

|                             |                                                                                   |                                                            |
|-----------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>NWP Industries Inc™</b>  |  | <b>Website: <a href="http://www.nwp.ca">www.nwp.ca</a></b> |
| PO Box 6280<br>4017-60 Ave. |                                                                                   | Phone: (403) 227-4100                                      |
| T4G 1S9                     |                                                                                   | Fax: (403) 227-4102                                        |

## ***QC & Instrumentation Documentation***

### ***Manual***

#### **3.0 MM BTU Line Heater**

**Prepared for:**  
**EnCana Corporation**  
**PO# 41979**

**Job Order # 08562-001**  
**Unit Serial # NWP-08562-001**  
**Coil Serial # NWP-08562-001-A**

|                             |                                                                                   |                                                            |
|-----------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------|
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| PO Box 6280<br>4017-60 Ave. |                                                                                   | Phone: (403) 227-4100                                      |
| T4G 1S9                     |                                                                                   | Fax: (403) 227-4102                                        |

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Taylor Relief Valve  
CCS Temperature Switch  
CCS Pressure Switch  
NWP Scrubber

### ***P&ID and BOM (Full Sized)***

### **Instrumentation Manual**

***For component replacement parts or technical questions, please contact NWP Industries Inc. at (403) 227-4100.***

|                             |                                                                                  |                                                            |
|-----------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------|
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| T4G 1S9                     |                                                                                  | Fax: (403) 227-4102                                        |

## **Equipment/Instrumentation Manual Contents**

1. ACL 5500
2. Alberta Y Strainer Model YS 800
3. ASCO Solenoid Valves
4. CCS Pressure Switch
5. CCS temperature Switch 6900
6. CM1 Century Needle Valve
7. Emico ball valves
8. Fisher 67CFR
9. Fisher 119 control valve
10. Fisher 627 pressure regulator
11. Fisher DVC 6030
12. Fossils pneumatic actuator
13. Headline 360A filters
14. Kimray HT-12PG temperature controller
15. Kimray separable sockets
16. Magnum needle valves
17. Nutron T3 floating ball valves
18. SOR 1510 Electric
19. Speed control valve NAS4000-NO2
20. Taylor 8200 Safety Relief Valve
21. Trend Thermometers 33
22. Wenco flame arrested burner
23. Wenco Thief Hatch
24. Wheatley swing check valve
25. Wika 233.53

|                             |                                                                                  |                                                            |
|-----------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------|
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| T4G 1S9                     |                                                                                  | Fax: (403) 227-4102                                        |

## Pre Start Checklist

Following is a Pre Start Checklist of items to be checked prior to package start up:

Ensure temporary-shipping support braces, plugs, blinds and flange protectors have been removed from package piping and vessels.

Ensure level controller dis-placer's have been installed. Ensure level controller connections have been made up correctly and tightened.

Install temperature and pressure indicators as required.

Chemical pumps are shipped dry, check / add oil as required. (Note: CVS Series 51 Chemical Injection Pumps are an oil free operation pump)

Ensure relief valves are installed on piping and vessels. (Shipped loose due to configuration of piping and vessels)

### **IMPORTANT**

Your NWP equipment is shipped from the plant with appropriate "CAUTION" signs attached. These advise of precautions to be taken to avoid potential danger and/or injury. They warn of one or more of the following potential hazards:

- Combustible materials
- Electrical shock
- Moving machinery
- Contents under pressure
- High temperature
- Chemicals present
- Burner start-up

**After the equipment is set up and before any process or utility is attached to it, inspect the equipment to be certain that no CAUTION tags are damaged or lost in transit. If this has occurred, or if you feel the equipment requires additional tags, immediately contact NWP Industries Inc. - Innisfail Branch at (403) 227-4100. We will gladly and promptly provide additional tags for equipment and answer any questions and/or problems that you have. SAFETY IS EVERYONE'S BUSINESS!**



|                                            |                                                                                  |                                               |
|--------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                               |
| Date of Issue: March 13, 2008              |                                                                                  | QCFO Final Inspection Release Certificate R00 |

## FINAL INSPECTION RELEASE CERTIFICATE

|                                                  |                        |  |
|--------------------------------------------------|------------------------|--|
| CUSTOMER: <b>Encana Corporation</b>              |                        |  |
| PRODUCT: <b>3.0 MM BTU/HR LINEHEATER PACKAGE</b> | WO#: <b>08562-001</b>  |  |
|                                                  | DATE: <b>Jan 11.13</b> |  |

### FINAL INSPECTION DOCUMENTATION

|                                                                                                                       |           |           |
|-----------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                          | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                  |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC.) |           |           |

|                                           |                          |
|-------------------------------------------|--------------------------|
| Q.C. FILE CLOSURE BY: <i>Kashie J. J.</i> | DATE: <b>Jan 11 2013</b> |
|-------------------------------------------|--------------------------|

### LOOSE COMPONENTS REQUIRED / PREPARED

|                                                                     |                             |
|---------------------------------------------------------------------|-----------------------------|
| ITEMS REQUIRED:                                                     | NO. OF BOXES OR PKGS. _____ |
| <b>30mm Lineheater</b><br>ADDITIONAL HARDWARE OR FASTENERS REQUIRED |                             |
| YES <input checked="" type="checkbox"/>                             | NO <input type="checkbox"/> |

### PREPARATION FOR SHIPMENT / STORAGE

|                                                    |                                                                     |
|----------------------------------------------------|---------------------------------------------------------------------|
| PREPARATION NEEDED / COMPLETED                     |                                                                     |
| <i>Ready to ship</i><br>S/N # <b>NWP-08562-001</b> |                                                                     |
| INVENTORY TAGS ATTACHED                            | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

### SHIPPING INSTRUCTIONS

|                                                     |                                                                      |
|-----------------------------------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED                              | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: _____ |                                                                      |
| PHONE: _____                                        | FAX: _____                                                           |
| RELEASED TO INVENTORY: <i>[Signature]</i>           |                                                                      |
| RELEASED TO CUSTOMER: <i>[Signature]</i>            | DATE: <b>Jan 11.13</b>                                               |

Jan 11. 13

# NWP INDUSTRIES INCORPORATED

## ADDED EQUIPMENT TRAVEL SHEET

APPROVED BY:

DATE:

NOV 22 2012

WO #: 08562-001

DESCRIPTION: 3.0 MM BTU/HR LINEHEATER PACKAGE

DRAWING #:

08562-1 REV 0; 08562 REV 0; 08562-2B REV 0

|                                                                          | REQ. | HOLD | EMPLOYEE INT. | DATE COMPLETE   | QC INIT.   | DATE             |
|--------------------------------------------------------------------------|------|------|---------------|-----------------|------------|------------------|
| QUOTATION REVIEWED                                                       | ✓    |      |               |                 |            |                  |
| WORK INSTRUCTIONS ISSUED                                                 | ✓    |      | <i>JA</i>     |                 | <i>RMS</i> | <i>NOV 23/12</i> |
| WORK INSTRUCTIONS REVIEWED                                               | ✓    | ✓    | <i>JA</i>     |                 | <i>RMS</i> | <i>NOV 23/12</i> |
| ABSA NOTIFIED FOR INSTALLATION INSPECTION                                | NA   |      |               |                 |            |                  |
| MATERIAL & PARTS RELEASED                                                | ✓    | ✓    |               |                 | <i>JA</i>  | <i>Jan 10/13</i> |
| HYDRO TEST PIPING                                                        | ✓    | ✓    |               |                 |            |                  |
| INSTRUMENTATION                                                          | ✓    |      | <i>JA</i>     | <i>Jan 9/13</i> | <i>JA</i>  | <i>Jan 10/13</i> |
| PNEUMATIC LEAK TEST                                                      | ✓    | ✓    | <i>JA</i>     | <i>Jan 9/13</i> | <i>JA</i>  | <i>Jan 10/13</i> |
| INSTRUMENTATION VALVES/FUNCTION TEST                                     | ✓    |      | <i>JA</i>     | <i>Jan 9/13</i> | <i>JA</i>  | <i>Jan 10/13</i> |
| VISUAL INSPECTION P & ID CHECKED                                         | ✓    | ✓    |               |                 | <i>JA</i>  | <i>Jan 10/13</i> |
| VISUAL INSPECTION OF BUILDING & RECEIVING OF P.O.                        | ✓    |      |               |                 | <i>JA</i>  | <i>Jan 10/13</i> |
| ANY CHANGE ORDERS VERIFIED COMPLETE                                      | ✓    | ✓    |               |                 | <i>JA</i>  | <i>Jan 11/13</i> |
| PREPARED FOR SHIPMENT & PACKAGE LOOSE ITEMS, TEST, CRATED AND DOCUMENTED | ✓    | ✓    |               |                 | <i>JA</i>  | <i>Jan 11/13</i> |
| VISUAL INSPECTION AFTER PAINT & RECEIVING OF P.O.                        | ✓    | ✓    |               |                 | <i>JA</i>  | <i>Jan 11/13</i> |
| PACKAGING / PRESERVATION REQUIREMENTS COMPLETE                           | ✓    | ✓    |               |                 | <i>JA</i>  | <i>Jan 11/13</i> |
| SERVICING REQUIREMENTS DEFINED AND APPROVED                              | NA   |      |               |                 | <i>JA</i>  | <i>Jan 11/13</i> |
| QC INSPECTION & FINAL RELEASE AND STICKER ATTACHED                       | ✓    |      |               |                 |            |                  |

ACCEPTED BY CUSTOMER

DATE



the pressure equipment safety authority

# PRESSURE PIPING CONSTRUCTION AND TEST DATA REPORT

In accordance with the provisions of the PESR Section 31(1)

Shop Construction ☒ Field Construction ☐Final Data Report ☒ Partial Data Report ☐ (from one ABSA- authorized Contractor to another ABSA- authorized Contractor).

Complete both sides of this Form

1. Constructed By: NWP Industries Inc. Owner's Job No: 08562-001  
 (Name of ABSA authorized primary contractor or subcontractor)  
4017 60<sup>th</sup> Ave, innisfail Alberta, T4G-1S9  
 (Address)

Certificate of Authorization Permit No. AQP-1253 Expiry Date: Novemebr 24<sup>th</sup>, 2014

2. Constructed For: EnCana Corporation Inc.  
 (Name of primary contractor if different from above)  
1313 10th Ave SW Calgary AB T3C 3P9  
 (Address)

Certificate of Authorization Permit No. AQP-NA Expiry Date: NA

(Required when the primary contractor undertakes some/all of the quality functions, e.g., NDE, PWHT, Tie-in, fabrication, hydro test, final assembly etc.)

3. Owner: EnCana Corporation Inc.  
 (Name and address)  
1313 10th Ave SW Calgary AB T3C 3P9  
 (Location of installation)

Certificate of Authorization Permit No. AQP- NA Expiry Date: NA

(Required when the owner undertakes some/all of the quality functions, e.g., NDE, PWHT, Tie-in, fabrication, hydro test, final assembly etc.)

