

Certificate of Authorization Permit

Quality Management System

Expiry Date: **August 20, 2008**

Reg. No.: **AQP-1342(S)**

This is to certify that:

PAINTEARTH ENERGY SERVICES INC.

**LSD 1-16-40-16-W4M
HALKIRK, 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 Miniature Pressure Vessels in accordance with CSA B51

Manufacture, Repair/Alter Category 'A', 'E' & 'H' Fittings in accordance with CSA B51

at the above SHOP address.

~~**Construct, Repair/Alter ASME B31.1 Power Piping and ASME B31.3 Process Piping**~~

~~at the SHOP and FIELD sites controlled from the above address.~~



Dated at Edmonton, this 15th day of December, 2006

A handwritten signature in black ink, appearing to read "L. Chan".

Chief Inspector and Administrator

PARTIAL ☐

A# 567572

Manufactured By: Paintearth Energy Services Inc. Box 24, Halkirk AB. T0C 1M0

Manufactured For: Burlington Resources Canada Ltd. 2100 250 6th Avenue SW, Calgary, AB. T2P 3H7

Ultimate Owner: Burlington Resources Canada Ltd. 2100 250 6th Avenue SW, Calgary, AB. T2P 3H7

Location of Installation: LSD: 04-34-52-26 W5M

| Manufacturer's Serial No. | Construction Drawing No. | CODE: ASME B31.3 | | | Year Built |
|---------------------------|---------------------------|------------------|------|---------|------------|
| C - 6119 - 002 ABC | C - 6119 - 002 ABC Rev. 1 | Edition | 2004 | Addenda | N/A |
| | | | | | 2007 |

CONSTRUCTION

| | Coil ID/Purpose | Design Pressure | Design Temp | Design Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN |
|---|------------------|-----------------|-------------|---------------------|---------------------|------------------------|----------|
| a | C - 6119 - 002 A | 4785 PSI | 257 ° F | - 20 ° F | 0.0983" | PES-4NPS-HT REV.2 | U 0194.2 |
| b | C - 6119 - 002 B | 1575 PSI | 257 ° F | - 20 ° F | 0.125" | PES-6NPS-HT REV.2 | U 0193.2 |
| c | C - 6119 - 002 C | 1330 PSI | 257 ° F | - 20 ° F | 0.0625" | PES-2NPS-HT REV.1 | U 0196.2 |
| d | | | | | | | |
| e | | | | | | | |

COIL

| Tubes | | | End Closures | | | | Openings | | |
|-------------|------------|-----------|--------------|-------------|---------|------------|-------------|-----------|--------|
| Mat'l Spec. | Diameter | Thickness | Return Bend | Thicknes | Flanges | Rating | Mat'l Spec. | Size/Type | Rating |
| a | SA - 333-6 | 4" NPS | 0.674" | SA-420-WPL6 | 0.674" | SA-350-LF2 | CL 2500 | N/A | N/A |
| b | SA - 106 B | 6" NPS | 0.432" | SA-234-WPB | 0.432" | SA - 105 N | CL 900 | N/A | N/A |
| c | SA - 106 B | 2" NPS | 0.218" | SA-234-WPB | 0.218" | SA - 105 N | CL 600 | N/A | N/A |
| d | | | | | | | | | |
| e | | | | | | | | | |

HEADERS/MANIFOLDS

| | Purpose | Size | Shell | Thickness | Ends | | | Openings | |
|---|---------|------|-------------|-----------|-------------|-----------|----|-------------|-----------|
| | | | Mat'l Spec. | | Mat'l Spec. | Thickness | No | Mat'l Spec. | Size/Type |
| f | | | | | | | | | |
| g | | | | | | | | | |

TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

| | Hydrostatic Test Pressure | Radiography (100% or % Random) | Other NDE (MT) (PT) (UT) | Postweld Heat Treatment | | Overall Length | Heating Surface | Volume |
|---|---------------------------|--------------------------------|--------------------------|-------------------------|---------|----------------|-----------------|--------------|
| | | | | Temp. | Time | | | |
| a | 7177 PSI | 100% | N/A | 1150 ⁰ F | 60 Min. | 352 ft. | 414.5 sq. ft. | 19.0 cu. ft. |
| b | 2362 PSI | 100% | N/A | 1150 ⁰ F | 60 Min. | 118 ft. | 204.5 sq. ft. | 21.3 cu. ft. |
| c | 1995 PSI | 100% | N/A | 1150 ⁰ F | 60 Min. | 61 ft. | 37.9 sq. ft. | 1.25 cu. ft. |
| d | | | | | | | | |
| e | | | | | | | | |
| f | | | | | | | | |
| g | | | | | | | | |

IMPACT TESTING: Exempt per Table 323.2.2 Column A1

REMARKS: Built to ASME B31.3 2004 Edition

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date March 30, 2007 Signed [Signature]

(Representative)

For Paintearth Energy Services Inc.

(Manufacturer)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, a duly authorized Safety Codes Officer employed by ABSA has inspected the above Heater Coils and state that, to the best of my knowledge and belief, the construction is in accordance with the Alberta Safety Codes Act and Regulations.

Date March 30, 2007

Signed [Signature]

AB # 261A

PAINT EARTH ENERGY SERVICES INC.

TRAVEL SHEET

| | | | | | | | | | |
|----------------------------------------------------|--|------------------------|--|-------------------------------------------------------|----------------------------------|--|--|--|--|
| DO NOT START CONSTRUCTION WITHOUT AI REVIEW | | | | | TRAVEL SHEET REVISION NO.: 0 | | | | |
| AI REVIEW: <i>[Signature]</i> | | | | | REVIEW DATE: <i>MAR. 2, 2007</i> | | | | |
| SERIAL NO.: C-6119-001 A/B/C | | JOB NO. 6119-002 A/B/C | | COIL A: 4" CL 2500 RTJ Coil MAWP 4785 PSI- 0.0983" CA | | | | | |
| | | | | COIL B: 6" CL 900 RFWN Coil MAWP 1575 PSI- 1/8" CA | | | | | |
| | | | | COIL C: 2" CL 600 RFWN Coil MAWP 1330 PSI- 1/16" CA | | | | | |
| DRAWING NO.: C-6119-001 A/B/C | | DWG. REVISION NO.: 0 | | TRAVEL SHEET INITIATION BY: <i>[Signature]</i> | | | | | |

| Seq. | Item | Comments | Q.C.I. | Date | A.I. Hold Points | A.I. | Date | Owner | Date |
|------|-----------------------------------------|-----------------------------------------|-----------|------------------|------------------|-----------|----------------|--------------------|-----------------|
| 1 | Calculations in File | | <i>PS</i> | <i>FEB 28/07</i> | * | <i>JA</i> | <i>3.2.07</i> | | |
| 2 | Release of App'd Dwg | | <i>PS</i> | <i>FEB 28/07</i> | * | <i>JA</i> | <i>3.2.07</i> | | |
| 3 | Heat Numbers Recorded | | <i>ME</i> | <i>MAR 8/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.13</i> |
| 4 | MTRs Checked | | <i>ME</i> | <i>MAR 8/07</i> | * | <i>JA</i> | <i>3.30.07</i> | | |
| 5 | Materials Checked | | <i>ME</i> | <i>MAR 8/07</i> | | | | | |
| 6 | WPS(s) Checked | | <i>PS</i> | <i>FEB 28/07</i> | | | | | |
| 7 | Welder(s) Qualified | | <i>PS</i> | <i>FEB 28/07</i> | | | | | |
| 8 | Thickesses Verified & Recorded | | <i>ME</i> | <i>MAR 8/07</i> | | | | | |
| 9 | Shell(s) & Head(s) Fitup Inspection | | <i>ME</i> | <i>MAR 8/07</i> | | | | | |
| 10 | Nozzle & Fittings Fit-up Inspection | | <i>ME</i> | <i>MAR 8/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.13</i> |
| 11 | Nozzle Orientation | | <i>PS</i> | <i>MAR 13/07</i> | | | | <i>[Signature]</i> | <i>07.03.13</i> |
| 12 | Nozzle & Flange Rating Checked | | <i>PS</i> | <i>MAR 13/07</i> | | | | | |
| 13 | Impact Tests | Exempt Table 323.2.2 Column A1 | N/A | --- | | | | | |
| 14 | Internals Checked | | N/A | --- | | | | | |
| 15 | Final Internal Inspection | Shell Side Tube Side | N/A | --- | | | | | |
| 16 | Weld Size Checked | | <i>PS</i> | <i>MAR 13/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.21</i> |
| 17 | Welder I.D. Checked | | <i>PS</i> | <i>MAR 13/07</i> | | | | <i>[Signature]</i> | <i>07.03.21</i> |
| 18 | Final External Inspection | | <i>PS</i> | <i>MAR 13/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.21</i> |
| 19 | Radiography | Longseams | N/A | --- | | | | <i>[Signature]</i> | <i>07.03.21</i> |
| | B31.3 Severe | Circs 100% | <i>PS</i> | <i>MAR 23/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.28</i> |
| 20 | Other N.D.E. | | N/A | --- | | | | | |
| 21 | Final Ext. Prior to P.W.H.T. | | <i>PS</i> | <i>MAR 21/07</i> | * | <i>JA</i> | <i>3.21.07</i> | <i>[Signature]</i> | <i>07.03.21</i> |
| 22 | PWHT Chart Checked | 60 Min @ 1150° F | <i>PS</i> | <i>MAR 27/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.28</i> |
| 23A | Hydro 7177 Psi Coil A | Gauge# <i>PI-1699</i> <i>PI-2006</i> | <i>PS</i> | <i>MAR 30/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.30</i> |
| 23B | Hydro 2362 Psi Coil B | Gauge# <i>PI-2119</i> <i>PI-1070</i> | <i>PS</i> | <i>MAR 30/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.30</i> |
| 23C | Hydro 1995 Psi Coil C | Gauge# <i>PI-715</i> <i>PI-1851</i> | <i>PS</i> | <i>MAR 30/07</i> | * | <i>JA</i> | <i>3.30.07</i> | <i>[Signature]</i> | <i>07.03.30</i> |
| 24A | CRN Drawing 4" | CRN# U0194.2 | <i>PS</i> | <i>FEB 28/07</i> | * | <i>JA</i> | <i>3.2.07</i> | | |
| 24B | CRN Drawing 6" | CRN# U0193.2 | <i>PS</i> | <i>FEB 28/07</i> | * | <i>JA</i> | <i>3.2.07</i> | | |
| 24C | CRN Drawing 2" | CRN# U0196.2 | <i>PS</i> | <i>FEB 28/07</i> | * | <i>JA</i> | <i>3.2.07</i> | | |
| 25 | Manuf. Data Report Completed & Verified | <i>(A) 567572</i> | <i>PS</i> | <i>MAR 30/07</i> | * | <i>JA</i> | <i>3.30.07</i> | | |
| 26 | Nameplate Stamping | | <i>PS</i> | <i>MAR 30/07</i> | * | <i>JA</i> | <i>3.30.07</i> | | |
| 27 | Nameplate Installation | | <i>PS</i> | <i>MAR 30/07</i> | | | | | |

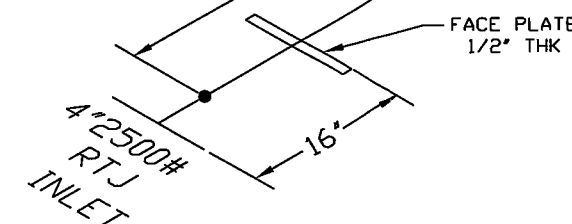
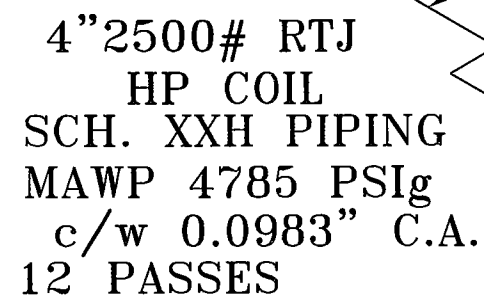
The Authorized Inspector shall be presented with the Travel Sheet prior to construction so that he can designate additional inspection points and/or Hold Points. Any revisions shall be marked with a delta symbol with revision number and described at the bottom of this page.

* Denotes an A.I. Inspection Point

** Denotes an A.I. Hold Point

[illegible]

AS BUILT



NOTES:

1. 100% X-RAY
2. PWHT, 1150°F FOR 60 MIN
3. X-RAY TO B31.3 SEVERE
4. DESIGNED & FABRICATED TO ASME CODE B31.3
5. LONG RADIUS ELBOWS
6. HYDROTEST: COIL 'A' TO 7177 PSIG @ 0.0983" C.A.
7. OVERALL LENGTH 352".
8. HEATING SURFACE 414.5 SQ.FT
9. HEATING VOLUME 19 CU.FT.

DESIGN DATA

DESIGN AND FABRICATE TO ASME B 31.3 2004 EDITION

MIN. DESIGN METAL TEMP. -20°F

MAX. DESIGN METAL TEMP. 257°F

CORROSION ALLOWANCE; 0.0983"


IMPACT TESTS; EXEMPT PER 323.2.2

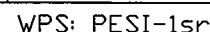
COLUMN A1

[illegible]

Paintearth

ENERGY SERVICES INC.

| | | | |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------|--------------------------|
| DATE 07-01-05 | CLIENT BURLINGTON RESOURCES c/o SPEC ENGINEERING INC. LSD: 04-34-52-28 W5M | | |
| DESIGNED BY PES | TITLE DRAWING FOR 4" | | |
| DRAWN BY C.PRICHARD | 3.750.000 BTUH LINEHEATER COILS c/w 0.0983" C | | |
| CHECKED BY  | PROJECT NO. 6119-001 | FILENAME 6119-002A | REFERENCE NO. U0194.2 |
| APPROVED BY | SHEET NO. 1 OF 3 | DRAWING NO. C-6119-002A | REV. NO. |
| SCALE NTS | | | |



DWG No. PES-6NPS-HT REV.2

NOTES:

1. 100% X-RAY
2. PWHT, 1150°F. FOR 60 MIN
3. X-RAY TO B31.3 SEVERE
4. DESIGNED & FABRICATED TO ASME CODE B31.3
5. LONG RADIUS ELBOWS
6. HYDROTEST: COIL 'B' TO 2362 PSIG @ 1/8" C.A.
7. OVERALL LENGTH 118'.
8. HEATING SURFACE 204.5 SQ.FT.
9. HEATING VOLUME 21.3 CU.FT.




PIPE SA-106B SMLS
FLANGES AND TOL'S ARE SA-105N
WELDED FITTINGS TO BE SA-234-WPB
WPS: PESI-1sr COIL 'B'

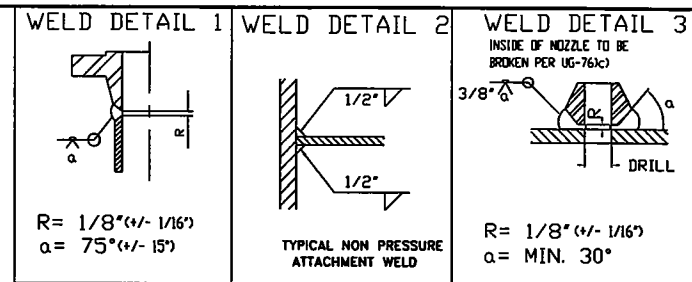
DESIGN DATA

DESIGN AND FABRICATE TO ASME B 31.3 2004 EDITION
MIN. DESIGN METAL TEMP. -20°F
MAX. DESIGN METAL TEMP. 257°F
CORROSION ALLOWANCE; 1/8"
IMPACT TESTS; EXEMPT PER 323.2.2
COLUMN A1

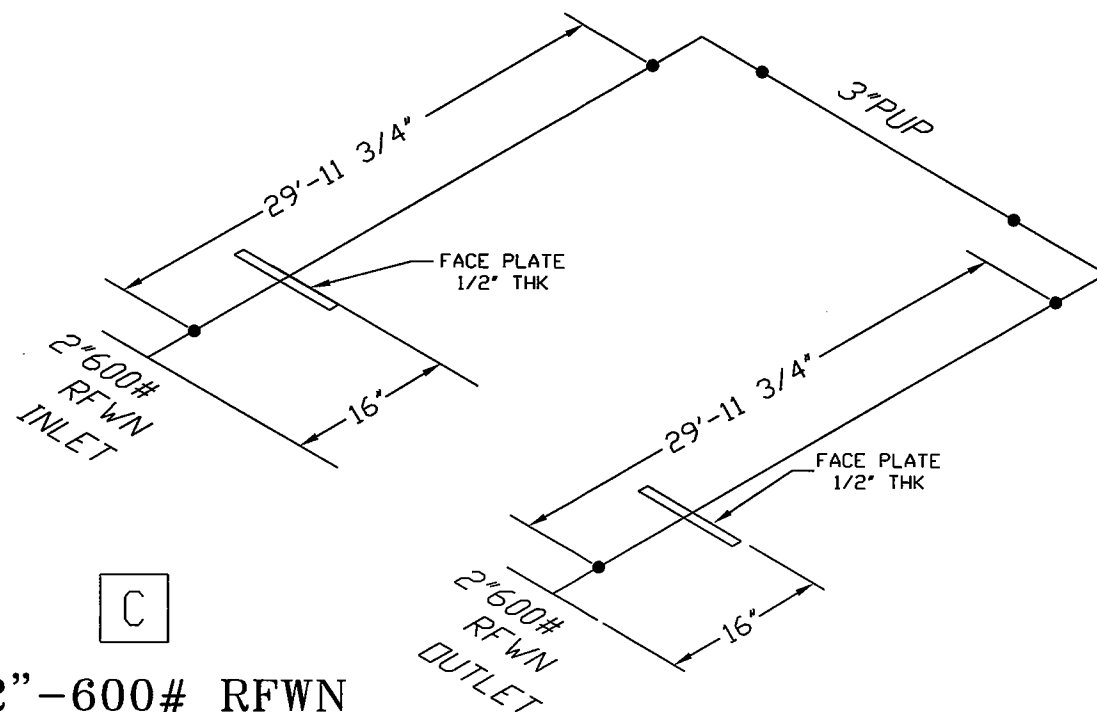
[illegible]

Paintearth
ENERGY SERVICES INC.

| | | | |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|--------------------------|
| DATE 07-01-05 | CLIENT BURLINGTON RESOURCES c/o SPEC ENGINEERING INC. LSD: 04-34-52-28 W5M | | |
| DESIGNED BY PES | TITLE <u>DRAWING FOR 6"</u> <u>3,750,000 BTUH LINEHEATER COILS c/w 1/8" C.A.</u> | | |
| DRAWN BY C.PRICHARD | | | |
| CHECKED BY  | | | |
| APPROVED BY | PROJECT NO. 6119-001 | FILENAME 6119-002B | REFERENCE NO. U0193.2 |
| SCALE N.T.S. | SHEET NO. 2 OF 3 | DRAWING NO. C-6119-002PR | REV. NO. |

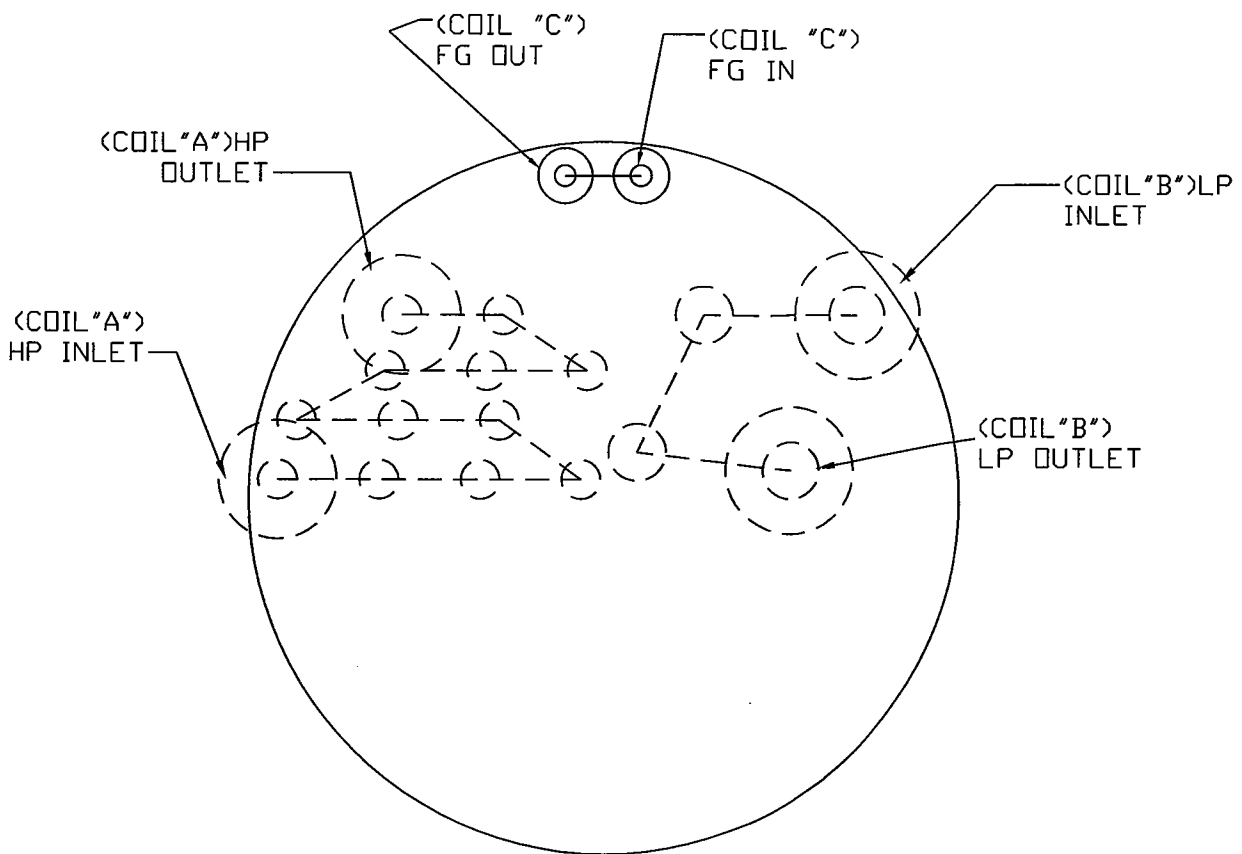


WPS: PESI-1sr



C

2"-600# RFWN
LP COIL
SCH. 80 PIPING
MAWP 1330 PSIG
c/w 1/16" C.A.



