

# Certificate of Authorization Permit

## Quality Management System

Expiry Date: **February 10, 2016**

Reg. No.: **AQP-1426(S)**

This is to certify that:

**CADO INDUSTRIES INC.**  
7491 - 110 AVENUE S.E.  
CALGARY, ALBERTA

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

**Construct, Repair/Alter ASME Section VIII-1 Pressure Vessels**  
**Construct, Repair/Alter ASME B31.3 Indirect Fired Heater Coils**  
**Construct, Repair/Alter ASME B31.1 Power Piping and ASME B31.3 Process Piping**  
**Manufacture Category 'A', 'E' & 'H' Fittings in accordance with CSA B51**  
at the above SHOP address.

*As a condition of this permit, the holder is required to participate in interim audits by a safety codes officer to verify that the quality management system is being maintained in a manner acceptable to a safety codes officer.*

Dated at Edmonton, this 17th day of December, 2012



# WELDER "C"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster  
Welder's Name Robert Gray ABSA File No. W-12068  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of base metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

#### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate  Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

#### Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.100 in.

0.118 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

#### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.110 in. maximum

0.236 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Transverse face bend #F1 Pass Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test June 19, 2013  
Certified By Darren McLean, T.T. Welding Examiner File No. E-00413  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained July 19, 2013 Test Coupon I.D. No. C2-45  
Welder Performance Qualification Card No. 04965 Laboratory Test No. CW13-466.2

# WELDER "C"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Robert Gray ABSA File No. W-12068  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

#### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

SMAW: F3 3 layers minimum  Yes  No

SMAW: F4 3 layers minimum  Yes  No

Position qualified

Vertical progression

#### Actual Values

F3 None

F4 With

P1

2.50 in. O.D.

SFA 5.1

E6010 / E7018-1

F3 / F4

0.125 in.

0.500 in.

6G

Uphill

#### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F3 / F4

0.250 in. maximum

Max. to be welded

All

Uphill

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass

Side bend #S3 Pass

Side bend #S2 Pass

Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test June 26, 2013

Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413

Test Certified for Cado Industries Inc. by Representative [Signature] Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field

Date test coupon is to be retained July 26, 2013 Test Coupon I.D. No. C2-54

Welder Performance Qualification Card No. 04991 Laboratory Test No. CW13-475.2

# WELDER "D"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Robert Sinnott ABSA File No. W-26006  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

#### Welding Variables (QW-350)

Backing

#### Actual Values

#### Range Qualified

Base metal P-No. 1 to P-No. 1

F3 None

With or without

Plate

Pipe

F4 With

With backing

Filler metal or electrode specification(s)

P1  
2.50 in. O.D.

P1

Filler metal or electrode classification(s)

SFA 5.1

1.0 in. O.D. minimum

Filler metal F-Number(s)

E6010 / E7018-1

WPS requirements

Deposit thickness for each process

F3 / F4

F3 / F4

SMAW: F3 3 layers minimum  Yes

No

0.125 in.

0.250 in. maximum

SMAW: F4 3 layers minimum  Yes

No

0.500 in.

Max. to be welded

Position qualified

6G

All

Vertical progression

Uphill

Uphill

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass

Side bend #S3 Pass

Side bend #S2 Pass

Side bend #S4 Pass

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test September 4, 2013

Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton

Calgary

Field

Date test coupon is to be retained October 4, 2013

Test Coupon I.D. No. C2-57

Welder Performance Qualification Card No. 02445

Laboratory Test No. CW13-675.1

# WELDER "D"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster  
Welder's Name Robert Sinnott ABSA File No. W-26006  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of base metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

#### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	GMAW None SMAW With	With or without With backing
Base metal P-No. 1 to P-No. 1 <input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	P1 2.375 in. O.D.	P1 1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.18 / SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	ER70S-6 / E7018-1	WPS requirements
Filler metal F-Number(s)	F6 / F4	F6 / F4
Deposit thickness for each process		
GMAW: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.138 in. maximum
SMAW: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.093 in.	0.186 in. maximum
Position qualified	GMAW SP 30° SMAW 1G Rotated	SP 0 - 45°, Flat Flat
Vertical progression	GMAW Downhill SMAW N/A	Downhill N/A
Inert gas backing (GTAW, PAW, GMAW)	None	With or without
Transfer mode (spray/globular or pulse to short circuit-GMAW)	Short circuiting	Short circuiting

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
Transverse face bend #F1 Pass Transverse root bend #R1 Pass

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test September 4, 2013  
Certified By [Signature] Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained October 4, 2013 Test Coupon I.D. No. C2-45  
Welder Performance Qualification Card No. 02448 Laboratory Test No. CW13-675.2

# WELDER "G"



## LUDWIG

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Clifton Burrill ABSA File No. W-29393  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

#### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate  Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

SMAW: F3 3 layers minimum  Yes  No

SMAW: F4 3 layers minimum  Yes  No

Position qualified

Vertical progression

#### Actual Values

F3 None

F4 With

P1

2.50 in. O.D.

SFA 5.1

E6010 / E7018-1

F3 / F4

0.125 in.

0.500 in.

6G

Uphill

#### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F3 / F4

0.250 in. maximum

Max. to be welded

All

Uphill

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass Side bend #S3 Pass

Side bend #S2 Pass Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test November 18, 2013

Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field

Date test coupon is to be retained December 18, 2013 Test Coupon I.D. No. C2-60

Welder Performance Qualification Card No. 12883 Laboratory Test No. CW13-891.1

# WELDER "G"



## LUDWIG

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster  
Welder's Name Clifton Burrill ABSA File No. W-29393  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of base metal(s) SA 106 Gr.B Thickness 8.74 mm (0.344 in.)

#### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate  Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

#### Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.125 in.

0.093 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

#### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.138 in. maximum

0.186 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Transverse face bend #F1 Pass Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test November 18, 2013

Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field

Date test coupon is to be retained December 18, 2013 Test Coupon I.D. No. C2-56

Welder Performance Qualification Card No. 12882 Laboratory Test No. CW13-891.2



# LUDWIG ASSOCIATES LTD.

**WELDER "P"**

*Materials and Welding Consulting*

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company	<u>Cado Industries Inc.</u>	Contact	<u>Jeremy Koster</u>
Welder's Name	<u>Kelvin Perez</u>	ABSA File No.	<u>W-6448</u>
WP Registration No.	<u>2621.2</u>	WPS No.	<u>CADO-8</u>
Welding Process(es)	<u>GMAW / SMAW</u>	Type	<u>Semi-automatic / Manual</u>
Specification of base metal(s)	<u>SA 106 Gr.B</u>	Thickness	<u>11.1 mm (0.436 in.)</u>

### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	GMAW None SMAW With	With or without With backing
Base metal P-No. 1 to P-No. 1	P1	P1 or P8 to P8
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.375 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.9 / SFA 5.4	WPS requirements
Filler metal or electrode classification(s)	ER309L / E309L-16	WPS requirements
Filler metal F-Number(s)	F6 / F5	F6 / F5
Deposit thickness for each process		
GMAW: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.100 in.	0.110 in. maximum
SMAW: 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.336 in.	0.672 in. maximum
Position qualified	GMAW SP 30° SMAW 1G Rotated	SP 0 - 45°, Flat Flat
artical progression	GMAW Downhill SMAW N/A	Downhill N/A
Inert gas backing (GTAW, PAW, GMAW)	None	With or without
Transfer mode (spray/globular or pulse to short circuit-GMAW)	Short circuiting	Short circuiting

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
Side bend #S1 Pass Side bend #S2 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION	<u>Ludwig Associates Ltd.</u>	A.O.Q.P. Registration No.	<u>7106 (C)</u>
Test Conducted By	<u>Darren McLean, CSA W178.2 level 1 Insp.</u>	Date of Test	<u>November 23, 2012</u>
Certified By	<u><i>[Signature]</i> Darren McLean, T.T</u>	Welding Examiner File No.	<u>E-00413</u>
Test Certified for Cado Industries Inc. by Representative	<u><i>[Signature]</i></u>		<u>Jeremy Koster</u>

### RECORD INFORMATION

Ludwig Associates Ltd. testing facility	<input type="checkbox"/> Edmonton	<input checked="" type="checkbox"/> Calgary	<input type="checkbox"/> Field
ate test coupon is to be retained	<u>December 23, 2012</u>	Test Coupon I.D. No.	<u>C2-46</u>
Welder Performance Qualification Card No.	<u>07656</u>	Laboratory Test No.	<u>CW12-783.1</u>



# WELDER "P"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Kelvin Perez ABSA File No. W-6448  
WP Registration No. 2621.2 WPS No. CADO-12N  
Welding Process(es) GTAW / SMAW Type Manual  
Specification of base metal(s) SA 106 Gr.B Thickness 8.74 mm (0.344 in.)

#### Welding Variables (QW-350)

Backing

#### Actual Values

#### Range Qualified

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Consumable insert (GTAW or PAW)

Filler type (solid/metal or flux cored/powder) (GTAW or PAW)

Deposit thickness for each process

GTAW: 3 layers minimum

Yes

No

0.125 in.

0.250 in. maximum

SMAW: 3 layers minimum

Yes

No

0.219 in.

0.438 in. maximum

Position qualified

2G

Flat, horizontal

Vertical progression

N/A

N/A

Inert gas backing (GTAW, PAW, GMAW)

With

With

GTAW current type/polarity (AC, DCEP, DCEN)

DCEN

DCEN

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Transverse face bend #F1 N/A

Transverse root bend #R1 N/A

# PASS

Transverse face bend #F2 N/A

Transverse root bend #R2 N/A

Alternative radiographic examination results (QW-191) Acceptable - See radiography report R-61910

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test July 2, 2013

Certified By [Signature] Darren McLean, T.T Welding Examiner File No. E-00413

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton

Calgary

Field

Location of test: Cado Industries Inc. 7491 110 Ave. SE Calgary, AB T3R 1R8

Date test coupon is to be retained Aug 2, 2013 Test Coupon I.D. No. C2-51

Welder Performance Qualification Card No. 02140 Laboratory Test No. CW13-487.1

4027 - 14 Street, S.E., CALGARY, ALBERTA T2C 3K6 PHONE: (403) 262-7072 FAX: (403) 266-3169

7925 Davies Road, EDMONTON, ALBERTA T6C 4N1 PHONE: (780) 458-3030 FAX: (780) 468-3032

# WELDER "P"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Kelvin Perez ABSA File No. W-6448  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of Base Metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

### Welding Variables (QW-350)

Backing

### Actual Values

### Range Qualified

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

SMAW: F3 3 layers minimum

Yes

No

0.125 in.

0.250 in. maximum

SMAW: F4 3 layers minimum

Yes

No

0.500 in.

Max. to be welded

Position qualified

6G

All

Vertical progression

Uphill

Uphill

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass

Side bend #S3 Pass

Side bend #S2 Pass

Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION SGS Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test October 21, 2013

Certified By [Signature] Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E00441

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field

Date test coupon is to be retained November 21, 2013 Test Coupon I.D. No. C2-59

Welder Performance Qualification Card No. 12685 Laboratory Test No. CW13-812.1

# WELDER "P"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Kelvin Perez ABSA File No. W-6448  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of Base Metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

### Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.125 in.

0.093 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.138 in. maximum

0.186 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
Transverse face bend #F1 Pass Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION SGS Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test October 21, 2013  
Certified By [Signature] Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E00441  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained November 21, 2013 Test Coupon I.D. No. C2-45  
Welder Performance Qualification Card No. 12684 Laboratory Test No. CW13-812.2



# LUDWIG ASSOCIATES LTD.

WELDER "R"

Materials and Welding Consulting

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
 Welder's Name Carlos Robertson ABSA File No. W-29988  
 WP Registration No. 2621.2 WPS No. CADO-1  
 Welding Process(es) SMAW Type Manual  
 Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

Welding Variables (QW-350)	Actual Values	Range Qualified
Backing	F3 None	With or without
	F4 With	With backing
Base metal P-No. 1 to P-No. 1	P1	P1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.50 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	E6010 / E7018-1	WPS requirements
Filler metal F-Number(s)	F3 / F4	F3 / F4
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
Vertical progression	Uphill	Uphill

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
 Side bend #S1 Pass Side bend #S3 Pass  
 Side bend #S2 Pass Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
 Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test September 21, 2012  
 Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413  
 Test Certified for Cado Industries Inc. by Representative [Signature] Jeremy Koster

### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
 Date test coupon is to be retained October 21, 2012 Test Coupon I.D. No. C2-48  
 Welder Performance Qualification Card No. 01893 Laboratory Test No. CW12-624.1



# LUDWIG ASSOCIATES LTD.

## WELDER "R"

### Materials and Welding Consulting

#### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
 Welder's Name Carlos Robertson ABSA File No. W-29988  
 WP Registration No. 2621.2 WPS No. CADO-5  
 Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
 Specification of base metal(s) SA 106 Gr.B Thickness 8.74 mm (0.344 in.)

#### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	GMAW None	With or without
	SMAW With	With backing
Base metal P-No. 1 to P-No. 1	P1	P1, P6, 4130
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.375 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.18 / SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	ER70S-6 / E7018-1	WPS requirements
Filler metal F-Number(s)	F6 / F4	F6 / F4
Deposit thickness for each process		
GMAW: 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.100 in.	0.110 in. maximum
SMAW: 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.244 in.	0.488 in. maximum
Position qualified	GMAW SP 30°	SP 0 - 45°, Flat
	SMAW 1G Rotated	Flat
Vertical progression	GMAW Downhill	Downhill
	SMAW N/A	N/A
Inert gas backing (GTAW, PAW, GMAW)	None	With or without
Transfer mode (spray/globular or pulse to short circuit-GMAW)	Short circuiting	Short circuiting

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
 Transverse face bend #F1 Pass Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
 Test Conducted By Darren McLean, CSA W178.2 level 1 Insp. Date of Test September 21, 2012  
 Certified By [Signature] Darren McLean, T.T. Welding Examiner File No. E-00413  
 Test Certified for Cado Industries Inc. by Representative [Signature] Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
 Date test coupon is to be retained October 21, 2012 Test Coupon I.D. No. C2-39  
 Welder Performance Qualification Card No. 01894 Laboratory Test No. CW12-624.2



# LUDWIG ASSOCIATES LTD.

## WELDER "S"

### Materials and Welding Consulting

#### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
 Welder's Name Donghao Shi ABSA File No. W-28478  
 WP Registration No. 2621.2 WPS No. CADO-13N  
 Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
 Specification of base metal(s) SA 106 Gr.B Thickness 8.74 mm (0.344 in.)

#### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	GMAW: None SMAW: With	With or without With backing
Base metal P-No. 1 to P-No. 1 <input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	P1 2.375 in. O.D.	P1, 4130 1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.18 / SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	ER70S-6 / E7018-1	WPS requirements
Filler metal F-Number(s)	F6 / F4	F6 / F4
Deposit thickness for each process		
GMAW: F6 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.100 in.	0.110 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.244 in.	0.488 in. maximum
Position qualified	GMAW: SP 30° SMAW: 1G Rotated	SP 0 - 45°, Flat Flat
Vertical progression	GMAW: Downhill SMAW: N/A	Downhill N/A
Inert gas backing (GTAW, PAW, GMAW)	None	With or without
Transfer mode (spray/globular or pulse to short circuit-GMAW)	Short circuiting	Short circuiting

#### RESULTS

# PASS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
 Transverse face bend #F1 Pass Transverse root bend #R1 Pass

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
 Test Conducted By Dan Nguyen, CSA W178.2 level II Insp. Date of Test June 5, 2012  
 Certified By Dan Nguyen, C.E.T. Welding Examiner File No. E-00286  
 Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
 Date test coupon is to be retained July 5, 2012 Test Coupon I.D. No. C2-39  
 Welder Performance Qualification Card No. 01474 Laboratory Test No. CW12-357.2

4027 - 14 Street, S.E., CALGARY, ALBERTA T2C 3X6 PHONE: (403) 262-7072 FAX: (403) 266-3169

7923 Davies Road, EDMONTON, ALBERTA T6E 4N1 PHONE: (780) 468-3030 FAX: (780) 468-3032



# LUDWIG ASSOCIATES LTD.

WELDER "S"

Materials and Welding Consulting

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
 Welder's Name Donghao Shi ABSA File No. W-28478  
 WP Registration No. 2621.2 WPS No. CADO-1  
 Welding Process(es) SMAW Type Manual  
 Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	F3 None	With or without
	F4 With	With backing
	P1	P1
	2.50 in. O.D.	1.0 in. O.D. minimum
Base metal P-No. 1 to P-No. 1	SFA 5.1	WPS requirements
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	E6010 / E7018-1	WPS requirements
Filler metal or electrode specification(s)	F3 / F4	F3 / F4
Filler metal or electrode classification(s)		
Filler metal F-Number(s)		
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
Vertical progression	Uphill	Uphill

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass Side bend #S3 Pass

Side bend #S2 Pass Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Dan Nguyen, CSA W178.2 level II Insp. Date of Test June 5, 2012

Certified By Dan Nguyen, C.E.T. Welding Examiner File No. E-00286

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field

Date test coupon is to be retained July 5, 2012 Test Coupon I.D. No. C2-41

Welder Performance Qualification Card No. 01473 Laboratory Test No. CW12-357.1

# WELDER "U"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Mohammed Masri ABSA File No. W-29270  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	F3 None	With or without
	F4 With	With backing
Base metal P-No. 1 to P-No. 1	P1	P1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.50 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	E6010 / E7018-1	WPS requirements
Filler metal F-Number(s)	F3 / F4	F3 / F4
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
Vertical progression	Uphill	Uphill

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
Side bend #S1 Pass Side bend #S3 Pass  
Side bend #S2 Pass Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Colin Burnette, CSA W178.2 Level 1 Insp. Date of Test December 2, 2013  
Certified By Colin Burnette T.T. Welding Examiner File No. E-00391  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained January 2, 2014 Test Coupon I.D. No. C2-61  
Welder Performance Qualification Card No. 13080 Laboratory Test No. CW13-931.1



# WELDER "U"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster  
Welder's Name Mohammed Masri ABSA File No. W-29270  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of base metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

### Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.100 in.

0.118 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.110 in. maximum

0.236 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Transverse face bend #F1 Pass Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Colin Burnette, CSA W178.2 Level 1 Insp. Date of Test December 2, 2013

Certified By [Signature] Colin Burnette T.T. Welding Examiner File No. E-00391

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton

Calgary

Field

Date test coupon is to be retained January 2, 2014

Test Coupon I.D. No. C2-58

Welder Performance Qualification Card No. 13081

Laboratory Test No. CW13-931.2

SGS Ludwig Associates Ltd. 4027 - 14 Street S.E. Calgary AB T2G 3K6 t +1 (403) 262-7072 f +1 (403) 266-3169  
7925 Davies Road Edmonton AB T6E 4N1 t +1 (780) 468-3030 f +1 (780) 468-3032 www.ludwigassociatesltd.com www.sgs.com

Member of the SGS Group (SGS SA)

# WELDER "V"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Marc McDonald ABSA File No. W-26485  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of Base Metal(s) SA 106 Gr.B Thickness 8.74 mm (0.344 in.)

### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate  Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified

Vertical progression

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

### Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.125 in.

0.219 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.138 in. maximum

0.438 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Transverse face bend #F1 Pass

Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION SGS Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test January 31, 2014  
Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained March 1, 2014 Test Coupon I.D. No. C2-62  
Welder Performance Qualification Card No. 13316 Laboratory Test No. CW14-081.4

# WELDER "V"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Marc McDonald ABSA File No. W-26485  
WP Registration No. 2821.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of Base Metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

### Welding Variables (QW-350)

Backing

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

SMAW: F3 3 layers minimum

Yes

No

0.125 in.

0.250 in. maximum

SMAW: F4 3 layers minimum

Yes

No

0.500 in.

Max. to be welded

Position qualified

6G

All

Vertical progression

Uphill

Uphill

### Actual Values

F3 None

F4 With

P1

2.50 in. O.D.

SFA 5.1

E6010 / E7018-1

F3 / F4

### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F3 / F4

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass

Side bend #S3 Pass

Side bend #S2 Pass

Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION SGS Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test January 31, 2014  
Certified By [Signature] Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained March 1, 2014 Test Coupon I.D. No. C2-61  
Welder Performance Qualification Card No. 13315 Laboratory Test No. CW14-081.3

# WELDER "W"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company CADO Industries Inc. Contact Jeremy Koster  
Welder's Name Wai Leung ABSA File No. W-22325  
WP Registration No. 2621.2 WPS No. CADO-6  
Welding Process(es) GMAW / SMAW Type Semi-automatic / Manual  
Specification of base metal(s) SA 106 Gr.B Thickness 5.54 mm (0.218 in.)

#### Welding Variables (QW-350)

Backing

#### Actual Values

#### Range Qualified

GMAW None

With or without

SMAW With

With backing

P1

P1

2.375 in. O.D.

1.0 in. O.D. minimum

SFA 5.18 / SFA 5.1

WPS requirements

ER70S-6 / E7018-1

WPS requirements

F6 / F4

F6 / F4

Base metal P-No. 1 to P-No. 1

Plate

Pipe

Filler metal or electrode specification(s)

Filler metal or electrode classification(s)

Filler metal F-Number(s)

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified

0.125 in.

0.138 in. maximum

0.093 in.

0.186 in. maximum

GMAW SP 30°

SP 0 - 45°, Flat

SMAW 1G Rotated

Flat

GMAW Downhill

Downhill

SMAW N/A

N/A

Inert gas backing (GTAW, PAW, GMAW)

Transfer mode (spray/globular or pulse to short circuit-GMAW)

None

With or without

Short circuiting

Short circuiting

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Transverse face bend #F1 Pass

Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)

Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test August 26, 2013

Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441

Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field

Location of test: Cado Industries Ltd. 7491 110 Ave. SE Calgary, AB T2C 2C9

Date test coupon is to be retained September 26, 2013 Test Coupon I.D. No. C2-45

Welder Performance Qualification Card No. 02394 Laboratory Test No. CW13-857.2

4027 - 14 Street, S.E., CALGARY, ALBERTA T2C 1K6 PHONE: (403) 263-7072 FAX: (403) 266-3169

7925 Davies Road, EDMONTON, ALBERTA T6E 4N1 PHONE: (780) 468-1030 FAX: (780) 468-1032

# WELDER "W"



## LUDWIG ASSOCIATES LTD.

Materials and Welding Consulting

### WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Wai Leung ABSA File No. W-22325  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of base metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

#### Welding Variables (QW-350)

	Actual Values	Range Qualified
Backing	F3 None	With or without
	F4 With	With backing
Base metal P-No. 1 to P-No. 1	P1	P1
<input type="checkbox"/> Plate <input checked="" type="checkbox"/> Pipe	2.50 in. O.D.	1.0 in. O.D. minimum
Filler metal or electrode specification(s)	SFA 5.1	WPS requirements
Filler metal or electrode classification(s)	E6010 / E7018-1	WPS requirements
Filler metal F-Number(s)	F3 / F4	F3 / F4
Deposit thickness for each process		
SMAW: F3 3 layers minimum <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0.125 in.	0.250 in. maximum
SMAW: F4 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.500 in.	Max. to be welded
Position qualified	6G	All
Vertical progression	Uphill	Uphill

#### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass Side bend #S3 Pass

Side bend #S2 Pass Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test August 26, 2013  
Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

#### RECORD INFORMATION

Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Location of test: Cado Industries Ltd. 7491 110 Ave. SE Calgary, AB T2C 2C9  
Date test coupon is to be retained September 26, 2013 Test Coupon I.D. No. C2-57  
Welder Performance Qualification Card No. 02393 Laboratory Test No. CW13-657.1

# WELDER "Y"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company <u>Cado Industries Inc.</u>	Contact <u>Jeremy Koster</u>
Welder's Name <u>Garth Brooks</u>	ABSA File No. <u>W-13556</u>
WP Registration No. <u>2621.2</u>	WPS No. <u>CADO-6</u>
Welding Process(es) <u>GMAW / SMAW</u>	Type <u>Semi-automatic / Manual</u>
Specification of Base Metal(s) <u>SA 106 Gr.B</u>	Thickness <u>5.54 mm (0.218 in.)</u>

### Welding Variables (QW-350)

Backing \_\_\_\_\_

Base metal P-No. 1 to P-No. 1

Plate  Pipe

Filler metal or electrode specification(s) \_\_\_\_\_

Filler metal or electrode classification(s) \_\_\_\_\_

Filler metal F-Number(s) \_\_\_\_\_

Deposit thickness for each process

GMAW: 3 layers minimum  Yes  No

SMAW: 3 layers minimum  Yes  No

Position qualified \_\_\_\_\_

Vertical progression \_\_\_\_\_

Inert gas backing (GTAW, PAW, GMAW) \_\_\_\_\_

Transfer mode (spray/globular or pulse to short circuit-GMAW) \_\_\_\_\_

### Actual Values

GMAW None

SMAW With

P1

2.375 in. O.D.

SFA 5.18 / SFA 5.1

ER70S-6 / E7018-1

F6 / F4

0.125 in.

0.093 in.

GMAW SP 30°

SMAW 1G Rotated

GMAW Downhill

SMAW N/A

None

Short circuiting

### Range Qualified

With or without

With backing

P1

1.0 in. O.D. minimum

WPS requirements

WPS requirements

F6 / F4

0.138 in. maximum

0.186 in. maximum

SP 0 - 45°, Flat

Flat

Downhill

N/A

With or without

Short circuiting

### RESULTS

Visual examination of completed weld (QW-302.4) \_\_\_\_\_ Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)  
 Transverse face bend #F1 Pass Transverse root bend #R1 Pass

# PASS

Alternative radiographic examination results (QW-191) \_\_\_\_\_ N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION <u>SGS Ludwig Associates Ltd.</u>	A.O.Q.P. Registration No. <u>7106 (C)</u>
Test Conducted By <u>Rob Cormier, CSA W178.2 Level 1 Insp.</u>	Date of Test <u>December 10, 2013</u>
Certified By <u>Rob Cormier, C.E.T., I.W.T.</u>	Welding Examiner File No. <u>E-00441</u>
Test Certified for Cado Industries Inc. by Representative _____	<u>Jeremy Koster</u>

### RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility <input type="checkbox"/> Edmonton <input checked="" type="checkbox"/> Calgary <input type="checkbox"/> Field
Date test coupon is to be retained <u>January 10, 2014</u> Test Coupon I.D. No. <u>C2-58</u>
Welder Performance Qualification Card No. <u>13103</u> Laboratory Test No. <u>CW13-949.2</u>

# WELDER "Y"

# SGS

# LUDWIG

## WELDER PERFORMANCE QUALIFICATION TEST RECORD

Company Cado Industries Inc. Contact Jeremy Koster  
Welder's Name Garth Brooks ABSA File No. W-13556  
WP Registration No. 2621.2 WPS No. CADO-1  
Welding Process(es) SMAW Type Manual  
Specification of Base Metal(s) A 513 Gr. 1026 Thickness 15.9 mm (0.625 in.)

### Welding Variables (QW-350)

Backing

### Actual Values

### Range Qualified

Base metal P-No. 1 to P-No. 1

F3 None

With or without

Plate

Pipe

F4 With

With backing

Filler metal or electrode specification(s)

P1

P1

Filler metal or electrode classification(s)

2.50 in. O.D.

1.0 in. O.D. minimum

Filler metal F-Number(s)

SFA 5.1

WPS requirements

Deposit thickness for each process

E6010 / E7018-1

WPS requirements

SMAW: F3 3 layers minimum

Yes

No

0.125 in.

0.250 in. maximum

SMAW: F4 3 layers minimum

Yes

No

0.500 in.

