.	NO. OF PIPES	EXPANSION (%)	PARENT METAL (BT)			TWT	GBT (ANGLE 180°)		IMPACT TEST RESULTS IN JOULES AT 0°C TEMP.						MAX. HARDNESS IN HV 10			METALLOGRAPHIC EXAMINATION (SMOOTH TEST)	DWTT % SA AT 0 °C FOR BASE METAL							
						YS (MPa)	UTS (MPa)	% EL (2" GL)	YS / UTS	UTS (MPa)	RB	FB	BM	WM	HAZ	FL+2	FL+5	% SA	HAZ	WELD		BASE	INDIVIDUAL	AVG.					
						0.8	485	570	25%	---	570	REQUIRED J.G. DIA 241.00 MM., USED J.G DIA 160.00 MM.	REF. ATTACHMENT - 1						---			---	---		85%				
						1.5	635	760	---	0.92	---								260 HV 10			---	SP1	SP2	AVG.				
1	812991	PA42319A1	@	8	---	501.25	613.07	42.24	---	---	---	---							---	---	---	---	---	---	---	---	---	---	---
		L10002804	T		1.18	517.05	618.27	42.13	0.84	660.46	OK	OK							---	---	---	---	---	---	---	---	---	---	---
		L10002804	L			523.29	605.28	42.89	0.86	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
2	812999	PA39860B1	@	2	---	523.74	608.63	42.76	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
		L10002096	T		1.03	541.19	634.70	43.94	0.85	651.88	OK	OK	---	---	---	---	---	---	---	---	---	---	---						
		L10007096	L			541.65	621.17	42.13	0.87	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
3	813000	PA42303A1	@	2	---	520.52	628.50	40.12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
		L10002821	T		1.18	548.37	638.44	39.94	0.86	673.94	OK	OK	---	---	---	---	---	---	---	---	---	---	---						
		L10002821	L			529.62	618.40	41.50	0.86	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
4	813001	PA42093A1	@	12	---	516.89	620.23	45.02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
		L10002650	T		1.18	533.95	625.49	44.90	0.85	634.17	OK	OK	---	---	---	---	---	---	---	---	---	---	---						
		L10002650	L			541.20	626.54	40.53	0.86	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
5	813003	PA42098B1	@	13	---	520.76	626.57	42.76	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
		L10002628	T		1.18	544.89	634.92	42.60	0.86	642.50	OK	OK	---	---	---	---	---	---	---	---	---	---	---						
		L10002628	L			551.90	628.75	43.31	0.88	---	---	---	---	---	---	---	---	---	---	---	---	---	---						
ABBREVIATION @ CONTROL TENSILE X TRANSVERSE																													

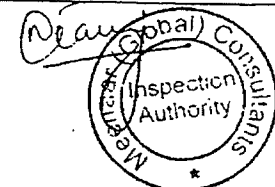
ABBREVIATION: @ CONTROL TENSILE, T TRANSVERSE, L LONGITUDINAL, EL ELONGATION, FB FACE BEND, RB ROOT BEND, GBT GUIDED BEND TEST, GL GAUGE LENGTH, SAT SATISFACTORY, UTS ULTIMATE TENSILE STRENGTH, YS YIELD STRENGTH, BM BASE METAL, WM WELD METAL, HAZ HEAT AFFECTED ZONE, DWTT DROP WEIGHT TEAR TEST, MIN MINIMUM SPECIFIED REQUIREMENT, MAX MAXIMUM SPECIFIED REQUIREMENT, TWT TRANSVERSE WELD TENSILE, TBT TRANSVERSE BASE TENSILE, SP SPECIMEN SA SHEAR AREA.



H.O.D (QA&C)



G.M (QA&C)



INSPECTION AUTHORITY



WELSPUN GUJARAT STAHL ROHREN LTD.
BHARUCH - GUJARAT (INDIA)
L SAW PIPE DIVISION

MILL TEST CERTIFICATE

(AS PER EN 10204 type 3.2)
ATTACHMENT 1
(CHARPY IMPACT TEST RESULTS)

WGSRL/0A/28 (REV.7)

MTC NO. : WGSRL/LS/2010/1428
DATE : 12.03.2010

CUSTOMER

P.O. NO : 0183000

PIPE SIZE : 42" (1067 mm) OD x 0.75" (19.05 mm) WT

TECH. SPEC. : LONGITUDINAL SEAM SUBMERGED ARC WELDED (LSAW) LINE PIPES
AS PER API 5L 44TH EDITION PSL 2 (X70M) 2007 & CUST.SPEC NO. :- PL-SPC-0300 REV.4 &
AS PER TECHNICAL MEETING HELD AT WELSPUN ANJAR DATED 08-12-2009

AS PER TECHNICAL MEETING HELD AT WELSPUN ANJAR DISTRICT 08-12-2009																										
SR. NO.	HEAT NO.	PIPE NO	ABSORBED ENERGY (JOULES MIN.) AT TEMP = 0°C																% SHEAR AREA (BASE METAL)				REMARKS			
			BASE				WELD				HAZ				FL + 2mm											
			1	2	3	AVG.	1	2	3	AVG.	1	2	3	AVG.	1	2	3	AVG.	1	2	3	AVG.		1	2	3
1	812991	L10002804	229	226	200	218.5	206	241	238	228.5	343	206	206	251.3	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
2	812999*	L10002096	298	298	298	298.0	140	140	128	136.0	298	298	298	298.0	---	---	---	---	---	---	---	100	100	100	100.0	ACCEPTABLE
3	813000	L10002821	244	250	316	270.2	197	232	188	205.6	334	343	355	343.7	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
4	813001	L10002650	238	232	250	240.4	140	164	128	144.0	325	328	262	305.0	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
5	813003	L10002628	232	271	277	260.3	164	137	194	164.9	235	286	274	265.2	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
6	813005	L10002634	247	265	355	289.1	170	179	301	216.5	221	265	265	250.3	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
7	813006	L10002621	274	250	283	269.2	152	146	146	148.0	292	349	313	317.9	---	---	---	---	---	---	---	100	100	100	100.0	ACCEPTABLE
8	813007	L10001148	244.4	238.4	250.3	244.4	149	101	188	146.0	265	253	304	274.2	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
9	813009	L10002819	229	280	221	243.4	182	134	155	156.9	316	283	274	291.0	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
10	813016	L10002782	286	170	259	238.4	158	140	146	148.0	301	292	286	293.0	---	---	---	---	---	---	---	100	100	100	100.0	ACCEPTABLE
11	813017	L10003037	235	191	206	210.6	167	203	161	176.8	352	185	152	229.5	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
12	813018	L10002623	253	271	221	248.3	182	197	200	192.7	292	346	277	305.0	---	---	---	---	---	---	---	95	95	95	95.0	ACCEPTABLE
ABBREVIATION : FL = FUSION LINE, BM = BASE METAL, AVG = AVERAGE, HAZ = HEAT AFFECTED ZONE																										

ABBREVIATION : FL = FUSION LINE, BM = BASE METAL, AVG = AVERAGE, HAZ = HEAT AFFECTED ZONE
* HEATS TESTED IN FULL SIZE SPECIMEN.

FULL SIZE SPECIMEN : (10 x 10 x 55) mm x 2 mm 'V' NOTCH
TESTED SPECIMEN SIZE : (6.7 x 10 x 55) mm x 2 mm 'V' NOTCH
REPORTED VALUE IS CONVERTED IN FULL SIZE SPECIMEN

SPECIFIED REQUIREMENTS FOR FULL SIZE SPECIMEN:

1. AVERAGE ABSORBED ENERGY (BASE) = 100 J MIN.
2. INDIVIDUAL ABSORBED ENERGY (BASE) = 75 J MIN.
3. AVERAGE ABSORBED ENERGY (WELD) = 80 J MIN.
4. INDIVIDUAL ABSORBED ENERGY (WELD) = 60 J MIN.

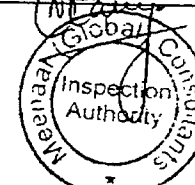
5. AVERAGE ABSORBED ENERGY (HAZ) = 45 J MIN.
6. INDIVIDUAL ABSORBED ENERGY (HAZ) = 38 J MIN.
7. AVERAGE % SHEAR AREA FOR BASE = 85% MIN.
8. INDIVIDUAL % SHEAR AREA FOR BASE = 60% MIN.



H.O.D (QA&C)



G.M (QA&C)



INSPECTION AUTHORITY



Element Materials Technology
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77009-3213 USA

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Contact: Charles Boatright
B & W Pipe, Inc.
5705 4th Street
KATY, TX 77493
P: 281 391 6688 / F: 281/391-1511

TEST CERTIFICATE — EAR-CONTROLLED DATA

Date: 4/30/2014
P.O. No.: B05-8800
W/O No.: BWP001-04-29-34806-1

Heat No.: 812999
Description: 42" OD x 0.750" Wall Pipe
Material / Process: API 5L, X70 / DSAW

CHARPY TEST RESULTS

Specification: Per Client
Procedure: ASTM A370
Direction: Transverse
Specimen Size: 10mm x 10mm x 2mm Notch

Test Temperature: -50°F
Specimen Type: ASTM Type A

Specimen	Location	Impact Value (ft-lbf)				Lateral Expansion (Mils.)			Percent Shear Fracture		
		Individual			Avg.						
1, 2, 3		162	192	115	156	97	94	78	100	100	100
Requirements, minimum		---			---	---			---		

The sample tested is for information only.

This document contains technical data whose export and re-export/retransfer is subject to control by the U.S. Department of Commerce under the Export Administration Act and the Export Administration Regulations. The Department of Commerce's prior written approval may be required for the export or re-export/retransfer of such technical data to any foreign person, foreign entity or foreign organization whether in the United States or abroad.



Testing Laboratory
Certificate Number 1480-05

Respectfully Submitted

Jim Blevins
Senior Customer Service Coordinator

Our letters and reports are for the exclusive use of the client to whom they are addressed and shall not be reproduced except in full without the approval of the testing laboratory. The use of our name must receive our written approval. Our letters and reports apply only to the sample tested and/or inspected, and are not indicative of the quantities of apparently identical or similar products. Unless otherwise noted all test methods and specifications are to the most current revision. Material submitted to our metals department will be discarded after a period of 30 days unless otherwise directed.