AS BUILT

DWG No. PES-2NPS-HT REV.1

NOTES:

1. 100% X-RAY
2. PWHT, 1150°F FOR 60 MIN
3. X-RAY TO B31.3 SEVERE
4. DESIGNED & FABRICATED TO ASME CODE B31.3
5. LONG RADIUS ELBOWS
6. HYDROTEST: COIL 'C' TO 1995 PSIG @ 1/16" C.A.
7. OVERALL LENGTH 61'.
8. HEATING SURFACE 37.9 SQ.FT.
9. HEATING VOLUME 1.25 CU.FT.

PIPE SA-106B SMLS
FLANGES AND TOL'S ARE SA-105N
WELDED FITTINGS TO BE SA-234-WPB
WPS: PESI-1sr COIL 'C'

DESIGN DATA

DESIGN AND FABRICATE TO ASME B 31.3 2004 EDITION
MIN. DESIGN METAL TEMP. -20°F
MAX. DESIGN METAL TEMP. 257°F
CORROSION ALLOWANCE, 1/16"
IMPACT TESTS: EXEMPT PER 323.2.2
COLUMN A1

| REV. | DESCRIPTION | DATE |
|------|-------------------------|----------|
| 0 | AS BUILT | 07-03-30 |
| 0 | ISSUED FOR CONSTRUCTION | 07-02-28 |
| 0 | ISSUED FOR APPROVAL | 07-01-05 |
| 0 | REVISION | |

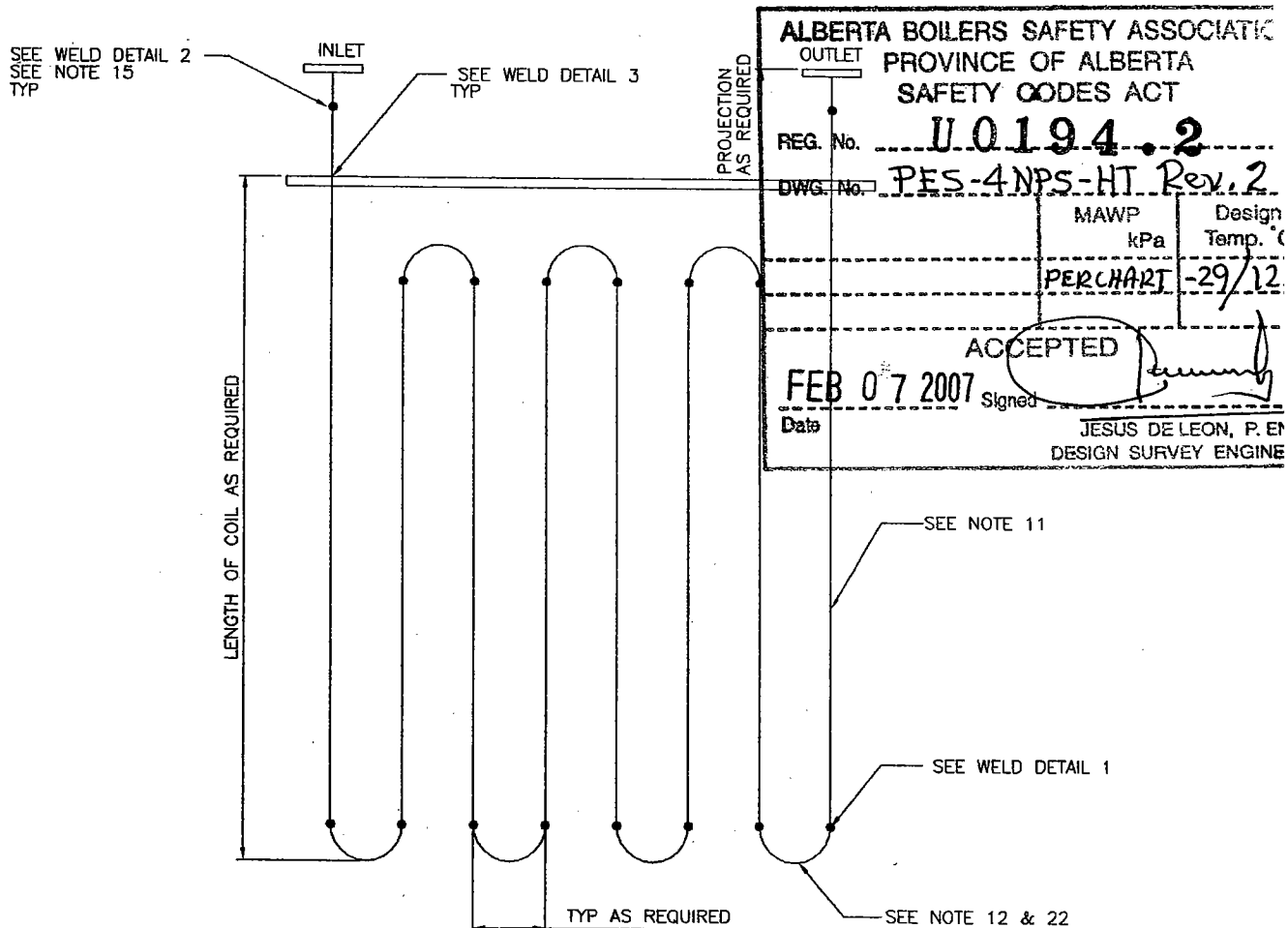


Paintearth
ENERGY SERVICES INC.

| | |
|------------------------|-------------------------------------------------------------------------------------|
| DATE 07-01-05 | CLIENT BURLINGTON RESOURCES c/o SPEC ENGINEERING INC. LSD: 04-34-52-26 WSM |
| DESIGNED BY PES | TITLE DRAWING FOR 2" 3,750,000 BTUH LINEHEATER COILS c/w 1/16" C.A. |
| DRAWN BY C.PRICHARD | PROJECT NO. 6119-001 |
| CHECKED BY DW | FILENAME 6119-002C |
| APPROVED BY | REFERENCE NO. U0196.2 |
| SCALE NTS | SHEET NO. 3 OF 3 |
| | DRAWING NO. C-6119-002C |
| | REV. NO. △ |

HEATER COIL DESIGN

| PIPE SIZE | SCHEDULE | WALL THICKNESS | | | | | | | | | | | | |
|-----------|----------------|----------------|---------------------|----------------|----------------|----------------|---------------------|--------------|--------------|---------------------|--------------|--------------|----------------|----------------|
| | | | BARE PIPE | | | | 150# FLANGE | | | 300# FLANGE | | | 600# FL | |
| | | | CORROSION ALLOWANCE | | | | CORROSION ALLOWANCE | | | CORROSION ALLOWANCE | | | CORROSION A | |
| | | | 0" | 1/16" | 0.0983" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" |
| 4" NPS | STD | 0.237 | 1913 (2869) | 1321 (1981) | | 743 (1114) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1321 (1981) |
| | XH | 0.337 | 2766 (4149) | 2154 (3231) | | 1557 (2335) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) |
| | 160 NOTE 20 | 0.531 | 4501 (6751) | 3849 (5773) | | 3212 (4818) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) |
| | XXH NOTE 20 | 0.674 | 5856 (8784) | 5172 (7758) | 4785 (7177) | 4503 (6754) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) |

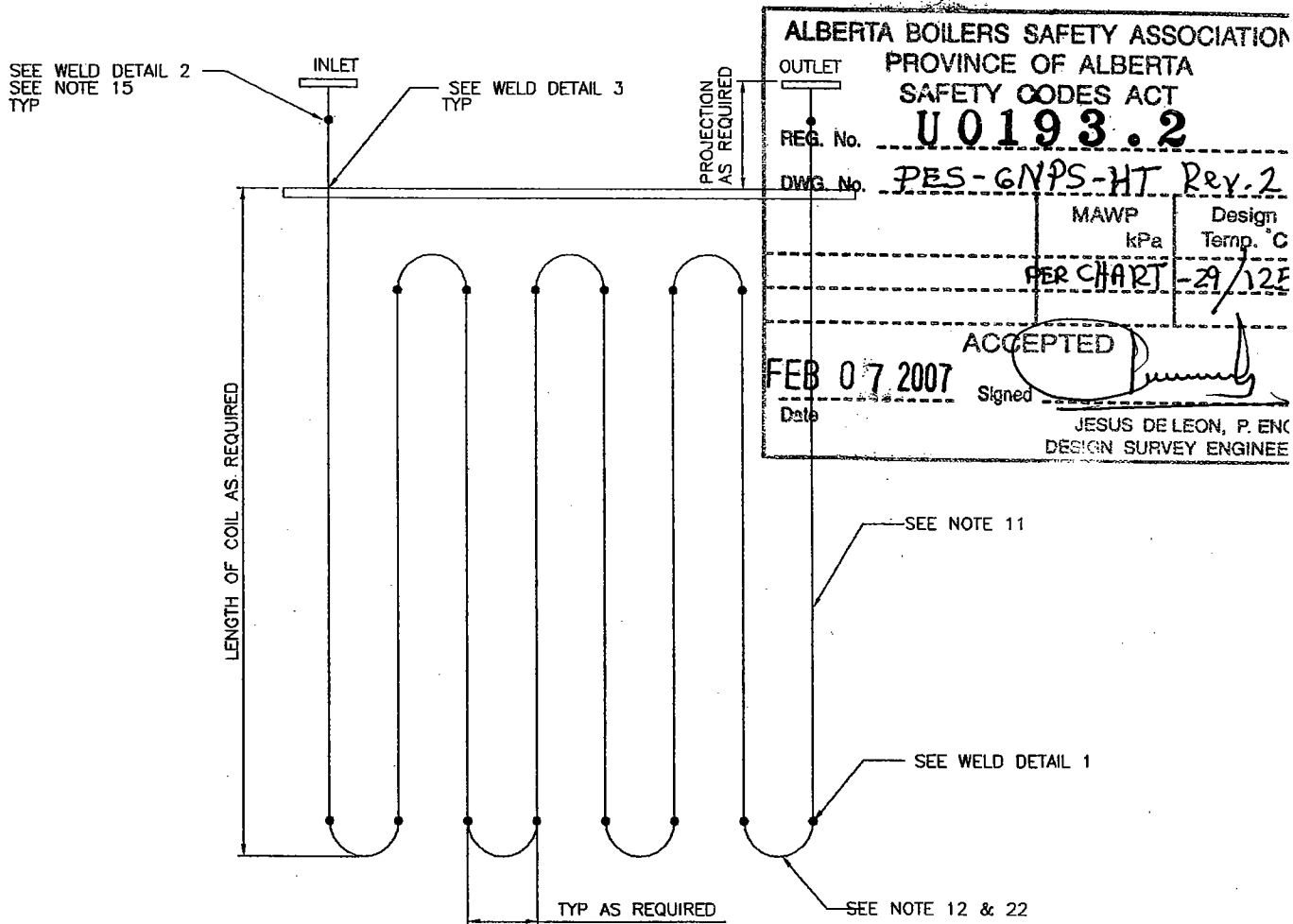


TYPICAL COIL SCHEMATIC
NUMBER OF PASSES AS REQUIRED (SEE NOTE 21)

| CALC. REV. | REV. REQ'D. | NO. | REVISION | BY | APP. | DATE | DESIGN AND DESIGN PRESSURE: MAXIMUM DESIGN MI MINIMUM DESIGN ME IMPACT TESTS: EXEM HYDROSTATIC TEST F POST WELD HEAT TR RADIOGRAPHY: CORROSION ALLOWAN |
|------------|-------------|-----|------------------------------------------------------------|----|------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | NO | 2 | ADD ADDITIONAL COLUMN FOR INTERMEDIATE CORROSION ALLOWANCE | CP | | 07-02-07 | |
| 0 | NO | 1 | REV PER ABSA COMMENTS | CP | | 07-01-26 | |
| 0 | NO | 0 | ISSUED FOR REGISTRATION | CP | | 07-01-04 | |
| | | | | | | | |

| PIPE SIZE | SCHEDULE | WALL THICKNESS (INCHES) | HEATER COIL DESIGN P | | | | | | | | | | | |
|-----------|----------|----------------------------|----------------------|-------|------|---------------------|-------|------|---------------------|-------|------|---------------------|-------|------|
| | | | BARE PIPE | | | 150# FLANGE | | | 300# FLANGE | | | 600# FLANGE | | |
| | | | CORROSION ALLOWANCE | | | CORROSION ALLOWANCE | | | CORROSION ALLOWANCE | | | CORROSION ALLOWANCE | | |
| 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" |

| | | | | | | | | | | | | | | |
|--------|-------------------|-------|----------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|----------------|-----|
| 6" NPS | STD | 0.280 | 1524 (2286) | 1126 (1689) | 735 (1102) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1126 (1689) | () |
| | XH | 0.432 | 2391 (3586) | 1980 (2970) | 1575 (2362) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) | () |
| | 120 NOTE 20 | 0.562 | 3156 (4734) | 2733 (4099) | 2316 (3474) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) | () |
| | 160 NOTE 20 | 0.719 | 4110 (6165) | 3672 (5508) | 3241 (4861) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) | () |
| | XXH NOTE 20/16 | 0.864 | 5023 (7534) | 4569 (6853) | 4124 (6186) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) | () |

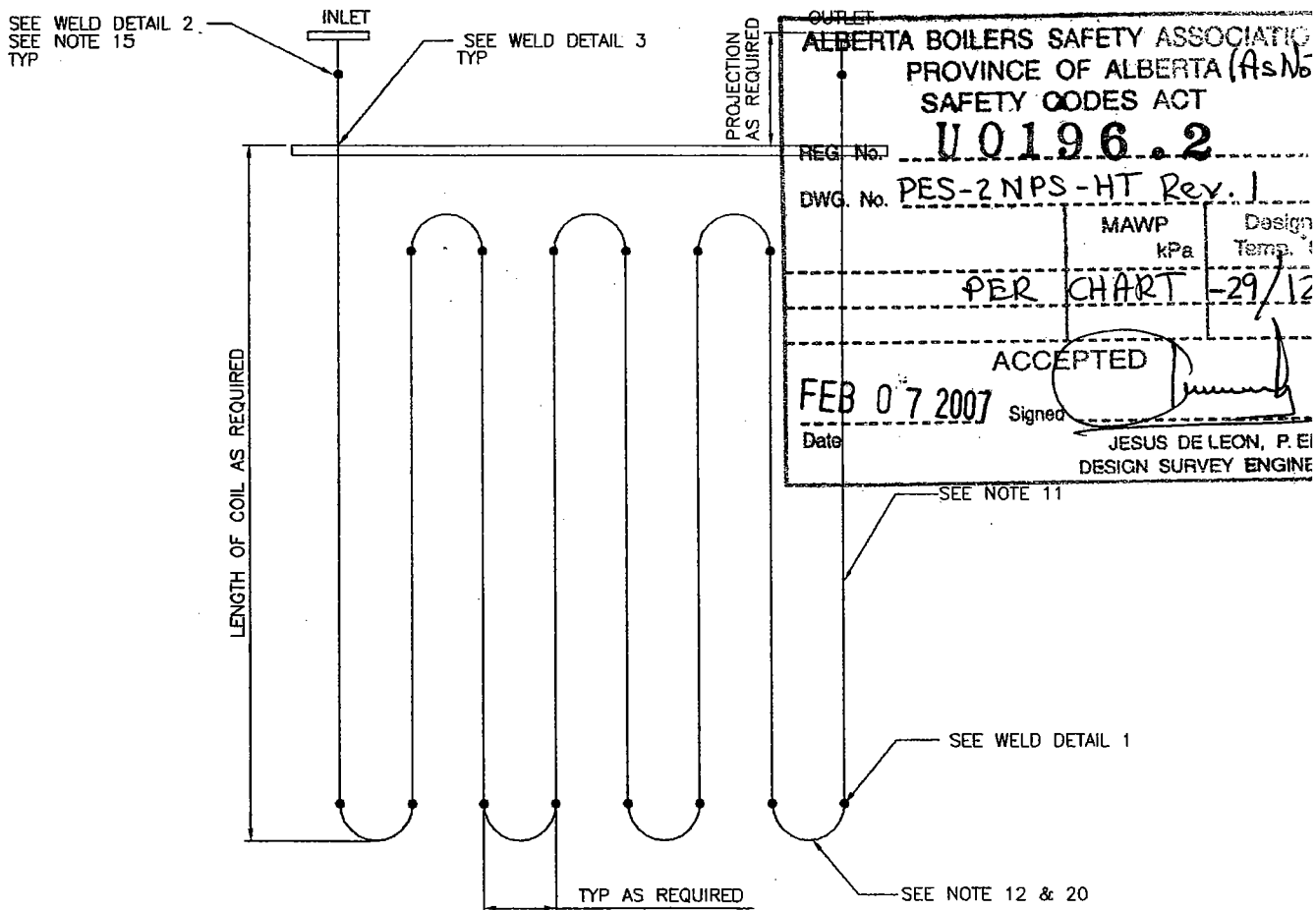


TYPICAL COIL SCHEMATIC
NUMBER OF PASSES AS REQUIRED (SEE NOTE 21)

| | | | | | | | | |
|--------------------|------------------|-----|-----------------------------------|----|----|-----|----------|----------------------|
| | | | | | | | | DESIGN AND FABRICATE |
| | | | | | | | | DESIGN PRESSURE: |
| | | | | | | | | MAXIMUM DESIGN META |
| | | | | | | | | MINIMUM DESIGN METAL |
| | | | | | | | | IMPACT TESTS: |
| 0 | NO | 2 | REVISED NOTE 16 PER ABSA COMMENTS | CP | CP | RS | 07-02-07 | HYDROSTATIC TEST PRE |
| 0 | NO | 1 | REVISED PER ABSA COMMENTS | CP | CP | RS | 07-01-26 | POST WELD HEAT TREA |
| 0 | NO | 0 | ISSUED FOR REGISTRATION | CP | CP | RS | 07-01-04 | RADIOGRAPHY: |
| CALC PKG REV.LEVEL | REV. CALCS REQ'D | NO. | REVISION | BY | PC | APP | DATE | CORROSION ALLOWANCE |