Max. to be welded

Position qualified

6G

All

Vertical progression

Uphill

Uphill

### RESULTS

Visual examination of completed weld (QW-302.4) Acceptable

Bend test  QW-462.2;  QW-462.3(a);  QW-462.5(c);  QW-462.5(d)

Side bend #S1 Pass

Side bend #S3 Pass

Side bend #S2 Pass

Side bend #S4 Pass

# PASS

Alternative radiographic examination results (QW-191) N/A

*We certify the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.*

ACCREDITED ORGANIZATION SGS Ludwig Associates Ltd. A.O.Q.P. Registration No. 7106 (C)  
Test Conducted By Rob Cormier, CSA W178.2 Level 1 Insp. Date of Test December 9, 2013  
Certified By Rob Cormier, C.E.T., I.W.T. Welding Examiner File No. E-00441  
Test Certified for Cado Industries Inc. by Representative Jeremy Koster

### RECORD INFORMATION

SGS Ludwig Associates Ltd. testing facility  Edmonton  Calgary  Field  
Date test coupon is to be retained January 9, 2014 Test Coupon I.D. No. C2-61  
Welder Performance Qualification Card No. 13102 Laboratory Test No. CW13-949.1

CLIENT Penn West

PROJECT First unit (4-well sep)

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-01A	4" XS A106B	284	1	C1739
1-070-01A	4" XS "	456	1	C1739
1-070-01A	2" XS "	108	1	C1751
1-070-01B	4" XS "	636	1	C1739
1-070-01B	4" XS "	1121	1	C1739
1-070-01B	4" XS "	175	1	C1739
1-070-02A	4" XS "	284	1	C1739
1-070-02A	4" XS "	456	1	C1739
1-070-02A	2" XS "	108	1	C1751
1-070-02B	4" XS "	636	1	C1739
1-070-02B	4" XS "	1121	1	9717
1-070-02B	4" XS "	175	1	C1739
1-070-03A	4" XS "	284	1	C1739
1-070-03A	4" XS "	456	1	C1739
1-070-03A	2" XS "	108	1	C1751
1-070-03B	4" XS "	636	1	C1739
1-070-03B	4" XS "	1121	1	C1739
1-070-03B	4" XS "	175	1	C1739
1-070-04A	4" XS "	284	1	C1739
1-070-04A	4" XS "	456	1	C1739
1-070-04A	2" XS "	108	1	C1751
1-070-04B	4" XS "	636	1	C1739
1-070-04B	4" XS "	1121	1	C1739
1-070-04B	4" XS "	175	1	C1739
1-070-05A	4" XS "	112	1	C1739

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CLIENT: Penn west

PROJECT: First Unit (4-well sep)

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-05A	4" XS A106B	1153	1	C1739
1-070-05B	4" XS A106B	976	1	C1739
1-070-05C	2" XS A106B	253	1	C1751
1-070-05D	4" XS A106B	147	1	C1739
1-070-05D	2" XS A106B	328	1	C1751
1-070-05E	4" XS A106B	198	1	C1739
1-070-05F	4" XS "	1467	1	C1739
1-070-05F	4" XS "	188	1	C1739
1-070-05F	4" XS "	1161	1	<del>C1739</del> 1583
1-070-05G	4" XS "	188	1	C1739
1-070-05H	8" XS "	3513	1	C1741
1-070-05H	4" XS "	188	1	C1739
1-070-05H	8" XS "	3227	1	C1741
1-070-05J	4" XS "	188	1	C1739
1-070-05J	8" XS "	3513	1	C1741
1-070-05K	4" XS "	188	1	C1739
1-070-05K	8" XS "	2890	1	C1770
1-070-05K	8" XS "	280	1	C1741
1-070-06A	4" XS "	112	1	C1739
1-070-06A	4" XS "	1153	1	C1739
1-070-06B	4" XS "	976	1	C1739
1-070-06C	2" XS "	253	1	C1751
1-070-06D	4" XS "	147	1	C1739
1-070-06D	2" XS "	328	1	C1751
1-070-06E	4" XS "	198	1	C1739

CADO JOB NUMBER: 2013-070

CLIENT: Penn West

PROJECT: First Unit (4-well sep)

PAGE 3 OF

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-06F	4" XS A106B	1467	1	C1739
1-070-06F	4" XS "	188	1	C1739
1-070-06F	4" XS "	1161	1	C1739
1-070-07A	4" XS "	112	1	C1739
1-070-07A	4" XS "	1153	1	C1739
1-070-07B	4" XS "	976	1	C1739
1-070-07C	2" XS "	253	1	C1751
1-070-07D	4" XS "	147	1	C1739
1-070-07D	2" XS "	328	1	C1751
1-070-07E	4" XS "	198	1	C1739
1-070-07F	4" XS "	1467	1	C1739
1-070-07F	4" XS "	188	1	C1739
1-070-07F	4" XS "	1161	1	C1745
1-070-08A	4" XS "	112	1	C1739
1-070-08A	4" XS "	1153	1	C1739
1-070-08B	4" XS "	976	1	C1739
1-070-08C	2" XS "	253	1	C1751
1-070-08D	4" XS "	147	1	C1739
1-070-08D	2" XS "	328	1	C1751
1-070-08E	4" XS "	198	1	C1739
1-070-08F	4" XS "	1467	1	C1739
1-070-08F	4" XS "	188	1	C1739
1-070-08F	4" XS "	1161	1	C1745
1-070-09A	2" XS "	163	1	C1751
1-070-09B	2" XS "	163	1	C1751

CADO JOB NUMBER: 2013-070

CLIENT: Penn West

PROJECT: First Unit (4-well sep)

PAGE 4 OF

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-09C	2" X 5 A106B	163	1	C1751
1-070-09D	2" X 5 A106B	163	1	C1751
1-070-09E	2" X 5 "	521	1	C1751
1-070-09E	2" X 5 "	855	1	C1751
1-070-09F	2" X 5 "	3576	1	C1751
1-070-09F	2" X 5 "	855	1	C1751
1-070-09G	2" X 5 "	3576	1	C1751
1-070-09G	2" X 5 "	855	1	C1751
1-070-09H	2" X 5 "	3576	1	C1751
1-070-09H	2" X 5 "	855	1	C1751
1-070-09J	2" X 5 "	3182	1	C1451
1-070-09J	2" X 5 "	3080	1	C1751
1-070-10A	3" X 5 "	197	1	C1002
1-070-10A	2" X 5 "	141	1	C1751
1-070-10B	3" X 5 "	242	1	C1002
1-070-10B	2" X 5 "	490	1	C1751
1-070-10B	2" X 5 "	141	1	C1751
1-070-10C	2" X 5 "	343	1	C175
1-070-10C	2" X 5 "	171	1	C1751
1-070-10D	2" X 5 "	141	1	C1751
1-070-10E	2" X 5 "	1939	1	C1451
1-070-10E	2" X 5 "	320	1	C1751
1-070-10E	2" X 5 "	717	1	C1751
1-070-11A	3" X 5 "	197	1	C1002
1-070-11A	2" X 5 "	141	1	C1751

CADO JOB NUMBER:

2013-070

CLIENT:

Penn West

PROJECT:

First Unit (4-well sep)

PAGE 5 OF

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-11B	3" X 5 A106B	242	1	C1662
1-070-11B	2" X 5 "	490	1	C1751
1-070-11B	2" X 5 "	141	1	C1751 4
1-070-11C	2" X 5 "	343	1	C1751
1-070-11C	2" X 5 "	171	1	C1751
1-070-11D	2" X 5 "	141	1	C1751 5
1-070-11E	2" X 5 "	1939	1	<del>C1751</del>
1-070-11E	2" X 5 "	320	1	C1751
1-070-11E	2" X 5 "	717	1	C1751
1-070-12A	3" X 5 "	197	1	C1662
1-070-12A	2" X 5 "	141	1	C1751 6
1-070-12B	3" X 5 "	242	1	C1662 *
1-070-12B	2" X 5 "	490	1	C1751
1-070-12B	2" X 5 "	141	1	C1751
1-070-12C	2" X 5 "	343	1	C1751
1-070-12C	2" X 5 "	171	1	C1751
1-070-12D	2" X 5 "	141	1	C1751 7
1-070-12E	2" X 5 "	1939	1	<del>C1751</del> -
1-070-12E	2" X 5 "	320	1	C1751
1-070-12E	2" X 5 "	717	1	C1751
1-070-13A	3" X 5 "	197	1	C1662
1-070-13A	2" X 5 "	141	1	C1751 8
1-070-13B	3" X 5 "	242	1	C1662 *
1-070-13B	2" X 5 "	490	1	C1751
1-070-13B	2" X 5 "	141	1	C1751 9

CLIENT: Penn West

PROJECT: First Unit (4-well sep) PAGE 6 OF

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-13C	2" XS A106B	343	1	C1751
1-070-13C	2" XS A106B	171	1	C1751
1-070-13D	2" XS A106B	141	1	C1751
1-070-13E	2" XS A106B	1939	1	C1751
1-070-13E	2" XS A106B	320	1	C1751
1-070-13E	2" XS "	717	1	C1738
1-070-14A	3" XS "	119	1	C1662 *
1-070-14A	2" XS "	141	1	C1751
1-070-14B	3" XS "	352	1	C1662 *
1-070-14B	2" XS "	490	1	C1751
1-070-14B	2" XS "	348	1	C1738
1-070-14B	2" XS "	343	1	C1751
1-070-14C	2" XS "	171	1	C1751
1-070-14D	2" XS "	48	1	C1751
1-070-14D	2" XS "	141	1	C1751
1-070-14E	2" XS "	1939	1	C1751
1-090-14E	2" XS "	320	1	C1751
1-070-14E	2" XS "	826	1	C1738
1-070-15A	3" XS "	119	1	C1705
1-070-15A	2" XS "	141	1	C1751
1-070-15B	3" XS "	352	1	C1662 *
1-070-15B	2" XS "	490	1	C1751
1-070-15B	2" XS "	348	1	C1738
1-070-15B	2" XS "	343	1	C1751
1-070-15C	2" XS "	171	1	C1751

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CLIENT: Penn West

PROJECT: First Unit (4-well sep)

SPOOL NO	MATERIAL	CUT LENGTH	QTY.	TRACING NO
1-070-15D	2" X 5 "	48	1	C1751
1-070-15D	2" X 5 "	141	1	C1751
1-070-15E	2" X 5 "	1939	1	C1751
1-070-15E	2" X 5 "	320	1	C1751
1-070-15E	2" X 5 "	826	1	C1738
1-070-16A	3" X 5 "	119	1	C1705
1-070-16A	2" X 5 "	141	1	C1751
1-070-16B	3" X 5 "	352	1	C1705
1-070-16B	2" X 5 "	490	1	C1751
1-070-16B	2" X 5 "	348	1	C1738
1-070-16B	2" X 5 "	343	1	C1751
1-070-16C	2" X 5 "	171	1	C1751
1-070-16D	2" X 5 "	48	1	C1751
1-070-16D	2" X 5 "	141	1	C1751
1-070-16E	2" X 5 "	1939	1	C1751
1-070-16E	2" X 5 "	320	1	C1751
1-070-16E	2" X 5 "	826	1	C1738
1-070-17A	3" X 5 "	119	1	C1705
1-070-17A	2" X 5 "	141	1	C1751
1-070-17B	3" X 5 "	352	1	C1705
1-070-17B	2" X 5 "	490	1	C1751
1-070-17B	2" X 5 "	348	1	C1738
1-070-17B	2" X 5 "	343	1	C1751
1-070-17C	2" X 5 "	171	1	C1751
1-070-17D	2" X 5 "	48	1	C1751

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CLIENT:

Penn West

PROJECT:

First unit (4-well sep)

PAGE 8 OF

SPOOL	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-17D	2" X S "	141	1	C1751
1-070-17E	2" X S "	1939	1	C1738
1-070-17E	2" X S "	320	1	C1751
1-070-17E	2" X S "	826	1	C1789
1-070-18A	2" X S "	1004	1	C1751
1-070-18B	2" X S "	321	1	C1751
1-070-18B	2" X S "	2515	1	C1738
1-070-19A	2" X S "	1004	1	C1751
1-070-19A	2" X S "	321	1	C1751
1-070-19A	2" X S "	2515	1	C1738
1-070-20A	2" X S "	1004	1	C1751
1-070-20B	2" X S "	321	1	C1751
1-070-20B	2" X S "	2515	1	C1738
1-070-21A	2" X S "	1004	1	C1751
1-070-21B	2" X S "	321	1	C1751
1-070-21B	2" X S "	2515	1	C1738
1-070-22A	2" X S "	141	1	C1751
1-070-22A	4" X S "	184	1	C1717
1-070-22B	3" X S "	507	1	C1744
1-070-22B	3" X S "	165	1	<del>C1751</del> C1705
1-070-22B	3" X S "	155	1	<del>C1751</del> C1705
1-070-22C	4" X S "	3037	1	C1745
1-070-22C	2" X S "	141	1	C1751
1-070-22C	4" X S "	184	1	C1717
1-070-22D	3" X S "	507	1	C1744

CLIENT: Penn West

PROJECT: First unit (4 - well sep)

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-22D	3" XS A106B	165	1	<del>C1647</del> C1662
1-070-22D	3" XS "	155	1	<del>C1647</del> C1744
1-070-23A	2" STD "	64	1	<del>C1647</del>
1-070-23B	2" STD "	623	1	C1647
1-070-23C	1" XS "	179	1	C1749
1-070-23D	2" STD "	78	1	C1647
1-070-23D	2" STD "	64	1	C1647
1-070-23D	6" STD "	5316 ✓	1	C1762
1-070-23E	2" STD "	108	1	C1647
1-070-23E	2" STD "	1393	1	C1647
1-070-23F	2" STD "	623	1	C1647
1-070-23G	1" XS "	179	1	C1749
1-070-23J	2" STD "	78	1	C1647
1-070-23J	2" STD "	64	1	<del>C1647</del>
1-070-23J	6" STD "	5413 ✓	1	C1762
1-070-23K	2" STD "	108	1	C1647
1-070-23K	2" STD "	1393	1	C1647
1-070-23L	2" STD "	623	1	C1647
1-070-23M	1" XS "	179	1	C1749
1-070-23N	2" STD "	78	1	C1647
1-070-23N	2" STD "	64	1	C1647
1-070-23P	2" STD "	108	1	C1647
1-070-23P	2" STD "	1393	1	C1647
1-070-23Q	2" STD "	623	1	C1647
1-070-23R	1" XS "	179	1	C1749



CLIENT: Penn West

PROJECT: First unit (4-well sep.)

SPOOL NO	MATERIAL	CUT LENGTH	QTY	TRACING NO
1-070-23T	2" STD A106B	78	1	C1647
1-070-23T	6" STD "	5585	1	C1762
1-070-23U	2" STD "	108	1	C1647
1-070-23U	2" STD "	1393	1	C1767
1-070-24C	2" STD "	4967	1	C1761
1-070-24D	2" STD "	5864	1	C1761
1-070-24D	2" STD "	3580	1	C1761
△ 1-070-22E	2" Sch 80, SA-106-B	141	1	C1751
△ 1-070-22E	4" Sch 80, SA-106-B	3038	1	C1763
△ 1-070-22E	4" Sch 80, SA-106-B	185	1	C1703
△ 1-070-22F	2" Sch 80, SA-106-B	141	1	C1751
△ 1-070-22F	4" Sch 80, SA-106-B	3038	1	C1763
△ 1-070-22F	4" Sch 80, SA-106-B	185	1	C1757
△ 1-070-22G	3" Sch <del>40</del> <sup>80</sup> , SA-106-B	156	1	C1744
△ 1-070-22G	3" Sch <del>40</del> <sup>80</sup> , SA-106-B	166	1	C1724
△ 1-070-22G	3" Sch <del>40</del> <sup>80</sup> , SA-106-B	508	1	C1744
△ 1-070-22J	3" Sch 80, SA-106-B	156	1	<del>C1744</del>
△ 1-070-22J	3" Sch 80, SA-106-B	166	1	C1744
△ 1-070-22J	3" Sch 80, SA-106-B	508	1	C1744
△ 1-070-22K	4" Sch 80, SA-106-B	2641	1	C1763
△ 1-070-22K	4" Sch 80, SA-106-B	1131	1	C1763
△ 1-070-22K	4" Sch 80, SA-106-B	2655	1	C1763
△ 1-070-22K	4" Sch 80, SA-106-B	387	1	C1745

DONE  
DONE  
DONE  
DONE  
DONE  
not yet  
DONE

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II

2013 EDITION  
JAN 17 2014  
ADD.

QRD/HIXG-36-007-5

Jiangsu Valin-Xigeng Special Steel Co., Ltd

MILL TEST REPORT

Contract No.: 20120000146  
Sheet No.: 1  
DATE: 2013-1-22

Handwritten: 11811, 3472



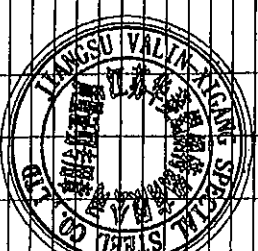
Customer: THANS AM  
Product: SEAMLESS CARBON STEEL PIPE FOR OIL AND GAS USE  
Steel Grade: B9-90/42M-29005