**Friza Forjados SA, de C.V.**

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C.P. 66360 Tels- 52(8) 153-0321, 153-0302
Fax: 52(8) 336-3560
Sta. Catarina, N.L., México

CERTIFIED COMPANY

ISO 9001: 2008

00180583

Material Test Report No.520919

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: A350/A350M LF2 CL1 Rev. 12

Pag. 1/2

Qty	Date	P.O. Number	Part No.	Job Order
1	29/04/2014	4500969585	7-237553	410615
Description	ROLLED RING 44.000" X 40.250" X 7.500" TRAN RING .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410615-02 .LINE ITEM: 20			

HEAT: 85831 (1/1) PCS

CHEMICAL ANALYSIS

HEAT No.		C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
85831	Ladle	0.19000	1.11000	0.00800	0.00500	0.21000	0.12000	0.19000	0.09000
		Cu %	V %	Nb %	CrMo %	NiCrMoCuV %	CE %		
	Ladle	0.13000	0.00300	0.00200	0.28000	0.53300	0.44827		

Hardness(HBW) PCS

Hardness

146

146

HEAT TREATMENT

Quantity	Heat Treat Lot No.	Heat Treatment	Temp. (°F)	Time at Temp (Hrs)	Cooling Medium	Quench. M. Temp. (°F)
1 PCS	425039	Normalized	1652	5.00	Air	
QTC	288203	Normalized	1652	5.00	Air	



WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED IN FRISA ALL MATERIALS ARE MERCURY FREE

CER-F-01-B

Gerardo Garcia Estrada

QUALITY ASSURANCE ENGINEER

**Friza Forjados SA, de C.V.**

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C.P. 66350 Tels- 52(8) 153-0321,153-0302
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Sta. Catarina, N.L., México

CERTIFIED COMPANY

ISO 9001: 2008

Material Test Report No.520919

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: A350/A350M LF2 CL1 Rev. 12

Pag. 2/2

Qty	Date	P.O. Number	Part No.	Job Order
1	29/04/2014	4500969585	7-237553	410615
Description ROLLED RING 44.000" X 40.250" X 7.500" .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410615-02 .LINE ITEM: 20				

Heat: 85831

Track ID: 339/16-12

MECHANICAL PROPERTIES**TENSILE TEST**

Orientation	Position	Location	Heat Treat Lot No.	Yield Strength (PSI)	Tensile Strength (PSI)	Elong. % (2")	A.R.(%)	Temp Tens °F	Post Welding HT Temp °F	Time	Cycle
Long	1/4 T		288203	47100	72900	35	69	77			

Heat: 85831

IMPACT TEST

Orientation	Position	Location	Heat Treat Lot No.	CVN (ft-lb)			Lat Exp (IN)			Shear (%)			Temp (F)	Post Welding HT T °F	T °C
Long	1/4 T		288203	64	84	71	0.0530	0.0670	0.0570	60	60	60	-51		

Heat: 85831

HARDNESS HBW QTC

Orientation	Position	Location	Heat Treat Lot No.	Point	Hardness	Post Welding HT Temp °F	Time	Cycle
Long	1/4 T		288203		147			
Long	1/4 T		288203		147			

OBSERVATIONS

- . FORGING RATIO: 8.7 TO 1
- . QTC SIZE (4 X 4 X 12)
- . IMPACT TEST: 0.390" X .390" X 2.160" CVN SPECIMEN
- . TENSILE TEST: 0.500" DIAMETER SPECIMEN AND 2.0" GAUGE LENGTH
- . FURNACE CALIBRATED AND SURVEYED PER API 6A ANNEX M 20th EDITION REQUIREMENTS
- . HARDNESS ON TEST SPECIMEN IS REPRESENTED BY TWO VALUES.
- . FURNACE TEMPERATURE MONITORING AND RECORDING METHOD: AIR THERMOCOUPLE
- . THE SPECIMEN FOR MECHANICALS WERE TAKEN TO: 1/4 T
- . CVN TEST SPECIMEN: LONGITUDINAL
- . TESTING ACCORDING TO ASTM A370

WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED
IN FRISA ALL MATERIALS ARE MERCURY FREE

CER-F-01-B

Gerardo Garcia Estrada

QUALITY ASSURANCE ENGINEER

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CERTIFIED COMPANY

ISO 9001: 2008

00180582

Material Test Report No.520918

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: A350/A350M LF2 CL1 Rev. 12

Pag. 1/2

Qty	Date	P.O. Number	Part No.	Job Order
1	29/04/2014	4500969585	7-237553	410615
Description ROLLED RING 44.000" X 40.250" X 7.500" TRAN RING .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410615-01 .LINE ITEM: 20				

HEAT: MM13104271 (1/1) PCS

CHEMICAL ANALYSIS

HEAT No.	Ladle	C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
MM13104271		0.19000	1.12000	0.01000	0.01900	0.22000	0.07000	0.11000	0.02000
	Ladle	Cu %	V %	Nb %	CrMo %	NCrMoCuV %	CE %		
		0.21000	0.00400	0.00100	0.13000	0.41400	0.42213		

Hardness(HBW) PCS

Hardness

152

152

HEAT TREATMENT

Quantity	Heat Treat Lot No.	Heat Treatment	Temp. (°F)	Time at Temp (Hrs)	Cooling Medium	Quench. M. Temp. (°F)
1 PCS	425210	Normalized	1652	5.00	Air	
QTC	408865	Normalized	1652	5.00	Air	



WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED IN FRISA ALL MATERIALS ARE MERCURY FREE

CER-F-01-B

Gerardo García Estrada

QUALITY ASSURANCE ENGINEER

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Sta. Catarina, N.L., México

CERTIFIED COMPANY
ISO 9001: 2008

Material Test Report No.520918

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: A350/A350M LF2 CL1 Rev. 12

Pag. 2/2

Qty	Date	P.O. Number	Part No.	Job Order
1	29/04/2014	4500969585	7-237553	410615
Description ROLLED RING 44.000" X 40.250" X 7.500" .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410615-01 .LINE ITEM: 20				

Heat: MM13104271

Track ID: 273/075-13

MECHANICAL PROPERTIES**TENSILE TEST**

Orientation	Position	Location	Heat Treat Lot No.	Yield Strength (PSI)	Tensile Strength (PSI)	Elong. % (2")	A.R.(%)	Temp Tens °F	Post Welding HT Temp °F	Time	Cycle
Long	1/4 T		408865	46600	72500	38	68	77			

Heat: MM13104271

IMPACT TEST

Orientation	Position	Location	Heat Treat Lot No.	CVN (ft-lb)			Lat Exp (IN)			Shear (%)			Temp (F)	Post Welding HT T °F T °C		
Long	1/4 T		408865	35	29	33	0.0320	0.0280	0.0280	30	30	30	-51			

Heat: MM13104271

HARDNESS HBW QTC

Orientation	Position	Location	Heat Treat Lot No.	Point	Hardness	Post Welding HT Temp °F	Time	Cycle
Long	1/4 T		408865		144			
Long	1/4 T		408865		148			

OBSERVATIONS

. FORGING RATIO: 8.7 TO 1
. QTC SIZE (4 X 4 X 12)
. IMPACT TEST: 0.390" X .390" X 2.160" CVN SPECIMEN
. TENSILE TEST: 0.500" DIAMETER SPECIMEN AND 2.0" GAUGE LENGTH
. FURNACE CALIBRATED AND SURVEYED PER API 6A ANNEX M 20th EDITION REQUIREMENTS
. HARDNESS ON TEST SPECIMEN IS REPRESENTED BY TWO VALUES.
. FURNACE TEMPERATURE MONITORING AND RECORDING METHOD: AIR THERMOCOUPLE
. THE SPECIMEN FOR MECHANICALS WERE TAKEN TO: 1/4 T
. CVN TEST SPECIMEN: LONGITUDINAL
. TESTING ACCORDING TO ASTM A370

WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

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CER-F-01-B

Gerardo García Estrada

QUALITY ASSURANCE ENGINEER



ASIL CELIK
SANAYİ ve TİCARET A.Ş.
http://www.asilcelik.com.tr

KALİTE BELGESİ

QUALITY CERTIFICATE / MILL TEST CERTIFICATE

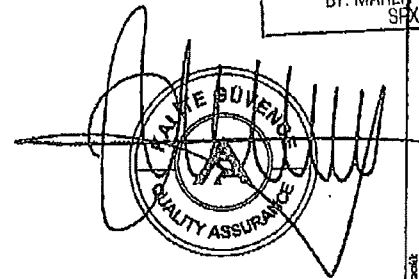


Döküman No / Document Number 1207233		Tarih / Date 20.09.2012		Sayfa / Page 1																											
Müşteri / Customer DUFERCO SA	Müşteri Sip. No / Your Order No	Sip. No. / Our Order No. 1111200722	Belge Norm / Document Norm EN 10204/3.1	Sip. Miktarı / Order (Kg) 25000																											
Kalite / Quality SAE4140/42 QT L80 SR	Keşit / Dimension Y/Rd 4.5"	Döküm No / Heat No. 120753	Ağırlık / Weight (Kg) 46584 Lbs	Adet / Quantity 42																											
Malzeme / Product HOT ROLLED ROUND STEEL BARS AND QUENCHED & TEMPERED AND STRESS RELIEVED ACC. TO ASTM A29/A29M-08, A304, A255, A370, A388, E45, E23-07, API 8A PSL3, A322-07, E112, A361, A2301, AMS 2750, API 16A, AMS MIL H6755-PAR 4.2.1 WAVED, NACE MR 01-76 / ISO 15184-2			Onaylayan / Approved By Subutay SEZGİN																												
Çelik Yapım Metodu / Steelmaking Process : Avcı Ocağı / EAF, Potu Fırını / LF, Vakumda Gaz Alma / VD																															
Pota Kimyasal Analizi / Ladle Chemical Composition (%)																															
C	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	Sn	V	B	Ti	W	Nb	H															
.42	.28	.93	.009	.017	1.02	.21	.10	.021	.13	.009	.005	.0003	.002	.004	.002	.00009															
Sertleşebilirlik / End Quench Test J1/16 inch (HRC)																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
60	59	58	58	58	57	57	57	56	56	54	54	53	52	51	50	47	44	44	43	41	40	40	39								
Mekanik Özellikler / Mechanical Properties (Mildradius)																															
Sertlik Hardness		Akma Yield		Çekme Tensile		Uzama Elongation		Keşit Dairesi Red Of Area		Çentik Impact		ISO-V (ft-lbs)		Ort/Av		Sıcaklık/Temp		LE		SH											
MD 223 HB		64703		105154		23		64		D1		D2		D3		72°F		1.82-2.04-2.04		100-100-100											
MD 223 HB										L 74		74		74		-75°F		1.03-1.04-1.04		80-80-80											
SRF 235 HB										T 48		44		45		72°F															
SRF 235 HB										T 19		21		18		-75°F															
Mikro Temizlik / Non-Metallic Inclusions																															
ASTM E45 METHOD A																															
A		B		C																											
T 2.00		.50		.00																											
H 1.00		.65		.00																											
Tane Boyu/Grain Size (ASTM E-112)		Mikro Dağılım Macro Etching (ASTM E-381)		D1 (Inch)																											
7-8		S R C		0.12																											
				İngot : 29.1/1																											
ASTM E46 METHOD C																															
S		O																													
0		2																													
MECHANICAL PROPERTIES TAKEN FROM PROLONGATION																															
LENGTH OF PROLONGATION : 20 cm / TENSILE SPECIMEN : RND. 12.5 mm																															
GAGE LENGTH (IN) ELONGATION : 2 inch / FBH SIZE MAX.3.2 mm & RESULTS WERE OK																															
CHARPY SPECIMEN : 10X10X55 mm / FURNACE CALIBRATION : AMS 2750																															
YIELD (EUL 0.5%) : 84358 PSI / QUENCH MEDIA POLYMER / COOLING MEDIA AIR																															
TEMP. OF TENSILE SPECIMEN : AMBIANT TEMP.																															
QUENCH TEMPERATURES AT START/FINISH : 100 °F & 120 °F																															
AUSTENITIZING TEMP. / TIME : 1680 °F / 3.88 HOURS																															
TEMPERING TEMP. / TIME : 1292 °F / 4.50 HOURS																															
STRESS RELIEVE TEMP. / TIME : 1207 °F / 4.50 HOURS																															
100 % MIX-UP CONTROLLED & SURFACE CRACK TESTED & RESULT WERE OK																															
ULTRASONIC INSPECTED PER ASTM A588/SA-588 & API 6A PSL 3 & RESULT WERE OK																															
METHOD OF MONITORING TEMPERATURE: FURNACE TYPE THERMOCOUPLE																															
THIS MATERIAL IS FREE FROM RADIOACTIVITY. NO WELD REPAIR PERFORMED. STEEL IS FREE FROM MERCURY.																															
COUNTRY OF ORIGIN: TURKEY																															
YUKARIDA BELİRTİLEN MALZEMELERİN TEST EDİLDİĞİ VE SİPARİŞ ŞARTLARINA UYGUN OLDUĞU ONAYLANIR.																															
WE HEREBY CERTIFY, MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLES WITH THE TERMS OF ORDER CONTRACT.																															

QUALITY CONTROL RECORD
APPROVED

MAY 07 2014

BY: MARLA TORRES
SPX



32.25.169.04.11

32.25.169.04.11

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İç Satış / Domestic Sales
+90 224 280 83 00
+90 224 280 63 09

Ticaret Sicili: 126542 / 72672

Dis. Satış / Export
+90 224 280 62 10
+90 224 280 62 19

Satınalma / Purchasing
+90 224 280 61 20
+90 224 280 61 30

Vergi Dairesi : Büyük Mükellefler Vergi Dairesi Başkanlığı
Vergi No : 0880052518

21/6/14 536515 120753 R284615

ACCORDING TO EN10204-3.1B

No. 8/17
DATE: OCT 25, 2012

CHEMICAL AND MECHANICAL PROPERTIES, IMPACT TEST AS FOLLOW:-

CERTIFICATE NO. Y1200000374107

LICENSE NO.

INSPECTOR
STAMP

QUALITY
MANAGER

STAMP OF DEPARTMENT
QUALITY ASSURANCE

江阴兴澄特种钢铁有限公司
JIANGYIN XINGCHENG SPECIAL STEEL WORKS CO., LTD.

QUALITY CONTROL RECORD
APPROVED

MAY 28 2014

BY: MARIA TORRES
SPX

**Frisa Forjados SA, de C.V.**

Valentín G. Rívero No. 127 Los Treviño
C.P. 66350 Tels- 52(8) 153-0321, 153-0302
Fax: 52(8) 336-3560
Sta. Catarina, N.L., México

CERTIFIED COMPANY

ISO 9001: 2008

00181399
Material Test Report No.521312

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: SA-350/SA-350M LF2 CL1 Ed. 2013a

Pag. 1/2

Qty	Date	P.O. Number	Part No.	Job Order
2	05/05/2014	4500969585	7-082882	410616
Description ROLLED RING 46.000" X 40.750" X 3.021" .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410616-08, 410616-09 .LINE ITEM: 30				

RAW SR 42"1-L

HEAT: 3172467 (2/2) PCS

CHEMICAL ANALYSIS

HEAT No.		C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
3172467	Ladle	0.19000	1.27000	0.00500	0.00900	0.21000	0.04000	0.07000	0.02000
Supplier		Cu %	V %	Nb %	CrMo %	NiCrMoCuV %	CE %		
REP	Ladle	0.07000	0.00200	0.00100	0.09000	0.20200	0.42740		

Hardness(HBW) PCS

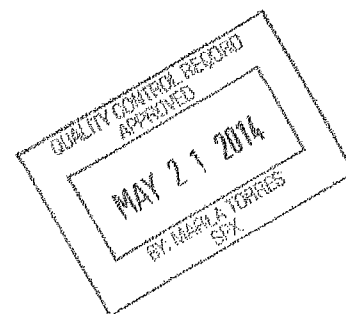
Hardness

148

148

HEAT TREATMENT

Quantity	Heat Treat Lot No.	Heat Treatment	Temp. (°F)	Time at Temp (Hrs)	Cooling Medium	Quench / M. Temp. (°F)
2 PCS	425279	Normalized	1652	5.00	Air	
QTC	409283	Normalized	1652	5.00	Air	



WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED
IN FRISA ALL MATERIALS ARE MERCURY FREE

CER-F-01-B

Gerardo Garcia Estrada

QUALITY ASSURANCE ENGINEER

**Friza Forjados SA, de C.V.**

Valentín G. Rivero No. 127 Los Treviño
C.P. 66350 Tels- 52(8) 153-0321, 153-0302
Fax: 52(8) 336-3560
Sta. Catarina, N.L., México

CERTIFIED COMPANY

ISO 9001: 2008

Material Test Report No.521312

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: SA-350/SA-350M LF2 CL1 Ed. 2013a

Pag. 2/2

Qty	Date	P.O. Number	Part No.	Job Order
2	05/05/2014	4500969585	7-082882	410616
Description ROLLED RING 46.000" X 40.750" X 3.021" .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410616-08, 410616-09 .LINE ITEM: 30				

Heat: 3172467

Track ID: 278/006-13

MECHANICAL PROPERTIES**TENSILE TEST**

Orientation	Position	Location	Heat Treat Lot No.	Yield Strength (PSI)	Tensile Strength (PSI)	Elong. % (2")	A.R.(%)	Temp Tens °F	Post Welding HT Temp °F Time Cycle		
Long	1/4 T		409283	46400	72200	37	72	77			

Heat: 3172467

IMPACT TEST

Orientation	Position	Location	Heat Treat Lot No.	CVN (ft-lb)			Lat Exp (IN)			Shear (%)			Temp (F)	Post Welding HT T °F T C		
Long	1/4 T		409283	80	17	63	0.0670	0.0150	0.0480	60	20	50	-51			

Heat: 3172467

HARDNESS HBW QTC

Orientation	Position	Location	Heat Treat Lot No.	Point	Hardness	Post Welding HT Temp °F Time Cycle		
Long	1/4 T		409283		148			
Long	1/4 T		409283		148			

OBSERVATIONS

. FORGING RATIO: 10.2 TO 1
. QTC SIZE (4 X 4 X 12)
. IMPACT TEST: 0.390" X .390" X 2.160" CVN SPECIMEN
. TENSILE TEST: 0.500" DIAMETER SPECIMEN AND 2.0" GAUGE LENGTH
. FURNACE CALIBRATED AND SURVEYED PER API 6A ANNEX M 20th EDITION REQUIREMENTS
. HARDNESS ON TEST SPECIMEN IS REPRESENTED BY TWO VALUES.
. FURNACE TEMPERATURE MONITORING AND RECORDING METHOD: AIR THERMOCOUPLE
. THE SPECIMEN FOR MECHANICALS WERE TAKEN TO: 1/4 T
. CVN TEST SPECIMEN: LONGITUDINAL
. TESTING ACCORDING TO ASTM A370

WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED IN FRISA ALL MATERIALS ARE MERCURY FREE

CER-F-01-B

Gerardo Garcia Estrada

QUALITY ASSURANCE ENGINEER

**Frisa Forjados SA, de C.V.**

Valentín G. Rivero No. 127 Los Treviño
C.P. 66350 Tels- 52(8) 153-0321,153-0302
Fax: 52(8) 336-3560
Sta. Catarina, N.L., México

CERTIFIED COMPANY
ISO 9001: 2008

Material Test Report No.521373

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: SA-350/SA-350M LF2 CL1 Ed. 2013a

Pag. 1/2

Qty	Date	P.O. Number	Part No.	Job Order
1	05/05/2014	4500969585	7-082882	410616
Description	ROLLED RING 46.000" X 40.750" X 3.021" .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410616-10 .LINE ITEM: 30			

RAW SR 42" 1-6

HEAT: MM13106112 (1/1) PCS**CHEMICAL ANALYSIS**

HEAT No.	Ladle	C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
MM13106112		0.18000	1.13000	0.01400	0.01800	0.25000	0.08000	0.13000	0.02000
Supplier	Ladle	Cu %	V %	Nb %	CrMo %	NiCrMoCuV %	CE %		
NUC		0.24000	0.00300	0.00000	0.15000	0.47300	0.42027		

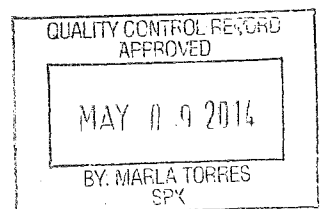
Hardness(HBW) PCS**Hardness**

154

154

HEAT TREATMENT

Quantity	Heat Treat Lot No.	Heat Treatment	Temp. (°F)	Time at Temp (Hrs)	Cooling Medium	Quench. M. Temp. (°F)
1 PCS	425498	Normalized	1652	5.00	Air	
QTC	419800	Normalized	1652	5.00	Air	



WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED
IN FRISA ALL MATERIALS ARE MERCURY FREE

CER-F-01-B

Gerardo Garcia Estrada

QUALITY ASSURANCE ENGINEER

**Friza Forjados SA, de C.V.**

Valentín G. Rivero No. 127 Los Treviño
C.P. 66350 Tels- 52(8) 153-0321,153-0302
Fax: 52(8) 336-3560
Sta. Catarina, N.L., México

CERTIFIED COMPANY

ISO 9001: 2008

Material Test Report No.521373

Certificate per: EN 10204:2004 3.1

Client: SPX CONTROL FLOW

Spec: SA-350/SA-350M LF2 CL1 Ed. 2013a

Pag. 2/2

Qty	Date	P.O. Number	Part No.	Job Order
1	05/05/2014	4500969585	7-082882	410616
Description ROLLED RING 46.000" X 40.750" X 3.021" .MELTING PRACTICE: EAF LR VD .SERIAL NUMBER NOTE: 410616-10 .LINE ITEM: 30				

Heat: MM13106112

Track ID: 52/064-14.