HEATER COIL DESIGN 1

| HEATER COIL DESIGN I | | | | | | | | | | | | | |
|----------------------|----------|----------------------------|---------------------|----------------|----------------|---------------------|--------------|--------------|---------------------|--------------|--------------|----------------|----------------|
| PIPE SIZE | SCHEDULE | WALL THICKNESS (INCHES) | BARE PIPE | | 150# FLANGE | | | 300# FLANGE | | | 600# FLA | | |
| | | | CORROSION ALLOWANCE | | | CORROSION ALLOWANCE | | | CORROSION ALLOWANCE | | | CORROSION ALL | |
| | | | 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" | 1/8" | 0" | 1/16" |
| 2" NPS | STD | 0.154 | 2377 (3565) | 1247 (1870) | 164 (246) | 242 (363) | 242 (363) | 164 (246) | 663 (994) | 663 (994) | 164 (246) | 1330 (1995) | 1247 (1870) |
| | XH | 0.218 | 3433 (5149) | 2257 (3385) | 1132 (1698) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) |
| | 160 | 0.344 | 5641 (8461) | 4367 (6550) | 3151 (4726) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) |
| | XXH | 0.436 | 7372 (11058) | 6019 (9028) | 4728 (7092) | 242 (363) | 242 (363) | 242 (363) | 663 (994) | 663 (994) | 663 (994) | 1330 (1995) | 1330 (1995) |



TYPICAL COIL SCHEMATIC
NUMBER OF PASSES AS REQUIRED (SEE NOTE 21)

| | | | | | | | | | | | | | |
|---------------------|------------------|-----|---------------------------|--|--|--|--|--|----|----|-----|----------|--|
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 0 | NO | 1 | REVISED PER ABSA COMMENTS | | | | | | CP | - | - | 07-01-26 | |
| 0 | NO | 0 | ISSUED FOR REGISTRATION | | | | | | CP | - | - | 07-01-04 | |
| CALC PKG REV. LEVEL | REV. CALCS REQ'D | NO. | REVISION | | | | | | BY | PC | APP | DATE | |

DESIGN AND FABRICAT
DESIGN PRESSURE:
MAXIMUM DESIGN ME
MINIMUM DESIGN ME
IMPACT TESTS:
HYDROSTATIC TEST F
POST WELD HEAT TR
RADIOGRAPHY:
CORROSION ALLOWAN

Isotope: IR.192
Focal Spot Size 3.1mm
Screens: Lead
Front: .010" Back: .010"

| | | | |
|-------|-------|---|-------|
| _____ | _____ | X | _____ |
| _____ | _____ | X | _____ |
| _____ | _____ | X | _____ |
| _____ | _____ | X | _____ |
| _____ | _____ | X | _____ |

QUEST CHARGES

JEREMY NORMAN
SNT LII
CGSB 48,9712 LII
#10308

_____ $4\frac{1}{2} \times 17$
 _____ 14×17
 _____ 7×17

| Total | Regular | OT | KM |
|-------|---------|----|----|
| 2 | 2 | — | 40 |

HUNT
INSPECTION LTD.

BROOKS, AB
(403) 501-8029
Fax (403) 362-7862

WELD DEFECTS
1. Slight 2. Moderate 3. Severe

Code: ASME B31.3 SEVERE

[illegible]

RADIATION SOURCE

Isotope: IR.192
Focal Spot Size 3.1mm
Screens: Lead
Front: .010" Back: .010"

INVOICE NUMBER

19442

FILM CHARGES

___ X ___
___ X ___
___ X ___
___ X ___
___ X ___

SHEET CHARGES

___ 4 1/2 X 17
___ 14 X 17
___ 7 X 17

Technician: LP

Helper: LP

Rod Fraser
Rod Fraser
SNT LII
CGSB 48.9712LII
Reg # 10361

| Total | Regular | OT | KM |
|----------|----------|----------|-----------|
| <u>1</u> | <u>1</u> | <u>—</u> | <u>17</u> |

RADIOGRAPHIC INTERPRETATION REPORT



STETTNER, AB (403) 742-4868
LACOMBE, AB (403) 782-7855
BROOKS, AB (403) 501-8029
Fax (403) 742-4858 Fax (403) 782-0260 Fax (403) 362-7862

☒ Check if Applicable

WELD DEFECTS

1. Slight 2. Moderate 3. Severe

Report#: 55517

Date: MAR 7/07 Page 1 of 1

Client:

PAINT EARTH ENERGY SERVICES INC.

Inspector

Print

Inspector

Sign:

P.O.#:

A.F.E.#:

Q.C.#:

Job#: C6119-002 BC

Ser.#:

Contractor:

Items Inspected:

COIL FABRICATION

Code: ASME B31.3 SEVERE

| Field Weld Number(s) | | Size | Wall Thickness | No. Of Exposures | Welder Symbol | Material C.S. Carbon Steel S.T. Stainless | Hunt Q.C. Procedure No. | Source to Object Distance | Object to Film Distance | Film Brand and Class | Penetrometer & Placement F.S. Film Side S.S. Source Side | Single Wall Exposure | Double Wall Exposure | Single Wall Viewing | Double Wall Viewing | Window | Crack | Undercut | Slag | Lack of Fusion | Concave Bead | Incomplete Penetration | Idios | Porosity | Low Cover | Burn Through | Crater | High Low | Hollow Bead | Gas Pocket | Suck Back | Excess Penetration | Other | Location: | Remarks | Accept | Reject |
|----------------------|-------|------|----------------|------------------|---------------|-------------------------------------------------|-------------------------|---------------------------|-------------------------|----------------------|----------------------------------------------------------------|----------------------|----------------------|---------------------|---------------------|--------|-------|----------|------|----------------|--------------|------------------------|-------|----------|-----------|--------------|--------|----------|-------------|------------|-----------|--------------------|-------|-----------------------|---------|--------|--------|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | PAINTEARTH FACILITIES | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2 | | | | | | | | | | AGFA | AGTM | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| 4 | X. 12 | 2" | 0.218 | 3 | K | C.S. | RT.13 | 2" | 0.280 | 2N | 1AFS | - | - | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| 5 | 13 | ↓ | ↓ | ↓ | L | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | 5 | |
| 6 | 14 | ↓ | ↓ | ↓ | L | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | 6 | |
| 7 | 15 | ✓ | ✓ | ↓ | K | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | 7 | |
| 8 | 16 | 6" | 0.432 | ↓ | L | ↓ | ↓ | 6" | 0.557 | 2S | 1BFS | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | 8 | |
| 9 | 17 | ↓ | ↓ | ↓ | K | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | 9 | |
| 10 | 18 | ↓ | ↓ | ↓ | K | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | 10 | |
| 11 | ✓19 | ✓ | ✓ | ✓ | K | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 12 |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 13 |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 14 |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 16 |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 17 |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 18 |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 19 |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 20 |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 21 |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 22 |
| 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 23 |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 24 |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 25 |

REVIEWED
MAR 09 2007 JH

REVIEWED

MAR 09 2007

19446

_____ 4½ X 17
_____ 14 X 17
_____ 7 X 17

6085

KM

30

BROOKS, AB
(403) 501-8029
Fax (403) 362-7862

1. Slight 2. Moderate 3. Severe

Sign:

Code: ASME B31.3 SEVERE

Goldenrod - Film

RADIATION SOURCE

Isotope: IR.192
Focal Spot Size 3.3mm
Screens: Lead
Front: .010" Back: .010"

INVOICE NUMBER

19316

FILM CHARGES

___ X ___
___ X ___
___ X ___
___ X ___
___ X ___

SHEET CHARGES

___ 4 1/2 X 17
___ 14 X 17
___ 7 X 17

Technician: [Signature]
Helper: TH.
[Signature]
DORRIN HUNT
SNT II
CGSB.48.9712 L III
3243

| Total | Regular | OT | KM |
|----------|----------|----------|-----------|
| <u>1</u> | <u>1</u> | <u>—</u> | <u>17</u> |

RADIOGRAPHIC INTERPRETATION REPORT



STETTLER, AB (403) 742-4868 Fax (403) 742-4858
LACOMBE, AB (403) 782-7855 Fax (403) 782-0260
BROOKS, AB (403) 501-8029 Fax (403) 362-7862

✓ Check if Applicable **WELD DEFECTS**
1. Slight 2. Moderate 3. Severe

Report#: 55564
Date: MAR 19/07 Page 1 of 1
Client: PAINTEARTH ENERGY SERVICES INC.
Inspector: _____
Print: _____
Inspector: _____
Sign: _____
P.O.#: _____
A.F.E.#: _____
Q.C.#: _____
Job#: C6119-002
Ser.#: _____
Contractor: _____
Items Inspected: Coil
FABRICATION
Code: ASME B31.3 SEVERE

| Field Weld Number(s) | Size | Wall Thickness | No. Of Exposures | Welder Symbol | Material C.S. Carbon Steel S.T. Stainless | Hunt Q.C. Procedure No. | Source to Object Distance | Object to Film Distance | Film Brand and Class | Penetrant & Placement F.S. Film Side S.S. Source Side | Single Wall Exposure | Double Wall Exposure | Single Wall Viewing | Double Wall Viewing | Window | Crack | Undercut | Slag | Lack of Fusion | Concave Bead | Incomplete Penetration | Idles | Porosity | Low Cover | Burn Through | Crater | High Low | Hollow Bead | Gas Pocket | Suck Back | Excess Penetration | Other | Location: PAINTEARTH FACILITIES | Remarks | Accept | Reject |
|----------------------|-------|----------------|------------------|---------------|-------------------------------------------|-------------------------|---------------------------|-------------------------|----------------------|-------------------------------------------------------|----------------------|----------------------|---------------------|---------------------|--------|-------|----------|------|----------------|--------------|------------------------|-------|----------|-----------|--------------|--------|----------|-------------|------------|-----------|--------------------|-------|---------------------------------|---------|--------|--------|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | X.35 | 2" | 0.218 | 3 | K | C.S. | RT.13 | 2" | 0.280 | 2H | 1A5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 37 | 6" | 0.432 | | K | | | 6" | 0.557 | DS | 1BFS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | X.25R | 4" | 0.674 | 1 | B | C.S. | RT.1.4 | 4" | 0.830 | DS | 1BFS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | X.26R | 4" | 0.674 | 1 | B | C.S. | RT.1.4 | 4" | 0.830 | DS | 1BFS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

RADIATION SOURCE

Isotope: IR.192

Focal Spot Size 3.3mm

Screens: Lead

Front: .010" Back: .010"

INVOICE NUMBER

19320

FILM CHARGES

X

X

X

X

X

SHEET CHARGES

4 1/2 X 17

14 X 17

7 X 17

Technician: [Signature]

Helper: TH Rod Fraser

Rod Fraser

SNT LII

CGSB 48.9712LII

Reg # 10361

Total

Regular

OT


KM

1/2

1/2

12

RADIOGRAPHIC INTERPRETATION REPORT



STETTTLER, AB

LACOMBE, AB

BROOKS, AB

(403) 742-4868

(403) 782-7855

(403) 501-8029

Fax (403) 742-4858

Fax (403) 782-0260

Fax (403) 362-7862

Check if Applicable

WELD DEFECTS

1. Slight 2. Moderate 3. Severe

Report#: 55651

Date: Mar 22/07 Page 1 of 1

Client: PAINT EARTH ENERGY SERVICES INC.

Inspector

Print

Inspector

Sign:

P.O.#:

A.F.E.#:

Q.C.#:

Job#: C6119-002

Ser.#:

Contractor:

Items Inspected: COIL FABRICATION

Code: ASME B31.3 SEVERE

| | Field Weld Number(s) | Size | Wall Thickness | No. Of Exposures | Welder Symbol | Material C.S. Carbon Steel S.T. Stainless | Hunt Q.C. Procedure No. | Source to Object Distance | Object to Film Distance | Film Brand and Class | Penetrometer & Placement F.S. Film Side S.S. Source Side | Single Wall Exposure | Double Wall Exposure | Single Wall Viewing | Double Wall Viewing | Window | Crack | Undercut | Slag | Lack of Fusion | Concave Bead | Incomplete Penetration | Icicles | Porosity | Low Cover | Burn Through | Crater | High Low | Hollow Bead | Gas Pocket | Suck Back | Excess Penetration | Other | Location: _____ | | Accept | Reject |
|---------|----------------------|------|----------------|------------------|---------------|-------------------------------------------------|-------------------------|---------------------------|-------------------------|----------------------|----------------------------------------------------------------|----------------------|----------------------|---------------------|---------------------|--------|-------|----------|------|----------------|---------------|------------------------|---------|----------|-----------|--------------|--------|----------|-------------|------------|-----------|--------------------|-------|-----------------------|--|--------|--------|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | PAINTEARTH FACILITIES | | | |
| Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2 | | | | | | | | | | <u>AGFA</u> | <u>ASTM</u> | | | | | | | | | | <u>REPAIR</u> | | | | | | | | | | | | | | | | 2 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| 4 | X-38R | 6" | 0.432 | 1 | K | C.S. | RT-1.3 | 6" | 0.557 | D5 | IBFS | — | — | | | | | | | | (1) 20cm | | | | | | | | | | | | | | | 4 | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7 |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 11 |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 12 |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 13 |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 14 |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 16 |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 17 |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 18 |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 19 |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 20 |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 21 |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 22 |
| 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 23 |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 24 |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 25 |

REVIEWED
MAR 23 2007
JH.

PAINT EARTH ENERGY SERVICES INC.

| HEAT TREATMENT INSTRUCTIONS | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------------------|--------|----------------------|
| JOB NO: SEE BELOW CUSTOMER: Paintearth Energy Services Inc. | | | | | |
| DESCRIPTION: C-6119-001 ABC 2" 4" 6" NPS LINEHEATER COIL | | | | | |
| DESCRIPTION: PES-6119-001 WELDED PIPE SPOOLS (SPOOLS # 1,1A,1B,2,3,4,5) | | | | | |
| DESCRIPTION: PES-6038-001 WELDED PIPE SPOOLS (SPOOL # 35) | | | | | |
| DESCRIPTION: PES-6140-001 WELDED PIPE SPOOLS (SPOOL # 3) | | | | | |
| DESCRIPTION: FG-6057-001A-G 6" NPS (7 SCRUBBERS) | | | | | |
| DATE: March 23, 2007 | | | | | |
| COMPONENT DESCRIPTION: | | | | | |
| DWG. NO. AND LINE NO. | DIAMETER | THICKNESS | MATERIAL | LENGTH | WEIGHT |
| C-6119-002 ABC | 4" NPS | 0.674" | SA-333G6 | 30 ft | 15000 LBS |
| PES-6119-001 | 4"NPS | 0.674" | SA-333G6 | | 7 SPOOLS |
| PES-6038-001 | 4"NPS | 0.531" | SA-106B | | 1 SPOOL |
| PES-6140-001 | 3" NPS | 0.300" | SA-106B | | 1 SPOOL |
| FG-6057-001 A-G | 6" NPS | 0.280" | SA-106B | | 7 SCRUBBERS |
| | | | TOTAL | 1 COIL | 7 SCRUBBERS 9 SPOOLS |
| TYPE OF HEAT TREATMENT: STRESS RELIEVE P-No.1 | | | | | |
| Temperature to be raised from 800°F (427°C) to 1150°F (621°C) at a maximum rate of 400 °F (204 °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 400°F (204°C) PER HOUR. | | | | | |
| [Calculated rate = 400 degrees F/hr. (204 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches] | | | | | |
| Temperature to be held at 1150°F (621°C) plus or minus 25°F (4°C) for 60 minutes. | | | | | |
| [Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)] | | | | | |
| Temperature to be lowered from 1150°F (621°C) to 800°F (427°C) at a maximum rate of 500 °F (260 °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 500°F (260°C) PER HOUR. | | | | | |
| [Calculated rate = 500 degrees F/hr. (260 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches] | | | | | |
| From 800°F (427°C) items may be cooled in still air. | | | | | |
| Additional requirements: | | | | | |
| * Job number and description required on heat treatment charts along with operators signature & date. | | | | | |
| * Reporting of thermocouple attachment/removal method and location, and verification of furnace thermocouple calibration is required. | | | | | |
| * A sufficient number of thermocouples shall be located to control and maintain uniform distribution of temperature on all vessels and parts. Thermocouples shall be directly attached to the item or provision shall be made for thermocouple placement at bottom, center and top of the furnace charge in accordance with the ASME Code. | | | | | |
| * During the heating period, there shall not be a greater variation in temperature throughout the portion of the vessel being heated than 250°F (139°C) within any 15 ft. (4.6 m) interval of length. An adequate number of thermocouples must be used to ensure this Code requirement is met. | | | | | |
| * During the holding period, there shall not be a greater difference than 150°F (83°C) between the highest and lowest temperature throughout the portion of the vessel being treated, except where the range is further limited by these instructions. | | | | | |
| * If Capacitor Discharge welding is used to attach thermocouples an ASME Code Section IX welding procedure is required (WPS qualification is not required), and the energy output must be limited to 125 Watt-Seconds. No other welding is permitted on vessels or parts. | | | | | |
| [0.5 X Capacitance in farads X Voltage ² = W-Sec.] | | | | | |
| Thermocouple Attachment Method: | | | Flash Weld | | |
| Furnace Heat Number: | | | F49-070545 | | |
| Furnace Operator Signature: | | | S. Murphy | | |
| Q.C. Inspector Signature: | | | R. L. | | |
| | | | Date: March 23, 2007 | | |

1 Coil
9 SPOOLS
7 Scrubbers
COW

FAXED



R & R Stress Relieving Service Ltd.

Nisku: 2103 - 6 Street • T9E 7X8 Tel: (780) 955-7559 • Fax: (780) 955-2903 • 1-800-499-HEAT (4328)
Blackfalds: #13 Burbank Industrial Park • Tel: (403) 885-2280 • Fax: (403) 885-0177
Calgary: (403) 236-8986

CERTIFICATE OF CONFORMANCE OF RECORDING INSTRUMENTS

| | |
|------------------|------------------------------------------------|
| CERTIFIED BY: | <u>R & R Stress Relieving Service Ltd.</u> |
| TEST NUMBER: | <u>RR0130</u> |
| DATE: | <u>January 31, 2007</u> |
| DATE DUE: | <u>July 31, 2007</u> |
| INSTRUMENT MFG: | <u>Yokogawa</u> |
| MODEL NUMBER: | <u>DR241-12-33-1W/C7/H1/D2</u> |
| SERIAL NUMBER: | <u>12AC14978</u> |
| RECORDER NUMBER: | <u>IR-155</u> |

This instrument has been calibrated and it is within the manufacturers specifications.

REFERENCE STANDARDS

| | |
|------------------------------------------|----------------------------|
| <u>DIGI MITE 311600 S/N48430-5522</u> | <u>CERT DATE NOV 15/06</u> |
| <u>DIG. INDICATOR/CALIR. 028-8427113</u> | <u>CERT DATE NOV 15/06</u> |

The calibration of all standards and measuring instruments used in the calibration are traceable to the National Research Council of Canada in Ottawa or to the National Bureau of Standards in Washington, D.C.

Steve Pierson



R & R Stress Relieving Service Ltd.