4. Piping Design Alberta Registration No.: PP-NA  
 (Required if aggregate piping volume is over 0.5m<sup>3</sup>)

5. Design Responsibility: Owner ☐; Contractor ☒

6. WP No.: WP-1604.2; Company: NWP Industries Inc. Owner's WP No. (If used): WP-NA  
 (Alberta Registration No.) (Alberta Registration No.)  
 WPS No(s). used: NWP-4 rev: 4; Owner's WPS No(s). (If used): NA

7. Code: ASME B31.1 Non Boiler External Piping ☐; ASME B31.1 Boiler External Piping ☐;  
 B31.5 ☐; B31.9 ☐; CSA Z662 Steam Pipelines ☐;  
 ASME B31.3 ☒ - Service Category: Normal ☒; D ☐; M ☐; High Pressure ☐; Severe Cyclic Condition ☐  
 High Purity ☐

| Drawing No.<br>Rev. No.<br>Line No.       | Fluid<br>(Air/Stm.<br>Etc.) | Des.<br>Press.<br>PSI | Des.<br>Temp. °F<br>(Max. &<br>Min.) | Pressure<br>Test<br>PSI | Test<br>Medium | Pipe Mat'l<br>Spec. &<br>Grade | C.A.<br>Inches | Pipe NPS<br>&<br>Schedule                                         | Flange<br>Material &<br>Rating | PWHT/<br>Preheat<br>Temp. °F | NDE                                       |
|-------------------------------------------|-----------------------------|-----------------------|--------------------------------------|-------------------------|----------------|--------------------------------|----------------|-------------------------------------------------------------------|--------------------------------|------------------------------|-------------------------------------------|
| 08562-2A<br>rev. 0, 08562-<br>2B Rev 0    |                             |                       |                                      |                         |                |                                |                |                                                                   |                                |                              |                                           |
| PI-474-<br>NXHBD-<br>100,101,103<br>& 104 | Hydrocarbons                | 5171<br>150           | 200/-49<br>200/-49                   | 7757<br>165             | Water<br>Air   | SA-333-6<br>316SS              | 1 1/2<br>0     | 4" NXH<br>3.8"<br>0.035" WT                                       | SA-350-LF2<br>Cl. 2500<br>NA   | 1150/50<br>NA/NA             | 100% RT<br>Visual                         |
| 1-G-17-C-<br>80A BLD-304                  | Hydrocarbons                | 150<br>150            | 100/-20-<br>100/-49<br>100/-20       | 225<br>165              | Water<br>Air   | SA-106B &<br>SA-333-6<br>316SS | 1 1/2<br>0     | 1 1/2, 3 1/2" &<br>1" 80 N11<br>5" 0.035"<br>WT 3.8"<br>0.035" WT | NA<br>NA                       | NA<br>NA/NA                  | 10% RT<br>Random<br>Visual                |
| 1-G-17-C-<br>80A BLD-250                  | Hydrocarbons                | 150                   | 100/-20-<br>100/-49                  | 225                     | Water          | SA-333-6                       | 1 1/2          | 1 1/2" 80 N11                                                     | NA                             | NA                           | Visual                                    |
| 1-G-17-C-<br>80A BLD-<br>250 & 101        | Hydrocarbons                | 150                   | 100/-20-<br>100/-49                  | 225                     | Water          | SA-106B &<br>SA-333-6          | 1 1/2          | 1" and<br>1 1/2" 80 N11<br>N11 80                                 | NA                             | NA                           | 100% RT<br>PSA Lines<br>100% RT<br>Random |

|                                |              |     |                      |     |       |                       |      |                  |    |    |                  |
|--------------------------------|--------------|-----|----------------------|-----|-------|-----------------------|------|------------------|----|----|------------------|
| FG-1"-C-<br>80A/B/D<br>300/304 | Hydrocarbons | 150 | 100/-20-<br>100//+49 | 225 | Water | SA-106B &<br>SA-333-6 | 1/16 | 1" SCH<br>XII/80 | NA | NA | 10% RT<br>Random |
|--------------------------------|--------------|-----|----------------------|-----|-------|-----------------------|------|------------------|----|----|------------------|

Partial Data Reports certified by sub-contractors are listed below and attached to this Data Report ☐

| No. | Line No. | Spout No. | Dwg. No.<br>(with Rev. No.) | Sub-contractor<br>(Name) | AQP No.<br>(if from Alberta) | Expiry<br>(if from Alberta) |
|-----|----------|-----------|-----------------------------|--------------------------|------------------------------|-----------------------------|
|     |          |           |                             |                          |                              |                             |
|     |          |           |                             |                          |                              |                             |
|     |          |           |                             |                          |                              |                             |
|     |          |           |                             |                          |                              |                             |
|     |          |           |                             |                          |                              |                             |
|     |          |           |                             |                          |                              |                             |
|     |          |           |                             |                          |                              |                             |

Remarks: For partial data report provide information about the code work that was not completed by the subcontractor (e.g., hydrostatic test, PWHT etc.). For final data report provide information about the code work that was not completed by subcontractors and subsequently completed by the primary contractor (e.g., hydrostatic test of entire assembly, PWHT etc.)

Hardness Testing – Max 200 BHN 10% of welds.

Endorse certificate 'A' or 'B'

#### A. CERTIFICATE OF COMPLIANCE

Signed by the subcontractor when supplying this certificate as a

Partial Data Report

We certify that the statements in this Data Report are correct and that materials, construction and workmanship of the piping fabrication conform to the registered quality system and the applicable Piping code(s).

Date: \_\_\_\_\_  
Contractor

Print Authorized Representative's Name

Signature

This certificate is not valid unless it forms part of a Final Data Report signed by Primary Contractor

#### B. CERTIFICATE OF COMPLIANCE

Signed by the primary contractor when supplying this certificate as a

Final Data Report

We certify that the statements in this Data Report are correct and that piping job no. 08562-001

described in this Data Report was constructed in accordance with the Province of Alberta Safety Codes Act and Regulations, and applicable ASME Piping Code(s).

Date: Jan 9, 2013 NWP Industries Inc.

Contractor  
Colleen Tysoe  
Print Authorized Representative's Name Signature

### CERTIFICATE OF INSPECTION

I, the undersigned, employed by Caliper Inspection have verified that all required examination and testing has been completed, and inspected the piping described in this construction data report to the extent necessary to be satisfied that it conforms to all applicable examination requirements of the Code and of the engineering design, and state that, to the best of my knowledge and belief, the contractor has constructed this piping in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the piping described in this construction data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date: Jan 9, 2013

Date: \_\_\_\_\_

Nick Berry

Owner's Inspector Name (please print)

ABSA Safety Codes Officer (please print)  
(BOILER/EXTERNAL PIPING ONLY)

Nick Berry  
Owner's Inspector Signature:

ABSA Safety Codes Officer's Signature

|                                                         |                                                                                   |                    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: March 30 2012                            |                                                                                   | FORM_NDE_001       |
| Rev Status: 2.0                                         |                                                                                   | N.D.E Requirements |

### N.D.E Requirements

Client: Encana

JO# 08562-001

Project: Threaded Piping – 3.5 mm Lineheater

Date: 14/12/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

- ☐ X-Ray  
☒ Gamma Ray  
☐ Ultrasonics  
☐ Liquid Penetrant  
☐ Magnetic Particle  
☐ Accoustic Emission  
☐ Hardness test Max 200 BHN

- ☐ 100%  
☐ Full  
☐ 25%  
☒ 10%  
 Other(Define)  
☐ Spot

- ☐ ASME Section VIII-UW-51  
☐ ASME Section VIII-UW-52  
☐ Customer Specification  
☐ ASME B31.3 NFS  
 Other (Specify)  
☒ Customer Spec  
☐ CSA W47.1/W59

General Instructions:

Vessel S/N

P1 Material

Welder ID

Shell-T=

Pipe-T= 1" XH

Total Welds 15 x threaded shots as per attached drawings (first # is XT-1)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

Special Requirements:

Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

**NOTE:** Encana Spec for Welded Piping-acceptance is zero UC and Zero iP  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: Karim Bouslama

Date: 14/12/2012

Job / P.O. #: 08562-001      IRISNDT #: 256160      Date: 14-Dec-12  
Client: ENCANNA C/O NWP  
Location:      Innisfail, Alberta  
Item Inspected: Threaded Piping-3.5mm Lineheater      Material: CS

### 15 - Threaded Pipe Shots

Number of Radiation Barrier Warning Signs Returned: 2

Interpretation by:  
JEFF BRUCKSHAW (PED LEVEL 2) SNT-TC-1A      2

(Print) C.G.S.B.      2  
(Level)  
C.G.S.B. #      12007



(Signature)

Client Representative:

(Print) \_\_\_\_\_

I am in full agreement with report contents

(Sign)  \_\_\_\_\_







406 - 11979 40 Street SE  
Calgary, Alberta  
Canada T2Z 4M3  
Tel: 403 543-3232  
Fax: 403 543-3233

### SHIPPING RELEASE

DATE: 25 March 2013

CALIPER JOB #: 20355-100-L-01

SUPPLIER: NWP Industries Inc.

PURCHASE ORDER #: 41979

LOCATION: Innisfail, Alberta

SUB ORDER: \_\_\_\_\_

PROJECT: 13-05 Wellsite

DESCRIPTION: 3.0 MMBTU / HR Line heater Package. NWP Job # 08562-001

DEFICIENCIES REMAINING AT TIME OF SHIPPING:

- Silicon touch ups before shipping.

Shipped Loose Items: Packed inside enclosure.

Items Not Shipped: N/A

THIS IS A COMPLETE SHIPMENT ☒

THIS IS A PARTIAL SHIPMENT ☐

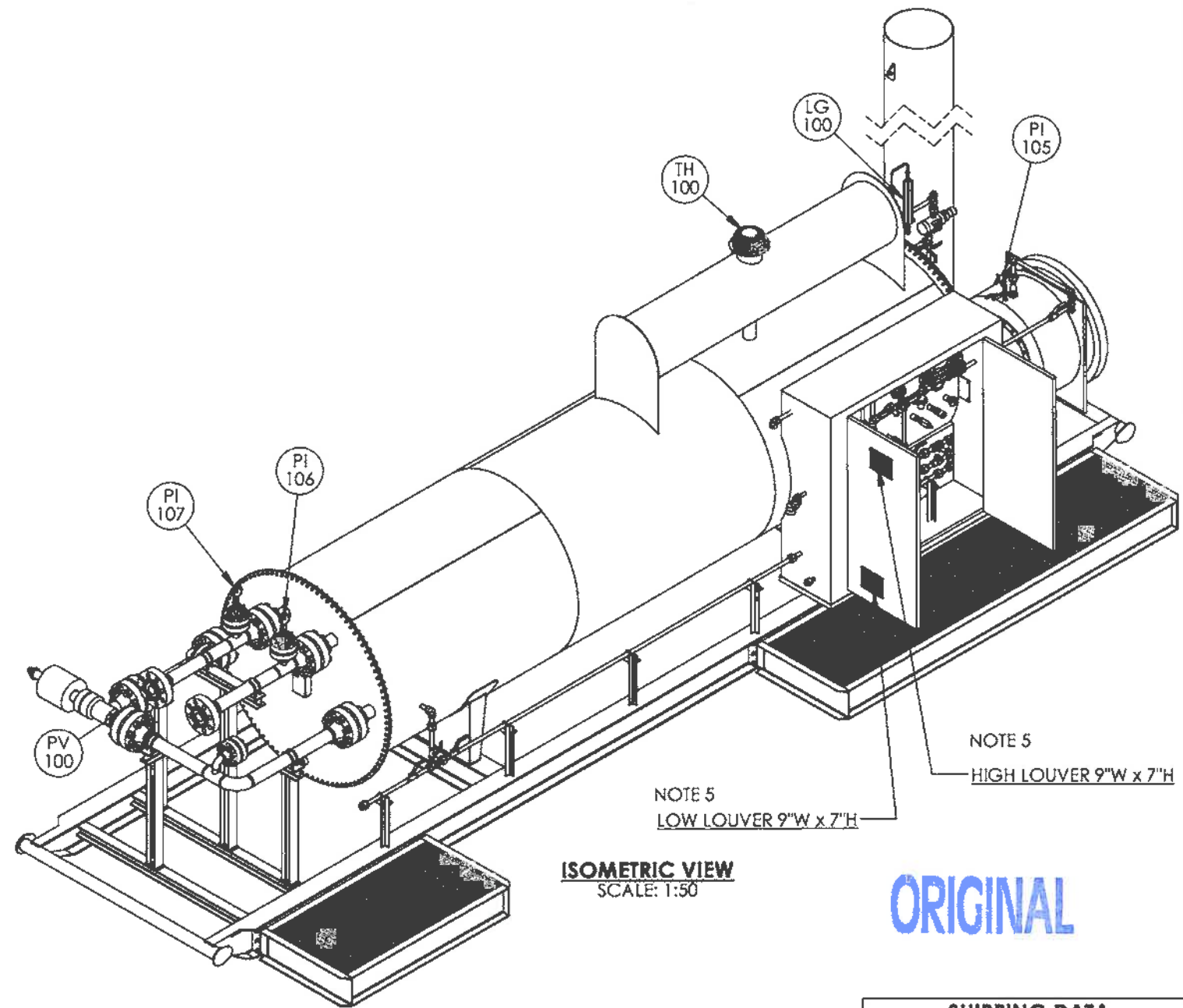
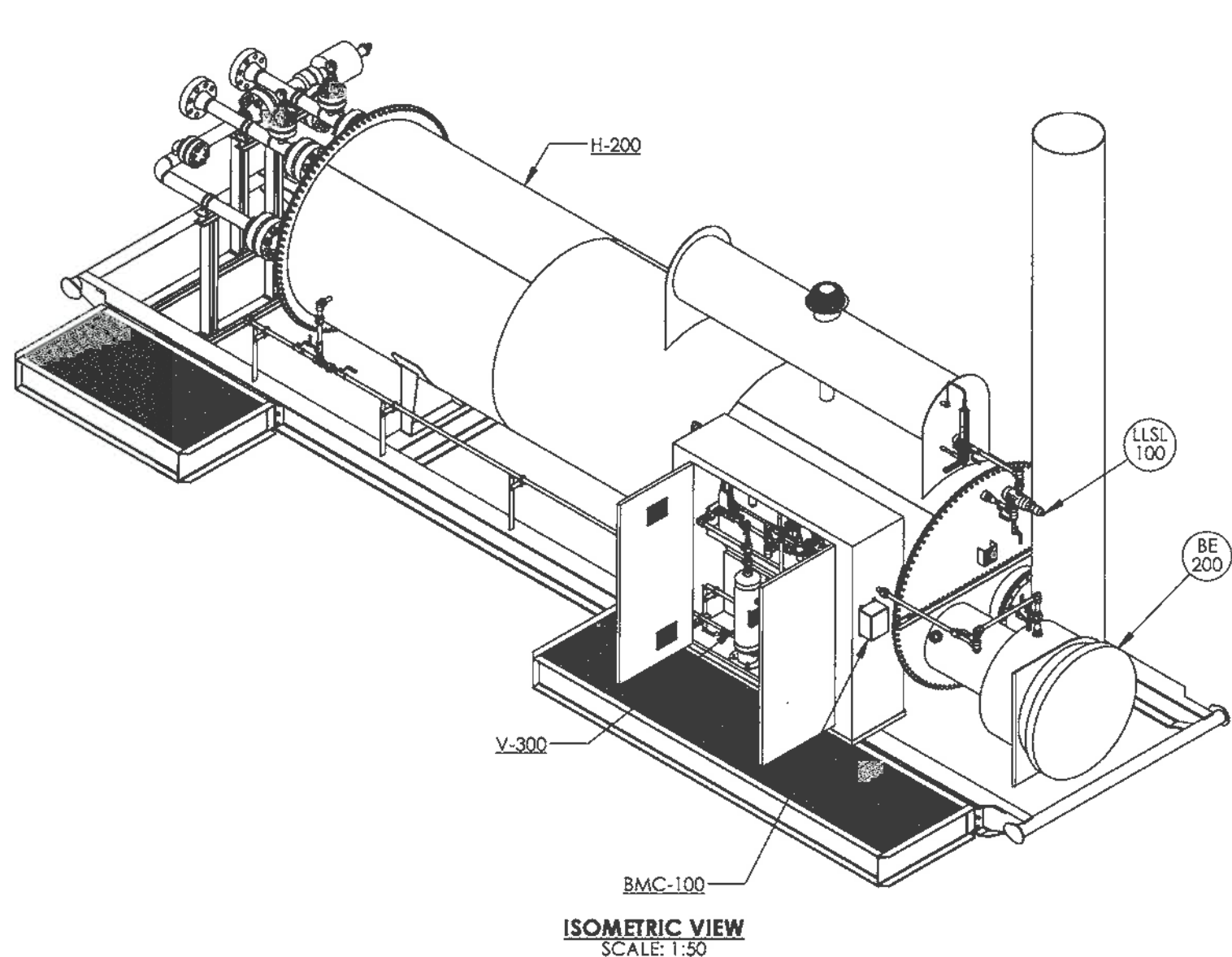
This does not relieve the supplier of any responsibility to ensure  
that the material or equipment meets all contractual requirements.