MECHANICAL PROPERTIES**TENSILE TEST**

Orientation	Position	Location	Heat Treat Lot No.	Yield Strength (PSI)	Tensile Strength (PSI)	Elong. % (2")	A.R.(%)	Temp Tens °F	Post Welding HT		
									Temp °F	Time	Cycle
Long	1/4 T		419800	46800	74900	37	70	77			

Heat: MM13106112

IMPACT TEST

Orientation	Position	Location	Heat Treat Lot No.	CVN (ft-lb)			Lat Exp (IN)			Shear (%)			Temp (F)	Post Welding HT		
														T °F	T	C
Long	1/4 T		419800	34	49	37	0.0280	0.0400	0.0300	10	10	20	-51			

Heat: MM13106112

HARDNESS HBW QTC

Orientation	Position	Location	Heat Treat Lot No.	Point	Hardness	Post Welding HT		
						Temp °F	Time	Cycle
Long	1/4 T		419800		152			
Long	1/4 T		419800		148			

OBSERVATIONS

. FORGING RATIO:10.2 TO 1
. QTC SIZE (4 X 4 X 12) '
. IMPACT TEST: 0.390" X .390" X 2.160" CVN SPECIMEN
. TENSILE TEST: 0.500" DIAMETER SPECIMEN AND 2.0" GAUGE LENGTH
. FURNACE CALIBRATED AND SURVEYED PER API 6A ANNEX M 20th EDITION REQUIREMENTS
. HARDNESS ON TEST SPECIMEN IS REPRESENTED BY TWO VALUES,
. FURNACE TEMPERATURE MONITORING AND RECORDING METHOD: AIR THERMOCOUPLE
. THE SPECIMEN FOR MECHANICALS WERE TAKEN TO: 1/4 T
. CVN TEST SPECIMEN: LONGITUDINAL
. TESTING ACCORDING TO ASTM A370

Gerardo Garcia Estrada

QUALITY ASSURANCE ENGINEER

SPX Flow Technology

PO Box 40421
Houston, TX 77240
Phone: (281) 469-0550
Fax: (281) 894-1332
www.spx.com

CERTIFICATE OF BOLTING

Date: OCT 10 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002 – 0720 – 14

SPX Flow Technology
Sales Order Number: 1806857

Item Number: 1

SPX Flow Technology certifies that the studs and nuts used in the construction of the above referenced are:

Studs: ASME SA 320 GR. L7.

Nuts: ASME SA194 GR. 7.

<u>Part Number</u>	<u>Description</u>	<u>Heat Number</u>
7-133143	1.25 X 6.5 STUD	DL1310455602
7-241121	1.25 X 9.0 STUD	DL1210716502
7-132229	1.25 X 6.0 STUD	DL1210716502
7-132128	1.25 NUT	2203292V
7-233918	1.13 X 6.5 STUD	133201
7-138907	1.13 NUT	2101634

SPX Flow Technology



Douglas Hinze
Quality Control Supervisor

DH/dw



Material Test Report

Customer

SPX Process Equip.
19191 Hempstead Highway
Houston, TX 77065
Fax
281-897-2987



USA Fastener Group, Inc.
1300 Gazin St., Houston, Texas 77020
P: (866)546-5872 | F: (713)641-4655
sales@usafgrp.com

Specification	Year	Description	PO Number	Lot Number
A320	2011a	Threaded Rod	4500972155	80912

Heat Number	Grade	Size	TPI	Length	Finish
DL1310455602	L7 / B7	1.1/4	8	12 FT	

C	Si	S	P	Mn	Mo	Cr	Ni	Al	V	Fe	Ti	Cu
0.42	0.25	0.018	0.006	0.87	0.15	0.82	0.06	0.002	0.004	0	0.002	0.22

Yield	Scale	Tensile	Scale
116800	0	133800	0
	psi		psi

Elong %	R.A %
21.5	0
	59
	0

Hardness	Scale
25	0
	HRC

Charpy Set 1	Scale	Temp	Macro Etch	Wedge Tensile	Proof Load
38 25 19	Ft Lbs	-150 °F	R C S		
0 0 0			2 2 2		

Quenched	Tempered	Stress Relieved
@ 0 ° in	@ 1328 ° F	@ 0 °

Remarks:

SN=.015; CB=.027
MERCURY FREE / NO WELD REPAIR
Conforms to ASTM A193-B7/ASME SA193-B7 Rev.2012b

Memo:

1 1/4-8 X 6 1/2
AT STUD A320-L7
[ART# 7-133143] (25)

All material meets both ASME/ASTM requirements where applicable.
EN10204 3.1



Quality Assurance
Gracie Martinez
<i>gm</i>

The above described product was manufactured, sampled, tested and inspected in accordance with the required specification, including any supplementary requirements or other requirements designated in the purchase order or contract and were found to meet those requirements.

Material Test Report

Customer

SPX Process Equip.
19191 Hempstead Highway
Houston , TX 77065
Fax
281-897-2987



USA Fastener Group, Inc.
1300 Gazin St., Houston, Texas 77020
P: (866)546-5872 | F: (713)641-4655
sales@usafgrp.com

Specification	Year	Description	PO Number	Lot Number
A320	2010	Threaded Rod	4500745274	70196

Heat Number	Grade	Size	TPI	Length	Finish
DL1210716502	L7 / B7	1.1/4	8	12FT	

C	SI	S	P	Mn	Mo	Cr	Ni	Al	V	Fe	Ti	Cu
0.42	0.27	0.009	0.005	0.88	0.16	0.83	0.07	0.003	0.004	0	0.002	0.16

Yield	Scale	Tensile	Scale
115400	0	132000	0
	psi		psi

Elong %	R.A %	Hardness	Scale
22.4	0	26	0
			HRC

Charpy Set 1	Scale	Temp	Macro Etch	Wedge Tensile	Proof Load
28 25 25	Ft Lbs	-150 °F	R C S		
			2 2 2		
Charpy Set 2					
0 0 0					

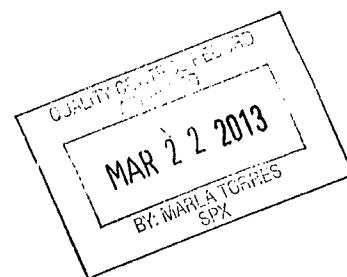
Quenched	Tempered	Stress Relieved
@ 0 ° in	@ 1326 ° F	@ 0 °

Remarks:

Cb=.026; Sn=.015
Conforms to ASTM A193-Gr.B7/ASME SA193-B7 Rev.2012a

Memo:

1.1/4-8 x 9 AT STUD A320-L7 PLAIN
EN 10204-TYPE 3.1
PART# 7-241121



The above described product was manufactured, sampled, tested and inspected in accordance with the required specification, including any supplementary requirements or other requirements designated in the purchase order or contract and were found to meet those requirements.

Quality Assurance
Gracie Martinez
<i>Gracie Martinez</i>

Material Test Report

Customer

SPX Process Equip.
19191 Hempstead Highway
Houston, TX 77065
Fax
281-897-2987



USA Fastener Group, Inc.
1300 Gazin St., Houston, Texas 77020
P: (866)546-5872 | F: (713)641-4655
sales@usafgrp.com

Specification	Year	Description	PO Number	Lot Number
A320	2010	Threaded Rod	4500745794	70196

Heat Number	Grade	Size	TPI	Length	Finish
DL1210716502	L7 / B7	1.1/4	8	12FT	

C	Si	S	P	Mn	Mo	Cr	Ni	Al	V	Fe	Ti	Cu
0.42	0.27	0.009	0.005	0.88	0.16	0.83	0.07	0.003	0.004	0	0.002	0.16

Yield	Scale	Tensile	Scale
115400	0	132000	0
	psi		psi

Elong %	R.A %
22.4	0
62	0

Hardness	Scale
26	0
	HRC

Charpy Set 1	Scale	Temp	Macro Etch	Wedge Tensile	Proof Load
28 25 25	Ft Lbs	-150 °F	R C S		
Charpy Set 2			2 2 2		
0 0 0					

Quenched	Tempered	Stress Relieved
@ 0 ° in	@ 1326 ° F	@ 0 °

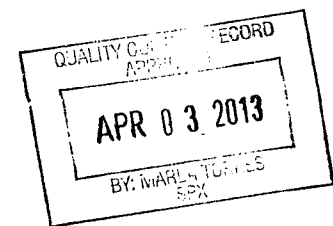
Remarks:

Cb=.026; Sn=.015
Conforms to ASTM A193-Gr.B7/ASME SA193-B7 Rev.2012a

Memo:

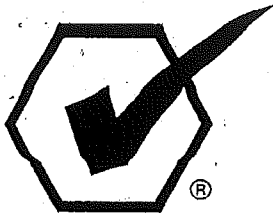
1.1/4-8 x 6 AT STUD A320-L7 PLAIN
PART# 7-132229
EN 10204 TYPE 3.1

10



The above described product was manufactured, sampled, tested and inspected in accordance with the required specification, including any supplementary requirements or other requirements designated in the purchase order or contract and were found to meet those requirements.