Spec. No.: KSTM / ASME A53B, A53A1068, API 5L X42, PSL 2, NICE JR-0175/150  
Welding Method: HR  
Tensile Test: HR  
Delivery State: N  
Impact Test 1 (J): 0 C

Hardness Test: HR  
H.P.T  
Duration of Time (S): 2970

NO.	Size (NPS)	LENGTH (FT)	Heat No.	Lot No.	PSS RT (MT)	TOTAL LENGTH (FEET)	BOL	Sample Type/Or-ientation/Dissection n/Ct. (mm)	T.S (ksi)		E.L. % (A)	P. 836 (2)	Impact Sample Dimension	Impact Test 1 (J)		Hardness Value (REVISION 3) / HR-100	H.P.T	Duration of Time (S)	
									Y.S1 (CI)	PS1				PS1	PS1				
1	4" x 0.337"	20	W2108971	211001209	35	4.767	700.46	4	S/L25/50	71340	59995	42.5	L/7.5	224/244/239	162.5	161.9	2970	5	
2	4" x 0.337"	20	W210971	211001208	49	6.673	980.64	5	S/L25/50	71195	59005	45.0	L/7.5	243/271/256	161.3	156.6	2970	5	
3	4" x 0.337"	20	W2100971	211001210	82	11.188	1641.08	8	S/L25/50	69745	67180	40.0	L/7.5	243/228/231	154.5	153.5	2970	6	
4																			
5																			

NO.	Composition Type	Chemical Composition %																				
		C	SI	Mn	P	S	Cr	Ni	CU	AL	Mo	V	Nb	B	Ti	Nb/C	Ca	BI	OX 10 <sup>-4</sup>	HX 10 <sup>-4</sup>	CHa	CHa
1	R	0.12	0.22	1.08	0.014	0.005	0.07	0.040	0.04	0.007	0.030	0.003	0.028	5.00	0.002	0.00001					0.32	0.32
2	P	0.12	0.28	1.08	0.010	0.003	0.04	0.036	0.07	0.029	0.008	0.002	0.032	5.00	0.002	0.00001					0.32	0.32
3	P	0.12	0.27	1.08	0.009	0.002	0.04	0.038	0.07	0.030	0.008	0.012	0.034	5.00	0.002	0.00001					0.32	0.32
4	H	0.12	0.22	1.08	0.014	0.005	0.04	0.040	0.04	0.034	0.004	0.028	5.00	0.002	0.00001					0.32	0.32	
5	P	0.12	0.28	1.07	0.009	0.002	0.04	0.034	0.07	0.029	0.006	0.002	0.030	5.73	0.002	0.00001					0.31	0.31
6	H	0.12	0.22	1.08	0.014	0.005	0.04	0.040	0.04	0.034	0.004	0.028	5.00	0.002	0.00001					0.32	0.32	
7	P	0.11	0.27	1.08	0.010	0.003	0.04	0.036	0.07	0.030	0.008	0.012	0.034	5.00	0.002	0.00001					0.31	0.31
8	H	0.12	0.22	1.08	0.014	0.005	0.04	0.040	0.04	0.034	0.004	0.028	5.00	0.002	0.00001					0.32	0.32	
9	P	0.11	0.27	1.08	0.009	0.002	0.04	0.036	0.07	0.030	0.008	0.012	0.034	5.82	0.002	0.00001					0.31	0.31
10	H	0.13	0.25	1.06	0.008	0.003	0.05	0.032	0.07	0.026	0.006	0.002	0.032	6.15	0.002	0.00001					0.33	0.33



2013 07 11 11:01:03  
PO# 11811  
Headline  
NUM 3472  
Date  
Rev'd By: SB  
4" XH SEAMLESS CS PIPE  
A106 GR B B.S.R.L.

Remarks: No duplicate will be accepted  
Certification: 王敏红  
Author: 陈林松  
Quality Manager: 王敏红



C1803  
01/11

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II  
3rd EDITION - ADD.  
JAN 13 2014

STD SEAMLESS STEEL PIPE  
A106 GR B B.E. (S.R.L.)

Rev'd By: SB  
Trans Am Piping Products Ltd.  
1910

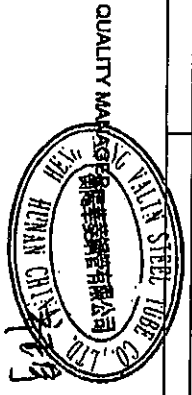
Contract No.: EL-11-709  
PO. NO.: EL-11-709  
Name of Customer: TRANS AM PIPING PRODUCTS LTD.  
LC NO.:  
Description: PIPE

HENGYANG VALIN STEEL TUBE CO., LTD  
**MILL INSPECTION CERTIFICATE**  
Date: FEB 27, 2012  
Page: 1/1

Add: 10 Dalikun, Hengyang City, Hunan, China  
Tel and Fax: +86 734 8873739 8872942  
Cable: 6993  
P.C. 421001

NO.	DELIVERY CONDITION (≥650°C)	HEAT NO.	STEEL GRADE	SIZE	BUNDLES	PIECES	FEETS	QUANTITY (MT)	ACTUAL WEIGHT(MT)	NONDESTRUCTIVE TEST										CHEMICAL COMPOSITION % (Ladle analysis P-Product analysis)														
										ET	UT	C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	TI	B	NB	CE	CE(CSA)	T.S. (MPa)	Y.S. (MPa)	E.L. (%)	AK (J)	HARDNESS BRINELL (HB)	HYDROSTATIC TEST (MPa)	FLATTEN TEST	BEND TEST
1	NORMALIZED	201482	B	2" STD A106 GR B B.E. SRL						L 0.17	0.30	1.25	0.018	0.013	0.08	0.04	0.03	0.01	0.01	0	0	0.001	0.40	0.39										
										P 0.17	0.30	1.24	0.018	0.012	0.08	0.03	0.03	0.01	0.01	0	0	0.001	0.39	0.39										
										P 0.17	0.30	1.24	0.018	0.012	0.08	0.03	0.03	0.01	0.01	0	0	0.001	0.39	0.39										
1	S81		424	37																														

- REMARKS: 1. We hereby certify that this certificate of quality is issued and signed by the manufacturer.  
2. We hereby certify that the properties described herein meet the requirement of the above spec.  
3. We hereby certify that this certificate is issued accordance with EN 10204 3.18  
4. SPECIMEN SIZE: (Pipe end, Longitudinal, Gauge Length=Z)  
A For pipes ≤ 1" full length specimen were used.  
B For pipes > 1" longitudinal strip specimen were used; the width of the gauge length portion is 3/4"  
5. NORMALIZED: 900°C  
6. DIMENSION STANDARD: ASME B36.10  
7. MANUFACTURE METHOD: COLD DRAWN  
8. CE=C+Mn=Cr+Mo+V/5+(Cr+Ni)/15 CE(CSA)=C+P+(Mn+Si)/6+(Cu+Ni)/20+(Cr+Mo+V+Nb)/5+5B)





01117  
"505"

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II  
10 EDITION  
ADD.  
DEC 17 2013



ADD: JINTANG ROAD DONGLI  
DISTRICT, TIANJIN CHINA  
TEL: 86-22-24801139  
FAX: 86-22-24801291

TIANJIN PIPE(GROUP) CORPORATION  
QUALITY CERTIFICATE  
(EN10204 3.1)

Licence No.:  
No.: C12900475621

Contract No.	2012SSG-CI-12-447	UC No.		O.D.*W.T.	8"X5/219, 1x 12.7mm)	Packing	IN LOOSE
Order	Trans Am Piping Products Ltd, CI-12-447	Product	Seamless Steel Line Pipe	Steel grade	Gr. 6	Total pieces	
P.O.No.		Port of destl.		Mant. Method	HOT ROLLING SEAMLESS	Total metres	
Standard	ASTM/A516/ASME SA 333-2011			Length range	SRL	Total weight	

Heat No.	Lot No.	Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	Tensile test(Mpa)						Impact test(J)									
								Temp. °C	T.S.	Type	Y.S.	Elong. %	Shrink %	Temp. °C	Size	AK1	shear %	AK2	shear %	AK3	shear %	AVE	shear %
103279	130					Normalized	130-10-1343	A	23	533	R0.5	371	30.5			A	-45°C	10X10	59	82	60	60	
Total																							

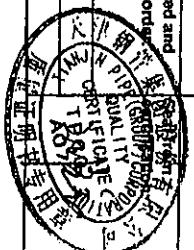
Heat No.	Lot No.	Sample No.	Hardness Brinell	Hardness Brinell(HB)(inside)			Hardness Brinell(HB)(middle)				Hardness Brinell(HB)(outside)				NDE	Fla. test(1)	Fla. test(2)	
				1	2	3	1	2	3	4	AVE	1	2	3				4
103279	130	130-10-1343	161	162	160	161	161	160	162	160	161	161	160	162	161			
Total																		

Steel spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	CE(100%)	Hydro. Test (Mpa/s)	
																				17.018	17.018
103279	L	0.16	0.29	1.35	0.010	0.002	0.02	0.02	0.07	0.02	0.03	0.034	0.01	0.001	0.0003	0.0004				0.41	0.40
A333 GR 6	P	0.16	0.30	1.34	0.010	0.002	0.02	0.02	0.06	0.02	0.03	0.033	0.01	0.002	0.0003	0.0004				0.40	0.40
	L																			0.40	
	P																				
	L																				
	P																				
	L																				
	P																				

Note: 1.NACE MR 0175-2009/ISO 15156-2:2009; 2.CE II W=Cathodic Protection+Vib+C+Cu+Ni+15; 3.The pipe is produced from "Fully Killed" steel; 4.Silicon and calcium treated for inclusion morphology control in Steel Making; Billet produced by TPCO; 5. Heat Treatment Condition For Pipe Normalized:900°C X 15MIN; Remark:destl.=destination;tem.=temperature;speci.=specification;Man.=Manufacture;Fla.=Flattening;G=Good;Hydro.=Hydrostatic;Mag.=Magnetic

No. C12900475621 Date 2012-10-25

Page (1)



HENGYANG VALIN STEEL  
TUBE CO., LTD

# MILL TEST CERTIFICATE

ADD: 10 Dalisintun, Hengyang City, Hunan, P. R. China  
P.C.: 421091  
Tel and Fax: +86 731 8873739  
E-mail: hysc@hysteel-tube.com

Handwritten: 69210, 1344

STOWER	BHD TUBULAR LIMITED	(ACCORDING TO EN10204 3.1)	CERTIFICATE NO.	111625	DATE:	2013-3-26	PAGE:	1/3
CONTRACT-ITEM NO.	2211060692-06	P.O.NO.						
PRODUCT	SEAMLESS STEEL LINE PIPE	HEAT TREATMENT	DELIVERY CONDITION					
SPECIFICATION	SEE SPECIFICATION NOTE	HEAT TREATMENT						
GRADE	B.BX42.PSL Grade 290	DIMENSIONS	4" X S80 X 40FT					
TOTAL BUNDLES:	22	TOTAL PIECES:	157	TOTAL LENGTH:	6284102 FT	TOTAL WEIGHT:	42.749	MT

NO.	LOT No.	HEAT No.	BUNDLES	PIECES	LENGTH		WEIGHT		SAMPLE TYPE/ ORIENTATION / SIZE (mm/GAUGE LENGTH) (mm)	TENSILE TEST ASTM A376			FLATTENING TEST
					FT	MT	W1	W2		TS(Pa)	YS(Pa)	R0.5	
1	31211124	1310624	11	78	3122.058	21.238			70615	50170	36.0	0.71	ACCEPTABLE
2	32111125	1310624	11	79	3162.064	21.511			74530	52345	35.5	0.70	ACCEPTABLE

NO.	NOTCH TYPE/ORIENTATION/TEMPERATURE(C) SIZE (mm)				IMPACT TEST				NON METALLIC INCLUSION	GRAIN SIZE	HARDNESS TEST	
	AK1 (J)	AK2 (J)	% SHEAR AREA	LE	AK1 (J)	AK2 (J)	% SHEAR AREA	LE			NACE MR0175	HV10
1	/	/	/	/	/	/	/	/			1157.000000	
2	/	/	/	/	/	/	/	/			1161.200000	

NOTES:  
 W1--THEORETICAL WEIGHT  
 W2--ACTUAL WEIGHT  
 NR--NORMALIZING ROLLED  
 AK1--ABSORB ENERGY FOR THE FIRST SET  
 AK2--ABSORB ENERGY FOR THE SECOND SET  
 SAMPLE ORIENTATION: L--LONGITUDINAL T--TRANSVERSE  
 SAMPLE TYPE: S--STRIP C--CLUBBED F--FULL-SECTION  
 Q&T--QUENCHING AND TEMPERING  
 A1--AVERAGE LE--SIDE EXPANSION  
 N--NORMALIZING HE--HOT EXPANDED  
 A--ANNEALING IR--HOT ROLLED  
 A1--AVERAGE N&T--NORMALIZING AND TEMPERING  
 LE--SIDE EXPANSION

M.T.R. ACCEPTABLE  
 TO A.S.M.E. SECT. II  
 ADD. EDITION 11  
 DEC 26 2013

344  
C1769

HENGYANG VALIN STEEL  
TUBE CO., LTD

# MILL TEST CERTIFICATE

(ACCORDING TO EN10204 3.1)

Add: 10 Dalixunru, Hengyang City, Hunan, P. R. China  
P.C.: 421001  
Tel and Fax: +86 733 8373739  
E-mail: hst@hysteel.com

CUSTOMER: BHD TUBULAR LIMITED  
CERTIFICATE NO: 111625  
DATE: 2015-3-26  
PAGE: 2/3

CONTACT ITEM NO: 2211000992-06  
P.O.NO: 111625  
DELIVERY CONDITION: HR

PRODUCT: SEAMLESS STEEL LINE PIPE  
SPECIFICATION: SEE SPECIFICATION NOTE  
HEAT TREATMENT: HR

GRADE: B.BxG2.PSLL.Grade 390  
TOTAL BUNDLES: 22  
TOTAL LENGTH: 6284.102  
TOTAL WEIGHT: 42.739

NET WEIGHT: 42.739  
DIMENSIONS: 4" x S80 x 40FT

NO	HEAT No.	LOT No.	Type	CHEMICAL COMPOSITION (%)											DIMENSIONS																										
				C	Si	Mn	Cr	Mo	W	Co	Ni	P	Al	Sa	As	Pb	Sb	Nb	Ti	Zr	N	Oi	S	H	B	Ca	CE	SUM1	SUM2	SUM3	R1	R2	R3								
1	1310624	32L3112A	H	E2	36	130	43	10																																	
			P	I0	33	130	51	7																																	
			P	I0	33	130	51	7																																	
2	32L3112B	32L3112B	H	I2	36	130	43	10																																	
			P	I1	33	127	50	7																																	
			P	I1	33	127	50	7																																	

POSITION: PIPE BODY (EMRL&T) PIPE END (MPI) END SURFACE (GROOVES) BR

TEST RESULT: ACCEPTABLE VISUAL & DIMENSION

RESIDUAL MAGNETISM: ACCEPTABLE COATING

UT THICKNESS MEASUREMENT: 3000/6

HYDROSTATIC TEST: 3000/6

NOTES: H-HEAT ANALYSIS P-PRODUCT ANALYSIS CE-EQUIVALENT CARBON R-RATIO RI=Cn/As  
CEIW=C+Mn/65+Cr+Mo+V/5+(Cu-Ni)/15 CEPCM=C-S/30+(Mn+Cr+Co)/20+(Ni/60+K/215+V/10+S/8 R2=N/IN R3=Mn/C  
SUM1=C+Cr+Mn+Ni+V SUM2=Nb+V SUM3=Nb+V+Ti



69213

HENGYANG VALIN STEEL  
TUBE CO., LTD

MILL TEST CERTIFICATE

(ACCORDING TO EN10201 3.1)

Add: 10 Daxixium, Jingsong  
City, Hunan, P. R. China P. O. : 421201  
Tel and Fax: 186 731 8878239  
E-mail: hsteelsysteeltube.com

CUSTOMER	BHD TUBULAR LIMITED		CERTIFICATE NO.	111625		DATE:	2013-3-26		PAGE:	3/3	
CONTRACT ITEM NO	9211000992-06		P. O. NO.								
PRODUCT	SEAMLESS STEEL LINE PIPE		DELIVERY CONDITION								
SPECIFICATION	SEE SPECIFICATION NOTE		HEAT TREATMENT								
GRADE	B.BX42.PSLI.Grade 290		DIMENSIONS		4" x S80 x 40FT						
TOTAL BUNDLES:	22		TOTAL PIECES:		157		TOTAL LENGTH:		6284.102		FT
			TOTAL WEIGHT:		42.749						MT
			REMARK:		ORIGIN: MADE IN CHINA						

SPECIFICATION NOTE  
ASTM/AASME/ASAI106/API 5L PSL1/CSA Z245.1 CAT 1 & NACE MR0175/ISO 15156/ MR0103 (For Harness Only)

We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.