2103 - 6 Street * Nisku, AB * T9E 7X8
Tel: 780- 955-7559 * Fax: 780- 955-2903 * 1-800-499-HEAT(4328)
Blackfalds * #13 Burbank Industrial Park * (403) 885-2280
Calgary (403) 236-8986

FURNACE OPERATION REPORT

CHART NO: F49-070545 DATE: March 23, 2007
CLIENT: Paintearth Energy Services PHONE: 403-884-2442
PO Box 24 FAX: 403-884-2106
Halkirk AB T0C 1M0
CLIENT NO: 15 CLIENT REF. NO:
CLIENT PO NO: NOT Required

| Quantity | Description | Price |
|----------------------------|------------------------------------------------------------------|------------|
| | C-6119-002 ABC, 2" 4" 6" NPS Lineheater Coil 1327.50 | 1850.00 |
| | PES-6119-001, Welded Pipe Spools, # 1, 1A, 1B, 2, 3, 4, 5 350.00 | |
| | PES-6038-001, Welded Pipe Spool, # 35 50.00 | |
| | PES-6140-001, Welded Pipe Spool, #3 50.00 | |
| | FG-6057-001 A-G, 6" NPS, (7) Scrubbers 350.00 | |
| <i>BSL</i> MAR 27/07 | | |
| Hours Additional Hold Time | /HR | |
| 15% Fuel Surcharge | | \$277.50 |
| After Hour Charges | /HR | |
| Other Charges | | |
| Subtotal | | \$2,127.50 |
| GST | | \$127.65 |
| Total | | \$2,255.15 |

SPECIFICATION:

ASME SECTION VIII - DIV 1

P# MATERIAL:

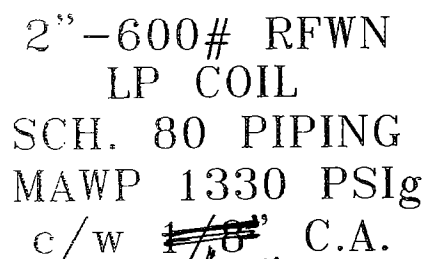
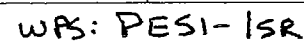
AMBIENT TO 800°F AT MODERATE RATE
FROM 800°F TO 1150°F AT 400°F/HR
SOAK 1150°F ± 25°F FOR 1 HR MIN
COOL FROM 1150°F TO 800°F AT 500°F/HR
COOL FROM 800°F TO AMB IN ENCLOSED
FURNACE

COMMENTS:

R&R Stress Relieving Service Ltd. will not be responsible for any damage or distortion caused by Heat Treatment Process.

INVOICE TO FOLLOW UNDER SEPARATE COVER. Thank you for your patronage.

Specy



1 Faceplate: 170401 - 026
4 Support plates: 170401 -
1 Nameplate backing: AUB -

PIPE SA-106B SMLS
FLANGES AND TOL'S ARE SA-105N
WELDED FITTINGS TO BE SA-234-WPB

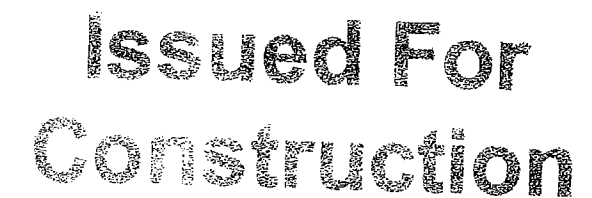
WPS: ~~HPS~~-1sr COIL 'C'

7. OVERALL LENGTH 732"
8. HEATING SURFACE 37.9 SQ. FT.
9. HEATING VOLUME 1.25 CU. FT.

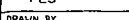
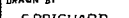
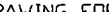
DWG No. PES-2NPS-HT REV. ~~0~~ **1**

NOTES:


1. 100% RAY
2. PWHT, 1150°F FOR 60 MIN
3. X-RAY TO B31.3 NORMAL SEVERE.
4. DESIGNED & FABRICATED TO ASME CODE B31.3
5. LONG RADIUS ELBOWS
6. HYDROTEST: COIL 'C' TO 1995 PSIG @ 1/16" C.A.



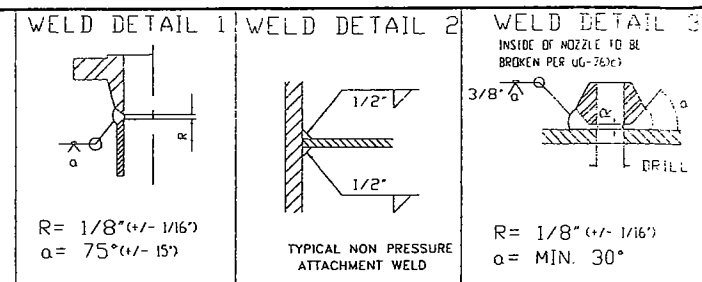
Forwarded to: Feb. Manager Feb 28/07
Released for Fabrication: Feb 28/07

| | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|-----------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------|--|--------------|--|
| | | | | | | | | | | DATE 07-01-05 | | CLIENT BURLINGTON RESOURCES c/o SPEC ENGINEERING INC. LSD: 04-34-52-26 WSM | | | | | |
| | | | | | | | | | | DESIGNED BY PES | | DRAWN BY C.PRICHARD | | TITLE DRAWING FOR 2' 3,750,000 BTUH LINEHEATER COILS c/w 1/16" C.A. | | | |
| | | | | | | | | | | CHECKED BY  | | APPROVED BY  | | PROJECT NO. FILE NAME 0611-07COLC REFERENCE NO. U0196.2 | | | |
| | | | | | | | | | | SCALE NTS | | SHEET NO. 3 OF 3. | | DRAWING NO. C- 6119-007  | | REV. NO. | |
| | | | | | | | | | | | | | | | | | |

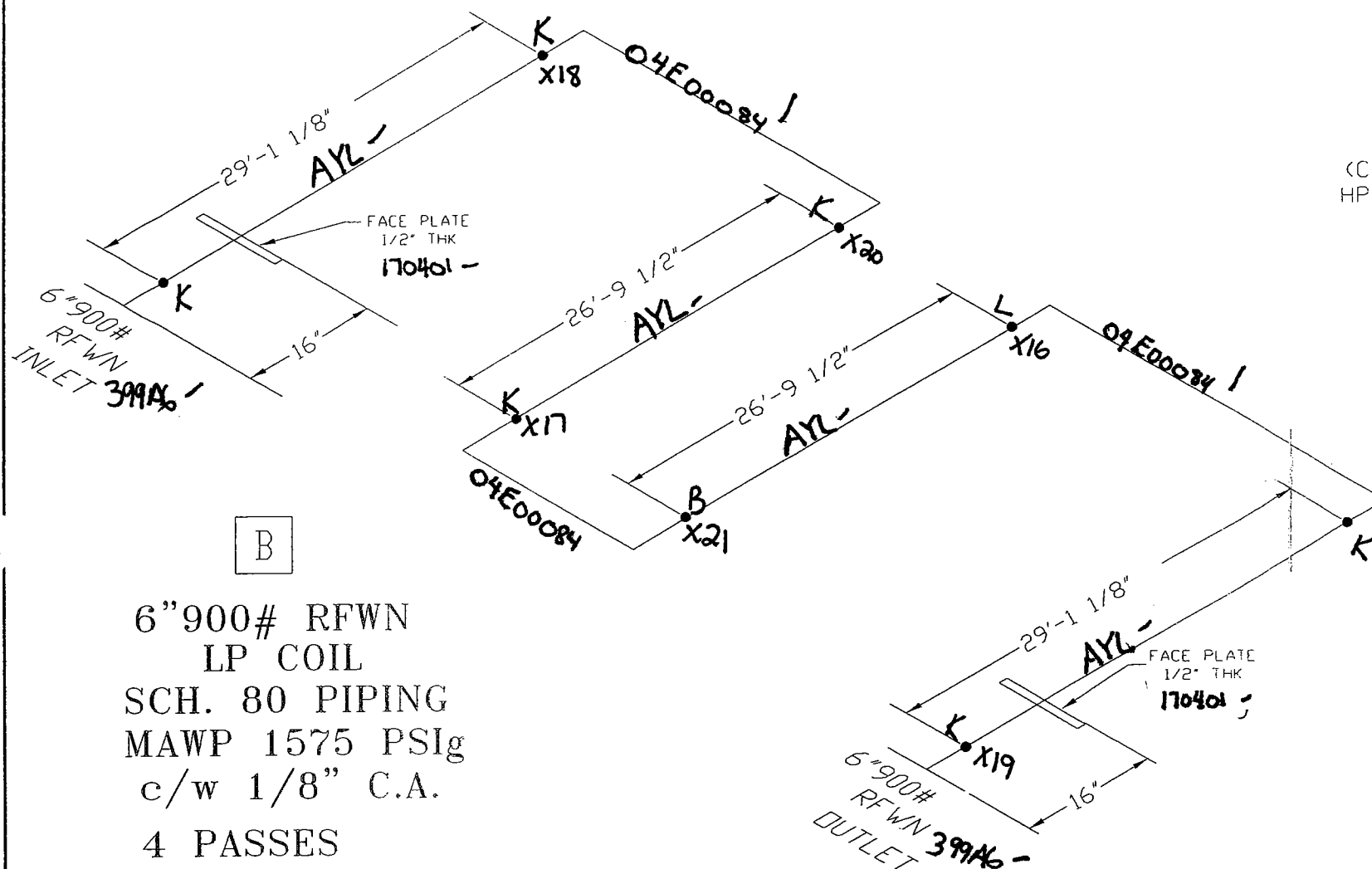
| | | | | | | | | | |
|------------------|------------------|----|---------------------------|----|----|----|------|------|----------|
| 0 | NO | 1 | Welder Symbols + headings | | | | | | |
| 0 | NO | 0 | ISSUED FOR CONSTRUCTION | | | | | | |
| 0 | NO | A | ISSUED FOR APPROVAL | | | | | | |
| CALC PKG RELEVEL | REV. CALC. REQ'D | NO | REVISION | CP | DD | QC | APP. | DATE | 07-01-05 |



Paintearth
ENERGY SERVICES INC.



WPS: PES1-1SR.



B

6"900# RFWN
LP COIL
SCH. 80 PIPING
MAWP 1575 PSIG
c/w 1/8" C.A.
4 PASSES

1 Faceplate: 170401-
4 Support plates: 170401-
1 Nameplate backing: AUB-

PIPE SA-106B SMLS
FLANGES AND TOL'S ARE SA-105N
WELDED FITTINGS TO BE SA-234-WPB
WPS: PES1-1SR COIL 'B'

DWG No. PES-6NPS-HT REV. #2

- NOTES:
- 100% X-RAY
 - PWHT, 1150°F FOR 60 MIN
 - X-RAY TO B31.3 SEVERE
 - DESIGNED & FABRICATED TO ASME CODE B31.3
 - LONG RADIUS ELBOWS
 - HYDROTEST: COIL 'B' TO 2362 PSIG @ 1/8" C.A.

7. OVER ALL LENGTH 1416"
8. HEATING SURFACE 204.5 SQ. FT.
9. HEATING VOLUME 21.3 CU. FT.

| | | | |
|------|----------|----|-------------------------|
| 0 | NO | 1 | Welder Symbols & Heat |
| 0 | NO | 0 | ISSUED FOR CONSTRUCTION |
| 0 | NO | A | ISSUED FOR APPROVAL |
| 0 | NO | NO | REVISION |
| BY | DD | OC | APP. |
| DATE | 07-01-05 | | |



Paintearth
ENERGY SERVICES INC.

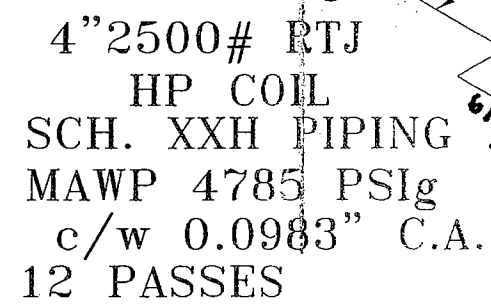
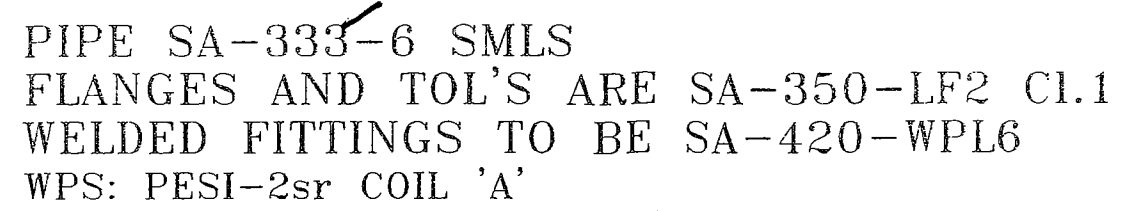
| | |
|-----------------------|-------------------------------------------------------------------------------------|
| DATE 07-01-05 | CLIENT BURLINGTON RESOURCES c/o SPEC ENGINEERING INC. LSD: 04-34-52-28 WSM |
| DESIGNED BY PES | TITLE DRAWING FOR 6" |
| DRAWN BY CPRICHARD | 3,750,000 BTUH LINEHEATER COILS c/w 1/8" C.A. |
| CHECKED BY CMA | PROJECT NO. 0611-07COLB |
| SCALE 1" = 1' | REFERENCE NO. 00193.2 |
| 2 OF 3 | SHEET NO. C- 6119-002-B |
| | REV. NO. |

Issued For
Construction

Issued to: For Manager 7628107SH
Released for Fabrication 7628107

7628107

7628107



NOTES:

1. 100% X-RAY
2. PWHT, 1150°F FOR 60 MIN
3. X-RAY TO B31.3 SEVERE
4. DESIGNED & FABRICATED TO ASME CODE B31.3
5. LONG RADIUS ELBOWS
6. HYDROTEST: COIL 'A' TO 7177 PSIG @ 0.0983" C.A.

Issued to Lab. Manager Feb 28 107 SH
Released for Fabrication Feb 28 107

7. OVER ALL LENGTH 4224"
8. HEATING SURFACE 414.5 SQ. FT.
9. HEATING VOLUME 19 CU. FT.

DESIGN DATA

DESIGN AND FABRICATE TO ASME B 31.3 2004 EDITION



MIN. DESIGN METAL TEMP. -20°F

MAX. DESIGN METAL TEMP. 257°F

CORROSION ALLOWANCE: 0.0983"

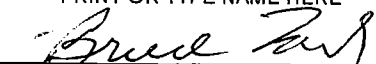
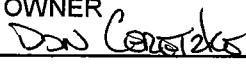
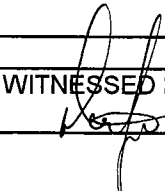
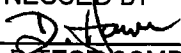
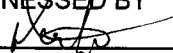
IMPACT TESTS: EXEMPT PER 323.2.2
COLUMN A1

[illegible]

| | | | | |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------|
|  Paintearth ENERGY SERVICES INC. | DATE 07-01-05 | CLIENT BURLINGTON RESOURCES c/o SPEC ENGINEERING INC. LSD: 04-34-52-26 #5M | | |
| | DESIGNED BY PES | TITLE <u>DRAWING FOR #</u> | | |
| | DRAWN BY C.PRICHARD | 3.750.000 BTUH LINEHEATER COILS c/w 0.0983" C.A. | | |
| | CHECKED BY <i>[Signature]</i> | PROJECT NO. | FILENAME 0611-07CDLA | REFERENCE NO. U0194.2 |
| APPROVED BY <i>[Signature]</i> | SHEET NO. 1 OF 3 | DRAWING NO. C- 6119-002-A | REV. NO.  | |
| SCALE NTS | | | | |

PAINT EARTH ENERGY SERVICES INC.

PRESSURE TEST / CERTIFICATE

| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| ISSUED C- 6119-002A | | DATE MAR 30/07 | |
| LOCATION ISSUED IPS Manufacturing Limited | | | |
| DESIGN PRESSURE 4785 PSI | TEST PRESSURE REQUIRED 7177 PSI | GAUGE NO'S USED: Two (2) | |
| TEST HOLD TIME REQUIRED 30 minutes | | ID NO: PI-1699 | RANGE: 0-15,000 PSI |
| | | ID NO: PI-2006 | |
| TEST MEDIUM H₂O | MEDIUM TEMPERATURE REQUIRED 50°F | | |
| PRESSURE INCREASE NOT TO EXCEED 1,000 kPa / MINUTE | | | |
| DESCRIPTION EQUIPMENT / SYSTEM | | | |
| | | | |
| | | | |
| HYDRO (1) ONE SET OF 4" SCH. XXH CL 2500 RTJWN COIL | | | |
| HYDRO FOR 0.0983" CA. | | | |
| SN# C-6119-002A | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| NOTES: | | | |
| 1. EQUIPMENT / SYSTEM TO BE INSPECTED BY QUALITY CONTROL REPRESENTATIVE AND AUTHORIZED INSPECTOR BEFORE HYDROSTATIC TEST. | | | |
| 2. SEAL ALL NOZZLES USING BLANK FLANGES AND GASKETS - NO GREASE OR OTHER COMPOUNDS TO BE APPLIED TO GASKET SURFACE. | | | |
| 3. COUPLINGS AND WELD-O-LETS ETC. TO BE PLUGGED AND TEFLON TAPE OR WHITELEAD MIXTURE MAY BE USED FOR SEALING. | | | |
| 4. PROVIDE AT LEAST ONE (1) VENT OPENING AT HIGHEST POINT DURING FILLING. | | | |
| 5. WATER TEMPERATURES SHOULD BE AS SPECIFIED BUT NOT LESS THAN 50°F OR MORE THAN 120°F FOR ALLOY STEELS. | | | |
| 6. ONE PRESSURE GAUGE SHALL BE USED ON THE TEST PIECE AND ONE GAUGE ON THE PUMP. | | | |
| 7. TEST GAUGES SHOULD SHOW CALIBRATION DATE WITHIN 12 MONTHS OF DATE OF USE. | | | |
| 8. TEST PRESSURE SHOULD BE HELD AS SPECIFIED BEFORE VIEWING. | | | |
| CONTRACTOR Paintearth Energy Services Inc. PRINT OR TYPE NAME HERE  | | OWNER  PRINT OR TYPE NAME HERE  | |
| DATE MAR 30/07 | | DATE 07-03-30 | |
| WITNESSED BY  | DATE MAR 30/07 | WITNESSED BY  | DATE 07-03-30 |
| FIELD TEST COMPLIANCE CERTIFICATE | | | |
| This is to certify the above listed equipment / system was tested as stated above and not witnessed by the Authorized Inspector | | | |
| WITNESSED BY | DATE | SIGNATURE | OF OWNER QUALITY ASSURANCE |

PAINT EARTH ENERGY SERVICES INC.

PRESSURE TEST / CERTIFICATE

| | | | |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------|--------------------|
| ISSUED C- 6119-002B | | DATE MAR 30/07 | |
| LOCATION ISSUED IPS Manufacturing Limited | | | |
| DESIGN PRESSURE 1575 PSI | TEST PRESSURE REQUIRED 2362 PSI | GAUGE NO'S USED: Two (2) | |
| TEST HOLD TIME REQUIRED 30 minutes | | ID NO: PI-2119 | RANGE: |
| | | ID NO: PI-1070 | 0- 6000 PSI |
| TEST MEDIUM H₂O | MEDIUM TEMPERATURE REQUIRED 50°F | | |
| PRESSURE INCREASE NOT TO EXCEED 1,000 kPa / MINUTE | | | |
| DESCRIPTION EQUIPMENT / SYSTEM | | | |
| | | | |
| | | | |
| HYDRO (1) ONE SET OF 6" SCH. 80 CL 900 RFWN COIL | | | |
| HYDRO FOR 0.1250" CA. | | | |
| SN# C-6119-002B | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| NOTES: | | | |
| 1. EQUIPMENT / SYSTEM TO BE INSPECTED BY QUALITY CONTROL REPRESENTATIVE AND AUTHORIZED INSPECTOR BEFORE HYDROSTATIC TEST. | | | |
| 2. SEAL ALL NOZZLES USING BLANK FLANGES AND GASKETS - NO GREASE OR OTHER COMPOUNDS TO BE APPLIED TO GASKET SURFACE. | | | |
| 3. COUPLINGS AND WELD-O-LETS ETC. TO BE PLUGGED AND TEFLON TAPE OR WHITELEAD MIXTURE MAY BE USED FOR SEALING. | | | |
| 4. PROVIDE AT LEAST ONE (1) VENT OPENING AT HIGHEST POINT DURING FILLING. | | | |
| 5. WATER TEMPERATURES SHOULD BE AS SPECIFIED BUT NOT LESS THAN 50°F OR MORE THAN 120°F FOR ALLOY STEELS. | | | |
| 6. ONE PRESSURE GAUGE SHALL BE USED ON THE TEST PIECE AND ONE GAUGE ON THE PUMP. | | | |
| 7. TEST GAUGES SHOULD SHOW CALIBRATION DATE WITHIN 12 MONTHS OF DATE OF USE. | | | |
| 8. TEST PRESSURE SHOULD BE HELD AS SPECIFIED BEFORE VIEWING. | | | |
| CONTRACTOR Paintearth Energy Services Inc. PRINT OR TYPE NAME HERE <i>[Signature]</i> | | OWNER <i>[Signature]</i> PRINT OR TYPE NAME HERE 07-03-30 DATE | |
| WITNESSED BY <i>[Signature]</i> | | WITNESSED BY <i>[Signature]</i> | |
| DATE MAR 30/07 | | DATE 07-03-30 | |
| FIELD TEST COMPLIANCE CERTIFICATE | | | |
| This is to certify the above listed equipment / system was tested as stated above and not witnessed by the Authorized Inspector | | | |
| WITNESSED BY | | SIGNATURE | |
| DATE | | OF OWNER QUALITY ASSURANCE | |

PAINT EARTH ENERGY SERVICES INC.