Quality Assurance
Gracie Martinez
<i>Gracie Martinez</i>



ALLOY & STAINLESS FASTENERS

11625 CHARLES ST
HOUSTON, TX 77041
ADMIN 713-929-0300
SALES 713-466-3031
SALES 713-466-9591 FAX

* C E R T I F I C A T E *
* O F T E S T *

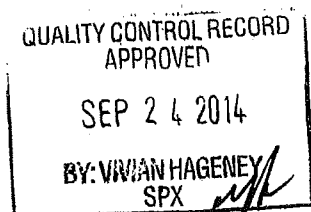
To: FASTENAL COMPANY (TXH11)
8525 JACKRABBIT ROAD
HOUSTON, TX 77095

Customer P/O # HZTX5035 **4501043799**

Our Order # 621421 **PN: 7-132128**

Line	Qty	UOM	Description	LOT						
1	575	EA	1 1/4-8 HEAVY HEX NUT ASTM A194 GR.7 ASTM SPEC DATE: 12a TEMPERING TEMP: 1200 DEG F CHARPY IMPACTS -150 DEG F = 21/23/21 FT.LBF SAMPLE HARDNESS 1100 DEG F FOR 24 HRS = 97 HRB	97325						
				<table><tr><td>CARBON</td><td>MANGANESE</td></tr><tr><td>.39</td><td>0.82</td></tr></table>	CARBON	MANGANESE	.39	0.82		
CARBON	MANGANESE									
.39	0.82									
Heat No. 2203292V		HEAT CODE	MACRO ETCH S2-R2-C3	<table><tr><td>PHOSPHORUS</td><td>SULFUR</td><td>SILICON</td></tr><tr><td>.012</td><td>.004</td><td>.26</td></tr></table>	PHOSPHORUS	SULFUR	SILICON	.012	.004	.26
PHOSPHORUS	SULFUR	SILICON								
.012	.004	.26								
NUMBER OF TEST 2		HARDNESS (HB) 271	PROOF LOAD lbf 175000	<table><tr><td>CHROMIUM</td><td>MOLY.</td><td></td></tr><tr><td>0.97</td><td>.18</td><td></td></tr></table>	CHROMIUM	MOLY.		0.97	.18	
CHROMIUM	MOLY.									
0.97	.18									

We certify that the material or the fasteners, or both, were manufactured, sampled, tested, and inspected in accordance with the specification listed above and any supplementary requirements or other requirements designated in the purchase/sales order and was found to meet those requirements.



Date: 09/08/14

ALLOY & STAINLESS FASTENERS
By: Kimberley Cain

Kimberley R. Cain
Certification Custodian

Material Test Report

Customer

SPX Process Equip.
19191 Hempstead Highway
Houston, TX 77065
Fax
281-897-2987



USA Fastener Group, Inc.
1300 Gazin St., Houston, Texas 77020
P: (866)546-5872 | F: (713)641-4655
sales@usafgrp.com

Specification A320		Year 2011a		Description ROUND BAR				PO Number 4500972155		Lot Number 80826				
Heat Number 133201				Grade L7 / B7		Size 1.1/8		TPI 8		Length 12 FT		Finish		
C	Si	S	P	Mn	Mo	Cr	Ni	Al	V	Fe	Ti	Cu		
0.4	0.27	0.03	0.012	0.89	0.16	0.84	0.09	0.001	0.007	0	0.001	0.24		
Yield 115300		0		Scale psi		Tensile 132600		0		Scale psi				
Elong % 22.2		0		R.A % 59		0		Hardness 27		0		Scale HRC		
Charpy Set 1 22 23 27			Scale Ft Lbs		Temp -150 °F		Macro Etch R		C		S		Wedge Tensile	
Charpy Set 2 0 0 0							2		1		1		Proof Load	
Quenched @ 0 ° In				Tempered @ 1311 ° F				Stress Relieved @ 0 °						

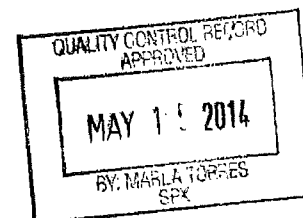
Remarks:

NB=.028; SN=.012
MERCURY FREE / NO WELD REPAIR
Conforms to ASTM A193-B7/ASME SA193-B7 Rev.2012b

Memo:

1 1/8-8 X 6 1/2
AT STUD A320-L7
PART# 7-233918

All material meets both ASME/ASTM requirements where applicable.
EN10204 3.1



Quality Assurance

Gracie Martinez

gm

The above described product was manufactured, sampled, tested and inspected in accordance with the required specification, including any supplementary requirements or other requirements designated in the purchase order or contract and were found to meet those requirements.



ALL-PRO FASTENERS, INC.
1916 PEYCO DRIVE NORTH
ARLINGTON, TX 76001
Phone: 817-467-5700
Fax: 817-467-5365

Certified Material Test Report

Page : 1 of 1

SOLD TO: SPX FLOW CONTROL-VMI
13320 BALLANTYNE CORPORATE PLACE
CHARLOTTE, NC 28277

SHIP TO: SPX FLOW CONTROL-DISCRETE
19191 HEMPSTEAD HWY
HOUSTON, TX 77065

DATE	SALES ORDER #	CUST P.O.#	REF NUMBER	SPECIFICATION	MATERIAL
11/19/2013	1309088	4500876755	7-138907	ASTM A194-12a	GR 7
QTY	ITEM DESCRIPTION	P21 LOT	MFG LOT	HEAT NO	
60	1-1/8-8 ASME A194 GR 7 HVY HEX NUT EN10204 TYPE 3.1	2841071	89797	2101634	

CHEMICAL ANALYSIS

C	Mn	P	S	SI	Cr	Mo
.39	.81	.01	.008	.22	.94	.18

PHYSICAL PROPERTIES

Proof Load LBS	Hardness Brinell	24 HR TEST HRBW
138200	286	98

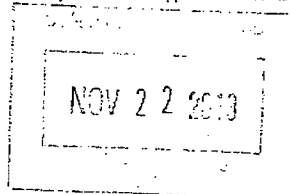
IMPACT TESTING

TYPE	TEMP	SMPL# 1	# 2	# 3	AVG	%SHEAR	LAT EXP
CHARPY	-150F	21FT/LBS	24FT/LBS	23FT/LBS	23FT/LBS		

SUPPLEMENTAL INFORMATION

COUNTRY OF MELT: CHINA, TEMPERING TEMP 1202F, MACRO E381: S2/R2/C3, EN 10204 3.1

The physical characteristics represented above are transference of test data documented by the source of inspection. All test are in accordance with the methods prescribed in the applicable SAE and/or ASTM specifications and are free from mercury contamination. No heats to which bismuth, selenium, tellurium or lead was intentionally added have been used to produce the bolts. ALL-PRO FASTENERS, INC. defers liability or warranty implied or expressed for the test results represented. Under terms expressed, we hereby certify that this data is a true representation of information provided by the material supplier and/or our testing laboratory, and under no circumstances has the information been altered. Original documentation remains on file for review.



Roderick Williams Q.A Manager

SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 26 2014
Customer: ENBRIDGE ENERGY PARTNERS L.P.
Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

Attached are the radiographic inspection reports for the above.

DH/mt

Douglas Hinze

Douglas Hinze

Quality Control Supervisor



ME
10.31.14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com



Testmasters, Inc.
NON-DESTRUCTIVE TESTING SERVICES

RADIOGRAPHIC INSPECTION REPORT

Form No. : TI-005
Rev. No. 001
Rev. Date: 09-28-04

Client:

SPX PROCESS EQUIPMENT

Report No.: 14-125356

Procedure: ti-4.10.2.1 REV.10

Date: 10-08-2014

Specification: ASME SEC.VIII, DIV.I, UW-51 2013 ED./ SPX-HIP2269, REV. A

P/O No: 4501053105

Description: 42" 600# M303A BODY TUBE (AFTER STRESS)

Job No: 2153299

Scope of Examination: 100% WELDMENTS

Page: 1 OF 2

CURIES OF CO-60 79.9 CAMERA A-325	SOURCE SIZE .223"	MATERIAL THICKNESS 2.00"	EXPOSURE TIME 4:20 MIN
EXPOSURE CONFIGURATION SWE ARRANGMT. "A"	VIEWING CONFIGURATION SWV	PENETRAMETER/SENSITIVITY ASTM 1B F/S # 11	LEAD SCREENS 0.010" Front & Back
FILM TYPE AGEA-D5/DZ	FILM QUANTITY 88	SOURCE TO FILM DISTANCE 27.00"	OBJECT TO FILM 3.00"

RADIOGRAPHIC READING SHEET (In-Process Inspection)

[illegible]

Time: _____ AM/PM

To: _____ AM/PM _____

Inspector: GABRIEL CHAGOLLA RT LEVEL-II

Assistant: RAMON CHAGOLLA

Inspector Signature:

Client Signature: _____

RADIOGRAPHIC INSPECTION REPORT

Client:

SPX PROCESS EQUIPMENT

Report No.: 14-125356

Procedure: ti-4.10.2.1 REV.10

Date: 10-08-2014

Specification: ASME SEC.VIII, DIV.I, UW-51 2010 ED./ SPX-HIP2269, REV. A

P/O No: 4501053105

Description: 42" 600# M303A BODY TUBE (AFTER STRESS)

Job No: 2153299

Scope of Examination: 100% WELDMENTS

Page: 2 OF 2

RADIOGRAPHIC READING SHEET (In-Process Inspection)

P.O. BOX 19249 • Houston, Texas • 77224-9249 • Tel. (713) 896-1885 • Fax (713) 896-6656



Testmasters, Inc.

NON-DESTRUCTIVE TESTING SERVICES

RADIOGRAPHIC INSPECTION REPORT

Form No. : TI-005

Rev. No. 001

Rev. Date: 09-28-04

Client: SPX PROCESS EQUIPMENT

Procedure: ti-4.10.2.1 REV.10 SPX – HIP2269, REV. A

Specification: ASME SEC.VIII, DIV.I, UW-51 2013 ED.