This certificate is issued by a computerized system and it is valid with electronic signature. In case the owner of the certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use.

Any alteration and/or falsification will be subject to the law.

If you need to assure the authenticity of this certificate, please do not hesitate to contact Hengyang Valin Steel Tube Co., LTD. E-mail: hsteelsysteeltube.com

CUSTOMER THIRD PARTY

Quality Manager	宋景凌
Certificate-maker	曾黎明

C1764  
30

HENGWANG VALIN STEEL  
TUBE CO., LTD

**MILL CERTIFICATE**

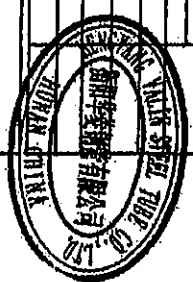
(ACCORDING TO EN10210M 3.1)

Add: 10 Beitheim, Beersing City, Henan, P.R. China  
P.C.: 421001  
Tel and Fax: +86 734 8673739  
E-mail: hwc@hvalinc.com

CONTRACT NO.	2111000206-1	PO NO. PO-3068 (LOT A)	CUSTOMER PO NO: 70P122EDM	CERTIFICATE NO.	20120716-1	DATE:	2012-6-18	PAGE:	1/3
PROJECT	SEAMLESS CARBON STEEL PIPE	LC NO: N.LC0419		DELIVERY CONDITION	HR				
SPECIFICATION	SEE SPECIFICATION NOTE			HEAT TREATMENT					
GRADES	B30X2 PERI, Grade 290			DIMENSIONS	3" * 0.300" - 21 FT				
TOTAL BUNDLES:	17	TOTAL PIECES:	233	TOTAL LENGTH:	4892340 FT	TOTAL WEIGHT:	22768 MT		

NO.	LOT NO.	HEAT NO.	BUNDLES	PIECES	LENGTH		WEIGHT		TENSILE TEST ASTM A570	FLATTENING TEST	
					FT	MM	KG	LB			
1	925302422	1223811	17	233	4892340	22768	69745	47960	38.5	0.68	ACCEPTABLE

NO.	IMPACT TEST				NONMETALLIC INCLUSION		GRAIN SIZE		HARDNESS TEST	
	NO.	AV. (J)	% SIBER AREA	LE	AV. (J)	AV. (J)	AV. (J)	AV. (J)	AV. (J)	AV. (J)
1										OK



NOTES  
W1-THEORETICAL WEIGHT  
W2-ACTUAL WEIGHT  
NR-NORMALIZING ROLLED  
AKI-ABSORBS ENERGY FOR THE FIRST SET

SAMPLE ORIENTATION: 1-L-LONGITUDINAL T-TRANSVERSE  
SAMPLE TYPE: S-STRIP C-CIRCLED F-FULL SECTION  
QQT-QUENCHING AND TEMPERING  
AVC-ABSORB ENERGY FOR THE SECOND SET

N-NORMALIZING  
A-ANNEALING  
AV-AVERAGE  
LE-SIDE EXPANSION  
HS-HOT EXPANDED  
HR-ROT ROLLED  
NR-NORMALIZING AND TEMPERING

PO# 2013-070-6870  
Heat Number 1223811  
Trans AM 1101  
P.O./Seq #: 13  
1101  
1223811  
13  
1975  
3 - Rev'd By: APS

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II  
10 EDITION  
ADD.  
DEC 18 2013

C1764

HONGYANG VALIN STEEL  
TUBE CO., LTD.

MILL CERTIFICATE

(ACCORDING TO EN10204.1)

Add: 10 Dalixibem, Hongyong City, Henan, P.R.China  
P.C.: 421001  
Tel and Fax: +86 734 8873739  
E-mail: hsf@hyssteel.com

CONTRACT NO. 211100726-1		PO NO. H0-2068 (LOT A) CUSTOMER PO NO. 70912E04		CERTIFICATE NO. C20120716-1	
PRODUCT SPECIFICATION		SEAMLESS CARBON STEEL PIPE		DELIVERY CONDITION HR	
GRADE		B.70E2.PSL (Grade 290)		DIMENSIONS 3" x 0.300" x 21FT	
TOTAL BUNDLES: 17		TOTAL PIECES: 231		TOTAL LENGTH: 487.340 FT	
TOTAL WEIGHT: 22.68 MT					

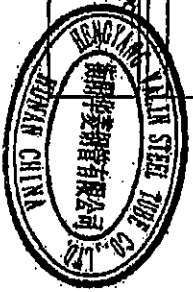
NO	HEAT No.	LOT No.	Type	CHEMICAL COMPOSITION (%)											MECHANICAL PROPERTIES											REMARKS						
				C	SI	Mn	CR	Mo	W	CU	Ni	P	AS	SA	FB	SB	TD	FT	Zr	N	Hf	S	Y	B	ES		TS	YS	EL	RA	RE	RT
1	123811	H	P	16.29	105	4	1	5	2	15															31	50	1	35	125	6	9	6.5
	92502422	P	P	16	31	108	5	1	5	2	15														30	52	1	36	135	6.2	9.2	6.8
	92502422	P	P	16	31	108	5	1	5	2	15														30	52	1	36	135	6.2	9.2	6.8
		H	P																													
		H	P																													
		H	P																													

POSITION	PIPE BODY	PIPE END	END SURFACE (GROOVE)	BEVELING
NDT Type (Level)	ETL3	MP1		ACCEPTABLE
LAMINAR	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
RESIDUAL MAGNETISM	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
UT THICKNESS MEASUREMENT (30%)	300%			
HYDROSTATIC TEST	300%			

NOTES: H-HEAT ANALYSIS P-PRODUCT ANALYSIS CR-SEMIVALVE CARBON R-EXITO  
 CEM-CEMENTATION-VISUAL NDT VISUAL NDT VISUAL NDT  
 SURF-CORROSION-VISUAL SURF-CORROSION-VISUAL SURF-CORROSION-VISUAL  
 144.912-A-CORRECT LEVEL, WALL 2. NOTCH DEPTHS 12.5% / 10% / 5% THE SPECIFIED WALL THICKNESS.



C1764

HENGYANG VALIN STEEL  
TUBE CO., LTD

MILL CERTIFICATE

(ACCORDING TO EN10294 3.1)

Add: 10 Dailisinao, Hengyang  
City, Hunan, P. R. China P. C.: 421001  
Tel and Fax: +86 734 8873733  
E-mail: hstc@hysteel.com

CONTRACT NO.	Z111000226-1	PO NO: 30068 (LOT A) CUSTOMER PO NO: 70P122EDM	CERTIFICATE NO.	C201220716-1
PRODUCT	SEAMLESS CARBON STEEL PIPE	LC NO: NECM119	DATE:	2012-6-18
SPECIFICATION	SEE SPECIFICATION NOTE	HEAT TREATMENT	DELIVERY CONDITION	HR
GRADE	B, BXX2, PS1, Grade 250	TOTAL LENGTH:	4892.340	FT
TOTAL BUNDLES:	17	TOTAL WEIGHT:	22.788	MT
REMARK:				

SPECIFICATION NOTE	ASTM A333/BA1068-2010, ASME S333/BA1068-2010, API 5L BXX2, PS1, 2008, NACE MR-0175-2009 (FOR HARDNESS ONLY) (CSA Z245.1 GR. 241/250 CAT 1-2007)
--------------------	---

We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark XRDNTIME high-green coloured at the bottom of the page is stamped. In case the owner of the certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use.

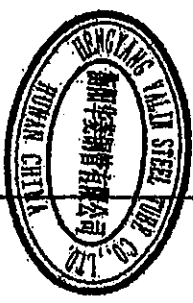
Any alteration and/or falsification will be subject to the law.

If you need to assure the authenticity of this certificate, please do not hesitate to contact Hengyang Valin Steel Tube Co., Ltd. E-mail: hstc@hysteel.com

CUSTOMER THIRD PARTY

Quality Manager: 宋景波

Certificate-maker: 倪小平



C1763  
342



ADD:JINTANG ROAD DONGLI  
DISTRICT, TIANJIN, CHINA  
TEL:86-22-24801139  
FAX:86-22-24801291

TIANJIN PIPE(GROUP)CORPORATION  
QUALITY CERTIFICATE

(EN10204 3.1)

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II  
10 EDITION  
ADD

DEC 18 2013 Licence No.:

No.: C13106904823

Contract No.	2012SSG-Q12-681	UIC No.		Product	Seamless Steel Line Pipe	O.D.*W.T.	F*XS(114.3x 8.58mm)	Packing	IN LOOSE																
Order	Trans Am Piping Products Ltd.,	Port of dest.		Steel grade	Cat 1 Gr.290SSXX2/r-B	Man. Method	HOT ROLLING SEAMLESS	Total pieces																	
P.O.No.	CL-12-681	Length range	SRL	Hardness Brinell(B)(middle)		Hardness Brinell(B)(outside)		Total metres																	
Standard	CSA Z245-14/7/API 5L PSL1-2007/ASTM/ASME A53A 406-2011	Tensile test(Mpa)		Hardness Brinell(B)(inside)		Hardness Brinell(B)(outside)		Total weight																	
Heat No.	Lot No.	Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	Tensile test(Mpa)								Impact test(J)									
								Temp. °C	T.S.	Type	Y.S.	Elong. %	Shrink %	Temp. °C	Size	AK1 shear %	AK2 shear %	AK3 shear %	Fia. test(1)	Fia. test(2)					
635679	130					Hot rolling	130-2-1231	1	22	594	R0.5	439	32.0												
Average								AVE						153	153	153	153	153							

Heat No.	Lot No.	Sample No.	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell
635679	130	130-2-1231	153	152	154	153	153	152	153	152	153	153	153	153	153	153	153	153	153	153	153	153	153	153	153

Heat No.	Lot No.	Sample No.	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell	Hardness Brinell
Q245B	P	0.17	0.34	1.12	0.010	0.004	0.04	0.04	0.01	0.05	0.024	0.08	0.001	0.001	0.001	0.0005	0.0010								

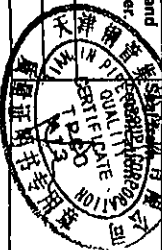
Steel spec.	C	SI	Mn	P	S	NI	Cr	Mo	Cu	Al	V	Nb	TI	B	Ca	N	H	O	CE(CSA)	CE(IMV)	Hydro. Test (Mpa)				
635679	L	0.17	0.34	1.13	0.010	0.003	0.03	0.04	0.01	0.08	0.025	0.06	0.001	0.0004	0.0010				0.39	0.39	19.08				
Q245B	P	0.17	0.34	1.12	0.010	0.004	0.04	0.04	0.01	0.05	0.024	0.08	0.001	0.001	0.0010				0.39	0.38					
	L																		0.39	0.38					
	P																								
	L																								
	P																								
	L																								
	P																								

PO # 20  
Heat 01  
Trans 1  
Shipm 0

Item # 26  
Unit 1202  
Product 13  
70913

Visual and dimension  
Hydro. Test  
Pipe end NDE  
Pipe end beveling  
Residual mag. Test  
SSCC  
HIC

Remark: desti.=destination; term.=temperature; spec.=specification; Man.=Manufacture; Fla.=Flattening; G=Good; Hydro.=Hydrostatic; Mag.=Magnetic  
We hereby state that all pipes are manufactured and inspected according to above standards and order











C1751  
224

HENGJIANG YALIN STEEL  
PIPE CO., LTD

**MILL TEST CERTIFICATE**

(ACCORDING TO EN10294 3.1B)

Add: 10 Dailixueun, Hengjiang City, Hunan, P.R.China P.C.: 421001

Tel and Fax: +86 734 8873739

E-mail: hsteelmill@steel.com

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II

10 EDITION

NOV 26 2013

CUSTOMER	BHD TUBULAR LIMITED		CERTIFICATE NO.	C201329094-1	
CONTRACT ITEM NO.	2111000778-02	P.O. NO.	112000	DATE:	2013-8-14
PRODUCT	SEAMLESS STEEL LINE PIPE		DELIVERY CONDITION	HR	
SPECIFICATION	SEE SPECIFICATION NOTE		HEAT TREATMENT	HR	
GRADE	B.XX42 Grade 290		DIMENSIONS	2" X S80 Y 20FT	
TOTAL BUNDLES:	TOTAL PIECES:	TOTAL LENGTH:	FT	TOTAL WEIGHT:	MT

NO.	LOT No.	HEAT No.	BUNDLES	PIECES	LENGTH		WEIGHT		SAMPLE TYPE ORIENTATION : SIZE (mm) / GAUGE LENGTH (mm) / S1/S1P/S0	TENSILE TEST ASTM A370	COLD BENDING TEST		
					FT	IN	MT	PI				TS(PS)	YS(PS)
1	997300715	1324627	14	510	10206.662	23.267			71340	52215	35.0	0.75	ACCEPTABLE
2	997300716	1324628	10	341	6824.454	15.557			68295	49880	32.5	0.73	ACCEPTABLE
3	997301213	1323592	13	476	9526.218	21.716			67425	49945	31.5	0.73	ACCEPTABLE