PRESSURE TEST / CERTIFICATE

| | | | |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------|
| ISSUED C-6119-002C | | DATE <u>MAR 30/07</u> | |
| LOCATION ISSUED IPS Manufacturing Limited | | | |
| DESIGN PRESSURE 1330 PSI | TEST PRESSURE REQUIRED 1995 PSI | GAUGE NO'S USED: Two (2) | |
| TEST HOLD TIME REQUIRED 30 minutes | | ID NO: PI-715 | RANGE: 0-6000 PSI |
| | | ID NO: PI-1851 | |
| TEST MEDIUM H₂O | MEDIUM TEMPERATURE REQUIRED 50°F | | |
| PRESSURE INCREASE NOT TO EXCEED 1,000 kPa / MINUTE | | | |
| DESCRIPTION EQUIPMENT / SYSTEM | | | |
| | | | |
| | | | |
| HYDRO (1) ONE SET OF 2" SCH. 80 CL 600 RFWN COIL | | | |
| HYDRO FOR 0.0625" CA. | | | |
| SN# C-6119-002C | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| NOTES: | | | |
| 1. EQUIPMENT / SYSTEM TO BE INSPECTED BY QUALITY CONTROL REPRESENTATIVE AND AUTHORIZED INSPECTOR BEFORE HYDROSTATIC TEST. | | | |
| 2. SEAL ALL NOZZLES USING BLANK FLANGES AND GASKETS - NO GREASE OR OTHER COMPOUNDS TO BE APPLIED TO GASKET SURFACE. | | | |
| 3. COUPLINGS AND WELD-O-LETS ETC. TO BE PLUGGED AND TEFLON TAPE OR WHITELEAD MIXTURE MAY BE USED FOR SEALING. | | | |
| 4. PROVIDE AT LEAST ONE (1) VENT OPENING AT HIGHEST POINT DURING FILLING. | | | |
| 5. WATER TEMPERATURES SHOULD BE AS SPECIFIED BUT NOT LESS THAN 50°F OR MORE THAN 120°F FOR ALLOY STEELS. | | | |
| 6. ONE PRESSURE GAUGE SHALL BE USED ON THE TEST PIECE AND ONE GAUGE ON THE PUMP. | | | |
| 7. TEST GAUGES SHOULD SHOW CALIBRATION DATE WITHIN 12 MONTHS OF DATE OF USE. | | | |
| 8. TEST PRESSURE SHOULD BE HELD AS SPECIFIED BEFORE VIEWING. | | | |
| CONTRACTOR Paintearth Energy Services Inc. PRINT OR TYPE NAME HERE <u><i>Paintearth Energy</i></u> | | OWNER <u><i>Don Corbett</i></u> PRINT OR TYPE NAME HERE <u><i>07-03-30</i></u> DATE | |
| WITNESSED BY <u><i>[Signature]</i></u> | | WITNESSED BY <u><i>[Signature]</i></u> | |
| DATE <u>MAR 30/07</u> | | DATE <u>07-03-30</u> | |
| FIELD TEST COMPLIANCE CERTIFICATE | | | |
| This is to certify the above listed equipment / system was tested as stated above and not witnessed by the Authorized Inspector | | | |
| WITNESSED BY | | OF OWNER | |
| DATE | | QUALITY ASSURANCE | |
| SIGNATURE | | | |



Certificate of Calibration

Number# DWC-1915

| | | | |
|-------------------------------------|-------------------|-----------------|-----------------|
| Customer: | CPW VALVE | Manufacturer: | CPW |
| Customer P/O: | 000399 | Serial Number: | PI-1699 |
| Order: | 30600 | Pressure Range: | 0/15000 PSI/KPA |
| Accuracy +/- : | 1 % OF FULL SCALE | Part Number: | |
| CALIBRATION DATE: SEPTEMBER 25 2006 | | | |

Deadweight Test Equipment

Make: SI-Barnet Deadweight Tester
Model : 9000 series
Serial Number: 58845

Calibrated By: GE Ruska
Date Calibrated: Jan 10/06
Ambient Temperature: 20 C

| Deadweight | Tested Gauge | Error +/- |
|------------|--------------|-----------|
| 0 PSI | 0 PSI | 0 PSI |
| 3000 | 2975 | -25 |
| 6000 | 5975 | -25 |
| 9000 | 8975 | -25 |
| 12000 | 11950 | -50 |
| 15000 | 14900 | -100 |

Technician: 
RANDY GABRUCK

Q.C. Manager: 
ROD MURRAY

Western Gauge and Instruments Ltd. Certifies that the above information is traceable to N.I.S.T.

6624 50 ST S.E. Edmonton, Alberta, T6B 2N7. P:780-463-3800 , F:780-463-3990.
E-Mail : edm@wgiltld.com

JARON WOLFF PROCESS CONTROLS LTD.

9535 - 42 AVENUE, EDMONTON, ALBERTA T6E 5R2

CERTIFICATE# 49883

FOR: CPW VALVE & INSTRUMENT LTD.

SUITE 100, 7503 GIRARD ROAD, EDMONTON, ALBERTA, T6B 2H2

| | | | |
|----------------|--------------|----------------------------|------------------|
| ORDER NO. | 003000 | AMBIENT TEMPERATURE | 20C |
| SERIAL NUMBER | PI/2006 | DEADWEIGHT | SN# 8604 |
| DIAL SIZE | 4 1/2" CPW | TEST MEDIUM | OIL |
| PRESSURE RANGE | 0-15,000 PSI | MAXIMUM ERROR | -50 PSI |
| SUB DIVISIONS | 2000 PSI | DATE | February 6, 2006 |
| CONNECTION | 1/2" NPT | LOCATION TESTED | 9535 - 42 AVE |
| INSPECTOR | G.J.P. WOWK | EDMONTON, ALBERTA, T6E 5R2 | |

THIS GAUGE IS CERTIFIED TO MEET AND/OR EXCEED THE REQUIREMENTS AS OUTLINED IN API SPECIFICATION 6A, NINETEENTH EDITION, JULY 2004 IN COMPLIANCE WITH SECTION 7, PARAGRAPH 7.1, 7.2, SUBPARAGRAPH 7.2.1, 7.2.2, 7.2.2.1, 7.2.2.2 AND 7.2.2.3. ALSO, API SPECIFICATION 16A, THIRD EDITION, JUNE 2004, SECTION 8, PARAGRAPH 8.1, 8.2, SUBPARAGRAPH 8.2.1 AND 8.2.2.

| <u>TESTED GAUGE</u> | | <u>DEADWEIGHT</u> | | <u>UPSACLE ERROR</u> | |
|---------------------|-----|-------------------|-----|----------------------|-----|
| 0 | | 0 | | 0 | |
| 3750 | PSI | 3800 | PSI | -50 | PSI |
| 7500 | PSI | 7540 | PSI | -40 | PSI |
| 11,250 | PSI | 11,250 | PSI | 0 | PSI |

TECHNICIAN:  Georg Wowk

Invoice: PCL-54611/1

Q.C. Manager:  Lynn Wowk

**ALL TEST EQUIPMENT IS TRACEABLE TO N.I.S.T. STANDARDS.

**CUSTOMER STANDARD DOCUMENT CS-001.



CPW VALVE & INSTRUMENT LTD.

MANUFACTURER OF
CPW HYDRO-POISE OIL FILLED PRESSURE GAUGES
#100 7503 Girard Road EDMONTON, ALBERTA, T6B 2H2
PH: 780-451-6888 FAX: 780-451-6878



DEADWEIGHT CERTIFICATION REPORT

CUSTOMER NAME: IPS Manufacturing Ltd

PO ORDER # 1758

SERIAL # PI/2119

MANUFACTURER: CPW

DIAL SIZE: 4 1/2"

PRESSURE RANGE: 0-6,000 D/S

SUB DIVISIONS: 100 PSI

CONNECTION: 1/2"

INSPECTOR: Mark Dukes

AMBIENT TEMPERATURE: 21C

MODEL: 502

TESTING DEVICE: Deadweight

TEST MEDIUM: Oil

MAXIMUM ERROR: 20 PSI

DATE: August 29, 2006

LOCATION TESTED: 100 7503 Girard Road

EDMONTON, ALBERTA

T6B 2H2

Deadweight Tester: Ashcroft Model 1305B Serial Number GN 118

The Ashcroft Deadweight Tester was calibrated against a Chandler Model 23-145, S/N 21270 Deadweight Tester traceable through Institute for National Measurement Standards (I.N.M.S.) Ottawa, Canada, Report Number MS-214-A

| <u>READING</u> | <u>DEADWEIGHT</u> | <u>GAUGE READING</u> |
|----------------|-------------------|----------------------|
| <u>NO.</u> | <u>PSI</u> | <u>PSI</u> |
| 1 | 1000 | 1000 |
| 2 | 2000 | 1980 |
| 3 | 3000 | 3000 |
| 4 | 4000 | 4000 |
| 5 | 5000 | 5000 |
| 6 | 6000 | 6020 |



CPW VALVE & INSTRUMENT LTD.

MANUFACTURER OF

CPW HYDRO-POISE OIL FILLED PRESSURE GAUGES
#100 7503 Girard Road EDMONTON, ALBERTA, T6B 2H2
PH: 780-451-6888 FAX: 780-451-6878



DEADWEIGHT CERTIFICATION REPORT

CUSTOMER NAME: IPS Manufacturing Ltd

PO ORDER #: Verbal

SERIAL #: PI/1070

MANUFACTURER: CPW

DIAL SIZE: 4 1/2 "

PRESSURE RANGE: 6000psi/40000 kpa

SUB DIVISIONS: 100psi

CONNECTION: 1/2 "

INSPECTOR: Scott Culver

AMBIENT TEMPERATURE: 21C

MODEL: 801

TESTING DEVICE: Deadweight

TEST MEDIUM: Oil

MAXIMUM ERROR: 10 PSI

DATE: February 27, 2007

LOCATION TESTED: 100 7503 Girard Road
EDMONTON, ALBERTA

T6B 2H2

Deadweight Tester: Ashcroft Model 1305B Serial Number GN 118

The Ashcroft Deadweight Tester was calibrated against a Chandler Model 23-145, S/N 21270 Deadweight Tester traceable through Institute for National Measurement Standards (I.N.M.S.) Ottawa, Canada, Report Number MS-214-A

| <u>READING</u> <u>NO.</u> | <u>DEADWEIGHT</u> <u>PSI</u> | <u>GAUGE READING</u> <u>PSI</u> |
|------------------------------|---------------------------------|------------------------------------|
| 1 | 1000 | 1000 |
| 2 | 2000 | 2000 |
| 3 | 3000 | 3000 |
| 4 | 4000 | 4000 |
| 5 | 5000 | 5000 |
| 6 | 6000 | 6010 |



CPW VALVE & INSTRUMENT LTD.

MANUFACTURER OF

CPW HYDRO-POISE OIL FILLED PRESSURE GAUGES
#100 7503 Girard Road EDMONTON, ALBERTA , T6B 2H2
PH: 780-451-6888 FAX: 780-451-6878



DEADWEIGHT CERTIFICATION REPORT

CUSTOMER NAME: IPS Manufacturing Ltd.

PO ORDER # Verbal

SERIAL # PI-715

MANUFACTURER: CPW

DIAL SIZE: 4 1/2"

PRESSURE RANGE: 0-6000 D/S

SUB DIVISIONS: 100 psi

CONNECTION: 1/2"

INSPECTOR: Scott Culver

AMBIENT TEMPERATURE: 21C

MODEL: 502

TESTING DEVICE: Deadweight

TEST MEDIUM: Oil

MAXIMUM ERROR: 10 psi

DATE: November 14, 2006

LOCATION TESTED: 100 7503 Girard Road

EDMONTON, ALBERTA

T6B 2H2

Deadweight Tester: Ashcroft Model 1305B Serial Number GN 118

The Ashcroft Deadweight Tester was calibrated against a Chandler Model 23-145, S/N 21270 Deadweight Tester traceable through Institute for National Measurement Standards (I.N.M.S.) Ottawa, Canada, Report Number MS-214-A

| <u>READING</u> <u>NO.</u> | <u>DEADWEIGHT</u> <u>PSI</u> | <u>GAUGE READING</u> <u>PSI</u> |
|------------------------------|---------------------------------|------------------------------------|
| 1 | 1000 | 1000 |
| 2 | 2000 | 2000 |
| 3 | 3000 | 3000 |
| 4 | 4000 | 3990 |
| 5 | 5000 | 4990 |
| 6 | 6000 | 6000 |



CPW VALVE & INSTRUMENT LTD.

MANUFACTURER OF

CPW HYDRO-POISE OIL FILLED PRESSURE GAUGES
#100, 7503 Girard Road • Edmonton Alberta • T6B 2H2

PH: 780-451-6888 FAX: 780-451-6878



DEADWEIGHT CERTIFICATION REPORT

CUSTOMER NAME: IPS Manufacturing Ltd.

PO ORDER # 1718

SERIAL # PI/1851

MANUFACTURER: CPW

DIAL SIZE: 4.5"

PRESSURE RANGE: 0-6000 D/S

SUB DIVISIONS: 100 psi

CONNECTION: 1/2"

INSPECTOR: Lynn Zaraska

AMBIENT TEMPERATURE: 21C

MODEL: 502

TESTING DEVICE: Deadweight

TEST MEDIUM: Oil

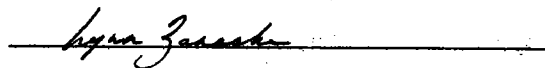
MAXIMUM ERROR: 15 psi

DATE: July 14, 2006

LOCATION TESTED: #100, 7503 Girard Rd.

EDMONTON, ALBERTA

T6B 2H2



Deadweight Tester: Ashcroft Model 1305B Serial Number GN 118

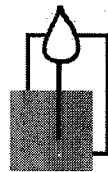
The Ashcroft Deadweight Tester was calibrated against a Chandler Model 23-145, S/N 21270 Deadweight Tester traceable through Institute for National Measurement Standards (I.N.M.S.) Ottawa, Canada, Report Number MS-214-A

| <u>READING</u> | <u>DEADWEIGHT</u> | <u>GAUGE READING</u> |
|----------------|-------------------|----------------------|
| <u>NO.</u> | <u>PSI</u> | <u>PSI</u> |
| 1 | 1000 | 1000 |
| 2 | 2000 | 2005 |
| 3 | 3000 | 3010 |
| 4 | 4000 | 4000 |
| 5 | 5000 | 4985 |
| 6 | 6000 | 5990 |

NAMEPLATE FACSIMILIE

W
100% RT
HT

CERTIFIED BY



Paintearth
ENERGY SERVICES INC.

YEAR BLT.

SERIAL No.

VESSEL TYPE

M.A.W.P. PSI AT °F

M.D.M.T. °F AT PSI

SHELL TK. IN HEAD TK. IN

CRN C.A. IN

A#:

JOB #

Mailing Address: Box 24, Halkirk, Alberta, Canada, T0C 1M0

100% RT

HT

200

G-5118-002A

4 012500RTNICH.XXH.COIL

4785

257

720

4785

0674

U0194.2

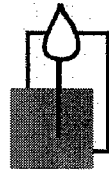
0.0983

①567572

NAMEPLATE FACSIMILIE

W
100% RT
HT

CERTIFIED BY



Paintearth
ENERGY SERVICES INC.

YEAR BLT.

SERIAL No.

VESSEL TYPE

M.A.W.P. PSI

AT °F

M.D.M.T. °F

AT PSI

SHELL TK. IN

HEAD TK. IN

CRN

C.A. IN

A#:

JOB #

Mailing Address: Box 24, Halkirk, Alberta, Canada, T0C 1M0

W
100° RT
HT

2X C-6119-002B

6" PL900 RFWI SCH.80 COLL

1575

257

23

1575

0.432

UM193.2

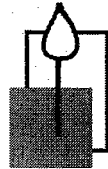
0.125

Ⓐ 567572

NAMEPLATE FACSIMILIE

W
100% RT
HT

CERTIFIED BY



Paintearth
ENERGY SERVICES INC.

YEAR BLT. SERIAL No.
VESSEL TYPE
M.A.W.P. PSI AT °F
M.D.M.T. °F AT PSI
SHELL TK. IN HEAD TK. IN
CRN C.A. IN

A#:

JOB #

Mailing Address: Box 24, Halkirk, Alberta, Canada, T0C 1M0

W
100% RT
HT

2007

C-6119-002C

2 CL600RFWN SCH.80 COIL

1330

257

-20

1330

0.218

U0196.2

0.0625

(A) 567572

EXHIBIT 9.4 MATERIAL CONTROL REPORT

JOB # C-6119-002A/B/C

4", 6", 2" NPS Long Radius Coils

3,750,000 BTUH Line-heater

Coil A

4" - CL 2500 RTJ SCH.XXH

4785 PSIG c/w 0.0983" C.A.

Inlet & Outlet Coil

| | | |
|----|--------------------------------------------------|--------|
| 2 | SMLS PIPE: 4" SCH.XXH, 29' 10 5/8" LONG SA-333-6 | AYP |
| 10 | SMLS PIPE: 4" SCH.XXH, 27' 2 1/2" LONG SA-333-6 | AYP |
| 11 | ELBOWS: 180° SCH. XXH 3" SA -420-WPL6 | 616715 |
| 2 | FLANGES: 4" SCH.XXH CL2500 RTJ SA-350-LF2 C1.1 | 760654 |
| 1 | FACE PLATE: 1/2" THK. SA-36 | 170401 |
| 4 | SUPPORT PLATE: 1/2" THK. SA-36 | 170401 |
| 1 | NAMEPLATE BACKING | AUB |
| 2 | ANGLE IRON SUPPORTS: | n/a |

Coil B

6" - CL 900 SCH.80 RFWN

1575 PSIG c/w 1/8" C.A.

Inlet & Outlet Coil

| | | |
|---|-------------------------------------------|----------|
| 2 | SMLS PIPE: 6" SCH.80, 29' 1 1/8" SA-106B | AYL |
| 2 | SMLS PIPE: 6" SCH.80, 26' 9' 1/2" SA-106B | AYL |
| 3 | ELBOWS: 180° SCH.80 3" SA-234WPB | 04F00084 |
| 2 | FLANGES: 6" SCH.80 CL 900 SA-105N | 399AG |
| 1 | FACE PLATE: 1/2" THK. SA-36 | 170401 |
| 4 | SUPPORT PLATE: 3/8" THK. SA-36 | 170401 |
| 1 | NAMEPLATE BACKING | AUB |
| 2 | ANGLE IRON SUPPORTS: | n/a |

Coil C

2" - CL 600 SCH.80 RFWN

1330 PSIG c/w 1/16" C.A.

Inlet & Outlet Coil

| | | |
|---|------------------------------------------|----------|
| 2 | SMLS PIPE: 2" SCH.80 29' 11 3/4" SA-106B | AYM |
| 2 | ELBOW: 180° SCH.80 3" SA-234WPB | 06C00009 |
| 2 | FLANGES: 2" SCH.80 CL 600 SA-105N | 29572 |
| 1 | FACE PLATE: 1/2" THK. SA-36 | 170401 |
| 4 | SUPPORT PLATE: 3/8" THK. SA-36 | 170401 |
| 1 | NAMEPLATE BACKING | AUB |
| 2 | ANGLE IRON SUPPORTS: | n/a |



TESTING GROUP
www.bodycote.com
www.bodycotetesting.com

TEST CERTIFICATE

Samuel Son & Co. - Regina
1355 Saskatchewan Ave.
Winnipeg, Manitoba
R3E 3K4
Requested by Jon Kurz

Lab #: 52218
COA No #: 69519
Issue #: 1
Date: 1/3/2007
Material: Steel
Form: Plate
Condition: Hot Rolled

Dimension: .500x60-56010#
PO 097203
Tag# B831530

Heat# 170401
SO# 836231

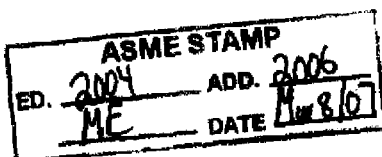
TENSILE TEST

| Sample | Label | Form | GL (in) | Width (in) | Thick (in) | Yield (psi) | Tensile (psi) | Elong (%) | Orient |
|--------|--------|------|------------|---------------|---------------|----------------|------------------|--------------|--------|
| 92395 | Lead | Flat | 2.00 | 0.498 | 0.488 | ✓63000 | ✓73000 | ✓34.0 | 90 deg |
| 92396 | Center | Flat | 2.00 | 0.499 | 0.486 | 60000 | 70000 | 34.4 | 90 deg |
| 92397 | Tail | Flat | 2.00 | 0.507 | 0.492 | 61000 | 71000 | 32.4 | 90 deg |

Test Method: ASTM-A370

CONFORMANCE

- ✓ The sample(s) MEET the TENSILE requirements of ASME-SA36
- ✓ The sample(s) MEET the TENSILE requirements of ASTM-A36
- ✓ The sample(s) MEET the TENSILE requirements of CSA-G40.21-44W



The test report shall not be reproduced except in full, without the written approval of the laboratory.
The recording of false, fictitious, or fraudulent statements or entries on the certificate
may be punished as a felony under federal law.