Description: 42" 600# M303A TRANS PC TO TRANS RG WELD

Scope of Examination: 100% WELDMENT (AFTER STRESS)

Report No.: 14-125677
Date: 10-17-2014
P/O No: 4501065303
W/O No: 2204328
Page: 1 OF 1

CURIES OF IR-192 44.7 CAMERA D-8089	SOURCE SIZE .138"	MATERIAL THICKNESS .750"	EXPOSURE TIME 6:00 MIN
EXPOSURE CONFIGURATION SWE ARRANGMT. "A"	VIEWING CONFIGURATION SWV	PENETRATER/SENSITIVITY ASTM 1-B S/S # 7	LEAD SCREENS 0.010" Front & Back
FILM TYPE AGFA- D5/D7	FILM QUANTITY 20	SOURCE TO FILM DISTANCE 21.00"	OBJECT TO FILM .875"

RADIOGRAPHIC READING SHEET (In-Process Inspection)

[illegible]

Time:

AM/PM

To:

AM/PM

Inspector: MANUEL JONES JR.

RT- Level-II

Assistant: MALCOLM SMITH

Inspector Signature:

Client Signature: _____

R1 Acceptable

RADIOGRAPHIC INSPECTION REPORT

Form No. : TI-005
Rev. No. 001
Rev. Date: 09-28-04

Client:	SPX PROCESS EQUIPMENT
Procedure:	ti-4.10.2.1 REV.10 SPX – HIP2269, REV. A
Specification:	ASME SEC.VIII, DIV.I, UW-51 2013 ED.
Description:	42" 600# M303A TRANS PC TO TRANS RG WELD
Scope of Examination:	100% WELDMENT

Report No.: 14-125681
Date: 10-17-2014
P/O No: 4501065303
W/O No: 2204328
Page: 1 OF 1

CURIES OF IR-192 44.7 CAMERA D-8089	SOURCE SIZE .138"	MATERIAL THICKNESS .750"	EXPOSURE TIME 6:00 MIN
EXPOSURE CONFIGURATION SWE ARRANGMT. "A"	VIEWING CONFIGURATION SWV	PENETRATOR/SENSITIVITY ASTM 1-B S/S # 7	LEAD SCREENS 0.010" Front & Back
FILM TYPE AGFA- D5/D7	FILM QUANTITY 4	SOURCE TO FILM DISTANCE 21.00"	OBJECT TO FILM .875"

RADIOGRAPHIC READING SHEET (In-Process Inspection)

[illegible]

Time: AM/PM To: AM/PM

Inspector: MANUEL JONES JR. RT- Level-II Assistant: MALCOLM SMITH

Inspector Signature: [Signature] Client Signature: [Signature]



Testmasters, Inc.

NON-DESTRUCTIVE TESTING SERVICES

RADIOGRAPHIC INSPECTION REPORT

Form No. : TI-005

Rev. No. 001

Rev. Date: 09-28-04

Client:	SPX PROCESS EQUIPMENT
Procedure:	ti-4.10.2.1 REV.10 SPX – HIP2269, REV. A
Specification:	ASME SEC.VIII, DIV.I, UW-51 2013 ED.
Description:	42" 600# M303A TRANS PC TO TRANS RG WELD
Scope of Examination:	100% WELDMENT (AFTER STRESS)

Report No.: 14-125678
Date: 10-17-2014
P/O No: 4501065303
W/O No: 2204328
Page: 1 OF 1

CURIES OF IR-192 44.7 CAMERA D-8089	SOURCE SIZE .138"	MATERIAL THICKNESS .750"	EXPOSURE TIME 6:00 MIN
EXPOSURE CONFIGURATION SWE ARRANGMT. "A"	VIEWING CONFIGURATION SWV	PENETRAMEETER/SENSITIVITY ASTM 1-B S/S # 7	LEAD SCREENS 0.010" Front & Back
FILM TYPE AGFA- D5/D7	FILM QUANTITY 20	SOURCE TO FILM DISTANCE 21.00"	OBJECT TO FILM .875"

RADIOGRAPHIC READING SHEET (In-Process Inspection)

[illegible]

Time:

AM/PM

To:

AM/PM

Inspector: MANUEL JONES JR.

RT- Level II

Assistant:

MALCOLM SMITH

Inspector Signature:

Client Signature:

SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 26 2014

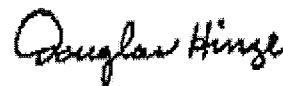
Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

Attached are the liquid penetrant, magnetic particle, and ultrasonic test inspection reports for the above.



Douglas Hinze

Quality Control Supervisor

DH/mt



mc
10-34-14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com

SPX Flow Control

Houston, Texas

Non-Destructive Examination Report

P/N	ID#	INSP DATE	W/O#	HEAT#
7-420444	MJ11236	10/26/2014		

Vendor ID#: 14125356

☒ **Magnetic Particle**

☒ **Liquid Penetrant**

Special Instruction / Weld Number

MT 4-CORNER PRESSURE CONTAINING WELDS, RIB TO HUB, THREADOLET WELDS. LP BOTTOM PLATE WELDS & THREADOLET WELDS. LP ALL SEAL WELDS. MP WELD END WELD BEVELS.

DESCRIPTION		SALES ORDER	SERIAL#
42" 600 M303 BODY		1806857-1	1000002916560
NDE / SERIAL#	MT INSTRUMENT	CAL. DUE DATE	MAGNETIZATION
See List Above	 MT-0013 / Yoke	5/1/2015	4 amp AC or Pulsed DC
Magnetic Particle / Method: Procedure: Acceptance Criteria:			Inspector: Thomas Nigrelli
WET (Fab. And Fab. Weld Repair) IP-2285 & IP-2200 ASME Sec. VIII, Div. 1, App. 6			
Liquid Penetrant / Method: Procedure: Acceptance Criteria:			
VISIBLE IP-2268 & IP-2214 ASME Sec. VIII, Div. 1, App. 8			

I hereby certify that the item(s) described above have been examined and comply with the acceptance criteria.

Test Results:

NO INDICATIONS FOUND

Comments:

Inspectors Signature: _____


Weld Shop Inspector



PT/MT

Date:

10/26/2014

SPX Flow Control

Houston, Texas

Non-Destructive Examination Report

P/N	ID#	INSP DATE	W/O#	HEAT#
7-420434	MJ11177	9/29/2014	2176734	

☒ **Magnetic Particle**

☐ **Liquid Penetrant**

Special Instruction / Weld Number
MT ALL ACCESSIBLE WELDS

DESCRIPTION		SALES ORDER	SERIAL#
CPLA-WMC 42" 600AD MG1 SW UT		1806857-1	1000002916560
NDE / SERIAL#	MT INSTRUMENT	CAL. DUE DATE	MAGNETIZATION
See List Above	☒ MT-0013 / Yoke	5/1/2015	4 amp AC or Pulsed DC
Magnetic Particle / Method: Procedure: Acceptance Criteria:			Inspector: Thomas Nigrelli
WET (Fab. And Fab. Weld Repair) IP-2285 & IP-2200 ASME Sec. VIII, Div. 1, App. 6			
Liquid Penetrant / Method: Procedure: Acceptance Criteria:			

I hereby certify that the item(s) described above have been examined and comply with the acceptance criteria.

Test Results:

NO INDICATIONS FOUND

Comments:

Inspectors Signature: _____

Thomas R. Nigrelli
Weld Shop Inspector



PT/MT

Date:

9/29/2014

1806857-1 1000002916560


Testmasters, Inc.

NON-DESTRUCTIVE TESTING SERVICES

ULTRASONIC INSPECTION REPORT

 Form No. TI-006
 Rev. No. 001
 Rev. Date: 09-28-04

Client: SPX- HOUSTON, M & J VALVE DIVISION
Procedure: TI 4.10.1.5 REV- 07 , ASME-V, 2013- ARTICLE -4, SPX- M&J DOC HIP 2203 REV-J
Specification: ASME- SECTION VIII, DIV.-1-2013, APPENDIX 12 ACCEPTANCE
Description: SEE BELOW
Scope of Examination: UT- VOLUMETRIC T/P TO HUB WELDS

Report No: 14-125901- UT
Date: 10-17-2014
P/O No: 4501065218
Job No: 2204328
Page: 1 OF 1

Testing Parameters											
Instrument Mfg.:	PANAMETRICS	Model:	EPOCH 4	S/N:	040262012	Date of Calibration:	12-12-2014				
Longitudinal 0°	2.25 MHz	Size	1.00" DIA.	Type:	TECHNISONIC	S/N:	49900	Ref. dB	34.0	Scan dB:	46.0
Angle Beam 45°	2.25 MHz	Size	0.62" X 0.62"	Type:	TECHNISONIC	S/N:	I-9436	Ref. dB	33.4	Scan dB:	51.0
Angle Beam 60°	2.25 MHz	Size	0.62" X 0.62"	Type:	TECHNISONIC	S/N:	I-9436	Ref. dB	41.0	Scan dB:	59.0
Angle Beam 70°	2.25 MHz	Size	0.62" X 0.62"	Type:	TECHNISONIC	S/N:	I-9436	Ref. dB	49.6	Scan dB:	67.6
Calibration Standards: DCS BLOCK S/N:00-6221 (RANGE DETERMINATION) / 1.5" ASME BASIC CALIBRATION BLOCK S/N19482-02 (SENSITIVITY)											
Surface Condition: AS WELDED Range: 3.0" (SB) & 5.0 (SW) FSW Couplant SONOTECH -SONOGEL BATCH# 10343-B											
Item	Quantity	Description				Results (In Process Inspection)					
01	01	BDY-MCF 42" 600# M303A, (FPW),WE X WE 6AGL, EN112B# CPO: 4501065218 W/O: 2204328 P/N: 7-420429 OPR: 0090 SN: 14-125356 T/P TO HUB WELD-A & WELD-B				ACCEPT					

Inspector: D. DRAKE UT LEVEL II

Assistant: N/A

Inspector Signature: 

Customer Signature: _____

SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 26 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

Attached are the heat treatment charts for the above.

Douglas Hinze

Douglas Hinze

DH/mt

Quality Control Supervisor



mt
10-31-14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com

[illegible]

1 PC
W.O.# 2204328
PT# 7-420429
BDY-MCF 42" 600#
10/16/14
GLENN T. DUNKIRK
MCTD
S.N. 14125356

SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 26 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

SPX Flow Technology Certifies that the above product meets the requirements of the drawing and specifications of SPX Flow Technology.

Douglas Hinze

Douglas Hinze

DH/mt

Quality Control Supervisor



ME
10.31.14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
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SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 26 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

Attached are the hydrostatic test reports for the above.