NO.	NOTCH TYPE ORIENTATION/TEMPERATURE (C) / SIZE (mm):				IMPACT TEST				NON METALLIC INCLUSION	GRAIN SIZE	HARDNESS TEST
	AK1 (J)	AV (J)	% SHEAR AREA	LE	AK2 (J)	AV (J)	% SHEAR AREA	LE			
1	/	/	/	/	/	/	/	/		168.200000	
2	/	/	/	/	/	/	/	/		171.300000	
3	/	/	/	/	/	/	/	/		157.000000	

NOTES:  
 W1-THEORETICAL WEIGHT      SAMPLE ORIENTATION: L-LONGITUDINAL T-TRANSVERSE  
 W2-ACTUAL WEIGHT          SAMPLE TYPE: S-STRIP C-CLIBBED F-FULL SECTION  
 NR-NORMALIZING ROLLED      Q&T-QUENCHING AND TEMPERING  
 AK1-ABSORB ENERGY FOR THE FIRST SET      AK2-ABSORB ENERGY FOR THE SECOND SET  
 LE-SIDE EXPANSION

PO # 2013.060.8722  
 Order # 113668  
 Hengjiang Steel Co., Ltd.  
 Rev'd By: SB

2" XH GRAMLES CS PIPE  
 A-108 GR B B M SRL

C1751

HENGSHANG VALIN STEEL  
TUBE CO., LTD

MILL TEST CERTIFICATE

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

(ACCORDING TO EN10204 3.1B)

CUSTOMER	BED TUBULAR LIMITED		CERTIFICATE NO.	20132909-1		PAGE	2/3	
CONTRACT ITEM NO.	211100078-02		P.O.NO.	112000		DATE	2013-8-14	
PRODUCT	SEAMLESS STEEL LINE PIPE		DELIVERY CONDITION	HR		TYPE	2" x 380 x 20FT	
SPECIFICATION	SEE SPECIFICATION NOTE		HEAT TREATMENT			TOTAL LENGTH	71	
GRADE	B.BX42Grade 280		DIMENSIONS			TOTAL WEIGHT	MT	
TOTAL BUNDLES:	TOTAL PIECES:							

NO	HEAT NO.	LOT NO.	Type	CHEMICAL COMPOSITION (%)																												
				C	Si	Mn	Cr	Mo	W	Cu	Ni	P	As	Sb	Nb	Ti	Zr	N	S	V	H	Ca	Ce	SRM	SUM	SRM	SRM	R1	R2	R3		
				*1000																												
1	1324627		H	13	28	126														17	40	2		37	178	5	17					
1	937300715		P	13	30	125														15	51	1		36	173	8.1	21.1					
1	937300715		P	14	30	125														18	54	1		37	172	7.4	20.4					
2	1324628		H	13	36	127														22	46	5		37	177	6.6	20.6					
2	937300716		P	13	29	122														15	41	1		36	171	5.1	17.1					
2	1323592		H	12	28	128														49	27	16		20	156	5.3	16.3					
3	937301213		P	12	26	121														46	26	14		20	144	5	15					
3	937301213		P	13	26	123														47	26	14		35	144	5.2	15.2					

NON-DESTRUCTIVE TEST		PIPE BODY		PIPE END		END SURFACE(GROOVE)		BEVELLING	
POSITION	NDT Type(Level)	UT/IA		UT/IA					
LAMINAR		ACCEPTABLE		ACCEPTABLE		N/A	N/A	ACCEPTABLE	
RESIDUAL MAGNETISM		ACCEPTABLE		ACCEPTABLE		N/A	N/A	ACCEPTABLE	
UT THICKNESS MEASUREMENT		ACCEPTABLE		ACCEPTABLE		N/A	N/A	ACCEPTABLE	
HYDROSTATIC TEST		ACCEPTABLE		ACCEPTABLE		N/A	N/A	ACCEPTABLE	

H-HEAT ANALYSIS    P-PRODUCT ANALYSIS    CE-EQUIVALENT CARBON    R-RATIO    RI-CA/JS    RO-AL-IN    RS-S-G-IC  
 CEIN-C-Mn-Si-Cr-Mo-Nb-V-Si-Cu-Nb-BS    CEPOH-C-Si-30-(Mn-Cu-Q)20-Nb-Si-Mo-V-Ti-Si-Mn-15-W-10-5-B    SUNG-Nb-V-Ti  
 SUNAI-Cr-Cu-Mo-Nb-V    SUND-Nb-V  
 140312-ACCEPT LEVEL LAMINAR NOTCH DEPTH IS 12.5% /10% /5% THE SPECIFIED WALL THICKNESS.    SUNG-Nb-V-Ti

15215

HENGYANG VALIN STEEL  
TUBE CO., LTD

MILL TEST CERTIFICATE

ADD: 10 Dalixincun, Hengyang  
City, Hunan, P.R. China P.C.: 421001  
Tel and Fax: +86 734 8873739  
E-mail: hyside@valinsteel.tube.com

CUSTOMER	BHD TUBULAR LIMITED		(ACCORDING TO EN10204 3.1b)	CERTIFICATE NO.	C20132094-1
CONTRACT-ITEM NO.	2111000778-02	P. O. NO.	112000	DATE:	2013-8-14
PRODUCT	SEAMLESS STEEL LINE PIPE	DELIVERY CONDITION		PAGE:	3/3
SPECIFICATION	SEE SPECIFICATION NOTE	HEAT TREATMENT			
GRADE	E3342Grade 290	DIMENSIONS			
TOTAL BUNDLES:		TOTAL LENGTH:		FT	MT
		TOTAL PIECES:			

REMARK: ORIGIN MADE IN CHINA	

SPECIFICATION NOTE	API 5L(45#)PSL1+ASTM/A536 AS A106-2010+CSA Z245.1(CAT 1 MR0175 ISO15156 MR0103(FOR HARDNESS ONLY))
--------------------	--

We hereby certify that material herein described has been manufactured in accordance with the standards and specifications required in your order and satisfies the corresponding requirements.

This certificate is issued by a computerized system and it is valid with electronic signature. In case the owner of the certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use.

Any alteration and/or falsification will be subject to the law.

If you need to assure the authenticity of this certificate, please do not hesitate to contact Hengyang Valin Steel Tube Co., Ltd. E-mail: hyside@valinsteel.tube.com

CUSTOMER THIRD PARTY

Quality Manager:

Certificate-maker: 席健娜

64210  
185

Yantai Steel Pipe Co., Ltd. of Lianyung Iron & Steel Group  
Tel: 0086-535-5244352, 62911225  
Fax: 0086-535-6291225

HT# 211100238

MILL TEST CERTIFICATE

EN 10204 2.1)

MTC NO.: 111001

Addr: No. 92, Zhiliuan Road, Yantai, 264000, P.R.China  
http://ysteelpipe.en.alibaba.com  
QP-824-16 Page 1 of 1

BUYER			PRODUCT NAME	CARBON STEEL SEAMLESS PIPE	STAMP OF MILL INSPECTION
USER			LICENSE NO.	SL-0490	
SPECIFICATION	ASME/ASTM SA106 / API 5L/CSA Z245.1/INACE MR0175-2007 SQRV SERVICE		CONTRACT NO.	YTSF1106CA01	
GRADE	SA106RCSA Z245.1 GR. 241 CAT 1		PURCHASE ORDER NO.	APF022	
			DATE OF DELIVERY	2011-10-18	
			DATE OF ISSUE	2011-10-18	Forger: Zhang

O. D.	T	W. T.	XS, S80	Length of One Pc Pipe	19.68 - 22.97 FT	Delivery Condition	Total Length	9562.495 FT	Total Bundles	7	Order Quantity	9.857 MT										
													Total Pcs.	431	Total Weight	9.532 MT	Normalized	Manual Method	Impact Absorbed Energy (J)	Hardness Test		
S&P Heat No.	C	S	Mn	P	S	Cr	Ni	Cu	V	Ti	Nb	B	W	Pcs	Bd	Lot No	Mechanical Properties				HRC	
																	Y.S.	T.S.	ELONG.	(%)		
1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	11-15222	P	4	1	255255	475475	24.504.5
<p>Remarks:</p> <ol style="list-style-type: none"> <li>We certify that the pipes herein described have been manufactured, sampled, tested and inspected in accordance with the above-mentioned specification and the CONTRACT, and meet the requirements of them.</li> <li>Any duplicated document of this CERTIFICATE is invalid.</li> </ol>																						

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECTION III  
2<sup>ND</sup> EDITION NOV 20-2013 ADD  
Zhai Lian

C1739  
342



Jintan Valin-Kiang Special Steel Co., Ltd.

MILL TEST REPORT

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II

10 EDITION 11 ADD.

NOV 27 2013

QND/HYG-36-007-5

2013-4-22

4" XH SEAMLESS PIPE  
A106 GR B B.C.S.P.I.P.E.

Rev'd By: SB

Product: 1440  
13  
12  
11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1

NO.	Composition Type	C	Si	Mn	P	S	Cu	Ni	Ca	Al	Mo	V	Nb	Ti	N	B	Chemical Composition %		H/C	Ca	Bt	HX-10 <sup>-4</sup>	HX-10 <sup>-4</sup>	Gras	Ceq		
																	Mg	As									
1	H	0.12	0.22	1.08	0.014	0.005	0.07	0.040	0.04	0.032	0.004	0.007	0.030	0.0004	0.028	0.002	0.00001	0.028	9.00	0.002	0.00001	0.028	0.022	0.22	0.22		
2	P	0.12	0.28	1.08	0.010	0.003	0.04	0.038	0.07	0.029	0.008	0.002	0.032	0.0003	0.022	0.002	0.00001	0.022	9.00	0.002	0.00001	0.022	0.022	0.22	0.22		
3	H	0.12	0.27	1.08	0.009	0.002	0.04	0.038	0.07	0.030	0.008	0.002	0.032	0.0004	0.028	0.002	0.00001	0.028	9.00	0.002	0.00001	0.028	0.022	0.22	0.22		
4	P	0.12	0.22	1.08	0.014	0.005	0.07	0.040	0.04	0.032	0.004	0.007	0.030	0.0004	0.028	0.002	0.00001	0.028	9.00	0.002	0.00001	0.028	0.022	0.22	0.22		
5	H	0.11	0.27	1.07	0.009	0.002	0.04	0.034	0.04	0.029	0.006	0.002	0.030	0.0004	0.028	0.002	0.00001	0.028	9.00	0.002	0.00001	0.028	0.022	0.22	0.22		
6	H	0.12	0.27	1.08	0.010	0.003	0.04	0.038	0.07	0.030	0.008	0.002	0.032	0.0004	0.028	0.002	0.00001	0.028	9.00	0.002	0.00001	0.028	0.022	0.22	0.22		
7	H	0.12	0.22	1.08	0.014	0.005	0.07	0.040	0.04	0.032	0.004	0.007	0.030	0.0004	0.028	0.002	0.00001	0.028	9.00	0.002	0.00001	0.028	0.022	0.22	0.22		
8	H	0.11	0.27	1.08	0.009	0.002	0.04	0.035	0.07	0.030	0.008	0.002	0.031	0.0005	0.028	0.002	0.00001	0.028	9.82	0.002	0.00001	0.028	0.022	0.22	0.22		
9	H	0.13	0.25	1.06	0.008	0.003	0.05	0.032	0.07	0.025	0.006	0.002	0.032	0.0005	0.024	0.002	0.00001	0.024	8.15	0.002	0.00001	0.024	0.033	0.33	0.33		
TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
17		186		3322.18		22.698																					



Remarks: No duplicate will be accepted. Certification: 王德旺. Auditor: 陈文超. Quality Manager: 王德旺.

1. BE USED CERTIFY THAT THE PRODUCTS DESCRIBED HAS BEEN MANUFACTURED, SHIPPED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENT AND PURPOSE ORDER, AND MEET THE REQUIREMENT. TO BE RELEASED. 2. ALL PIPES BE MADE FROM  
OR RADIATION CONTAMINATION. 3. THE WELD ARE ISSUED IN DUPLICATE. 4. FULLY KILLED. 5. IT HAS BEEN NO WELD REPAIR. 6. IT HAS BEEN NO WELD REPAIR. ORIGINAL FOR CUSTOMER USE ONLY. DUPLICATE ON FILE ONLY.




C1744  
306

Benteler SteelTube GmbH  
Postfach 13 40  
33043 Padernborn  
Deutschland  
Tel.: +49.5254.81-0 Fax: +49.5254.13666

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

Benteler SteelTube GmbH - Postfach 1340 - 33043 Padernborn - Deutschland  
Trans Am Piping Products Ltd.  
1711 - 66th Avenue  
EDMONTON AB T6P 1Y9  
CANADA

Dokument-Nr.: 65-741303/001/P  
Document No.:  
No. du document:  
Kunden-Bestell-Nr.: BST 12-5650 /Trans Am CI-12-679  
Purchase Order No.:  
No. de commande du client:  
Benteler Order No.: 1582779  
No. de commande Benteler:  
Versandzeilen-Nr.: 6588633  
Dispatch Note No.:  
No. d'avis d'expédition:  
Prüf-Nr.:  
Inspection No.:  
No. du certificat:  
Blatt: 1 / 5  
Page:

Hersteller: Warmrohrwerk Dinslaken  
Manufacturer: IDW EN ISO 9001, ISO/TS-16949 CERTIFIED BY TÜV NORD CERTI  
Produktur: PED 97/23/EC CERTIFIED BY TÜV NORD SYSTEMS  
Herstellerzeichen:   
Manufacturer's brand:  
Marque du producteur:  
Stempel des Abnahmebeauftragten: W/A  
Stamp of the inspection representative:  
Poinçon du contrôleur:  
Stahlschweißverfahren: ELEKTROSTAHL  
Steelmaking process: ELECTRIC FURNACE  
Procédé d'élaboration de l'acier: FOUR ELECTRIQUE

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

**Lieferbedingungen:**  
Terms of delivery:  
Conditions de livraison:  
ASME SA-106, ASME Section II Part A Edition 2010 Addenda 2011a, S6, ASTM-A 106-2011, S6, API Specification 5L, Forty-Fourth Edition, October 2007, ISO 3183:2007, PSL 1, incl. ADDENDUM 3, CSA Standard Z245.1-07 Category I, Sour Service, ANS/INACE MR0175/ISO 15156-1: 2009, ANS/INACE MR0175/ISO 15156-2: 2009

**Maße - Toleranzen:**  
Dimensions-tolerances:  
Dimensions-tolerances:  
ASME SA-530, ASME Section II Part A Edition 2010 Addenda 2011a, ASTM-A 530-2004a  
GRADE 290, GRADE B, GRADE X 42

**Stahlsorte:**  
Steel grade:  
Nuance d'acier:  
GRADE 290, GRADE B, GRADE X 42

**Lieferzustand:**  
Delivery condition:  
Etat de livraison:  
Hot rolled

**Produktkennzeichnung:**  
Product marking:  
Marquage du produit:  
FS: BENTELER Z.245.1-07 - ISO 3183 - A 106-S6 - SA-106-S6 Spec 5L-0151 API SIGNO213 PSL 1  
B/X42/290 SS HEAT-NO. TEST PRESSURE NDE DIMENSIONS TUBES-LENGTH FEET WA GERMANY P.O.  
CI-12-679  
PS: HEAT-NO. DIMENSIONS SCHEDULE B/X42/290 SS

ASZ = Anzeichenzeichnung, Etching ink marking, Genéral's trace . FK = Farbzeichnung, colour marking, marquage par couleur . FS = Fachabkürzung, part standing, marquage par lettre . FSD = Fachabkürzung, Colour per part, imprimé à jet d'encre de couleur . LX = Laserbezeichnung, Laser marking, Marquage laser . PNE = Effektivzeichnung, sig. marking, marquage sur adhésifs . PS = Prägenstempel, die stamp, marquage par poinçonage . TS = Transversalkennzeichnung, ink jet spray marking, imprimé à jet d'encre .