Signed: \_\_\_\_\_

Supplier

Signed: \_\_\_\_\_

Inspector



**ORIGINAL**

# **NOTES**

1. 24 oz. PNEUMATIC TEST REQUIRED ON SHELL & FIRETUBE.
2. PIPE SUPPORTS WHERE REQUIRED.
3. SHIP LOOSE ITEMS TO BE BOXED AND SEALED PRIOR TO SHIPMENT.
4. PLUG ALL OUTLETS PRIOR TO SHIPMENT.
5. LOUVERS MUST BE LOCATED AS SHOWN IN THIS ORIENTATION.
6. HEAT MEDIUM APPROXIMATE VOLUME IS 470 CU FT.

## **SHIPPING DATA**

|                |              |
|----------------|--------------|
| OVERALL HEIGHT | 11' - 6 7/8" |
| OVERALL LENGTH | 37' - 5"     |
| OVERALL WIDTH  | 10' - 5"     |
| APPROX. WEIGHT | 33200 BLS    |

|            |         |
|------------|---------|
| ENCANA PO# | P041978 |
| 08562-001  |         |
| 08562-002  |         |

|                    |                                                            |                   |           |    |     |     |                         |
|--------------------|------------------------------------------------------------|-------------------|-----------|----|-----|-----|-------------------------|
| LH-7224-BARE       | WELDED BATH ASSEMBLY                                       |                   |           |    |     |     |                         |
| LH-PH-7224-1       | PREHEAT PIPING                                             |                   |           |    |     |     |                         |
| LH-LAD-72          | LADDER ASSEMBLY                                            |                   |           |    |     |     |                         |
| LH-FIRSTK-24-2     | WELDED FIRETUBE / STACK ASSEMBLY                           |                   |           |    |     |     |                         |
| 08562-6/08562-11   | SKID, SHELL, LADDER, PREHEAT PIPING ASSE/ENCLOSURE DRAWING |                   |           |    |     |     |                         |
| 08562-3/08562-4    | SKID ASSEMBLY / COIL ASSEMBLY                              | 0                 | OCT 31/12 | VW |     |     | ISSUED FOR CONSTRUCTION |
| 08562-1/08562-2    | P&ID / PIPING ASSEMBLIES                                   | A                 | OCT 01/12 | VW |     |     | ISSUED FOR APPROVAL     |
| DOCUMENT NO.       | DESCRIPTION                                                | REV               | DATE      | BY | CHK | APP |                         |
| REFERENCE DRAWINGS |                                                            | DRAWING REVISIONS |           |    |     |     |                         |

**ISSUED FOR CONSTRUCTION**

SIGNED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
W.O.: \_\_\_\_\_  
S/N: \_\_\_\_\_



P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

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ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
C/W 4"-2500# RTJ SPLIT COILS  
GENERAL ARRANGEMENT

|                 |                   |                   |
|-----------------|-------------------|-------------------|
| DWN: VW         | CHK:              | APP:              |
| DATE: OCT 01/12 | DATE: NOV 02 2012 | DATE: NOV 02 2012 |
| SCALE: 1:50     | DWG: 08562        | REV: 0            |
| SHEET: 1 OF 3   |                   |                   |





**P&ID Bill of Materials****ORIGINAL****Job: 08562****Item:** Lineheater-08562-2B**Description:** 3.0 MM BTU/HR**Drawing:** 08562-1 Rev 0**Customer:** ENCANACORP

| <i>Part #</i> | <i>Qty</i>  | <i>Description/Notes</i>                                                                                                                                                                                                  |
|---------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BA-1</b>   | <b>2.00</b> | <b>BALL VALVE, EMICO, 1" NPT</b><br><br>VALVE, BALL, EMICO, 1" NPT, 720 SERIES, 3 PIECE BODY, 600 PSI WOG, FULL PORT, STAINLESS STEEL, LOCKING HANDLE, UL APPROVED EAY 730-01-05 REQUIRED FOR B149 COMPLIANCE             |
| <b>BA-2</b>   | <b>2.00</b> | <b>BALL VALVE, EMICO, 1/4" NPT</b><br><br>VALVE, BALL, EMICO, 1/4 IN. NPT, 720 SERIES, TWO PIECE BODY, 600 PSI, WOG, FULL PORT, STAINLESS STEEL, LOCKING HANDLE, UL APPROVED EAY 720-01-01 REQUIRED FOR B149 COMPLIANCE   |
| <b>BA-3</b>   | <b>3.00</b> | <b>Ball Valve,Nutron 3000 PSI 1/4" NPT</b><br><br>CS Body ,STD Trim,FP Lever Operated<br><br>MODEL - T3-R02S30BZ                                                                                                          |
| <b>BA-4</b>   | <b>5.00</b> | <b>Ball Valve,Nutron 3000 PSI 1/2" NPT</b><br><br>CS Body ,STD Trim,FP, Lever Operated<br><br>MODEL:T3-F05S30BZ                                                                                                           |
| <b>BA-5</b>   | <b>3.00</b> | <b>Ball Valve,Nutron 3000 PSI 1" NPT</b><br><br>CS Body ,STD Trim,RP, Lever Operated<br><br>Model: T3-R10S30BZ                                                                                                            |
| <b>BA-6</b>   | <b>1.00</b> | <b>Ball Valve,Nutron 3000 PSI 2" NPT</b><br><br>CS Body ,STD Trim,RP, Lever Operated<br><br>Model : T3-R20S30BZ                                                                                                           |
| <b>BA-7</b>   | <b>1.00</b> | <b>Ball Valve,Nutron 3000 PSI 3/4" NPT</b><br><br>CS Body ,STD Trim,RP, Lever Operated<br><br>MODEL:T3-R07S30BZ                                                                                                           |
| <b>BA-8</b>   | <b>3.00</b> | <b>Ball Valve,Nutron 3000 PSI 1" L/T</b><br><br>CS Body ,STD Trim,RP, Lever Operated, LOW TEMP<br><br>Model: T3-R10S30BLZ                                                                                                 |
| <b>BA-9</b>   | <b>1.00</b> | <b>Ball Valve,Nutron 3000 PSI 1/4" L/T</b><br><br>CS Body ,STD Trim,RP Lever Operated, LOW TEMP<br><br>MODEL - T3-R02S30BLZ                                                                                               |
| <b>BE-200</b> | <b>1.00</b> | <b>Flame Arrestor</b><br><br>Wenco Burner Model SB 42/24-24-NG<br>Firebox Flame Arrestor.<br>Two Piece O-type aluminum housing, 42" flame cell element, to fit a 24" fire tube.<br>Burner rated at 3,000,000 BTU/hr (net) |



NWP Industries Inc.  
**P&ID Bill of Materials**

ORIGINAL

**Job: 08562**  
**Item:** Lineheater-08562-2B  
**Description:** 3.0 MM BTU/HR

**Drawing:** 08562-1 Rev 0  
**Customer:** ENCANACORP

| Part #            | Qty         | Description/Notes                                                                                                                                                                                                                                                                                 |
|-------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |             | <i>No Internals<br/>FBP: blank<br/>Hinge: Left<br/>2" Main gas connection at 12:00<br/>1/2" Pilot gas connection at 12:00</i>                                                                                                                                                                     |
|                   |             | <i>Incendium Quote Q2910<br/>Oct 20/12</i>                                                                                                                                                                                                                                                        |
| <b>BE-200 INT</b> | <b>1.00</b> | <b>Burner Internals</b><br><br><i>(2) ACL-M2000 air/gas mixers<br/>(2) ACL-B20016 venturi barrels<br/>ACL-2X0N20024 High Efficiency burner nozzle<br/>Orifices sized for 3.0 MM BTU/HR natural gas.</i>                                                                                           |
|                   |             | <i>Price Confirmed Oct 20/12</i>                                                                                                                                                                                                                                                                  |
| <b>BMC-100</b>    | <b>1.00</b> | <b>Burner Control System Zirco</b><br><br><i>Burner Control System Zirco Safety-Light ACL 5500<br/>24 VDC (2.4Watt)<br/>Must Come with 3/16" Flame Rod</i>                                                                                                                                        |
| <b>CH-464593</b>  | <b>1.00</b> | <b>Swing Check Valve Wheatley 1" 2160</b><br><br><i>CH-1</i>                                                                                                                                                                                                                                      |
|                   |             | <i>Swing Check Valve Wheatley 1" 2160 RP Thrd Carbon<br/>Steel Body NACE Trim 820-013216-131P</i>                                                                                                                                                                                                 |
| <b>FG-100</b>     | <b>1.00</b> | <b>Headline Filter 360A-70</b><br><br><i>FILTER HEADLINE MODEL 360A-70 1/2 IN. NPT<br/>INLET/OUTLET 25<br/>MICRON CARTRIDGE 500 PSI MAWP</i>                                                                                                                                                      |
| <b>FG-101</b>     | <b>1.00</b> | <b>Headline Filter 370A</b><br><br><i>Filter Headline, Model 370A 1/2 IN. NPT<br/>C/W TWO 25-178-CC Activated Carbon Dessicant<br/>filters for adsorption of hydrocarbons and other<br/>organic vapors<br/>Maximum Pressure 500 PSI<br/>Maximum Temperature 120F<br/>Flow at 100 PSIG 40 SCFM</i> |
| <b>FY-100</b>     | <b>1.00</b> | <b>Valve Positioner</b><br><br><i>Fisher Fieldvue DVC 6030<br/>Pneumatic Valve Positioner C/W Hart Communications<br/>Control Signal: 4 -20 mA</i>                                                                                                                                                |
|                   |             | <i>SUPPLIED WITH PV-100</i>                                                                                                                                                                                                                                                                       |
| <b>HIC-100</b>    | <b>1.00</b> | <b>Conant Selector Valve</b><br><br><i>Model AL4TSL<br/>CONANT SELECTOR VALVE<br/>1/4" NPT aluminum construction</i>                                                                                                                                                                              |