DH/mt

Douglas Hinze

Douglas Hinze

Quality Control Supervisor

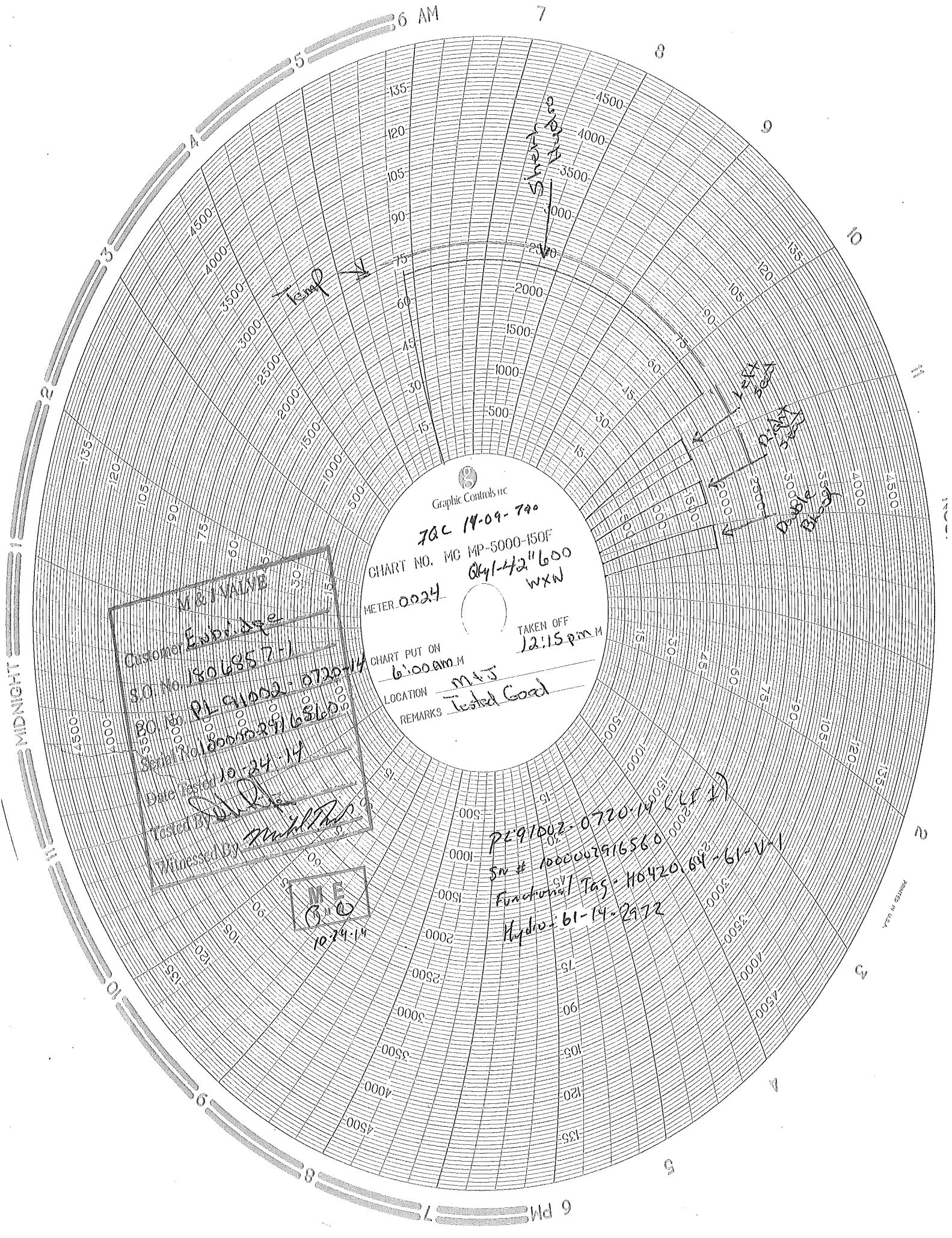


ME
10-31-14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com

PRODUCT: ☒ GATE ☐ DAN-FLO ☐ EX-GATE ☐ BALLTROL ☐ CEG ☐ BALL ☐ CHECK ☐ OTHER _____		SIZE: <u>42"</u> MODEL: <u>M303</u>	CLASS: ☐ 150 ☐ 900 ☐ 300 ☐ 1500 ☐ 400 ☐ 2500 ☒ 600 ☐ OTHER _____	ENDS: ☐ FXF ☐ WXW ☐ WXF ☐ _____	SERIAL NO. <u>1000002916560</u> S.O. NO. <u>1806857-1</u> CUSTOMER <u>Enbridge</u>	
PRESSURE/FUNCTIONAL TESTING PER: ☒ API 6D ☐ ANSI B16.34 ☒ M&J/CUST. SPEC: <u>MT-1340</u>						
VALVE OPERATED BY: ☐ TEMPORARY OPERATOR ☐ BGO ☒ ELECTRIC ☐ HYDRAULIC						
PRESSURE TESTING	HYDROSTATIC SHELL TEST		@ <u>2300</u> PSIG. FOR <u>4.25</u>	☒ HR ☒ MIN	☒ TEST OK	GAGE NO. <u>CR-0024</u>
	HYDROSTATIC SEAT TEST	SEAT #1	@ <u>1700</u> PSIG. FOR <u>10</u>	☐ HR ☒ MIN	☒ TEST OK	GAGE NO. <u>CR-0024</u>
		SEAT #2	@ <u>1700</u> PSIG. FOR <u>10</u>	☐ HR ☒ MIN	☒ TEST OK	GAGE NO. <u>CR-0024</u>
	BLOCK & BLEED	BOTH SEATS @ <u>1750</u>	PSIG. FOR <u>10</u>	☐ HR ☒ MIN	☒ TEST OK	GAGE NO. <u>CR-0024</u>
	AIR/GAS SHELL TEST	@ _____	PSIG. FOR _____	☐ HR ☐ MIN	☐ TEST OK	GAGE NO. _____
	AIR/GAS SEAT TEST	SEAT #1	@ _____	PSIG. FOR _____	☐ HR ☐ MIN	☐ TEST OK
SEAT #2		@ _____	PSIG. FOR _____	☐ HR ☐ MIN	☐ TEST OK	GAGE NO. _____
FUNCTIONAL TESTING	PULL TEST	VALVE OPENED WITH SEAT #1 @ _____ PSIG.		☐ SEAT RETEST OK		
		VALVE OPENED WITH SEAT #2 @ _____ PSIG.		☐ SEAT RETEST OK		
	TORQUE TEST	_____ FT.-LBS TO OPEN VALVE WITH SEAT #1 @ _____ PSIG.		☐ OK		
		_____ FT.-LBS TO OPEN VALVE WITH SEAT #2 @ _____ PSIG.		☐ OK		
		_____ FT.-LBS TO OPEN @ 0 PSIG.		_____ FT.-LBS TO CLOSE @ 0 PSIG.		
		EXPANDING GATE VALVE OPERATOR TORQUE SETTING: _____				
VERIFICATION	VALVE STROKE FULL OPEN / FULL CLOSE ☒ YES			BOLTING TIGHTNESS AFTER TEST ? ☒ OK		
	SET PRESSURE _____ PSIG. @ _____ PSIG. N2 LD. PILOT SN _____					
	VALVE ASSEMBLED BY: <u>1st + 2nd Shift</u> DATE: <u>10-23-14</u>					
	VALVE TESTED BY: <u>[Signature]</u> DATE: <u>10-24-14</u>					
TEST WITNESSED BY: <u>[Signature]</u> DATE: <u>10-24-14</u>						
COMMENTS: <u>Runtime - open + close - 163 sec</u> <u>PG-0240</u>						





Graphic Controls Inc

70C 14-09-790

CHART NO. MC MP-5000-150F

METER 0024

TAKEN OFF 12:15 PM

CHART PUT ON 6:00 AM

LOCATION M&V

REMARKS Tested Good

M&V VALVE
Customer: Ebbel
S.O. No. 806857-1
S.O. No. PL 91002-0720-14
Serial No. 1000002916560
Date Tested 10-24-14
Tested By [Signature]
Witnessed By [Signature]

ME
10-24-14

PE 91002-0720-14 (CLF 1)
SN # 1000002916560
Functional Tag - 110420.64-61-V-1
Hydro - 61-14-2972

Company: SPX Flow	Doc #: 40576	Print #: 000-000
Technology	OEM #:	Serial #: PG-0240
Address: 8800 Westplain Dr.	Contact:	Location: M&J Assy & Test
houston, TX	Dept:	Mfg.: McDaniel
Zip: 77041	Cal.Date: 09/20/2014	Model: 0 - 5000 PSI
Page: 1 of 1	PO#:	Gage: Pressure Gauge

As Found

Master	Actual	Deviation	Serial	Tol +50.000000 / -50.000000
+1250.000000	+1270.000000	+20.000000		
+2500.000000	+2522.000000	+22.000000		
+3750.000000	+3754.000000	+4.000000		
+5000.000000	+5012.000000	+12.000000		

As Left

Master	Actual	Deviation	Serial	Tol +50.000000 / -50.000000
+1250.000000	N/A	N/A		
+2500.000000	N/A	N/A		
+3750.000000	N/A	N/A		
+5000.000000	N/A	N/A		

Comments:

Calibration Procedure CAL - 0020 Latest Rev.