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT II  
10 EDITION 11. M.T.R.  
NOV 20 2013

PO# 2013.0711  
Heat No. 0711  
Trans Am Piping  
Product / Shipping  
Rev'd By: SB  
Date: 19.11.13  
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Benteler Steel/Tube GmbH  
 Postfach 13 40  
 33043 Padernborn  
 Deutschland  
 Tel.: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**  
 Steel/Tube

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

Dokument-Nr.: 65-741303/001/P  
 Document No.:  
 No. du document:

Prüf-Nr.:  
 Inspection No.:  
 No. du certificat:

Blatt: 2 / 5  
 Page:  
 Page:

Pos.	Stück	Maße	Länge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachlängen
Item	Number	Dimensions	Length	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths
Poste	Nombre	Dimensions	Longueur	Poids	No. de coulée	Pression d'épreuve	Série de no. des tubes	Longueurs multiples
0006	51	3" NPS * Sched. 80 20 FT - 22 FT	1114,50 feet	11667 lbs	576422	3000 PSI	5	
0007	73	4" NPS * Sched. 80 20 FT - 22 FT	1592,16 feet	24233 lbs	576422	3000 PSI	5	

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

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU	V	NiB	TI	B
Item	Heat No.													
Poste	No. de coulée													
0006	576422	0,130	0,180	0,75	0,010	0,003	0,06	0,03	0,07	0,09	0,002	0,015	0,001	0,0001
0007	576422	0,130	0,180	0,75	0,010	0,003	0,06	0,03	0,07	0,09	0,002	0,015	0,001	0,0001

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

Formelergebnisse / Formula results / Résultats des formules

Pos.	Schmelzen-Nr.	1. Formel	2. Formel	3. Formel	4. Formel
Item	Heat No.	1. Formula	2. Formula	3. Formula	4. Formula
Poste	No. de coulée	1. Formule	2. Formule	3. Formule	4. Formule
0006	576422	0,284	0,261	5,769	0,252
0007	576422	0,284	0,261	5,769	0,252

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

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU	V	NiB	TI	B
Item	Heat No.													
Poste	No. de coulée													
0006	576422	0,130	0,170	0,75	0,010	0,003	0,06	0,03	0,07	0,09	0,002	0,015	0,001	0,0001
0006	576422	0,130	0,170	0,75	0,010	0,003	0,06	0,03	0,07	0,09	0,002	0,015	0,001	0,0001



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Benteler SteelTube GmbH  
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 33043 Paderborn  
 Deutschland  
 Tel.: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**  
 Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1** Dokument-Nr.: 65-741303/001/P  
 INSPECTION CERTIFICATE EN 10204-3.1 Document No.:  
 CERTIFICAT DE RECEPTION EN 10204-3.1 No. du document: PÜF-Nr.:  
 Inspektion No.:  
 Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%] No. du certificat:

Pos.	Schmelzen-Nr.	C	SI	MIN	P	S	CR	MO	NI	CU	V	NB	TI	B
0007	576422	0,130	0,170	0,75	0,010	0,003	0,06	0,03	0,07	0,10	0,002	0,015	0,001	0,0001
0007	576422	0,130	0,170	0,76	0,010	0,003	0,06	0,03	0,07	0,09	0,002	0,015	0,001	0,0001

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

Formelergebnisse / Formula results / Résultats des formules

Pos.	Schmelzen-Nr	1. Formel	2. Formel	3. Formel	4. Formel
0006	576422	1. Formule	2. Formule	3. Formule	4. Formule
0007	576422	0,284	0,261	5,769	0,252
0007	576422	0,284	0,261	5,769	0,252
0007	576422	0,285	0,262	5,846	0,252

Prüfergebnisse / Test results / Résultats des essais

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

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

Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test PASSED  
 pressure/Time-record

ET-test: acc. to CSA Z245.1; for imperfections; drilled hole: 3,20 mm PASSED

Augensichtkontrolle: PASSED Maßkontrolle: PASSED  
 Visual inspection: Dimensions examination:  
 Examen Visuel: Vérification des dimensions:

h5L13

Benteler Steel/Tube GmbH  
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 33043 Padertorn  
 Deutschland  
 Tel.: +49.5254.81-0 Fax: +49.5254.13866

**BENTELER**  
 Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**      Dokument-Nr.: 65-741303/001/P      Pdf-Nr.:  
 INSPECTION CERTIFICATE EN 10204-3.1      Document No.:      Inspection No.:  
 CERTIFICAT DE RECEPTION EN 10204-3.1      No. du document:      No. du certificat:

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

Die Probenahme erfolgte an Vielfachlängen.  
 The sampling was carried out on multiple lengths.

L'échantillonnage était réalisé aux longueurs multiples.

Zugversuch längs Streifenprobe / Tensile test longitudinal Strip test specimen / Essai de traction longitudinale Bande decoupee sur tube

Pos.	Proben-Nr. Specimen No.	Schmelzen-Nr. Heat No.	Probenabmessung Specimen dimensions	Streckgrenze Yield strength	Zugfestigkeit Tensile strength	Dehnung Elongation	Einschnürung Area reduction
Poste	No. de l'éprouvette	No. de coulée	Dimensions de l'éprouv.	Limite élastique	Résistance à la traction	Allongement	Coefficient de striction
Anforderungen Requirements				R <sub>el</sub> PSI	R <sub>m</sub> PSI	A <sub>2</sub> " %	1. Formel 1. Formula
Exigences				MIN 42061	60191-90849	MIN 30	1. Formule
0006	000001	576422	25,40 X 8,80	50038	66282	42,00	
0007	000001	576422	25,40 X 8,60	49458	65847	40,00	

Härteprüfung / Hardness test / Essai de dureté

Pos.	Proben-Nr. Specimen No.	Schmelzen-Nr. Heat No.	Härte Hardness	HRC	HB	HV	HRB	HBW
Poste	No. de l'éprouv.	No. de coulée	Dureté					
Anforderungen Requirements	MAX 200							
Exigences	131							
0006	000001	576422						
0007	000001	576422			129			

Restmagnetismus / Demagnetize / Démagnétiser

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

1721

Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland

Tel.: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**  
Steel/Tube

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

Dokument-Nr.: 65-741303/001/P  
Document No.:  
No. du document:

Prüf-Nr.:  
Inspection No.:  
No. du certificat:

Blatt: 5 / 5  
Page:  
Page:

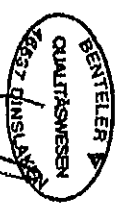
Vermerk / Remark / Remarque

NACE Standard: Hardness acc. to ANSI/NACE MRO175/ISO 15156: HRC max 22. The material meets the requirements of NACE MRO103, Region 3, in accordance to Figure 1 and Appendix A.2, ANSI/NACE MRO175/ISO 15156-2:2009; Certificate remarks: The Material is Aluminium deoxidized and inclusion shape controlled with Calcium-Silicon treatment, It is the end user's responsibility to ensure that all environmental requirements as well as the requirements regarding engineering, construction and operation of facilities are fulfilled in the country of use. Fit for purpose of the parts as well as homologation is not the scope of this contract. This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-07 meets the requirement for micro hardness of max. 248 HV 500 gf. No weld repair has been carried out

Grain size: acc. to ASTM-E 112; Grain size and finer: 6

Verkäufer(in) / Salesman / woman in charge / Personne chargée : Mrs Schönweis, Tel.: 05254 81-204234, Fax: 204289

Dinslaken, 18.03.2013, TEL.: 02064.623-5360 FAX: 02064.623-5390



Abnahmebeauftragter  
Inspection representative  
Contrôleur

DR. BASEL KEITA / SEMIZ

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

C1741  
327"

YANTAI LIBAO STEEL PIPE CO., LTD.

MILL TEST CERTIFICATE

(EN1020, 3.1)

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II  
10 EDITION  
NOV 27 2013  
ADD.

NO. 185 XINGFU MIDDLE ROAD, YANTAI, CHINA  
TEL: 0086 535-68-3845/6854750 FAX: (0535) 6842245  
HTTP://WWW.LUBAOSTEEL.TUBE.COM

PAGE 1 OF 1

PURCHASER	TRANS AM PIPING PRODUCTS LTD.	DESCRIPTION OF GOODS	PIPE
DIMENSION STANDARD	ASME B36.10	CUSTOMER'S NO.	100109 右册 20091116
MATERIAL SPECIFICATION	ASTM A106-B-2006, ASME SA106-B-2007, API 5L B-2007 CSA Z345.1-2007 Gr. 241 Cat 1 NACE MR0175-2003/ISO 15155	DATE OF DELIVERY	CERTIFICATE NO.
		P.O. NO.	SOE CONTRACT NO.
		STAMP OF MILL INSPECTOR	DATE OF ISSUE
			Z091116

0.2	213 mm	8.75	W.	12.7mm	Length	11-11.58	Total Length	Delivery Condition	Total Quantity	Hot Finished Seamless								
Total Pieces		Total Weight		Lot No.		Tensile Test		Impact Test		Direction of Pipe								
Chemical Composition																		
No Heat No.	C	Si	Mn	P	S	Cu	Ni	Cr	V	No	Ti	B	Nb	CE	Lot No.	Tensile Test	Impact Test	Heat Treatment
1	0.22	0.18	0.23	0.56	0.008	0.005	0.10	0.40	0.08	0.15	0.01	0.001	0.01	0.29	9210908	240 415 22.0 999 997	34S 34S	167 169
2	0.22	0.18	0.23	0.56	0.008	0.005	0.10	0.40	0.08	0.15	0.01	0.001	0.01	0.29	9210908	240 415 22.0 999 997	34S 34S	167 169
E.T. E.M.I. U.T. K.P.I. Visual & Dimensions																		
Expander Ring Expansion Ring Tensile Flattening Banding Flanging SSC Macrostructure Heat Treatment																		
NOTES: 2* Chemical Composition Heat (Ladle) Analysis 3* Per Pipe Body 4* longitudinal 5* 2-Script 20mm: G.I. = Gauge Length L1=5: 6552RT (F0)																		
REMARK: L/C NO.: DUCK V93825																		
WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF ABOVE SPECIFICATIONS AND PURCHASE ORDER, AND MET THE REQUIREMENTS.																		
CHIEF OF QUALITY CONTROL DEPT.																		

PO# 2013-070-8739 Item# 5  
Heat Number: 1309  
Trans Am Piping Products Ltd. Rev'd By: SB  
Shipments/Seq: 9 1557 3

8" XH BLK GRAMLES STEEL PIPE  
A106 GR B B.B. D.R.L.

C1740  
286

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II

14 EDITION

ADD.

NOV 27 2013



ADD: JINTANG ROAD DONGLI  
DISTRICT: TANJIN, CHINA  
TEL: 86-22-24901139  
FAX: 86-22-24901291

TIANJIN PIPE (GROUP) CORPORATION LTD.  
TEST CERTIFICATE  
(EN10204 3.1)

U/C No.:  
No: C13988765733

STD GRAM 193 9T REL PIPE  
AT 06 GR B 5B U. D.R.L.

Rev'd By: SB

PO# 201307011100024  
Heat No. 070301100024  
Trans NUB  
Shipment /

Order P.O.No.	Product DIMENSION STANDARD	PIPE ASME B36.10	O.D.*W.T.		Length range	Mann Method	DRL	Packing			IN LOOSE							
			6" STD (18.3x7.1mm)	HOT ROLLING SEAMLESS				Total pieces	Total metres	Total weight	Total weight							
Contract No. 2011SSG-CL-11-873	Material Standard ASTM A 106-B-08, ASME SA 106-B-08, API 5L X42 PSL1-07, CSA Z245.1-07 G:290 Cat.1	Material Standard NACE MR0175-03/ISO 15156																
Heat No.	Lot No.	Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	1 <sup>st</sup> Tem. °C	T.S. Type	Y.S. Y.S.	Elong. %	Shank %	2 <sup>nd</sup> Tem. °C	Size AK1	AK1 share %	AK2 share %	AK3 share %	AVE share %
WB0211045	130					Hot rolling	130-12-1013	A	595	395	36							
Total																		
Heat No.	Lot No.	Sample No.	Hardness Brinell	Hardness Brinell(EB)(middle)		Hardness Brinell(EB)(middle)				Hardness Brinell(EB)(outside)				NDE ENIL4		Fla. test(1)	Fla. test(2)	
WB0211045	130	130-12-1013	165	164	165	165	164	164	185	165	165	165	164	164	164			
Heat No.		C	Si	Mn	P	S	NI	Cr	Mo	Co	Cu	V	B	TI	Nb			
Steel spec: WB0211045		L	0.17	0.31	1.29	0.018	0.003	0.02	0.01	0.02	0.01	0.01	0	0.001	0	CE	CE(CSA)	Hydro Test (Pstis)
		P	0.16	0.32	1.30	0.018	0.003	0.02	0.01	0.02	0.01	0.01	0	0.001	0	0.39	0.38	1800/5
		L			1.30	0.018	0.003	0.02	0.01	0.02	0.01	0.01	0	0.001	0	0.39	0.38	
		P																
		P																
		L																
		P																
		P																
NDE(00%)		Visual and dimension		Hydro Test		Pipe and NDE			Pipe end beveling		Residual mag Test		SSCC		HIC			
Notes:		CE(CSA)=C+Fe+Mn+S+Si+Cu+1.5Al+0.20+(Cr+Mo+V+NB)/5+SB		CE=C+Mn+(Cr+Mo+V)/5+(Cu+NB)/15														
Remarks: destl =destination; item =item; temperature; steel spec =steel specification; destl =destnation; Mann =Manufacturer; G =Good																		











Handwritten notes and signatures at the top right of the page.

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II  
10 EDITION 11 ADD.

MILL TEST REPORT

ORD/HXG-36-007-5

Jiangsu Valin Xiang Special Steel Co., Ltd.