Mohinder Singh, Sr. Technologist

1 of 1

CLIENTE / Customer / Client

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

CERTIFICADO DE INSPECCION Works Certificate - Certificat d'Usine

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA:
Date:

14/11/2006

N.º
No.

110029

HOJA:
Page: 1



N.º: SGI 1922164

ULMA

ULMA FORJA, S.COOP.

PRODUCTO
Article - Produit

FLANGES

SU PEDIDO N.º
Your Order No. 4876674-00
Votre Cde. N.º

DE
of - de 17/04/2006

Certified acc. PED 97/23/EC
by TÜV Rheinland
N.º 61 202 E/Q 02 7443

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

NORMAS APLICABLES
Requirements - Normes Applicables

ASME B16.5-96

MATERIAL CORRESPONDIENTE
Material Correspondent - Qualité

ASTMA105N-05
ASME SA105N-05

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

NACE MR-01-75/03
CSA - Z245.12-05
GR248 CAT I

MARCA DEL FABRICANTE
Mark of factory
Marque du fabricant



55485

DEPARTAMENTO
Section
Department

QUALITY ASSURANCE

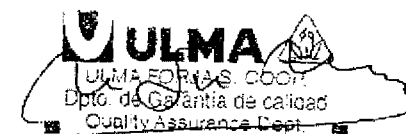
| PARTIDA Item Poste | CANTIDAD Quantity Quantité | DESCRIPCION Description Description | OBSERVACIONES Remarks Observations (*) | COLADA N.º Heat No N.º Coulée | RESISTENCIA T-Strength Resist Rupt N/mm2 | LIMITE ELAST. Y-Strength Limite Elast. N/mm2 | ALARGAM. Elongation Allongement Lo: 4 d % | ESTRICCION Red. Area Striction % | RESILENCIA Impact test Resilience Joules | PROBETA - SPECIMEN MEDIA Average Moyenne °C | DUREZA Hardness Dureté HR |
|--------------------------|----------------------------------|----------------------------------------------------|-------------------------------------------------|-------------------------------------|---------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------|---------------------------------------------------|---------------------------------------------------------|------------------------------------|
| 20 7536118 30 7531524 | 7 24 | BLIND 20 300LB RF A105N WN 6 900LB SRC RF A105N | NE NE | 543A6 399A6 | ✓ 528 ✓ 519 | ✓ 312 ✓ 320 | ✓ 29,40 ✓ 32,60 | 51,00 65,00 | | | 152 149 |

| COMPOSICION QUIMICA - STEEL MARKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE | | | | | | | | | | | | |
|------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------|
| COLADA N.º Heat No N.º Coulée | C % | Si % | Mn % | P % | S % | Cr % | Ni % | Mo % | Nb % | V % | Cu % | CEQ % |
| 399A6 543A6 | ✓ 0.180 ✓ 0.200 | ✓ 0.250 ✓ 0.230 | ✓ 0.900 ✓ 0.790 | ✓ 0.020 ✓ 0.014 | ✓ 0.007 ✓ 0.013 | ✓ 0.120 ✓ 0.020 | ✓ 0.090 ✓ 0.005 | ✓ 0.020 ✓ 0.001 | ✓ 0.007 ✓ 0.001 | ✓ 0.003 ✓ 0.001 | ✓ 0.220 ✓ 0.010 | 0.379 0.337 |

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

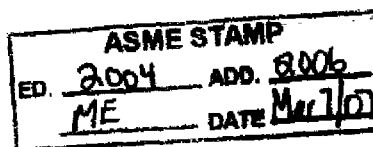
- Los materiales citados cumplen las normas aplicables
- Manufacturing requirements are satisfied
- Les normes applicables sont respectées

EL INSPECTOR
Works Inspector - L'Inspecteur



(*) OBSERVACIONES:
Remarks
Observations

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



Abnahmeprüfzeugnis Nr.
Inspection Certificate No.
Certificat de Réception No.

197640 von 19.10.05 **EN10204/95 - 3.1B**
EN10204/05 - 3.1

Zeichen des Herstellerwerkes
 Manufacturer's mark/Poinçon d'usine
 Zeichen des Werkachverständigen
 Inspector's stamp/Poinçon de l'expert



Wilhelm Geldbach Industrie

Wilhelm Geldbach Industrie GmbH
 Siegelstraße 17
 D - 45886 Gelsenkirchen
 Telefon: +49 209 15803 22
 Telefax: +49 209 15803 499
 Email: JACOBY@W-G.DE

Wilhelm Geldbach Industrie GmbH Siegelstraße 17 45886 Gelsenkirchen

W.F.F. FITTINGS&FLANGES
(CANADA) LTD.
7004K - 5TH STREET S.E.

CDN CALGARY, ALBERTA T2H 2G9

| | | | |
|------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------|
| Komm.-Nr./Pos Works-No. Rapport-No. | Rechnungs-Nr./Pos Invoice-No. Facture-No. | Ihre Auftrags-Nr Your order-No. Votre Commande-No. | Lieferdatum Delivery date Date de livraison |
| 5953/032 | 0/00 | E04748DD/V | 05.10.06 |
| Lieferplan/Pos Menge Delivery Note Bon de livraison | Quantität Quantity Quantité | Bezeichnung des Gegenstandes Designation of article Designation du produit | |
| 12365/016 | 3 | WN2500LB B16.5 4 A.LFÜRXXS | |

Werkstoff: LF2 CL.1
Material / Matière

| Zugversuch Tensile test / Traction | | | | Kerbschlagbiegeversuch Impact test/Cesal de flexion par choc | | | | |
|---------------------------------------|------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------|--------------|----------------------|----------------------------------------------------------------|
| Probe-Nr. Test-No. No d'essai | Richtung Direction Direction | Streckgrenze (Re) Yield strength Limite élastique Rp 1% N/mm2 ReH/Rp 0,2% | Zugfestigkeit (Rm) Tensile strength Résistance à la traction N/mm2 | Dehnung (A) Elongation Allongement % | Einschnürung (Z) Reduction of area striction % | Form Type | Temp. Temp. °C | Schlagarbeit KV Energy of impact Energie de rupture J |
| 7253 | T | 351 | 519 | 2in. 32 | 64 | Charpy-V | -50 | 166 140 152 |
| 253B | T | 336 | 530 | 2in. 34 | 62 | Charpy-V | -50 | 138 141 138 |

Härteprüfung / Hardness / Dureté: HBW 2.5/187.5 - 150 - 160

Schmelze Code-Nr.
Heat-No./No. de coulée Code-No./Code de coulée
760654
MCD TO RTJ BEVEL
Steelmaker: DONASID CALARASI

Erschmelzungsart
Melting proc./Procédé d'élaboration
E

Schmelzanalyse
Heat analysis / Analyse sur coulée %

| | | | | | | | | | | | | | | | |
|------|------|------|-------|-------|------|------|------|----|----|---|------|-------|-------|---|------|
| C | Si | Mn | P | S | Cr | Mo | Ni | Al | Ti | N | Cu | V | Nb | B | Ceq |
| 0.19 | 0.23 | 1.04 | 0.011 | 0.006 | 0.06 | 0.01 | 0.08 | | | | 0.17 | 0.001 | 0.002 | | 0.39 |

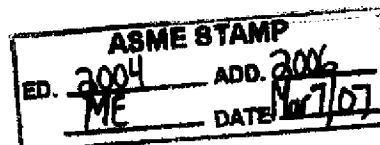
(Ceq = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Al)/15)

Anforderungen - Lieferzustand
 Requirements / Specifications - Delivery condition / Etat de livraison
NORMALIZED 910 DEGR. C/AIR
IN ACC. TO ASME BPVC SEC.2 PART A - 2004 / ADDENDA 2005, A350/A350M-04A
ASTM A350/A350M-04A/ASME BPVC SEC.2 PART A - 2004/ADD.2005, ZUGELASSEN VDTÜV488
ASTM A350, SA350

Einsatzmaterial / base material / matériau : ASTM A350
 Besichtigung und Maßkontrolle: o.B. / Visual and dimensional check: w.o. / Contrôle visual et dimensionnel: satisfaisant.
 Die gestellten Anforderungen sind erfüllt. / The requirements are fulfilled. / Les conditions imposées sont satisfaites.

Der Werkachverständige / Work inspector / L'expert de l'usine
Der Abnahmebeauftragte / authorized inspection representative
 Brucherseifer / Schädeler

EDV - Zeugnis / EDI Test Certificate



ONA 010637

三英鋼鐵股份有限公司
SAN ENG STEEL FORGING CO., LTD.

NO. 22 LANE 50, WAN SING STREET
SAN MIN DISTRICT, KAOSIUNG,
TAIWAN, R. O. C.
Tel: 07-372 4249 07-371 2934
Fax: 07-371 2923 07-371 2846
URL: http://www.saneng.com.tw
e-mail: saneng@ksts.seed.net.tw

MILL TEST CERTIFICATE
=====

EN10204-3.1.B(DIN50049/3.1.81)
CUSTOMER : SEYBOLD INTERNATIONAL CORP.
20 HOLLY STREET, SUITE 205
TORONTO, M4S 3B1, CANADA
TEL: 416-4810191 FAX: 416-4811790

ORDER NO.: 5543(4) NATIONAL
L/C NO.:

CERT NO.: SE-5543DN

DATE: 04/17/2006

PAGE: 1 OF 1

| PRODUCT | | | SPECIFICATION FOR MATERIAL | | | | SPECIFICATION FOR FITTINGS | | | | | | | | | |
|-----------------------------|----------------------|----------|---------------------------------------------------------------------|-------|-------|-------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| FORGED CARBON STEEL FLANGES | | | ASTM A-105-03/ASME SA-105 (2245.12 CAT I GR.248 SOUW SERVICE-01) | | | | ASME B16.5-98a | | | | | | | | | |
| ITEM NO. | DESCRIPTION | QUANTITY | CHEMICAL COMPOSITION (%) | | | | | | | | | | | | | |
| | | | C | SI | Mn | P | S | Cu | Cr | NI | Mo | V | Nb | N | C.E. | |
| 1. | 3730 600# WRF XS | 2" | 600 PCE | 0.190 | 0.140 | 1.120 | 0.010 | 0.016 | 0.100 | 0.110 | 0.050 | 0.005 | 0.003 | 0.005 | 0.009 | 0.411 |
| 2. | 3745 150# SORF | 3" | 300 PCE | 0.210 | 0.170 | 1.080 | 0.009 | 0.015 | 0.080 | 0.090 | 0.040 | 0.005 | 0.003 | 0.005 | 0.009 | 0.418 |
| 3. | 3747 150# SORF | 6" | 156 PCE | 0.210 | 0.140 | 1.220 | 0.013 | 0.010 | 0.100 | 0.050 | 0.070 | 0.005 | 0.003 | 0.005 | 0.009 | 0.437 |
| 4. | 11638 150# SORF | 10" | 100 PCE | 0.200 | 0.240 | 0.890 | 0.023 | 0.013 | 0.170 | 0.180 | 0.150 | 0.020 | 0.000 | 0.001 | 0.011 | 0.410 |
| 5. | 25561 150# SORF | 20" | 3 PCE | 0.200 | 0.200 | 0.990 | 0.016 | 0.007 | 0.000 | 0.030 | 0.010 | 0.000 | 0.003 | 0.001 | 0.000 | 0.372 |
| 6. | 4047 150# THRF | 2" | 500 PCE | 0.210 | 0.180 | 1.130 | 0.013 | 0.015 | 0.080 | 0.050 | 0.050 | 0.017 | 0.003 | 0.005 | 0.010 | 0.421 |
| 7. | 3729 600# WRF STD | 2" | 300 PCE | 0.190 | 0.140 | 1.120 | 0.010 | 0.016 | 0.100 | 0.110 | 0.050 | 0.005 | 0.003 | 0.005 | 0.009 | 0.411 |
| 8. | 13192 1500# WRF XS | 3" | 19 PCE | 0.190 | 0.250 | 0.900 | 0.021 | 0.021 | 0.200 | 0.130 | 0.130 | 0.020 | 0.000 | 0.000 | 0.008 | 0.392 |
| 9. | 14871 1500# WRF S160 | 3" | 33 PCE | 0.190 | 0.250 | 0.900 | 0.021 | 0.021 | 0.200 | 0.130 | 0.130 | 0.020 | 0.000 | 0.000 | 0.008 | 0.392 |

| ITEM | HEAT | TENSILE STRENGTH (MPA) | YIELD STRENGTH (MPA) | ELONGATION (%) | HARDNESS (HB) | REDUCTION OF AREA (%) | HEAT TREATMENT | MATERIAL SUPPLIER | REMARKS |
|------|-------|------------------------|----------------------|----------------|---------------|-----------------------|----------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 485 MIN | 250 MIN | 22.0 MIN | 187 MAX | 30.0 MIN | | | |
| 1. | 28572 | ✓505.00 | ✓300.10 | ✓36.0 | 150 | 67.7 | NORMALIZED | OEMK | NORMALIZATION: 860°C X 3HRS CONFORMS TO MEET NACE MR-01-75 LATEST EDITION <div>ASME STAMP ED. 2004 ADD. 2006 N/A DATE Feb 6/07</div> 93937 |
| 2. | 49190 | 498.20 | 291.30 | 39.6 | 157 | 66.8 | NORMALIZED | OEMK | |
| 3. | 38672 | 515.80 | 304.00 | 35.4 | 150 | 67.7 | NORMALIZED | OEMK | |
| 4. | 57773 | 508.00 | 317.70 | 35.2 | 153 | 66.8 | NORMALIZED | RED OCTOBER | |
| 5. | 49523 | 497.20 | 287.30 | 38.0 | 153 | 66.8 | NORMALIZED | ACONINAS | |
| 6. | 47350 | 521.70 | 325.80 | 34.2 | 157 | 66.8 | NORMALIZED | OEMK | |
| 7. | 29572 | 505.00 | 300.10 | 36.0 | 150 | 67.7 | NORMALIZED | OEMK | |
| 8. | 58032 | 505.00 | 309.90 | 34.4 | 153 | 66.8 | NORMALIZED | RED OCTOBER | |
| 9. | 58032 | 505.00 | 309.90 | 34.4 | 153 | 66.8 | NORMALIZED | RED OCTOBER | |

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND ALSO WITH THE REQUIREMENTS CALLED FOR BY THE ABOVE ORDER AND IS THAT WHICH HAS BEEN TESTED TO THE SATISFACTION OF THE CERTIFICATE.

MANAGER

TEST CHIEF

ALGOMA STEEL INC.

105 West St., Sault Ste. Marie, Ontario, Canada, P6A 7B4

| | | | | | | | |
|-----------------------------------------|--------------------------|-------------------------|------------------------|-------------------------|---------------|---------|---------------------|
| CUSTOMER PURCHASE ORDER NUMBER 08987 | ENTRY DATE 2006/08/14 | SHIP DATE 2006/09/01 | TALLY NUMBER 337924 | SHIPPER'S NUMBER 06- | CARRIER CP | -346959 | MILL ORDER 13298 |
|-----------------------------------------|--------------------------|-------------------------|------------------------|-------------------------|---------------|---------|---------------------|

CHANGE TO CUSTOMER NAME & ADDRESS
ALBERTA INDUSTRIAL METALS LTD
4821 - 78TH STREET
RED DEER ALBERTA
T4P 1N5

SHIP TO CUSTOMER NAME & ADDRESS
ALBERTA INDUSTRIAL METALS LTD
C/O BATES (CPR) TRANSFER FACILITY
CALGARY, ALBERTA

MILL TEST REPORTS

ALGOMA STEEL INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN HEREIN AS CONTAINED IN THE COMPANY RECORDS AND WITHIN THE SCOPE OF ACCREDITATION OF ISO/IEC GUIDE 17025-1999 AS CONTAINED IN THE COMPANY RECORDS.

J. Johnston
MANAGING METALLURGIST

CUSTOMER SPECIFICATION
HOT ROLLED STEEL SHEET - CARBON - TO THE CHEM OF ASTM A36 (05) - STRL Q - CUT
EDGE ACCEPTABLE - RESTRICTED GAUGE 3/4 TOL - STRUCTURAL STD SURFACE & SHPE -
COIL END TEST ONE/HEAT INFO ONLY

SUPPLEMENTARY INSTRUCTIONS

FAX B/L (403-343-1311) ATTN J.KING MRK B/L (FOR TRK DELIVERY TO
ALBERTA INDUSTRIES METALS 7660-49 AVE. RED DEER, ALBERTA. FAX
SH TO BATES @ 403-236-5923

INSP 1/R TEST REPORTS REQUIRED

QSTT
USE STRUCTURAL

AUB

2006/09/01 11:11

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT BY MAIL WITHOUT WRITTEN APPROVAL OF ALGOMA STEEL INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705)945-2634 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT.

MEETS EN 10204 3.1.B AND DIN 50049 3.1.B

***** PRODUCT SHIPPED *****

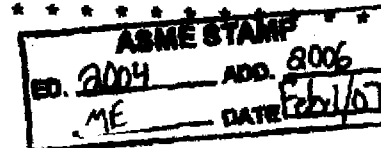
CUSTOMER ITEM 4 OUR ITEM 004 DIMENSIONS .183 X 60 X COIL

| COIL NUMBER | HEAT | NO. PIECES | WEIGHT | COIL NUMBER | HEAT | NO. PIECES | WEIGHT |
|-------------|----------|------------|--------|-------------|----------|------------|--------|
| 63415033 | 6572E-05 | 1 | 28715 | 63415035 | 6572E-06 | 1 | 29409 |
| 63415036 | 6573E-52 | 1 | 28704 | 63415037 | 6573E-01 | 1 | 29409 |
| 63415038 | 6573E-53 | 1 | 29365 | 63415039 | 6573E-02 | 1 | 29420 |

***** MECHANICAL PROPERTIES *****

TENSILE TESTS:

| HEAT | SAMPLE | GAUGE | COND | METH | DIR | YIELD KSI | TENSILE KSI | % ELONG |
|---------|--------|-------|------|------|-----|-----------|-------------|-----------|
| → 6572E | SRCE | .1830 | AR | .2 | T | ✓ 52.5 | ✓ 72.0 | ✓ 21 (8") |
| 6573E | DSPC | .1830 | AR | .2 | T | 52.0 | 71.5 | 18 (8") |

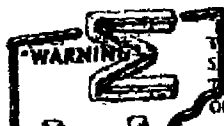


LAB
ALG
ALG

***** CHEMICAL PROPERTIES *****

| HEAT | C | MN | P | S | SI | CR | NI | CU | MO | AL | CB | V | B |
|---------|-------|-------|--------|--------|-------|-----|-----|-------|-----|------|------|------|---|
| → 6572E | ✓ .20 | ✓ .86 | ✓ .013 | ✓ .008 | ✓ .03 | .02 | .01 | ✓ .02 | .01 | .030 | .000 | .003 | |
| 6573E | .002 | .19 | .84 | .010 | .005 | .03 | .02 | .02 | .01 | .027 | .000 | .003 | |
| | .001 | | | | | | | | | | | | |

PAGE 1 OF 1



THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM SPECIFIED YIELD STRENGTH AND (2) THE CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OR VALUES REPORTED HEREIN CAN NOT BE USED TO QUALIFY THE STEEL FOR ANY SPECIFICATION OTHER THAN THE ONE INDICATED AND CAN NOT BE RELIED UPON FOR ANY PURPOSE (INCLUDING DESIGN OR CALCULATIONS) AS REPRESENTING THE ACTUAL STRENGTH OF SUCH STEEL.