We certify the equipment used for this calibration is traceable to NIST through one or more of the following numbers:

Reference Standard Serial #: DWT-0003

Deadweight Tester 15 - 10,000 psig

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 08/21/2013 --> 08/21/2016

Reference Standard Serial #: calpg-0001

Digital Test Comparator Gauge 0-500

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 06/11/2014 --> 06/11/2015

Reference Standard Serial #: calpg-0002

Digital Test Comparator Gauge 0-2000

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 06/11/2014 --> 06/11/2015

Reference Standard Serial #: calpg-0003

Digital Test Comparator Gauge 0-10000

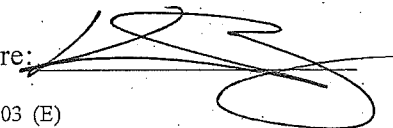
Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 06/11/2014 --> 06/11/2015

Gage Status: PASS

Next Calibration Due: 12/20/2014

Certified By: Kevin Priesmeyer

Signature: 

This certificate is not valid unless all 1 page(s) are present:

We certify that the aforementioned gage has been calibrated according to the requirements of ISO 10012-1 : 2003 (E)

Company: SPX Flow Technology	Doc #: 40575	Print #: 000-001
Address: 8800 Westplain Dr. houston, TX	OEM #: 242E-48994	Serial #: CR-0024
Zip: 77041	Contact:	Location: M&J Assy & Test
Page: 1 of 1	Dept:	Mfg.: ITT Barton
	Cal. Date: 09/19/2014	Model: 0 - 5,000 PSI
	PO#:	Gage: Chart Recorder

As Found

Master	Actual	Deviation	Serial	Tol +50.000000 / -50.000000
+1250.000000	+1275.000000	+25.000000		
+2500.000000	+2525.000000	+25.000000		
+3750.000000	+3750.000000	+0.000000		
+5000.000000	+5000.000000	+0.000000		

As Left

Master	Actual	Deviation	Serial	Tol +50.000000 / -50.000000
+1250.000000	N/A	N/A		
+2500.000000	N/A	N/A		
+3750.000000	N/A	N/A		
+5000.000000	N/A	N/A		

Comments:

Calibration Procedure CAL - 0019 Latest Rev.

Temperature verified at 73 deg F.

We certify the equipment used for this calibration is traceable to NIST through one or more of the following numbers:

Reference Standard Serial #: DWT-0003

Deadweight Tester 15 - 10,000 psig

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 08/21/2013 --> 08/21/2016

Reference Standard Serial #: hp-0004

Hygro-thermometer

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 05/22/2014 --> 05/22/2015

Reference Standard Serial #: calpg-0001

Digital Test Comparator Gauge 0-500

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 06/11/2014 --> 06/11/2015

Reference Standard Serial #: calpg-0002

Digital Test Comparator Gauge 0-2000

Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 06/11/2014 --> 06/11/2015

Reference Standard Serial #: calpg-0003

Digital Test Comparator Gauge 0-10000

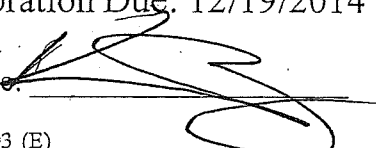
Traceable to NIST via NAMAS certification no:

Last / Next Cal Dates: 06/11/2014 --> 06/11/2015

Gage Status: PASS

Next Calibration Due: 12/19/2014

Certified By: Kevin Priesmeyer

Signature: 

This certificate is not valid unless all 1 page(s) are present:

We certify that the aforementioned gage has been calibrated according to the requirements of ISO 10012-1 : 2003 (E)

SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 31 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

SPX Flow Technology certifies that the above were coated in accordance with SPX Flow Technology paint procedure PNT-3330.

Douglas Hinze

Douglas Hinze

DH/mt

Quality Control Supervisor



ME
10-31-14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com

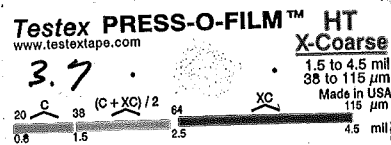
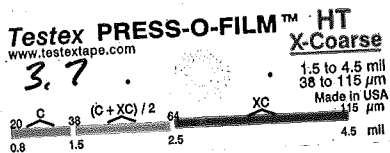
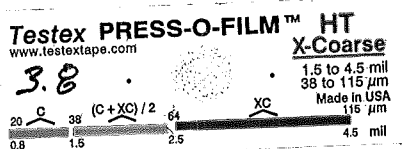


M & J VALVE

COATING INSPECTION FORM

The following inspection list must be completed on each valve.

Customer ENBRIDGE		Sales Order Number 1806857 - 1	
Serial Number 2916560 42" 600	Coating Specification Number 3330	☐ Internal ☒ External	
PREPARATION	Coating Spec SP-1	Sandblasting Spec SP-10	
	Surface Profile Test Average 3	Date 10/29/14	
	Time 10 AM	Relative Humidity 75%	Due Temp 71



PAINT PROCESS		Coat Type	Date	Time	Dew Point (°F)	Temp (°F)	Valve Temp (°F)	Relative Humidity	ADTF	Batch Number	Exp. Date
	Coat 1	SPC-2888	10/29/14	12 PM	74	85	85	72%	48	A 89566704	9/16
										B 89570704	9/16
	Coat 2								A		
									B		
	Coat 3								A		
									B		
	Coat 4								A		
									B		
	PLAST MEDIA										

METHOD OF TESTING

Positector-6000

AVERAGE DFT

48

BLAST MEDIA

COMMENTS

HOLIDAY INSPECTION	Method of Testing	Model Number
	☒ Holiday Detector High Voltage / ☐ Low Voltage Wet Sponge / ☐ Salt Test	Initials: JC
	☒ Any Holiday Repaired and Re-Inspected	Initials: m
	☒ Witnessed by Customer or 3 rd Party Inspector	Initials: n
☒ Coating Satisfactory for Shipping		

Inspected By:

Date: 10/30/14

Witnessed By:

Date: 10-31-14

6000
S/N 621487

Probe Model: FRS
Probe S/N: 123064

#1-2025-06-08
29/6/2025

↓ ↑
10
40.7 mils
58.5 mils
48.81 mils
6.54 mils

SPX
Flow Technology
HOUSTON, TEXAS

CERTIFICATE OF COMPLIANCE

Date OCT 31 2014

Customer: ENBRIDGE ENERGY PARTNERS L.P.

Purchase Order Number: PL91002-0720-14

Sales Order Number: 1806857

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" CL 600, MODEL M303 GATE VALVE.	1000002916560

Attached are the final inspection reports for the above.

DH/mt

Douglas Hinze

Douglas Hinze

Quality Control Supervisor



me
10-31-14

M & J VALVE • COPES-VULCAN • GD CLOSURES
8800 Westplain Drive Houston, TX 77041 USA
PO Box 40421 • Houston, Texas 77240
Telephone: (281) 469-0550 • Fax: (281) 894-1332
Web Site: www.spxfc.com



SPX Flow Technology

Houston, Texas

BOLT TORQUE SUMMARY REPORT

Date: 10-24-14

Customer: Enbridge

Purchase Order: PL91002-0720-14

Sales Order Number: 1806857-1

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Serial Number</u>
1	1	42" 600 WXW	1000002916560

Bolt Torque on the above has been checked and meets design requirements.

By:  Title: 10-24-14

M&J Valve ♦ Copes – Vulcan

8800 Westplain Drive, Houston, Texas 77041

P.O. Box 40421, Houston, Texas 77240

Phone: (281)469-0550 ♦ Fax: (281) 894-1332

Website: www.spxft.com

THE FOLLOWING INSPECTION LIST MUST BE COMPLETED ON EACH VALVE PRIOR TO SHIPMENT:

CUSTOMER ENBRIDGE ENERGY PARTNERS L.P.		SALES ORDER NO. 1806857-1	
SERIAL NO. 1000002916560	DATE REQUIRED 10-31-2014		SIZE & MODEL 42" M303
SERIES 600		END CONNECTION WE x WE (107" F/F)	
PIPE THICKNESS .750" WALL		BEVELED TO MATCH .500"	
FINAL ASSEMBLY PART NUMBER 7.420444	TYPE OPERATOR L+Q L120-190/80-2P/V7 ACTUATOR		
CYL. SERIAL NO. ---	POWER UNIT SERIAL NO. L1035253	OPERATOR TIME: (OPEN) 175 SECONDS	(CLOSED) ---

☒ SERIAL NUMBER (NAME TAG, BODY BOLTING FLANGE, UPPER FLANGE)

☒ STEM PACKING FEATURE

☒ SIDE HOLE FOR (REVERSE) GATE

☒ GATE BORE & THROUGH BORE IN ALIGNMENT

☒ BOTTOM BLOWDOWN ASSEMBLY INSTALLED AND TIGHT

☒ GREASE FEATURE INSTALLED AND TIGHT **ECV**

☒ BOTTOM DRAIN PLUG INSTALLED AND TIGHT

☒ STEM SEAL VENT PLUG INSTALLED AND TIGHT

☒ STEM PROTECTOR WITH CAP INSTALLED AND TIGHT **CLEAR PLASTIC**

☒ BONNET, CUPOLA & YOKE NUTS TIGHT

**SOCKET WELD BELOW GROUND CONNECTIONS
ENCLOSED IN CHANNEL IRON.**

☒ FLANGES FACES PARALLEL

☒ FLANGE HOLES STRADDLE CENTERLINE

SAND BLAST ☒	PNT-3259	PROTECTIVE COATING ☒	TYPE PNT. 3330	THICKNESS 25-80 MILS
VALVES SHIPPED LESS OPERATOR ---		UPPER YOKE FLANGE, OK ---		PARTS FOR OPERATOR WITH VALVE ---

ADDITIONAL INFORMATION

131,812" Q Bore to Top Mtg. Flg.

☒ TORQUE TEST REQUIRED ☒ CHAINLOCKING DEVICE REQUIRED

☒ OPERATIONAL TEST

☒ VALVE WITNESS TESTED BY CUSTOMER **Reg**

☒ MTR'S VERIFIED **Reg**

☒ TEST REPORT COMPLETED AND SIGNED

☒ VALVE SATISFACTORY FOR SHIPMENT

☒ TEST CERTIFICATE **Reg.**

☒ TEST CHART **4.25 HOUR SHELL**

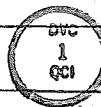
☒ SPECIAL TAGGING : **DBB**

☒ API MONOGRAM REQUIRED ; AFFIXED ☒

INSPECTED BY

CUSTOMER INSP.

Ortho's



DATE

OCT 31 2014

DATE RELEASED

SPX**M&J Valve**

ISO 14313



HOUSTON, TEXAS

PATENTED: 5,163,655 AND 6,164,622

SIZE	CLASS	MODEL	API	F / F
42"	600	M-303	6D	107"
BODY	GATE	SEAT	STEM	SEAL
X-70	A-516	A-350	4140	LT/BUNA
TEMP	-50F	+150F		
MOP	1480 PSI	1415 PSI		
DATE MFG	LICENSE NO	SERIAL NUMBER		
10/14	6D-0079	1000002916560		

DBB/SHELLTEST @2275 PSI/4.25 HRS.

PO# PL91002-0720-14
FUNC. TAG# H0420.64-61-V-1
HYDROTEST#61-14-2972
SHELLTST@2300 PSI/4.25HR