NWP Industries Inc.  
**P&ID Bill of Materials**

ORIGINAL

**Job: 08562**  
**Item:** Lineheater-08562-2B  
**Description:** 3.0 MM BTU/HR

**Drawing:** 08562-1 Rev 0  
**Customer:** ENCANACORP

| <i>Part #</i>         | <i>Qty</i>  | <i>Description/Notes</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |             | 2 stack 4-way valve body<br>Provides for block & vent on actuator supply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>LG-100</b>         | <b>1.00</b> | <b>Level gauge</b><br><br>5700-22-CTRH-GS-ATM-AMB-NS<br>1/2" NPT, 22"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>LLSL-100</b>       | <b>1.00</b> | <b>LEVEL SWITCH ELECTRIC SOR</b><br><br>LEVEL SWITCH ELECTRIC SOR 2 IN. NPT 316SS BODY 316<br>SS FLOAT<br><br>MODEL 1510C-G2A-C-L9-ES-CSNCCVMC<br><br>Body Material 316 Stainless Steel<br><br>Process Connections 2" NPT(M)<br><br>Float Material 316SS (Standard) 1500 PSIG<br>-40 to 400°F<br><br>Switch Mechanisms - Low Power SPST 25 Watts Max<br><br>CSA Certified. Class 1, Group A, B, C, D;<br>Divisions 1 & 2. For relay option;<br>Class 1, Group C & D, Divisions 1 & 2.<br>Single seal ambient & process<br>temperatures -40°C to +125°C<br><br>Canadian Registration Number (CRN).<br><br>Manual check accessory<br>(uses Viton GLT o-rings)<br><br>NACE construction - MR 01-75 / ISO<br>15156 2003. Available only with<br>316SS materials of construction |
| <b>NE-100864</b>      | <b>5.00</b> | <b>Needle Valve MAGNUM 1/4" NPT 6000 M</b><br><br>NE-1<br><br>VALVE NEEDLE MAGNUM 1/4" NPT 6000 M X F STRAIGHT<br>316 SS BODY ,MODEL 3600B222                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>NE-2</b>           | <b>2.00</b> | <b>Needle valve,Century 316 SST NACE</b><br><br>Century Gauge Valve,3/4" MNPT x 1/2" FNPT,316<br>SST,NACE, Model CM11L1M64TCNTSSP100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>PI-101</b>         | <b>1.00</b> | <b>Pressure Gauge, WIKA, 0-200 PSI</b><br><br>PRESSURE GAUGE WIKA 2-1/2 IN. FACE, 1/4 IN. BOTTOM<br>MOUNT,DUAL SCALE, 0-200 PSI STAINLESS STEEL,<br>MODEL 233.53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>PI-102/103/104</b> | <b>3.00</b> | <b>Pressure Gauge, WIKA, 0-30 PSI</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



NWP Industries Inc.  
**P&ID Bill of Materials**

ORIGINAL

**Job: 08562**  
**Item: Lineheater-08562-2B**  
**Description: 3.0 MM BTU/HR**

**Drawing: 08562-1 Rev 0**  
**Customer: ENCANACORP**

| Part #                   | Qty         | Description/Notes                                                                                                                                                                                                                                                                        |
|--------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |             | PRESSURE GAUGE WIKA 2-1/2 IN. F 1/IN.0-30PSI,,DUAL SCALE, STAINLESS STEEL MODEL 233.53, CENTER BACK MOUNT                                                                                                                                                                                |
| <b>PI-105</b>            | <b>1.00</b> | <b>Pressure Gauge, WIKA, 0 -30 PSI</b><br><br>PRESSURE GAUGE WIKA 2-1/2 IN. F 1/4 IN. BOTTOM MOUNT,DUAL SCALE, 0 - 30 PSI STAINLESS STEEL,MODEL 233.53                                                                                                                                   |
| <b>PI-106</b>            | <b>1.00</b> | <b>Pressure Gauge, WIKA, 0 - 10000 PS</b><br><br>PRESSURE GAUGE WIKA 4 IN. F 1/2 IN. BOTTOM MOUNT, 0 - 10000 PSI STAINLESS STEEL, MODEL 233.53                                                                                                                                           |
| <b>PI-107</b>            | <b>1.00</b> | <b>Pressure Gauge, WIKA, 0 - 1500 PSI</b><br><br>PRESSURE GAUGE WIKA 4 IN. F 1/2 IN. BOTTOM MOUNT,DUAL SCALE, 0 - 1500 PSI STAINLESS STEEL, MODEL 233.53                                                                                                                                 |
| <b>PI-109/110</b>        | <b>2.00</b> | <b>Pressure Gauge, WIKA, 0 - 200 PSI</b><br><br>PRESSURE GAUGE WIKA 2-1/2 IN. F 1/4 IN. BOTTOM MOUNT,DUAL SCALE, 0 - 200 PSI STAINLESS STEEL,MODEL 233.53                                                                                                                                |
| <b>PRV-101</b>           | <b>1.00</b> | <b>Fisher 627 Regulator</b><br><br>REGULATOR PRESSURE FISHER 1 IN. NPT 627-489 5-20 PSI ADJUSTABLE RANGE, 1/2" ORIFICE STD TRIM TAPPED BONNET BODY 500 PSI MAWP                                                                                                                          |
| <b>PRV-67CF166338582</b> | <b>2.00</b> | <b>Regulator, Fisher, 0-125psi, 1/4"</b><br><br>PRV-103/107<br><br>Regulator, Fisher, 0-125psi, 1/4" NPT<br>Tapped-Bonnet, Type: 67 CFR, Adjustable spring range, 5 micron filter, 0-160 psi gauge, adjustable screw with closing cap, temperature range: -20 to 180 Deg F,Tapped Bonnet |
| <b>PSHH-100</b>          | <b>1.00</b> | <b>CCS Pressure switch</b><br><br>SWITCH, PRESSURE, CCS DUAL SNAP MODEL 6900GZE14, 1/2 IN. NPT, SS CONSTRUCTION, CSA APPROVED, SET @ 14 PSI RISING CALIBRATION CERTIFICATE IS REQUIRED                                                                                                   |
| <b>PSLL-100</b>          | <b>1.00</b> | <b>CCS pressure switch</b><br><br>SWITCH, PRESSURE, CCS DUAL SNAP MODEL 6900GZE12, 1/2 IN. NPT, SS CONSTRUCTION, CSA APPROVED, SET @ 4 PSI FALLING CALIBRATION CERTIFICATE IS REQUIRED                                                                                                   |
| <b>PSV-300</b>           | <b>1.00</b> | <b>Relief valve,Taylor 1"</b><br><br>RELIEF VALVE TAYLOR 1 IN.X 1-1/2" NPT SET AT 150 PSI NACE TRIM "F" ORIFICE.<br>INSP & TEST REPORT REQ'D UV STAMP REQ'D<br>STD SERVICE MODEL 8200 N,FIRE RATED<br>DESIGN BASIS THERMAL RELIEF                                                        |

NWP Industries Inc.  
**P&ID Bill of Materials**

ORIGINAL

**Job: 08562**  
**Item: Lineheater-08562-2B**  
**Description: 3.0 MM BTU/HR**

**Drawing: 08562-1 Rev 0**  
**Customer: ENCANACORP**

| <i>Part #</i>           | <i>Qty</i>  | <i>Description/Notes</i>                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SC-100</b>           | <b>1.00</b> | <b>SPEED CONTROL VALVE</b><br><br><i>SPEED CONTROL VALVE, MODEL NAS4000-NO2, 1/4" NPT, 150 PSI MAWP</i>                                                                                                                                                                                                                                                                         |
| <b>SCR-FLOAT-599928</b> | <b>1.00</b> | <b>SCRUBBER FLOAT 2" HLSD</b><br><br><i>HLSD-300</i><br><br><i>Must be flat disc type, ball type is not approved</i>                                                                                                                                                                                                                                                            |
| <b>SCR823-1</b>         | <b>1.00</b> | <b>Fuel Gas Scrubber 8-5/8" OD x 23"</b><br><br><i>V-300</i><br><br><i>Fuel Gas Scrubber 8-5/8" OD x 23" S/S 285 PSI, 1/8" C.A, -50 F - 100 F; Radiography None</i>                                                                                                                                                                                                             |
| <b>SOV/UY-100</b>       | <b>1.00</b> | <b>1" Fossil POC Valve</b><br><br><i>VFossil 1 IN. Gas Safety Shut-off Valve with Proof of Closure Limit Switch 24 volt power source c/w: SS valve, actuator, solenoid and quick dump valve. Approved as a safety shut-off valve assembly to CSA 6.5-2000 C/I (as required by CSA B149.3) Approved to temperatures as low as minus 45 degrees celsius using instrument air.</i> |
| <b>ST-1</b>             | <b>1.00</b> | <b>1" Y Strainer</b><br><br><i>Y STRAINER 1 IN. NPT C/W 1/32 IN. PERFORATION MODEL YS800 2000 PSI @ 100F</i>                                                                                                                                                                                                                                                                    |
| <b>SY-EF8314H301</b>    | <b>1.00</b> | <b>Solenoid ASCO 3-Way, 1/4" NPT SST</b><br><br><i>EY-100</i><br><br><i>Solenoid ASCO 3-Way, 1/4" NPT SST Body 24VDC Coil, CSA Approved Explosion Proof, 130 PSI Maximum Operating Pressure Differential, Low Power 0.55 Watts</i>                                                                                                                                              |
| <b>TC-100</b>           | <b>1.00</b> | <b>Kimray HT-12</b><br><br><i>Temperature Controller - KIMRAY, MODEL HT12, SIZE 1/2 IN. NPT 30DEG.F -400 DEG.F TEMP RANGE, 12" PROBE c/w SS THERMOWELL</i>                                                                                                                                                                                                                      |
| <b>TCV-100</b>          | <b>1.00</b> | <b>Control Valve,Fisher</b><br><br><i>VALVE, CONTROL, FISHER MODEL 119, 1" NPT, 9/16 IN PORT, 5-35 PSI RANGE, CAST IRON BODY, 150 PSI MAWP, STD SERVICE</i>                                                                                                                                                                                                                     |
| <b>TH8-16</b>           | <b>1.00</b> | <b>Thief Hatch Wenco 16 oz Pressure</b><br><br><i>TH-100</i><br><br><i>Thief Hatch Wenco 16 oz Pressure Spring 0.4 oz Vacuum Setting Sweet Service c/w Base Gasket</i>                                                                                                                                                                                                          |