INSPECTION CERTIFICATE



SUMITOMO METAL INDUSTRIES, LTD.
PIPE & TUBE WORKS (KAINAN)
260-100, FUNOO, KAINAN, JAPAN

CERTIFICATE NO. : BYYJ8931

PAGE: 1

DATE: 2006-02-27

CUSTOMER :CAPITOL PIPE & STEEL PRODUCTS OF CANADA, LTD.
ORDER NO. :703034
SHIPPER :MARUBENI-ITOCHU STEEL INC. 090 JH2 CVB61601 5P10J000605
COMMODITY :SEAMLESS STEEL PIPE

STANDARD :ASTM A106-04B / ASME 2004 SA-106 CR.B
SPECIFICATION :

MILL WORK NO. :BYYJ8931 O.D.:NB2 W.T.:0.218inch LENGTH:MIN.18feet MAX.20feet QUANTITY:441pcs.
TOTAL LENGTH:8408.80feet MASS:19172kg

HEAT NO. PRODUCTS PCS. HEAT NO. PRODUCTS PCS.
J5LC206 35 J6K1225 406

HEAT TREATMENT:AS ROLLED

CHEMICAL COMPOSITION (%)

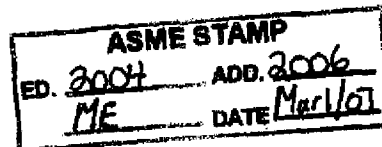
| | #1 | | | | | | | | | | | | #1 L:LADLE ANALYSIS |
|------------|----|-----|-----|-----|-----|----|----|----|----|----|----|----------|--------------------------------------------|
| | | C | Si | Mn | P | S | Cu | Cr | Ni | Mo | V | *U4 +CEQ | |
| SPEC. MIN. | L | - | 10 | 29 | - | - | - | - | - | - | - | - | #2: X1000 OTHER:X100 |
| MAX. | L | 30 | - | 106 | 35 | 35 | 40 | 40 | 40 | 15 | 8 | 100 45 | |
| HEAT NO. | | | | | | | | | | | | | #U4:Cu+Ni+Cr+Mo+V |
| J5LC206 | L | 19 | 20 | 62 | 8 | 11 | 4 | 4 | 2 | 0 | 0 | 10 31 | |
| J6K1225 | L | ✓20 | ✓20 | ✓75 | ✓23 | ✓9 | ✓1 | ✓8 | ✓2 | ✓2 | ✓0 | 13 35 | *CEQ: C+Mn/6+ (Cr+Mo+V) /5+ (Cu+Ni) /15 |

TENSILE TEST

| | #1 #2 | | YS | TS | EL | TYPE OF SPECIMEN FULL SECTION |
|------------|-------|---|---------|---------|-----|--------------------------------------------|
| | | | #3 | #3 | % | |
| SPEC. MIN. | L | B | P 35.0 | P 60.0 | 30 | GAUGE LENGTH 2.0" |
| MAX. | L | B | P - | P - | - | |
| HEAT NO. | | | | | | KIND OF YS 0.5% EXTENSION UNDER LOAD |
| J5LC206 | L | B | P 47.3 | P 70.1 | 62 | |
| J6K1225 | L | B | P ✓50.9 | P ✓75.0 | ✓57 | #1 DIRECTION L: LONGITUDINAL |
| | L | B | P 50.2 | P 75.0 | 60 | |

BENDING TEST:ACCEPTABLE
VISUAL & DIMENSIONS:ACCEPTABLE
HYDROSTATIC TEST 2500psi:ACCEPTABLE
EN10204 3.1

NACE MR0175 HARDNESS:GUARANTEED



CAPITOL PIPE

ISO 9001:2000

Date: 2006 12/06

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH ABOVE STANDARD AND SPECIFICATION AND SATISFIES THE REQUIREMENTS.

Y. Komito
MANAGER QUALITY ASSURANCE SECTION

INSPECTION CERTIFICATE



SUMITOMO METAL INDUSTRIES, LTD.
WAKAYAMA STEEL WORKS (KAINAN)
260-100, FUNOO, KAINAN, JAPAN

CERTIFICATE NO.: BYYF0680

PAGE: 1

DATE: 2006-12-15

CUSTOMER :CAPITOL PIPE & STEEL PRODUCTS OF CANADA, LTD.
ORDER NO. :703181
SHIPPER :MARUBENI-ITOCHU STEEL INC. 090 JH2 CYB9340Y 6P18J000207
COMMODITY :SEAMLESS STEEL PIPE

STANDARD :ASTM A106-04B / ASME 2004 (A05) SA-106 GR. B
SPECIFICATION :

MILL WORK NO. :BYYF0680 O. D. :NB6 W. T. :0.432inch LENGTH:40feet QUANTITY:77pcs. MASS:39963kg

HEAT NO. PRODUCTS PCS. HEAT NO. PRODUCTS PCS.
J6KB487 70 J6KB491 7

HEAT TREATMENT:AS ROLLED

CHEMICAL COMPOSITION(%)

AYL

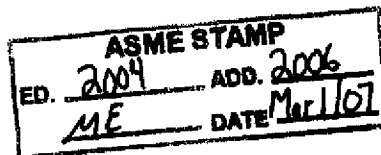
| | | C | Si | Mn | P | S | Cu | Cr | Ni | Mo | V | *U4 | *CEQ | #1 L: LABLE ANALYSIS |
|------------|---|----|----|-----|----|----|----|----|----|----|---|-----|------|--------------------------------------------|
| #1 | | #2 | | | | #2 | | | | | | | | |
| SPEC. MIN. | L | - | 10 | 29 | - | - | - | - | - | - | - | - | - | #2: X1000 |
| MAX. | L | 30 | - | 106 | 35 | 35 | 40 | 40 | 40 | 15 | 8 | 100 | 45 | OTHER: X100 |
| HEAT NO. | | | | | | | | | | | | | | |
| J6KB487 | L | 18 | 22 | 83 | 17 | 6 | 2 | 6 | 2 | 1 | 0 | 11 | 34 | #U4: Cu+Ni+Cr+Mo+V |
| J6KB491 | L | 19 | 23 | 96 | 17 | 7 | 2 | 5 | 3 | 1 | 0 | 11 | 37 | #CEQ: C+Mn/6+ (Cr+Mo+V) /5+ (Cu+Ni) /15 |

TENSILE TEST

| | | YS | | TS | EL | TYPE OF SPECIMEN STRIP 1" WIDTH GAUGE LENGTH 2.0" |
|------------|-----|----------|----------|--------|----|-----------------------------------------------------------------------------------------------|
| #1 #2 | | #3 | #3 | % | | |
| SPEC. MIN. | L B | P 35.0 | P 60.0 | 26.5 | | KIND OF YS 0.5% EXTENSION UNDER LOAD |
| MAX. | L B | P - | P - | - | | |
| HEAT NO. | | | | | | #1 DIRECTION L: LONGITUDINAL #2 SAMPLING POSITION B: BASE METAL #3 UNIT P: ksi |
| J6KB487 | L B | ✓ P 41.6 | P ✓ 71.4 | ✓ 41.5 | | |
| J6KB491 | L B | P 48.0 | P 76.6 | 39.6 | | |

FLATTENING TEST:ACCEPTABLE
VISUAL & DIMENSIONS:ACCEPTABLE
HYDROSTATIC TEST 2700psi:ACCEPTABLE
EN10204 3.1

NACE MR0175 HARDNESS:GUARANTEED



WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH ABOVE STANDARD AND SPECIFICATION AND SATISFIES THE REQUIREMENTS.

Y. Komsto
MANAGER, QUALITY ASSURANCE SECTION

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

Steel Juveniles

BENTELER 
Stahl/Rohr

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

Benteler Stahl/Rohr GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

Van Leeuwen Pipe and Tube
(Canada) Inc.
2875-64th Avenue
EDMONTON, AB T6P 1R1
KANADA

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

Kunden-Bestell-Nr.: 05-5549 / 45000375
Purchase Order No.:
No. de commande du client:

Benteler Auftrags-Nr.: 1137072
Benteler Order No.:
No. de commande Benteler:

Versandanzeigen-Nr.: 6585518
Dispatch Note No.:
No. d'avis d'expédition:

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

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

Hersteller: Warmrohrwerk Dinslaken
Manufacturer: ISO/TS 16949 (ISO 9001) DMV CERT-13765-2003
Producteur: PED 97/23/EC TÜV Cert 07 202 41111/2/5001/1/1/1

Herstellerzeichen:
Manufacturer's brand:
Marque du producteur:



Stempel des Abnahmebeauftragten: WA
Stamp of the inspection representative:
Timbre du contrôleur:

Stahlerschmelzungsverfahren: ELEKTROSTAHL
Steelmaking process: ELECTRIC FURNACE
Procédé d'élaboration de l'acier: FOUR ELECTRIQUE

Blatt: 1 / 8
Page:
Page:

Lieferbedingungen: ASTM-A 333-HF-2004a, ASME SA-333-HF, ASME Section II Part A Edition 2004 Addenda 2005, CSA Standard Z245.1-02
Terms of delivery:
Conditions de livraison:

Maße - Toleranzen: ASME B36.10M-2004, ASME SA-530, ASME Section II Part A Edition 2004 Addenda 2005, ASTM-A 999-2004a
Dimensions-tolerances:
Dimensions-tolérances:

Stahlsorte: GRADE 290, GRADE 6
Steel grade:
Nuance d'acier:

AYP

Lieferzustand: Normalized
Delivery condition:
État de livraison:

Produktkennzeichnung: see attachment product marking
Product marking:
Marquage du produit:

| 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 |
| | | | feet | lbs | | bar | | |
| 0008 | 19 | 3" NPS * Sched. 160 38 FT - 42 FT | 776,02 | 11069 | 532074 | 207 | 5 | 21716 |
| 0010 | 145 | 4" NPS * Sched. 80 18 FT - 22 FT | 3170,31 | 47115 | 741174 | 207 | 5 | 21803 |

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

AYP

P.O. 39/05

BENTELER
Stahl/Rohr

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

Dokument-Nr.:
Document No.:
No. du document:

65-315738/001/P

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

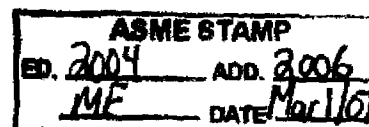
Blatt: 2 / 8
Page:
Page:

| 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 |
| | | | feet | lbs | | bar | | |
| 0012 | 24 | 4" NPS * Sched. 120 38 FT - 42 FT | 985,83 | 18563 | 532074 | 207 | 5 | 21720 |
| → 0013 | 26 | 4" NPS * XXS 32 FT - 36 FT | 926,38 | 25254 | 741106 | 207 | 5 | 21722 |

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

| Pos. | Schmelzen-Nr. | C | SI | MN | P | S | CR | MO | NI | CU | V | NB | TI | B |
|--------|---------------|---------|---------|--------|---------|---------|------|------|------|------|-------|-------|-------|--------|
| Item | Heat No. | | | | | | | | | | | | | |
| Poste | No. de coulée | | | | | | | | | | | | | |
| 0008 | 532074 | 0,110 | 0,340 | 1,24 | 0,006 | 0,002 | 0,17 | 0,06 | 0,17 | 0,11 | 0,066 | 0,033 | 0,004 | 0,0004 |
| 0010 | 741174 | 0,110 | 0,360 | 1,26 | 0,009 | 0,003 | 0,18 | 0,08 | 0,18 | 0,12 | 0,066 | 0,034 | 0,004 | 0,0003 |
| 0012 | 532074 | 0,110 | 0,340 | 1,24 | 0,006 | 0,002 | 0,17 | 0,06 | 0,17 | 0,11 | 0,066 | 0,033 | 0,004 | 0,0004 |
| → 0013 | 741106 | ✓ 0,105 | ✓ 0,355 | ✓ 1,23 | ✓ 0,008 | ✓ 0,003 | 0,17 | 0,08 | 0,18 | 0,10 | 0,064 | 0,033 | 0,004 | 0,0001 |

- Formel: $CE IIW = C + (Mn/6) + ((Cr+Mo+V)/5) + ((Cu+Ni)/15) \leq 0,42 \%$
- Formel: $CEV = C + F * ((Mn/6) + (Si/24) + (Cu/15) + (Ni/20) + ((Cr+Mo+V+Nb)/5) + (5*B)) \leq 0,40$
- Formel: $Mn/C \geq 3/1$
- Formel: $Cr+Cu+Mo+Ni+V \leq 1,00 \%$



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 |
| 0008 | 532074 | 0,395 | 0,323 | 11,273 | 0,576 |
| 0010 | 741174 | 0,405 | 0,331 | 11,455 | 0,626 |
| 0012 | 532074 | 0,395 | 0,323 | 11,273 | 0,576 |
| 0013 | 741106 | 0,391 | 0,319 | 11,714 | 0,594 |

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER 
Stahl/Rohr

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

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

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

Blatt: 3 / 8
Page:
Page:

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

| Pos. | Schmelzen-Nr. | | | | | | | | | | | | | |
|-------|---------------|-------|-------|------|-------|-------|------|------|------|------|-------|-------|-------|--------|
| Item | Heat No. | C | SI | MN | P | S | CR | MO | NI | CU | V | NB | TI | B |
| Poste | No. de coulée | | | | | | | | | | | | | |
| 0008 | 532074 | 0,120 | 0,320 | 1,21 | 0,008 | 0,002 | 0,17 | 0,07 | 0,17 | 0,10 | 0,069 | 0,037 | 0,003 | 0,0005 |
| 0010 | 741174 | 0,110 | 0,330 | 1,26 | 0,009 | 0,003 | 0,19 | 0,08 | 0,18 | 0,12 | 0,071 | 0,040 | 0,003 | 0,0006 |
| 0012 | 532074 | 0,120 | 0,330 | 1,26 | 0,008 | 0,002 | 0,18 | 0,07 | 0,18 | 0,10 | 0,071 | 0,038 | 0,003 | 0,0006 |
| 0013 | 741106 | 0,120 | 0,320 | 1,20 | 0,008 | 0,002 | 0,17 | 0,06 | 0,17 | 0,06 | 0,068 | 0,037 | 0,004 | 0,0002 |

- Formel: $CE_{IIW} = C + (Mn/6) + ((Cr+Mo+V)/5) + ((Cu+Ni)/15) \leq 0,42 \%$
- Formel: $CEV = C + F * ((Mn/6) + (Si/24) + (Cu/15) + (Ni/20) + ((Cr+Mo+V+Nb)/5) + (5*B)) \leq 0,40$
- Formel: $Mn/C \geq 3/1$
- Formel: $Cr+Cu+Mo+Ni+V \leq 1,00 \%$

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 |
| 0008 | 532074 | 0,401 | 0,346 | 10,083 | 0,579 |
| 0010 | 741174 | 0,408 | 0,334 | 11,455 | 0,641 |
| 0012 | 532074 | 0,413 | 0,356 | 10,500 | 0,601 |
| 0013 | 741106 | 0,395 | 0,340 | 10,000 | 0,528 |

Prüfresultate / 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: | Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test pressure/Time-record | PASSED |
| Augensichtkontrolle: Visual inspection: Examen visuel: | PASSED | PASSED |
| Maßkontrolle: Dimensions examination: Vérification des dimensions: | PASSED | PASSED |
| Ringfaltversuch: Flattening test: Essai d'aplatissement: | PASSED | PASSED |

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13686

BENTELER 
Stahl/Rohr

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

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

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

Blatt: 4 / 8
Page:
Page:

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 Streifenprobe / Tensile test Strip test specimen / Essai de traction Bande decoupee sur tube

| Pos. Item Poste | Proben-Nr. Specimen No. No. de l'éprouvette | Schmelzen-Nr. Heat No. No. de coulée | Probenabmessung Specimen dimensions Dimensions de l'éprouv. | Streckgrenze Yield strength Limite élastique | Zugfestigkeit Tensile strength Résistance à la traction | Dehnung Elongation Allongement | Einschnürung Area reduction Coefficient de striction | Re/Rm Re/Rm Re/Rm |
|--------------------------------------------|---------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------|--------------------------------------|------------------------------------------------------------|-------------------------|
| Anforderungen Requirements Exigences | | | mm | ReH MPa 290-495 | Rm MPa 415-625 | A2" % MIN 30 | 1. Formel 1. Formula 1. Formule | |
| 0008 | 000001 | 532074 | 25,40 X 10,70 | 400 | 531 | 46,00 | | |
| 0008 | 000002 | 532074 | 25,40 X 11,10 | 393 | 526 | 44,00 | | |
| 0010 | 000001 | 741174 | 25,40 X 8,50 | 375 | 523 | 42,00 | | |
| 0010 | 000002 | 741174 | 25,40 X 8,50 | 380 | 522 | 41,00 | | |
| 0010 | 000003 | 741174 | 25,40 X 8,50 | 380 | 518 | 38,00 | | |
| 0010 | 000004 | 741174 | 25,40 X 8,50 | 379 | 523 | 39,00 | | |
| 0012 | 000001 | 532074 | 25,40 X 11,00 | 383 | 528 | 42,00 | | |
| 0012 | 000002 | 532074 | 25,40 X 11,30 | 377 | 518 | 40,00 | | |
| → 0013 | 000001 | 741106 | 25,40 X 16,80 | ✓ 353 | ✓ 499 | ✓ 50,00 | | |
| 0013 | 000002 | 741106 | 25,40 X 17,10 | 348 | 489 | 48,00 | | |

Härteprüfung / Hardness test / Essai de dureté

| Pos. Item Poste | Proben-Nr. Specimen No. No. de l'éprouv. | Schmelzen-Nr. Heat No. No. de coulée | Härte Hardness Dureté | | | | |
|--------------------------------------------|------------------------------------------------|--------------------------------------------|-----------------------------|-----|----|-----|--|
| Anforderungen Requirements Exigences | | | HRC | HB | HV | HRB | |
| 0008 | 000001 | 532074 | | 155 | | | |
| 0008 | 000002 | 532074 | | 156 | | | |

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER 
Stahl/Rohr

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

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

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

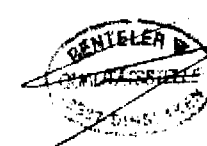
Blatt: 5 / 8
Page:
Page:

Härteprüfung / Hardness test / Essai de dureté

| Pos. Item Poste | Proben-Nr. Specimen No. No. de l'éprouv. | Schmelzen-Nr. Heat No. No. de coulée | Härte Hardness Dureté |
|--------------------------------------------|------------------------------------------------|--------------------------------------------|-----------------------------|
| | | | HRC HB HV HRB |
| Anforderungen Requirements Exigences | | | MAX 200 |
| 0010 | 000001 | 741174 | 156 |
| 0010 | 000002 | 741174 | 155 |
| 0010 | 000003 | 741174 | 154 |
| 0010 | 000004 | 741174 | 155 |
| 0012 | 000001 | 532074 | 146 |
| 0012 | 000002 | 532074 | 148 |
| 0013 | 000001 | 741106 | 149 |
| 0013 | 000002 | 741106 | 150 |

Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

| Pos. | Proben-Nr. | Schmelzen-Nr. | Probenabmessung | | | Probenlage | Prüftemperatur | Kerbschlagarbeit | | Kerbschlagzähigkeit | | Verf.-Bruchanteil | |
|---------------|------------------|---------------|----------------------------|---------|---------|--------------------------|---------------------|------------------|---------|---------------------|---------|-------------------|---------|
| Item | Specimen No. | Heat No. | Specimen dimensions | | | Specimen position | Test temperature | Absorbed energy | | Impact strength | | Shear fracture | |
| Poste | No. de l'éprouv. | No. de coulée | Dimensions de l'éprouvette | | | Position de l'éprouvette | Température d'essai | Energie absorbée | | Résistance au choc | | Rupture ductile | |
| Anforderungen | | | Länge | Breite | Höhe | längs (L) | | einzel | mittel | einzel | mittel | single | average |
| Requirements | | | Length | Width | Height | longitudinal (L) | | single | average | single | average | | |
| Exigences | | | Longueur | Largeur | Hauteur | longitudinal (L) | | individuelle | moyenne | individuelle | moyenne | | |
| | | | | | | quer (Q) | GRAD | | | | | % | |
| | | | mm | mm | mm | transversal (Q) | °C | J | J | J/cm² | J/cm² | min.50 | min.60 |
| | | | 55 | 10,00 | 10,00 | transversal (Q) | -45 | MIN 027 | | | | | |
| 0012 | 000004 | 532074 | 55 | 10,00 | 10,00 | L | -45 | 216 | | | | 85 | |
| | | | | 10,00 | 10,00 | | | 202 | | | | 85 | |
| | | | | 10,00 | 10,00 | | | 224 | 214 | | | 70 | 80 |
| 0013 | 000001 | 741106 | 55 | 10,00 | 10,00 | Q | -45 | 203 | | | | 85 | |
| | | | | 10,00 | 10,00 | | | 164 | | | | 70 | |
| | | | | 10,00 | 10,00 | | | 168 | 178 | | | 70 | 75 |



Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER 
Stahl/Rohr

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

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

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

Blatt: 6 / 8
Page:
Page:

Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

| Pos. Item Poste | Proben-Nr. Specimen No. | Schmelzen-Nr. Heat No. | Probenabmessung Specimen dimensions | | | Probenlage Specimen position | Prüftemperatur Test temperature | Kerbschlagarbeit Absorbed energy | | Kerbschlagzähigkeit Impact strength | | Verf.-Bruchanteil Shear fracture |
|--------------------------------------------|----------------------------|---------------------------|----------------------------------------|----------------------------|---------------------------|---------------------------------------------------|------------------------------------|-------------------------------------|------------------------------|----------------------------------------|------------------------------|-------------------------------------|
| | | | Dimensions de l'éprouvette | | | Position de l'éprouvette | Température d'essai | Energie absorbée | | Résistance au choc | | Rupture ductile |
| Anforderungen Requirements Exigences | | | Länge Length Longueur | Breite Width Largeur | Höhe Height Hauteur | längs (L) longitudinal (L) longitudinal (L) | | einzel single individuelle | mittel average moyenne | einzel single individuelle | mittel average moyenne | |
| | | | mm | mm | mm | quer (Q) transversal (Q) transversal (Q) | GRAD °C -45 | J MIN 027 | J | J/cm² | J/cm² | % |
| | 0013 | 000004 | 741106 | 55 | 10,00 | 10,00 | L | -45 | 165 | | | |
| | | | | | 10,00 | 10,00 | | | 211 | | | |
| | | | | | 10,00 | 10,00 | | | 233 | 203 | | |

Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

| Pos. Item Poste | Proben-Nr. Specimen No. | Schmelzen-Nr. Heat No. | Probenabmessung Specimen dimensions | | | Probenlage Specimen position | Prüftemperatur Test temperature | Kerbschlagarbeit Absorbed energy | | Kerbschlagzähigkeit Impact strength | | Verf.-Bruchanteil Shear fracture |
|--------------------------------------------|----------------------------|---------------------------|----------------------------------------|----------------------------|---------------------------|---------------------------------------------------|------------------------------------|-------------------------------------|------------------------------|----------------------------------------|------------------------------|-------------------------------------|
| | | | Dimensions de l'éprouvette | | | Position de l'éprouvette | Température d'essai | Energie absorbée | | Résistance au choc | | Rupture ductile |
| Anforderungen Requirements Exigences | | | Länge Length Longueur | Breite Width Largeur | Höhe Height Hauteur | längs (L) longitudinal (L) longitudinal (L) | | einzel single individuelle | mittel average moyenne | einzel single individuelle | mittel average moyenne | |
| | | | mm | mm | mm | quer (Q) transversal (Q) transversal (Q) | GRAD °C -45 | J MIN 027 | J | J/cm² | J/cm² | |
| | 0008 | 000001 | 532074 | 55 | 10,00 | 10,00 | L | -45 | 219 | | | |
| | | | | | 10,00 | 10,00 | | | 219 | | | |
| | | | | | 10,00 | 10,00 | | | 222 | 220 | | |

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER 
Stahl/Rohr

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

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

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

Blatt: 7 / 8
Page:
Page:

Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

| Pos. | Proben-Nr. | Schmelzen-Nr. | Probenabmessung | | | Probenlage | Prüftemperatur | Kerbschlagarbeit | | Kerbschlagzähigkeit | | Verf.-Bruchanteil | |
|---------------|------------------|---------------|----------------------------|---------|---------|--------------------------|---------------------|------------------|---------|---------------------|---------|-------------------|---------|
| Item | Specimen No. | Heat No. | Specimen dimensions | | | Specimen position | Test temperature | Absorbed energy | | Impact strength | | Shear fracture | |
| Poste | No. de l'éprouv. | No. de coulée | Dimensions de l'éprouvette | | | Position de l'éprouvette | Température d'essai | Energie absorbée | | Résistance au choc | | Rupture ductile | |
| Anforderungen | | | Länge | Breite | Höhe | längs (L) | | einzel | mittel | einzel | mittel | single | average |
| Requirements | | | Length | Width | Height | longitudinal (L) | | single | average | single | average | single | average |
| Exigences | | | Longueur | Largeur | Hauteur | longitudinal (L) | | individuelle | moyenne | individuelle | moyenne | | |
| | | | | | | quer (Q) | GRAD | | | | | | |
| | | | mm | mm | mm | transversal (Q) | °C | J | J | J/cm² | J/cm² | % | |
| | | | 55 | 7,50 | 10,00 | transversal (Q) | -45 | MIN 020 | | | | min.50 | min.60 |
| 0010 | 000001 | 741174 | 55 | 5,00 | 10,00 | Q | -56 | 98 | | | | 70 | |
| | | | | 5,00 | 10,00 | | | 104 | | | | 70 | |
| | | | | 5,00 | 10,00 | | | 104 | 102 | | | 60 | 67 |
| 0010 | 000004 | 741174 | 55 | 7,50 | 10,00 | L | -45 | 212 | | | | 70 | |
| | | | | 7,50 | 10,00 | | | 208 | | | | 85 | |
| | | | | 7,50 | 10,00 | | | 211 | 210 | | | 85 | 80 |

Restmagnetismus / Demagnetize / Démagnétiser

residual magnetic field intensity max 3,5 millitesla



| Pos. | Ihr Zeichen | Kundenmaterial | Kundenbestell-Nr. |
|-------|-----------------|--------------------------|---------------------------|
| Item | Your reference | Customer's Material No. | Purchase Order No. |
| Poste | Votre référence | No. de matière du client | No. de commande du client |
| 0008 | | P.O. 45000375 | 05-5549 / 45000375 |
| 0010 | | P.O. 45000375 | 05-5549 / 45000375 |
| 0012 | | P.O. 45000375 | 05-5549 / 45000375 |
| 0013 | | P.O. 45000375 | 05-5549 / 45000375 |

Vermerk / Remark / Remarque

NACE Standard: Hardness acc. to NACE Standard MR0175 HRC max 22., The material meets the requirements of NACE MR0103; Certificate remarks: This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-02 meets the requirement for micro hardness of max. 248 HV 500.

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER 

Stahl/Rohr

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

Dokument-Nr.: 65-315738/001/P
Document No.:
No. du document:

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

Blatt: 8 / 8
Page:
Page:

Beiblatt Produktkennzeichnung / Attachment product marking / Supplément marquage du produit

| Pos. | Produktkennzeichnung |
|-------|----------------------|
| Item | Produktkennzeichnung |
| Poste | Marquage du produit |

0008, 0010, 0012

FS: BENTELER Z.245.1-A/SA-333 6/290 CAT II HEAT-NO. M45C S HN DIMENSIONS SCHE DULE WA GERMANY P.O. 45000375

0013 FS: BENTELER Z.245.1-A/SA-333 6/290 CAT II HEAT-NO. M45C S HN DIMENSIONS WEIG HT CLASS WA GERMANY P.O. 45000375

FK = Farbkennzeichnung, colour marking, marquage par couleur FS = Farbscheblonierung, paint stencilling, marquage par peinture FSD = Farbstrahlrucker, Colour jet printer, imprimante à jet d'encre de couleur LS = Längsscheblonierung, longitudinal stencilling, marquage longitudinal par peinture PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette PS = Prägestempel, die stamp, marquage par poinçonnage TS = Tintenstrahlkennzeichnung, ink jet spray marking, imprimante à jet d'encre

Verkäufer(in) / Salesman/ woman in charge / Personne chargée : Mr Seelbach, Tel.: 05254/81-4281, Fax: 4289

Wärmebehandlung / Heat treatment / Traitement thermique

Normalized: 890° C; Holding time: 5 min.

Dinslaken, 16.02.2006, TEL.: 02064.623-537 FAX: 02064.623-539

Abnahmebeauftragter

Inspection representative

Contrôleur

JAN FREERKS / WAG



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.

P039191 (0-506)

Purchaser: WFF FITTINGS AND FLANGES(CANADA) LTD.

INSPECTION CERTIFICATE



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

E-No. MA-578 Purchase Order No. 60468000 Job No.

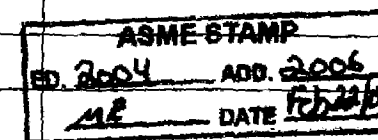
TO EN10204 3.1

D M Y Certificate No.
04/10/2006 T- 2006140682

| No. | MFG. No. (Heat Identification No.) | Specification for Material Made from Seamless Pipe | | | | Specification for Inspection | | | Visual Examination | Dimensional Inspection |
|-----|---------------------------------------|-------------------------------------------------------|--|----------|--|------------------------------|--|--|--------------------|------------------------|
| | | ASTM A234-05a/ASME SA234 WPB NACE MR0175-2003 | | | | ASME B16.9-2003 | | | Good | Good |
| | | Product & Size (T x I) | | Quantity | | Heat Treatment (Note 1) | | | | |
| 1 | 06E00065 | 45 EL WPB 8 S80 0 2 - 0 2 (10) | | 5 | | A | | | | |
| 2 | 04E00084 | 180 EL WPB 6 S80 0 0 2 (10) | | 10 | | A | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |

| Specification | Chemical Composition % | | | | | | | | | | | | Tension Test #2 | | | HARDNESS MAX |
|-------------------|------------------------|-------|-------|--------|--------|-------|-------|-------|-------|--------|--------|-------|-----------------|------|------|---------------|
| | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | V | Nb | C.E. | YS | TS | E | |
| | x 100 | x 100 | x 100 | x 1000 | x 1000 | x 100 | x 100 | x 100 | x 100 | x 1000 | x 1000 | x 100 | MPa. | | % | |
| Min. | | | | | | | | | | | | | | | | 197 HB : GOOD |
| Max. | | 10 | 29 | | | | | | | | | | 240 | 415 | 30 | |
| Material Heat No. | 30 | | 106 | 50 | 58 | 40 | 40 | 40 | 15 | 80 | 20 | | 655 | | | |
| 1 | J6L1373 | 18 | 19 | 69 | 13 | 7 | 1 | 2 | 4 | 0 | 0 | 0 | 30 | 268 | 457 | 45 |
| 2 | 75814 | ✓14 | ✓26 | ✓67 | ✓18 | ✓7 | ✓38 | ✓14 | ✓8 | ✓4 | ✓1 | 0 | 31 | ✓292 | ✓465 | ✓40 |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |

ASME STAMP
ED. 2004 ADD. 2006
ME DATE Feb 2006



(Note 1) A : Hot formed with final temperature between 620°C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S : Stress Relieving 675°Cx0.5 HR. Air Cooling

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Quality Assurance Manager
Thai Benkan Co., Ltd.

33A825

PO39191
(0-835)

Purchaser :
需要家名
TRANS-AM PIPING
PRODUCTS LTD.

INSPECTION CERTIFICATE

検査証明書

EN 10204/3.1

BENKAN BENEX Corporation

株式会社 ベネックス

KIRYU FACTORY

桐生工場

Date: 日付

Certificate No.

651 2-CHOME AIOL-CHO
KIRYU CITY GUNMA PREF, JAPAN

群馬県桐生市相生町2-651
TEL (0277) 54-8146

M D Y
月 日 年

証明書番号

BENEX No.
ベネックス番号

Order No.
注文番号

90-6167-15

CI-06-489

DEC. 22, 2006 1A90616715

| | | | | | | | | | | | | | | | | | |
|-------------------------------------------|------------------------------------------------------------|--------------------------------------|----------------------------|--------------------------------|-----------|----------|----------|----------|----------|-----------|-----------|--------------------------|--------------|--------------|-----------------------|---------------------------------|--|
| Job No. 工事番号 | Specification for Material 材料規格 | Specification for Inspection 検査規格 | Visual Examination 外観検査 | Dimensional Inspection 寸法検査 | | | | | | | | | | | | | |
| | ASTM A420/A420M-04 GR. WPL6 SATISFIES ASME SA420-LATEST | ASME B16.9-2003 | GOOD | GOOD | | | | | | | | | | | | | |
| MFG No. (Heat Identification No.) 製造番号 | Product & Size 品名及び寸法 | Quantity 数量 | | | | | | | | | | | | | | | |
| 616715 | SEAMLESS 180E(L) WPL6 4 XXS | | | | | | | | | | | | | | | | |
| Material Manufacturer 素材供給メーカー | Material Heat No. 製鋼番号 | HARDNESS TEST H.B.197MAX. | | | | | | | | | | | | | | | |
| NKK TUBES | 20920 | NACE MR-01-75 (2003) | | GOOD | | | | | | | | | | | | | |
| Specification | Chemical Composition 化学成分% | | | | | | | | | | | * 2 Tension Test 引張試験 | | | IMPACT TEST (J) | | |
| | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | CB | CEQ* | Y S | TS | E | | |
| 規定値 | x 100 | x 100 | x 100 | x 1000 | x 1000 | x 100 | x 100 | x 100 | x 100 | x 1000 | x 1000 | x 100 | XXXXX MPa | XXXXX MPa | XXX | 10X 10X2V AT -45 °C | |
| Min. 最小 | | 15 | 50 | | | | | | | | | | 240 | 415 | 30 | 370 374 370 | |
| Max. 最大 | 30 | 40 | 135 | 35 | 40 | 40 | 30 | 12 | 40 | 80 | 20 | 42 | | 585 | | AVE. 371 | |
| | ✓13 | ✓19 | ✓115 | ✓19 | ✓2 | ✓2 | ✓4 | ✓1 | ✓1 | ✓1 | 0 | 33 | ✓15 | ✓450 | ✓52 | SPEC. AVE. 17.6 MIN. 13.6 | |

CARBON CONTENT : 0.23% MAX.
NORMALIZING : 910°C X 0.4 HR. AIR COOLING.

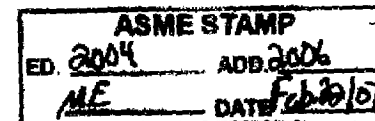
MADE FROM SEAMLESS PIPE

*CEQ = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

上記注文品は御指定の規格または仕様に従って製造され、その要求事項を満足していることを証明します。

* 1: The symbol "t" after wall thickness means mm as unit. 厚さ数値の後に示す "t" はmm単位を意味します。
* 2: YS=Yield strength 耐力 YP=Yield point 降伏点 TS=Tensile strength 引張り強さ E=Elongation 伸び



S. Masuda
Manager of Quality Assurance Section
品質保証課長

4" XXH LR 180 BW RETURN BEND
A420-WPL6

HEAT NUMBER : 616715
TRANS AM PIPING PRODUCTS - REV'D BY: *[Signature]*
Shipment/Seq #: S 6 - 1721 4

Purchaser : VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

INSPECTION CERTIFICATE

PO 36677



Thai Benkan Co., Ltd.
58 Soi Watkrumai, Bangkok, Prapadaeng,
Samutprakan, 10130 Thailand.

TO EN10204 3.1

E-No. Purchase Order No. Job No.

MA-456 45000383

D M Y Certificate No.

26/05/2006 T- 2006040194

| No. | MFG. No. (Heat Identification No.) | Specification for Material Made from Seamless Pipe | | Specification for Inspection | | Visual Examination | Dimensional Inspection |
|-----|---------------------------------------|----------------------------------------------------------------------------------------------------|-------------|------------------------------|----------|--------------------|------------------------|
| | | ASTM A234-05/ASME SA234 WPB NACE MR0175/ISO 15156-2003 "CSA Z245.11 Gr. 241 Cat I SOUR SERVICE" | | ASME B16.9-2003 | | Good | Good |
| | | Product & Size (T*1) | Quantity | Heat Treatment (Note 1) | Item No. | | |
| 1 | 05N00016 | 90 EL WPB 1 1/4 S80 | 10 | A | 3572 | | |
| 2 | 06B00012 | 90 EL WPB 1 1/2 S80 | 30 | A | 3576 | | |
| 3 | 06C00009 | 90 EL WPB 2 S80 | 2,403/3,000 | A | 3578 | | |
| 4 | 05P00054 | 90 EL WPB 8 S80 | 12/100 | A | 3583 | | |
| 5 | 06D00010 | 90 EL WPB 2 S80 | 352/3,000 | A | 3578 | | |

| Specification | | Chemical Composition % | | | | | | | | | | | Tension Test #2 | | | HARDNESS MAX | |
|-------------------|---------|------------------------|-------|-------|--------|--------|-------|-------|-------|-------|--------|--------|-----------------|------|------|--------------|---------------------------------------------------------------------------------------|
| | | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | V | Nb | C.E. | YS | TS | | E |
| Min. | | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 100 | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 100 | MPa. | | % | |
| Max. | | | 10 | 29 | | | | | | | | | | 240 | 415 | 30 | 197 HB : |
| Material Heat No. | | 23 | | 106 | 50 | 58 | 40 | 40 | 40 | 15 | 80 | 20 | 45 | | 655 | | GOOD |
| 1 | 71314 | 16 | 22 | 80 | 13 | 1 | 16 | 12 | 11 | 3 | 3 | 2 | 35 | 336 | 455 | 56 | <div>ASME STAMP</div> <div>NO. 2004 APP. 2006</div> <div>ME DATE Feb 6/07</div> |
| 2 | J5K8308 | 19 | 21 | 87 | 15 | 8 | 1 | 2 | 5 | 1 | 0 | 1 | 32 | 314 | 489 | 52 | |
| 3 | J5KC154 | ✓19 | ✓19 | ✓72 | ✓18 | ✓7 | ✓1 | ✓2 | ✓6 | ✓1 | ✓0 | ✓0 | 33 | ✓293 | ✓479 | ✓58 | |
| 4 | 41358 | 18 | 19 | 88 | 7 | 1 | 3 | 3 | 4 | 3 | 1 | 1 | 31 | 278 | 447 | 42 | |
| 5 | J5LC324 | 18 | 19 | 88 | 10 | 5 | 1 | 2 | 4 | 0 | 0 | 0 | 30 | 313 | 484 | 53 | |

(Note 1) A : Hot formed with final temperature between 620°C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S : Stress Relieving 675°Cx0.5 HR. Air Cooling

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form T7-6A-D

Quality Assurance Manager
Thai Benkan Co., Ltd.