ACCEPTED BY: [Signature]

CUSTOMER :		TRANS. NO.		L/C NO.		SPEC. NO.		MATERIAL		P.O. NO.		DATE:																																																																																																																																																																																				
SHANGSHI CARBON STEEL PIPE FOR OIL AND GAS USE		9-9-96/242H290SS		1113040202		133 12.39 2661.75		7 5/19/50 73515		32.5		2013-4-22																																																																																																																																																																																				
Product		Spec. No.		ASTM / ASME / AS/ISO / A51008, API 5LX42, PSL-2, NACE MR-0175/ISO 15848-2 (SECTION 3) / MR-0103/SS (CSA Z245.1 GRADE 290 CATEGORY 1)		Contract No.:		Hardness Test		H.P.T		Duration of Time (S)																																																																																																																																																																																				
Seal Grade		Making Method		HR		BOLTING :		HARDNESS VALUE		H.P.T		PS1																																																																																																																																																																																				
NO.	Size (NPS)	LENGTH (FT)	Heat No.	Lot No.	PCS	WT (MT)	TOTAL LENGTH (FEET)	NO.	Tensile Test		E.L.Y (A)	P.L.Y (Z)	Impact Test 1 (J)	Hardness Test	H.P.T	Duration of Time (S)																																																																																																																																																																																
									Sample Type/Or. Length/Displacement	T.S (Mpa)							Y.S.T (CI)	Impact Sample Dimension																																																																																																																																																																														
1	3" x 0.300"	20	1307-03412	1113040202	133	12.39	2661.75	7	5/19/50	73515	32.5	L/5	67/82/58	168.7	174.3	2970	5																																																																																																																																																																															
2	3" x 0.300"	20	1307-03412	1113040201	69	6.428	1380.9	4	5/19/50	77515	32.5	L/5	91/125/88	176.2	171.7	2970	5																																																																																																																																																																															
<table border="1"> <thead> <tr> <th rowspan="2">NO.</th> <th rowspan="2">Composition Type</th> <th colspan="15">Chemical Composition %</th> </tr> <tr> <th>C</th> <th>SI</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Cr</th> <th>NI</th> <th>CU</th> <th>AL</th> <th>MO</th> <th>V</th> <th>Nb</th> <th>B</th> <th>TI</th> <th>Nb/C</th> <th>Ca</th> <th>BI</th> <th>OX 10<sup>-4</sup></th> <th>PH 10<sup>-4</sup></th> <th>CPH</th> <th>CPH</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>B</td> <td>0.11</td> <td>0.23</td> <td>1.05</td> <td>0.009</td> <td>0.003</td> <td>0.02</td> <td>0.008</td> <td>0.07</td> <td>0.014</td> <td>0.003</td> <td>0.016</td> <td>0.003</td> <td>0.025</td> <td>9.66</td> <td>0.002</td> <td>0.00001</td> <td></td> <td></td> <td></td> <td>0.30</td> <td>0.32</td> </tr> <tr> <td>2</td> <td>P</td> <td>0.13</td> <td>0.27</td> <td>1.06</td> <td>0.009</td> <td>0.003</td> <td>0.03</td> <td>0.008</td> <td>0.06</td> <td>0.028</td> <td>0.004</td> <td>0.029</td> <td>0.004</td> <td>0.030</td> <td>8.16</td> <td>0.001</td> <td>0.00001</td> <td></td> <td></td> <td></td> <td>0.29</td> <td>0.30</td> </tr> <tr> <td>3</td> <td>P</td> <td>0.13</td> <td>0.27</td> <td>1.06</td> <td>0.008</td> <td>0.003</td> <td>0.03</td> <td>0.009</td> <td>0.07</td> <td>0.004</td> <td>0.001</td> <td>0.027</td> <td>0.005</td> <td>0.030</td> <td>8.15</td> <td>0.001</td> <td>0.00001</td> <td></td> <td></td> <td></td> <td>0.29</td> <td>0.30</td> </tr> <tr> <td>4</td> <td>B</td> <td>0.11</td> <td>0.22</td> <td>1.02</td> <td>0.008</td> <td>0.001</td> <td>0.02</td> <td>0.006</td> <td>0.06</td> <td>0.048</td> <td>0.005</td> <td>0.025</td> <td>0.003</td> <td>0.028</td> <td>9.64</td> <td>0.001</td> <td>0.00001</td> <td></td> <td></td> <td></td> <td>0.30</td> <td>0.31</td> </tr> <tr> <td>5</td> <td>P</td> <td>0.11</td> <td>0.26</td> <td>1.06</td> <td>0.008</td> <td>0.002</td> <td>0.02</td> <td>0.010</td> <td>0.07</td> <td>0.027</td> <td>0.002</td> <td>0.027</td> <td>0.003</td> <td>0.028</td> <td>9.64</td> <td>0.001</td> <td>0.00001</td> <td></td> <td></td> <td></td> <td>0.30</td> <td>0.31</td> </tr> <tr> <td>6</td> <td>P</td> <td>0.12</td> <td>0.26</td> <td>1.06</td> <td>0.008</td> <td>0.002</td> <td>0.02</td> <td>0.009</td> <td>0.07</td> <td>0.026</td> <td>0.001</td> <td>0.027</td> <td>0.003</td> <td>0.028</td> <td>9.63</td> <td>0.001</td> <td>0.00001</td> <td></td> <td></td> <td></td> <td>0.30</td> <td>0.31</td> </tr> </tbody> </table>																	NO.	Composition Type	Chemical Composition %															C	SI	Mn	P	S	Cr	NI	CU	AL	MO	V	Nb	B	TI	Nb/C	Ca	BI	OX 10 <sup>-4</sup>	PH 10 <sup>-4</sup>	CPH	CPH	1	B	0.11	0.23	1.05	0.009	0.003	0.02	0.008	0.07	0.014	0.003	0.016	0.003	0.025	9.66	0.002	0.00001				0.30	0.32	2	P	0.13	0.27	1.06	0.009	0.003	0.03	0.008	0.06	0.028	0.004	0.029	0.004	0.030	8.16	0.001	0.00001				0.29	0.30	3	P	0.13	0.27	1.06	0.008	0.003	0.03	0.009	0.07	0.004	0.001	0.027	0.005	0.030	8.15	0.001	0.00001				0.29	0.30	4	B	0.11	0.22	1.02	0.008	0.001	0.02	0.006	0.06	0.048	0.005	0.025	0.003	0.028	9.64	0.001	0.00001				0.30	0.31	5	P	0.11	0.26	1.06	0.008	0.002	0.02	0.010	0.07	0.027	0.002	0.027	0.003	0.028	9.64	0.001	0.00001				0.30	0.31	6	P	0.12	0.26	1.06	0.008	0.002	0.02	0.009	0.07	0.026	0.001	0.027	0.003	0.028	9.63	0.001	0.00001				0.30	0.31
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Total Bundles		Total Pieces		TOTAL LENGTH (FEET)		TOTAL Weight (MT)		Order Quantity		Thread Test		Drift Test		Cooling		Resistance to O <sub>2</sub>		Grain Size		Thread Type (STC, LC, BT, NI, BI)		PSL (PSL1, PSL2, PSL3)																																																																																																																																																																										
11		202		4992.55		18.818		conformity		ET		L2		PIPE END		PIPE END		FRACTURE		OK		PSL2																																																																																																																																																																										
Surface & Dimension		conformity		conformity		conformity		conformity		conformity		conformity		conformity		conformity		conformity		conformity		conformity																																																																																																																																																																										

REMARKS: No duplicate will be accepted. Certification: [Signature]. Auditor: [Signature]. Quality Manager: [Signature].

1. BE HERE CERTIFY THAT THE PRODUCTS DESCRIBED HAS BEEN MANUFACTURED, SHIPPED TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENT AND PURCHASE ORDER AND MEET THE REQUIREMENT. TO BE RELEASED, 2. ALL PTWS BE MADE PREZ UP ROTATION CONTINUATION. 3. The Rice Ave issued in Duplicate. 4. FULLY KILLED. 5. IT HAS BEEN NO WELD REPAIR. 6. IT HAS BEEN NO WELD REPAIR. 07/18/13 For Customer Use Only. Duplicate on File Only.





68517

C1589 . 227



ADD: JINTANG ROAD DONGLI  
DISTRICT, TIANJIN, CHINA  
TEL: 86-22-24801217  
FAX: 86-22-24801291

TIANJIN PIPE (GROUP) CORPORATION  
QUALITY CERTIFICATE

Licence No.:  
No.: 12012010

Contract No.	TPCO-11452E	L/C No.		OD-W.T.	2" XH (φ 60.30*5.54mm)	Packing	IN BUNDLES
Order	Mc Jianlin Reidian Corporation	Product	SEAMLESS STEEL LINE PIPE	Steel grade	Gr.290 CAT I SS Gr. B/BX/42	Total pieces	47
P.O. No.	POHS 739 136042	Port of dest.		Man. Method	HOT ROLLING SEAMLESS	Total metres	
Standard	CSA Z245.1 (2007) ASTM A53/A106 /ASME SA53 /SA 106 (2010) API 5L(2007)	Length range	12.81-13.41			Total Tons	4.715

Heat No.	Lot No.	Pieces	Metres	Bundles	Tons	Delivery condition	Sample No.	Tensile test(MPa)				Elong. %	Shrink %	Shrink 2°	Temp. °C	Size	AK1	Shear %	AK2	Shear %	AK3	Shear %	Shear AVE	Shear	
								Temp. °C	T.S.	Type	Y.S.														
518303	71	47			4.715	As rolled	71-01-0430	21	500	Rd0.5	355	36													

Total	47				4.715		Note:	strip, L <sub>0</sub> =19.0mm L <sub>0</sub> =50mm																	
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Heat No.	Lot No.	Sample No.	HRC	Hardness test (inside)				Hardness test (middle)				Hardness test (outside)				NDE	Bend test	Fla. test(1)	Fla. test(2)															
				1	2	3	4	AVE	1	2	3	4	AVE	1	2					3	4	AVE												
518303	71	71-01-0430	<20																															

Steel speci.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	Ceq(SA)	Ceq(W)	Hydro. Test		
																						14MnSV	P
518503	L	0.14	0.25	1.070	0.013	0.003	0.06	0.07	0.02	0.11	0.040	0.03	<0.01	<0.01	<0.0005	0.0026					0.33	0.35	3010psi/8s

Heat No.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Ti	B	Ca	N	H	O	Ceq(SA)	Ceq(W)	Hydro. Test	
																						14MnSV
	L																					

<p>REMARK: dest.=destination; Tem.=Temperature; speci.=specification; Man.=Manufacturer; Fla.=Flattening; G=Good; Hydro.=Hydrostatic; Mag=Magnetic</p>																					
<p>EN10204-3.1B : NACE MR 0175 (2003) /ASME B31.3(2007). CECSA-C-FX (Mn6+Si2+Cu15+Ni20+ (C+Mo+V+Nb) /5+5B) CE II W)</p>																					
<p>EN10204-3.1 : ALUMINIUM KILLED STEEL, EAF-LE-CONTINUOUS CASTING, Silicon and calcium treated for inclusion morphology control in Steel Making.</p>																					
<p>TO A.S.M.E. SECT. II</p>																					
<p>MTR ACCEPTABLE</p>																					
<p>77 EDITION</p>																					
<p>ADD</p>																					
<p>Jul 29 2013</p>																					

Note: We hereby state that all pipes are manufactured and inspected according to above standards and grades.

No. OR-11-824-19

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2012-1-31

(FOR EXPORT ONLY)

C1583

C1583 349

M.T.R. ACCEPTABLE  
TO A.S.M.E. SECT. II



ADD: JINTANG ROAD DONGLI  
DISTRICT, TANJIN, CHINA  
TEL: 86-22-24801217  
FAX: 86-22-24801291

TIANJIN PIPE (GROUP) CORPORATION  
QUALITY CERTIFICATE

Licence No.: 12010617  
No.: 12010617  
EDITION 11  
JUL 29 2013

Contract No. TPCO-11453E L/C No. SEAMLESS STEEL LINE PIPE  
Order No. Mc Junkin Rodman Corporation Product Port of dest. Length range: 38FT-44FT  
P.O. No. F095 759 136042  
Standard: CSA Z245.1(2007) ASTM/A516 ASA 106 ASA S32010Y API 5L(2007)  
O.D. x W.T. 48 1/2 x 30 x 8.56mm  
Steel grade: Gr.290 CATTI SS/GF, B/B/X42  
Min. Method: HOT ROLLING SEAMLESS  
Total pieces: 340  
Total meters: 98513  
Packaging: IN BUNDLES

Heat No.	Lot No.	Pieces	Meters	Bundles	Tons	Delivery condition	Sample No.	Tensile test (MPa)				Straink %	Straink 2% %	Tem. °C	Size	AK1 Shear %	AK2 Shear %	AK3 Shear %	Shear AVE %	Shear %	
								Temp.	T.S.	Type	Y.S.										Elong. %
518449	71	340			98.513	As rolled	71-12-1332	A	22	505	R10.5	320	36.0								

Heat No.	Lot No.	Sample No.	HRC	Hardness test (inside)				Hardness test (middle)	Hardness test (outside)												
				1	2	3	4		1	2	3	4									
518449	71	71-12-1332	<20				AVE														

Heat No.	Steel spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Chemical composition % (Ladle analysis P-Product analysis)				V	Nb	Ti	B	Ca	N	H	O	CE(CSA)	CE(MV)	Hydro Test
										Cu	Al	AI	V											
518449	1.017	0.21	0.94	0.009	0.003	0.09	0.08	0.02	0.12	0.016	<0.01	<0.01	0.0005	0.0014	0.36	0.36	3010P/S/SS							
	1.016	0.20	0.93	0.007	0.002	0.09	0.09	0.01	0.12	0.014	<0.01	<0.01	0.0005	0.0013	0.35	0.35								
	1.016	0.20	0.93	0.007	0.003	0.09	0.09	0.01	0.12	0.014	<0.01	<0.01	0.0005	0.0014	0.35	0.35								

Heat No.	Lot No.	Sample No.	HRC	Visual and Dimension	Hydro. Test	Pipe End NDE	Pipe End Beveling	Residual Mag. Test	SSCC	HIC	Fla. Fla.	
											test(1)	test(2)
518449	71	71-12-1332	<20								G	G

NOTE: (W)=C+Mn/6+H/C+Mo/4+V/5+(Cu+Ni)/15.5 ALUMINIUM KILLED STEEL, EAF-LF-CONTINUOUS CASTING GEN10204-3.1 Silicon and Calcium treated for inclusion morphology control in Steel Melting.  
 Remark: dest. = destination; Tem. = Temperature; spec. = specification; Man. = Manufacturer; Pn. = Plant name; G = Good; Hydro. = Hydrostatic; Mag = Magnetic



We hereby state that the above mentioned goods have been inspected and tested according to the order.  
 No. 12012106  
 Page: (1)  
 2012-1-17  
 (FOR EXPORT ONLY)