NWP Industries Inc.  
**P&ID Bill of Materials**

ORIGINAL

**Job: 08562**  
**Item:** Lineheater-08562-2B  
**Description:** 3.0 MM BTU/HR

**Drawing:** 08562-1 Rev 0  
**Customer:** ENCANACORP

| <i>Part #</i>            | <i>Qty</i>  | <i>Description/Notes</i>                                                                                                                                                                                                                                                              |
|--------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TI-100</b>            | <b>1.00</b> | <b>Thermometer,3" dial</b><br><br>THERMOMETER 3" DIAL TREND 6" STEM -20 TO 120C / 0 TO 250F 304SS MODEL 33                                                                                                                                                                            |
| <b>TSHH-100</b>          | <b>1.00</b> | <b>Temperature Switch</b><br><br>TEMPERATURE SWITCH CCS DUAL SNAP SET @ 90 C RISING C/W FACTORY SET CERTIFICATE MODEL 6900TE 14                                                                                                                                                       |
| <b>TW-100/102</b>        | <b>2.00</b> | <b>SEPARABLE SOCKET</b><br><br>SEPARABLE SOCKET KIMRAY HCE 1 IN. SS-12SS                                                                                                                                                                                                              |
| <b>TW-101</b>            | <b>1.00</b> | <b>Thermowell, WIKA 1/2" X 1" X 6"</b><br><br>THERMOWELL WIKA 1/2" X 1" X 6" 304SS                                                                                                                                                                                                    |
| <b>UY-101</b>            | <b>1.00</b> | <b>ASCO Solenoid</b><br><br>Asco 24VDC Solenoid C/I Rated ANSI Z21.21 & CSA6.5 Certification 1/4" NPT 10.6 Watts P/N HV426716002.                                                                                                                                                     |
| <b>PRV-67CFR362SCSG3</b> | <b>2.00</b> | <b>Regulator, Fisher, 0-35psi, 1/4"</b><br><br>PRV-102/104<br><br>Regulator, Fisher, 0-35psi, 1/4" NPT<br>Tapped-Bonnet, Type: 67 CFR, Adjustable spring range, 5 micron filter, 0-35 psi gauge, adjustable screw with closing cap, temperature range: -20 to 180 Deg F,Tapped Bonnet |
| <b>PV/FY100</b>          | <b>1.00</b> | <b>CUSTOMER SUPPLIED</b><br><br>CUSTOMER SUPPLIED<br><br>Master Flo P3E choke,4In 2500RTJ x 4In 250RTJ Nace EE, Trim TC, TC outlet wear sleeve<br>34J8S-4J8MT72PBY2<br>Master Flo 100DA actuator,<br>PDA-100PDA100203AAC3E10IV<br>Fisher positioner DVC-6030                          |

**BMC-100**  
BURNER MANAGEMENT SYSTEM  
MODEL NO: ACL 5500  
24 VDC

**H-200**  
LINE HEATER  
MFR: NWP INDUSTRIES  
SIZE: #72" x 24" S/S  
DUTY: 3.0 MMBTU/HR

**PS-100**  
COIL A  
MFR: NWP INDUSTRIES  
MAWP: 5171 PSIG @ 200°F  
XRAY: 100%  
PWHT: YES  
CA: 1/16", CRN: P9407.231

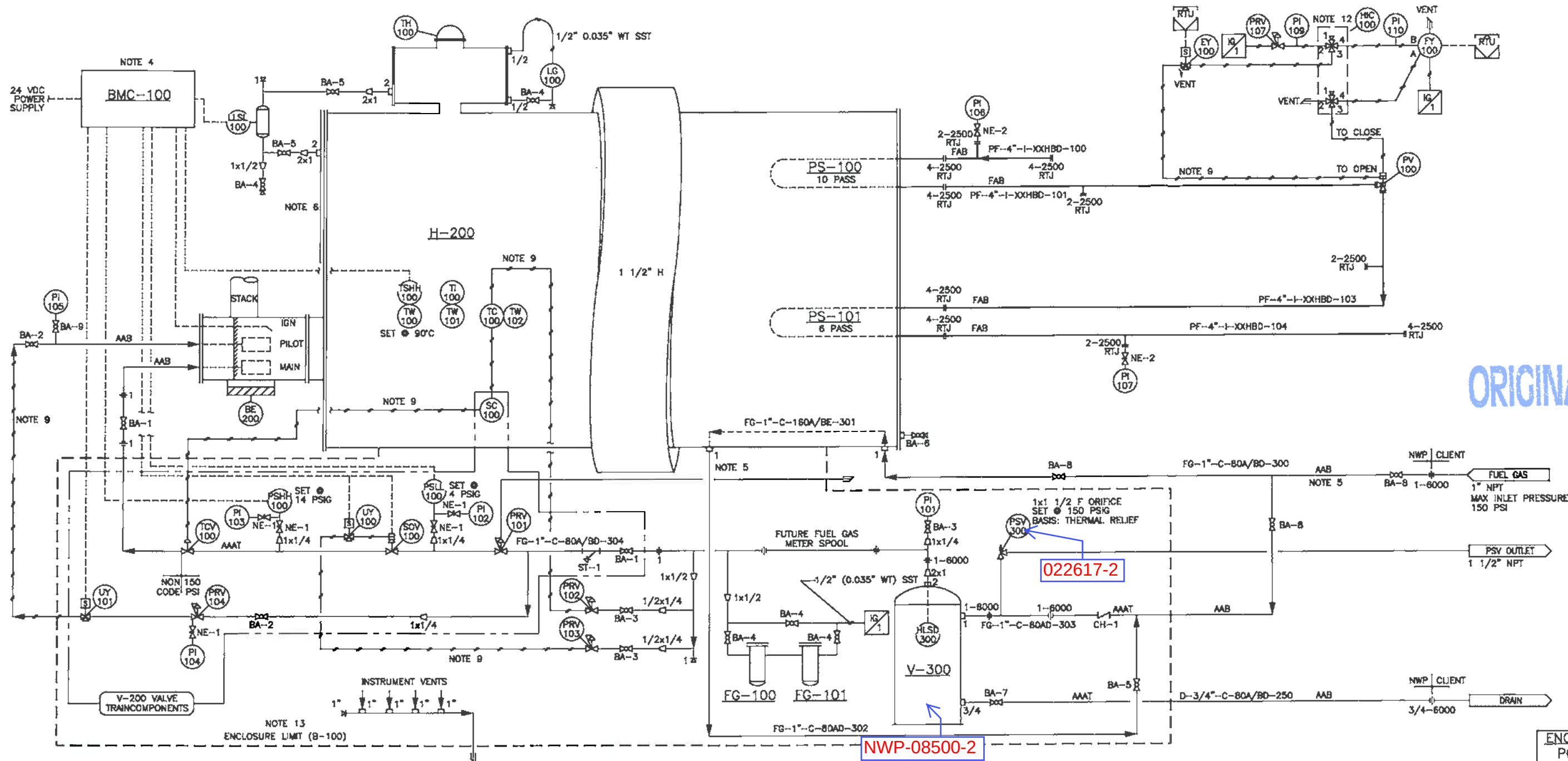
**PS-101**  
COIL B  
MFR: NWP INDUSTRIES  
MAWP: 5171 PSIG @ 200°F  
XRAY: 100%  
PWHT: YES  
CA: 1/16", CRN: P9407.231

**PV-100**  
CHOKE VALVE  
MFR: MASTERFLO  
MDL NO.: P3E  
SIZE: 4" 2500# INLET x 4" 2500# OUTLET  
TRIM: TUNGSTEN CARBIDE  
CUSTOMER SUPPLIED

**V-300**  
FUEL GAS SCRUBBER  
MFR: NWP INDUSTRIES  
SIZE: #8 5/8" x 23" S/S  
MAWP: 285 PSIG @ 100°F  
CRN: CH08319.213

**FG-100**  
FUEL GAS FILTER  
MFR: HEADLINE  
MODEL NO.: 380A-70C

**FG-101**  
FUEL GAS FILTER  
MFR: HEADLINE  
MODEL NO.: 370A



ORIGINAL

022617-2

NWP-08500-2

ENCANA PO#  
P041978  
08562-001  
08562-002

| DOCUMENT NO        | DESCRIPTION         | REV | DATE       | BY | CHK | APP |
|--------------------|---------------------|-----|------------|----|-----|-----|
| 08562-6            | BATH ASSEMBLY       |     |            |    |     |     |
| 08562-4            | COIL ASSEMBLY       |     |            |    |     |     |
| 08562-3            | SKID ASSEMBLY       |     |            |    |     |     |
| 08562-2B           | PIPING ASSEMBLY     |     |            |    |     |     |
| 08562-2A           | WELDED PIPING       | 0   | OCT 31/12  | EP |     |     |
| 08562              | GENERAL ARRANGEMENT | A   | SEPT 25/12 | EP |     |     |
| DRAWING REVISIONS  |                     |     |            |    |     |     |
| REFERENCE DRAWINGS |                     |     |            |    |     |     |

**ISSUED FOR CONSTRUCTION**  
SIGNED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
W.O.: 08562-001  
S.O.: \_\_\_\_\_  
ALL DIMENSIONS IN INCHES

**NWP INDUSTRIES INC.**  
Total oilfield supply.  
P.O. BOX 6280, INNISFAIR, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102  
THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST.

**ENCANA CORPORATION**  
LINEHEATER PACKAGE  
3.0 MMBTU/HR  
c/w 4" 2500# RTJ SPLIT COILS  
PIPING AND INSTRUMENTATION DIAGRAM  
DWN:EP CHK: APP:   
DATE: SEP 25/12 DATE: 21 2012 DATE: 20 2012  
SCALE: NTS SHEET: 1 OF 2 DWG: 08562-1 REV: 0

1. PIPE SUPPORTS WHERE REQUIRED.
2. SHIP LOOSE ITEMS TO BE BOXED AND SEALED PRIOR TO SHIPMENT.
3. PLUG ALL OUTLETS PRIOR TO SHIPMENT.
4. BNC WIRED BY NWP.
5. FUEL GAS SYSTEM DESIGNED FOR SWEET GAS ONLY.
6. REMOVABLE COIL INSPECTION PLATE.
7. 10% XRAY ON NWP MANUFACTURED THREADED PIPING, 100% XRAY ON PSY-300 CONNECTIONS.
8. 3/8" (0.065" WT) SS TUBING.
9. 3/8" (0.035" WT) SS TUBING.
10. AIR TEST TO 75 PSI AND ALL PNEUMATIC INSTRUMENTS TO BE FUNCTIONED TESTED.
11. BUILT TO FOLLOWING ENCANVA SPECS: PIPING MATERIAL -  
ECA-PVF-5-03 FEB 8, 2012
12. TUBING CONFIGURATION SHOWN IN AUTO POSITION.
13. PORTION OF LINEHEATER SHELL INSIDE INSTRUMENT ENCLOSURE NOT BE INSULATED.

|  |                                  |
|--|----------------------------------|
|  | MAJOR PROCESS LINE               |
|  | UTILITY LINE                     |
|  | BUILDING LIMITS                  |
|  | PROCESS/UTILITY TUBING LINE      |
|  | INSTRUMENT PNEUMATIC LINE        |
|  | INSTRUMENT CAPILLARY LINE        |
|  | ELECTRICAL DATALINK LINE         |
|  | ELECTRICAL CONNECTION LINE       |
|  | BALL VALVE                       |
|  | GLOBE VALVE                      |
|  | GATE VALVE                       |
|  | CHECK VALVE                      |
|  | PLUG VALVE                       |
|  | NEEDLE VALVE                     |
|  | STRAIGHT CHOKE VALVE             |
|  | SOCKET WELD VALVE                |
|  | RUPTURE VALVE                    |
|  | SOLENOID VALVE                   |
|  | BUTTERFLY VALVE                  |
|  | 3-WAY VALVE                      |
|  | 4-WAY VALVE                      |
|  | DIAPHRAGM ACTUATED CONTROL VALVE |
|  | PRESSURE REGULATOR               |
|  | 3-WAY DIAPHRAGM CONTROL VALVE    |

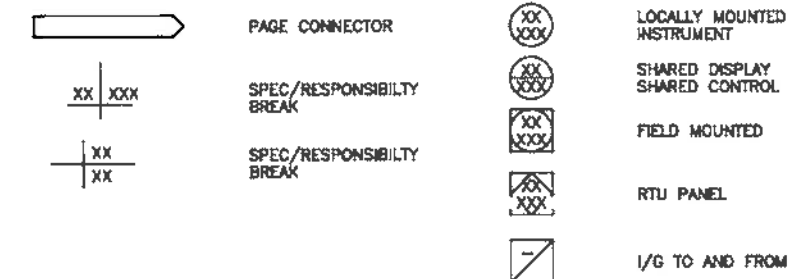
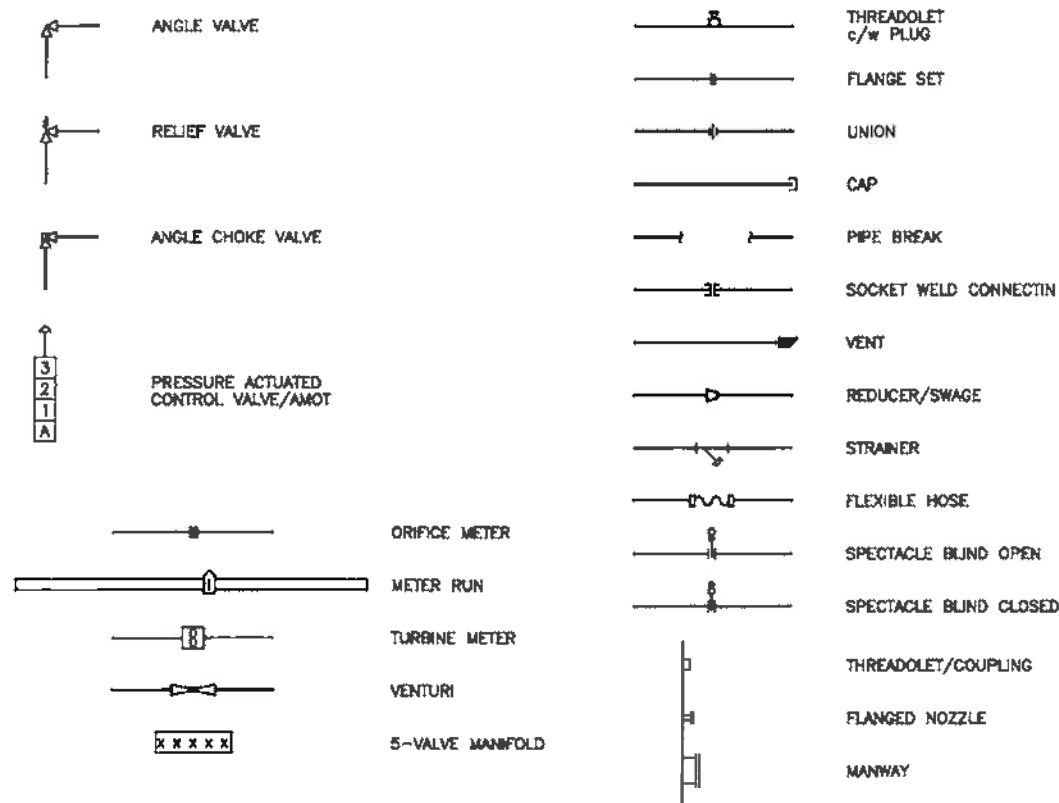
```

XX-X"-X-XXXX-XXX
|
CONDENSATE - C
DRAIN - D
FUEL GAS - FG
LIQUID - L
LEAN GLYCOL - LG
METHANOL - M
OIL - O
PROCESS FLUID - PF
PROCESS GAS - PG
PRESSURE RELIEF - PR
RICH GLYCOL - RG
WATER - W
NOMINAL PIPE SIZE
|
CLASS 2000 THREADED - A
CLASS 3000 THREADED - B
CLASS 8000 THREADED - C
150 ANSI FLANGED - D
300 ANSI FLANGED - E
600 ANSI FLANGED - F
900 ANSI FLANGED - G
1500 ANSI FLANGED - H
2500 ANSI FLANGED - I
|
100-198 MAJOR PROCESS FLUIDS
200-248 MINOR PROCESS FLUIDS
250-298 RELIEF, DRAINS
300-398 UTILITY VAPOURS
400-498 UTILITY LIQUIDS
|
INSTRUMENT TUBING
A - GALVANIZED TUBING w/ CS FITTINGS
B - 304 SS TUBING w/ CS FITTINGS
C - 304 SS TUBING w/ 316 SS FITTINGS
D - 316 SS TUBING w/ 316 SS FITTINGS
E - NOT APPLICABLE
|
PIPE GRADE
A - SA-106B
B - SA-333 GR.8
|
PIPE SCHEDULE

```

XX-X  
 BALL VALVE - BA  
 NEEDLE VALVE - NE  
 GLOBE VALVE - GL  
 CHECK VALVE - CH  
 GATE VALVE - GA  
 BUTTERFLY VALVE - BU

START WITH 1



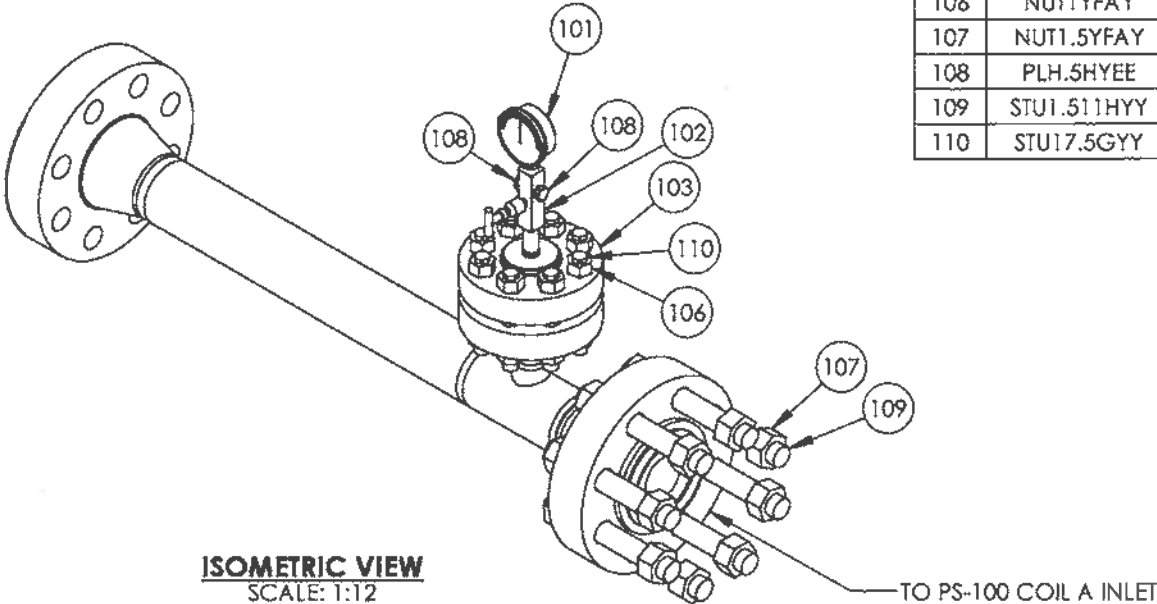
ORIGINAL

|            |
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| PO41978    |
| 08562-001  |
| 08562-002  |

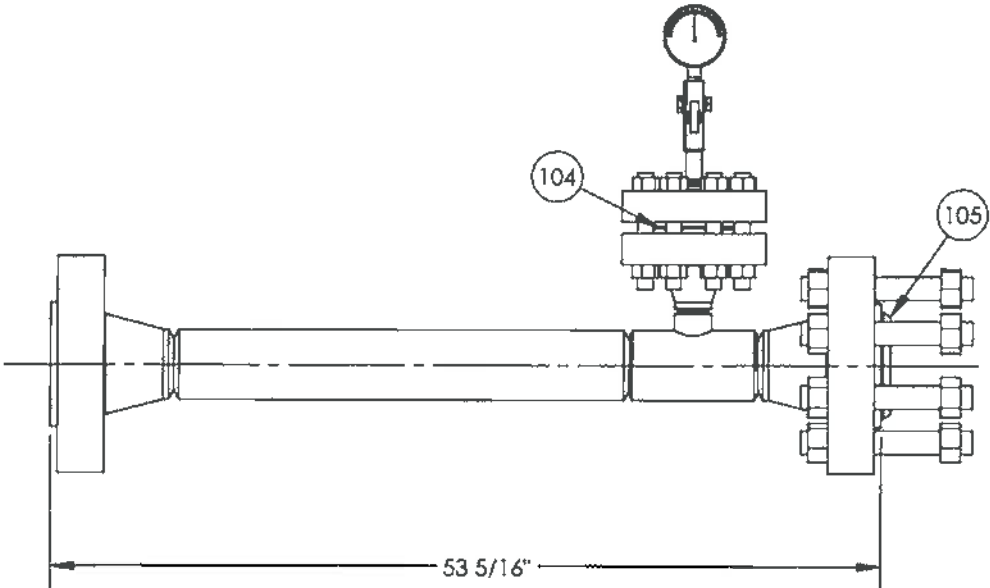
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|--------------------|---------------------|-------------------|------------|----|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 08562-6            | BATH ASSEMBLY       |                   |            |    |                                                                                      |                                                                                       |                         | <div>ISSUED<br/>FOR<br/>CONSTRUCTION</div> <div>SIGNED: _____</div> <div>DATE: _____</div> <div>W.O.: 08562-001</div> <div>S.O.: _____</div> <div>ALL DIMENSIONS IN INCHES</div> | <div><br/>NWP<br/>INDUSTRIES INC.<br/>Total oilfield supply.<br/>P.O. BOX 6280, INNISFAIR, AB T4G 1S9<br/>PH: (403) 227-4100 FAX: (403) 227-4102<br/>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND<br/>MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS<br/>DRAWING MUST BE RETURNED UPON REQUEST.</div> | ENCANA CORPORATION<br>LINEHEATER PACKAGE<br>3.0 MMBTU/HR<br>c/w 4" 2500# RTJ SPLIT COILS<br>PIPING AND INSTRUMENTATION DIAGRAM |                                                                                            |                                                                                            |
| 08562-4            | COIL ASSEMBLY       |                   |            |    |                                                                                      |                                                                                       |                         |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   | DWN: EP                                                                                                                        | CHK:  | APP:  |
| 08562-3            | SKID ASSEMBLY       |                   |            |    |                                                                                      |                                                                                       |                         |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   | DATE: SEP 25/12                                                                                                                | DATE: NOV 21 2012                                                                          | DATE: NOV 20 2012                                                                          |
| 08562-2B           | PIPING ASSEMBLY     |                   |            |    |                                                                                      |                                                                                       |                         |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   | SCALE: NTS                                                                                                                     | DWG: 08562-1                                                                               | REV: 0                                                                                     |
| 08562-2A           | WELDED PIPING       | 0                 | OCT 31/12  | EP |  |  | ISSUED FOR CONSTRUCTION |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                            |                                                                                            |
| 08562              | GENERAL ARRANGEMENT | A                 | SEPT 25/12 | EP | -                                                                                    | -                                                                                     | ISSUED FOR APPROVAL     |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                            |                                                                                            |
| DOCUMENT NO.       | DESCRIPTION         | REV               | DATE       | BY | CHK                                                                                  | APP                                                                                   |                         |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                            |                                                                                            |
| REFERENCE DRAWINGS |                     | DRAWING REVISIONS |            |    |                                                                                      |                                                                                       |                         |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                            |                                                                                            |



| ITEM | PART #       | DESCRIPTION                                                     | MTR # | LENGTH | QTY. |
|------|--------------|-----------------------------------------------------------------|-------|--------|------|
| 101  | 233.54-10000 | PRESSURE GAUGE WIKA 0-10000 PSI MODEL 233.54 SS                 |       |        | 1    |
| 102  | BUY          | VALVE NEEDLE CENTURY 3/4" M x 1/2" F NPT<br>CM1111M64TCN1SSP100 |       |        | 1    |
| 103  | FLH2.75FYBF  | FLANGE HUBBED 2" 2500 ANSI TAPPED 3/4" NPT RTJ SA350LF2-CL1     |       |        | 1    |
| 104  | GASR26YYYD   | GASKET 2" 2500 ANSI R26 RTJ MILD STEEL                          |       |        | 1    |
| 105  | GASR38YYYD   | GASKET 4" 2500 ANSI R38 RTJ MILD STEEL                          |       |        | 1    |
| 106  | NUT1YFAY     | NUT 1" 2HM HEX                                                  |       |        | 16   |
| 107  | NUT1.5YFAY   | NUT 1 1/2" 2HM HEX                                              |       |        | 16   |
| 108  | PLH.5HYEE    | PLUG HEX 1/2" 6M THRD SA105N                                    |       |        | 2    |
| 109  | STU1.511HY   | STUD 1 1/2" x 11" LG B7M                                        |       |        | 8    |
| 110  | STU17.5GY    | STUD 1" x 7 1/2" LG B7M                                         |       |        | 8    |



ISOMETRIC VIEW  
SCALE: 1:12



FRONT VIEW  
SCALE: 1:12

ORIGINAL

- NOTES**
1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  2. DIMENSIONS INCLUDE  $1/8"$  ROOT GAP.
  3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
  4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY. SHOP TO ADJUST PIPE LENGTHS AS REQUIRED.
  5. HARDNESS TESTING - MAX 200 BNH 10%.

| DESIGN DATA                         |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | PF-4"-XXHBD-100                  |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200°F                            |
| MINIMUM DESIGN TEMPERATURE:         | -49°F                            |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150°F TO 1175°F FOR 1HR MIN.    |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

|                    |                                    |                   |           |    |     |                         |  |
|--------------------|------------------------------------|-------------------|-----------|----|-----|-------------------------|--|
|                    |                                    |                   |           |    |     | <b>AS BUILT</b>         |  |
| 08562-6            | BATH ASSEMBLY                      |                   |           |    |     |                         |  |
| 08562-3            | SKID ASSEMBLY                      |                   |           |    |     |                         |  |
| 08562-2A           | WELDED PIPING                      |                   |           |    |     |                         |  |
| 08562-1            | PIPING AND INSTRUMENTATION DIAGRAM |                   |           |    |     |                         |  |
| 08562              | GENERAL ARRANGEMENT                | 0                 | OCT 05/12 | VW | 9   | ISSUED FOR CONSTRUCTION |  |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE      | BY | CHK | APP                     |  |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |           |    |     |                         |  |

|                                |           |
|--------------------------------|-----------|
| <b>ISSUED FOR CONSTRUCTION</b> |           |
| SIGNED:                        |           |
| DATE:                          |           |
| W.O.:                          | 08562-001 |
| S/N:                           |           |
| ALL DIMENSIONS IN INCHES       |           |

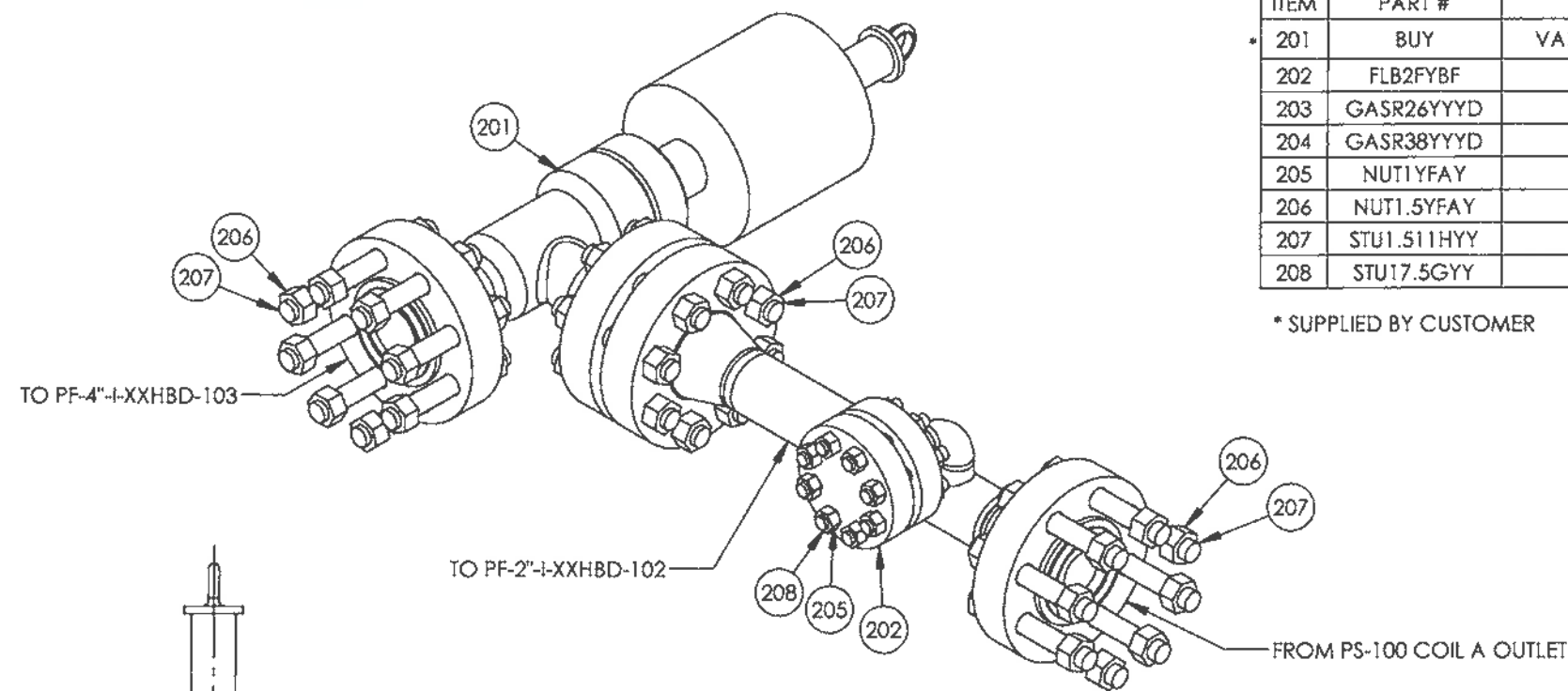


**NWP**  
INDUSTRIES INC.  
Total oilfield supply.

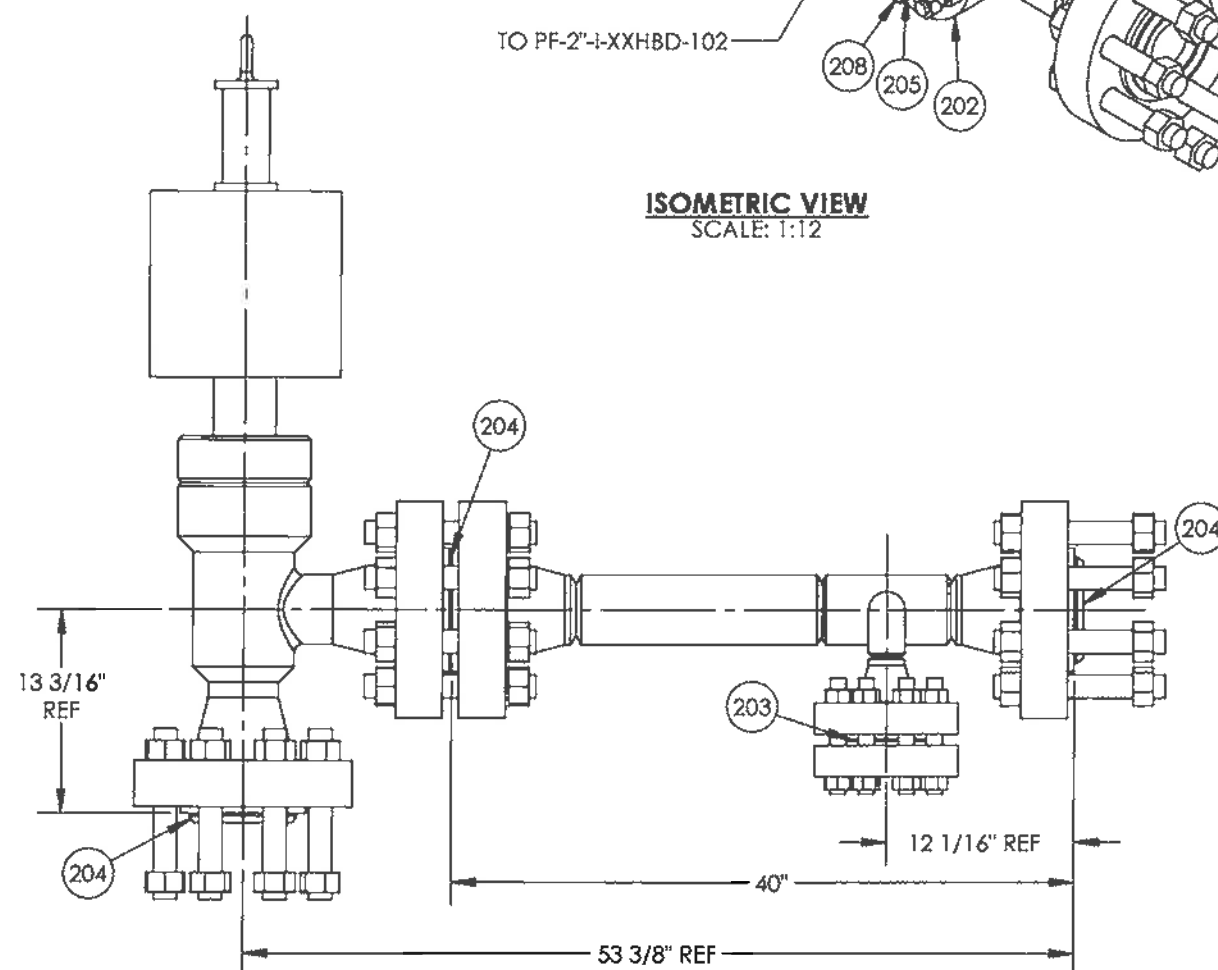
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PH: (403) 227-4100 FAX: (403) 227-4102

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|                                                                                                          |                   |                   |        |
|----------------------------------------------------------------------------------------------------------|-------------------|-------------------|--------|
| ENCANA CORPORATION<br>LINEHEATER PACKAGE<br>3.0 MMBTU<br>c/w 4"-2500# RTJ SPLIT COILS<br>PIPING ASSEMBLY |                   |                   |        |
| DWN: VW                                                                                                  | CHK: 9            | APP: 9            |        |
| DATE: OCT 05/12                                                                                          | DATE: NOV 20 2012 | DATE: NOV 19 2012 |        |
| SCALE: 1:12                                                                                              | DWG: 08562-2B     | SHEET: 1 OF 8     | REV: 0 |



**ISOMETRIC VIEW**  
SCALE: 1:12



**PLAN VIEW**  
SCALE: 1:12

| ITEM | PART #     | DESCRIPTION                                                                  | MTR # | LENGTH | QTY. |
|------|------------|------------------------------------------------------------------------------|-------|--------|------|
| 201  | BUY        | VALVE CHOKE MASTERFLO P3E 4" x 4" 2500 ANSI RTJ w/ MASTERFLO PDA100 ACTUATOR |       |        | 1    |
| 202  | FLB2FYBF   | Blind 2" 2500 ANSI RTJ SA350LF2-CL1                                          |       |        | 1    |
| 203  | GASR26YYYD | GASKET 2" 2500 ANSI R26 RTJ MILD STEEL                                       |       |        | 1    |
| 204  | GASR38YYYD | GASKET 4" 2500 ANSI R38 RTJ MILD STEEL                                       |       |        | 3    |
| 205  | NUT1YFAY   | NUT 1" 2HM HEX                                                               |       |        | 16   |
| 206  | NUT1.5YFAY | NUT 1 1/2" 2HM HEX                                                           |       |        | 48   |
| 207  | STU1.511HY | STUD 1 1/2" x 11" LG B7M                                                     |       |        | 24   |
| 208  | STU17.5GY  | STUD 1" x 7 1/2" LG B7M                                                      |       |        | 8    |

\* SUPPLIED BY CUSTOMER

ORIGINAL

# **NOTES**

1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8$ " UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS INCLUDE  $1/8$ " ROOT GAP.
3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY. SHOP TO ADJUST PIPE LENGTHS AS REQUIRED.
5. HARDNESS TESTING - MAX 200 BNH 10%.

## **DESIGN DATA**

|                                     |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | PF-4"-I-XXHBD-101                |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200°F                            |
| MINIMUM DESIGN TEMPERATURE:         | -49°F                            |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150°F TO 1175°F FOR 1HR MIN.    |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

|                    |                                    |                   |           |    |                         |
|--------------------|------------------------------------|-------------------|-----------|----|-------------------------|
| AS BUILT           |                                    |                   |           |    |                         |
| 08562-6            | BATH ASSEMBLY                      |                   |           |    |                         |
| 08562-3            | SKID ASSEMBLY                      |                   |           |    |                         |
| 08562-2A           | WELDED PIPING                      |                   |           |    |                         |
| 08562-1            | PIPING AND INSTRUMENTATION DIAGRAM |                   |           |    |                         |
| 08562              | GENERAL ARRANGEMENT                | 0                 | OCT 05/12 | VW | ISSUED FOR CONSTRUCTION |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE      | BY | CHK APP                 |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |           |    |                         |

ISSUED FOR  
CONSTRUCTION

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

W.O.: 08562-001

S/N: \_\_\_\_\_

ALL DIMENSIONS IN INCHES



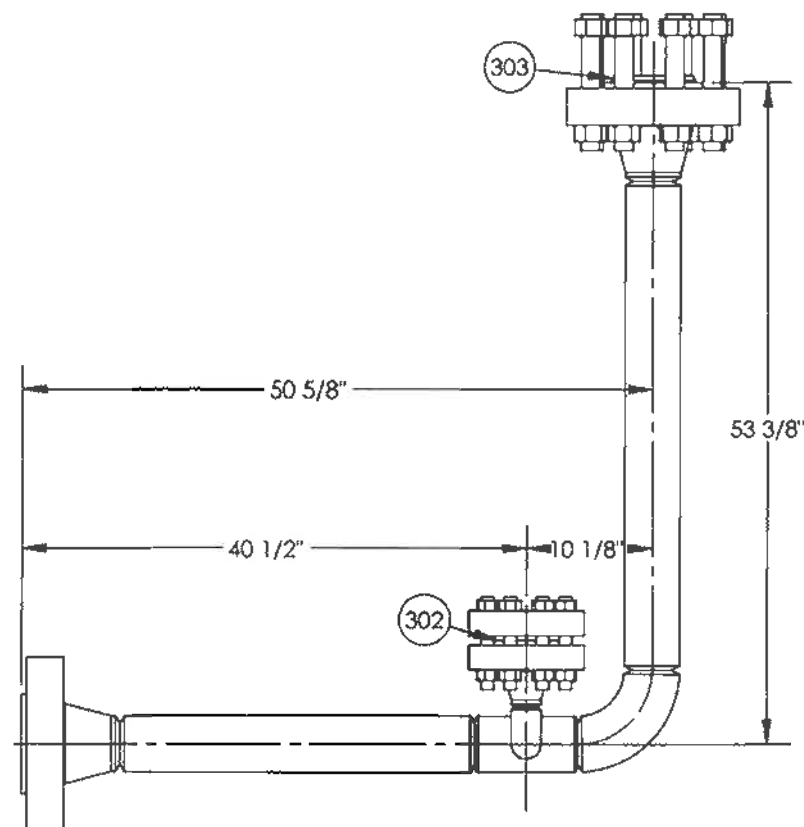
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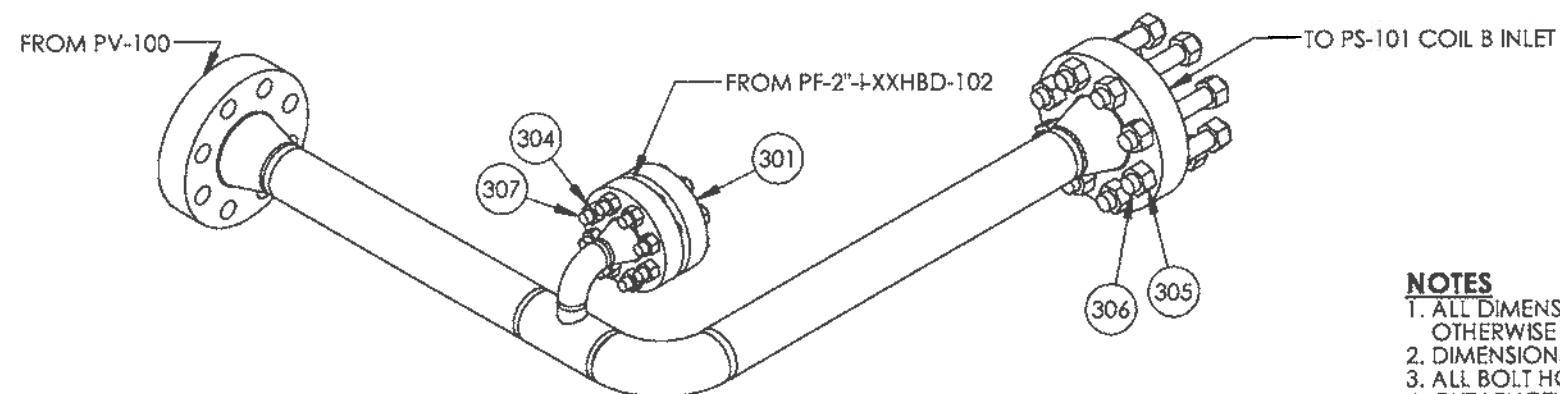
ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
c/w 4"-2500# RTJ SPLIT COILS  
PIPING ASSEMBLY

|                 |                         |                         |
|-----------------|-------------------------|-------------------------|
| DWN: VW         | CHK: <i>[Signature]</i> | APP: <i>[Signature]</i> |
| DATE: OCT 05/12 | DATE: NOV 20 2012       | DATE: NOV 19 2012       |
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| SHEET: 2 OF 8   |                         |                         |

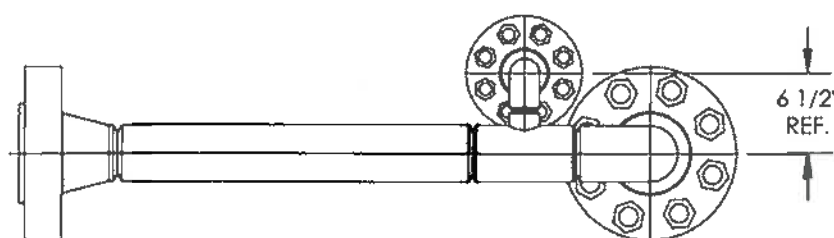
| ITEM | PART #      | DESCRIPTION                            | MTR # | LENGTH | QTY. |
|------|-------------|----------------------------------------|-------|--------|------|
| 301  | FLB2FYBF    | Blind 2" 2500 ANSI RTJ SA350LF2-CL1    |       |        | 1    |
| 302  | GASR26YYD   | GASKET 2" 2500 ANSI R26 RTJ MILD STEEL |       |        | 1    |
| 303  | GASR38YYD   | GASKET 4" 2500 ANSI R38 RTJ MILD STEEL |       |        | 1    |
| 304  | NUT1.YFAY   | NUT 1" 2HM HEX                         |       |        | 16   |
| 305  | NUT1.5YFAY  | NUT 1 1/2" 2HM HEX                     |       |        | 16   |
| 306  | STU1.511HYY | STUD 1 1/2" x 11" LG B7M               |       |        | 8    |
| 307  | STU17.5GY   | STUD 1" x 7 1/2" LG B7M                |       |        | 8    |



**PLAN VIEW**  
SCALE: 1:15



**ISOMETRIC VIEW**  
SCALE: 1:15



**FRONT VIEW**  
SCALE: 1:15

**ORIGINAL**

**NOTES**

1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8$ " UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS INCLUDE  $1/8$ " ROOT GAP.
3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY. SHOP TO ADJUST PIPE LENGTHS AS REQUIRED.
5. HARDNESS TESTING - MAX 200 BNH 10%.

**DESIGN DATA**

|                                     |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | PF-4'-+XXHBD-103                 |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200 °F                           |
| MINIMUM DESIGN TEMPERATURE:         | -49 °F                           |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150 °F TO 1175 °F FOR 1HR MIN.  |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

|                    |                                    |                   |           |    |     |
|--------------------|------------------------------------|-------------------|-----------|----|-----|
| <b>AS BUILT</b>    |                                    |                   |           |    |     |
| 08562-6            | BATH ASSEMBLY                      |                   |           |    |     |
| 08562-3            | SKID ASSEMBLY                      |                   |           |    |     |
| 08562-2A           | WELDED PIPING                      |                   |           |    |     |
| 08562-1            | PIPING AND INSTRUMENTATION DIAGRAM |                   |           |    |     |
| 08562              | GENERAL ARRANGEMENT                | 0                 | OCT 05/12 | VW | APP |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE      | BY | CHK |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |           |    |     |

**ISSUED FOR CONSTRUCTION**

SIGNED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
W.O.: **08562-001**  
S/N: \_\_\_\_\_  
ALL DIMENSIONS IN INCHES



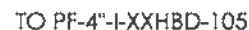
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ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
c/w 4"-2500# RTJ SPLIT COILS  
PIPING ASSEMBLY

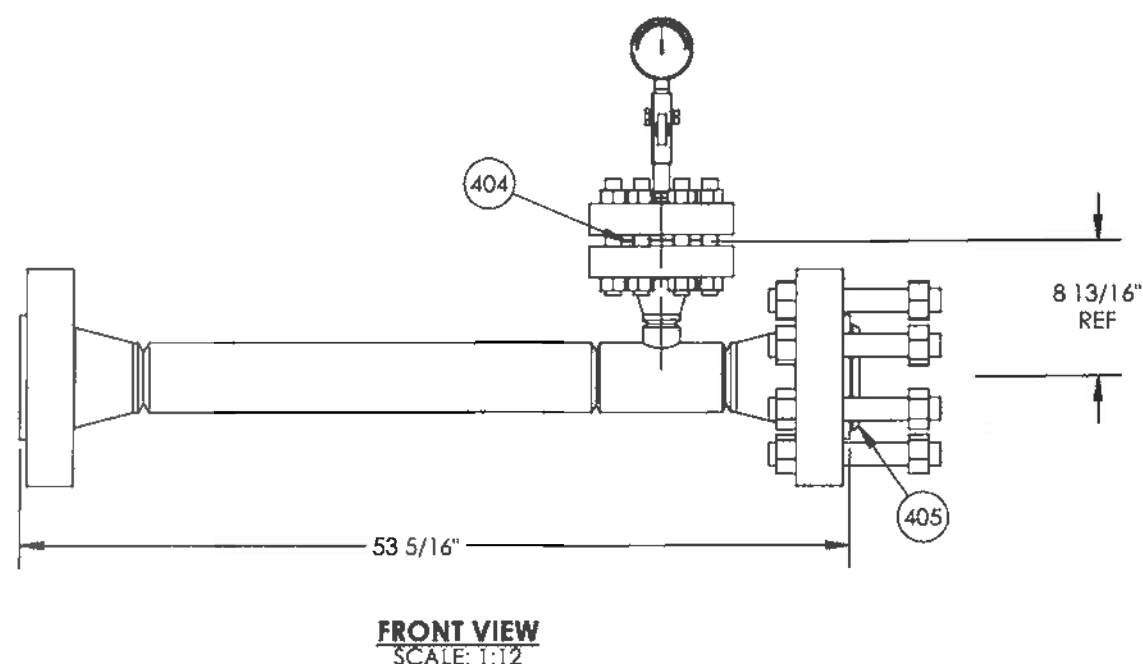
DWN: VW CHK: **P** APP: **APP**  
DATE: OCT 05/12 DATE: **NOV 20 2012** DATE: **NOV 19 2012**  
SCALE: 1:15  
SHEET: 3 OF 8  
DWG: **08562-2B** REV: **0**





| ITEM | PART #       | DESCRIPTION                                                     | MTR # | LENGTH | QTY. |
|------|--------------|-----------------------------------------------------------------|-------|--------|------|
| 401  | 233.54-10000 | PRESSURE GAUGE WIKA 0-10000 PSI MODEL 233.54 SS                 |       |        | 1    |
| 402  | BUY          | VALVE NEEDLE CENTURY 3/4" M x 1/2" F NPT<br>CM111LM64TCNTSSPI00 |       |        | 1    |
| 403  | FLH2.75FYBF  | FLANGE HUBBED 2" 2500 ANSI TAPPED 3/4" NPT RTJ SA350LF2-CL1     |       |        | 1    |
| 404  | GASR26YYD    | GASKET 2" 2500 ANSI R26 RTJ MILD STEEL                          |       |        | 1    |
| 405  | GASR38YYD    | GASKET 4" 2500 ANSI R38 RTJ MILD STEEL                          |       |        | 1    |
| 406  | NUT1YFAY     | NUT 1" 2HM HEX                                                  |       |        | 16   |
| 407  | NUT1.5YFAY   | NUT 1 1/2" 2HM HEX                                              |       |        | 16   |
| 408  | PLH.5HYEE    | PLUG HEX 1/2" 6M THRD SA105N                                    |       |        | 2    |
| 409  | STU1.511HY   | STUD 1 1/2" x 11" LG B7M                                        |       |        | 8    |
| 410  | STU17.5GY    | STUD 1" x 7 1/2" LG B7M                                         |       |        | 8    |

ORIGINAL



## NOTES

- NOTES**
1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  2. DIMENSIONS INCLUDE  $1/8"$  ROOT GAP.
  3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
  4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY. SHOP TO ADJUST PIPE LENGTHS AS REQUIRED.
  5. HARDNESS TESTING - MAX 200 BNH 10%.

| DESIGN DATA                         |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | PF-4"-LXXHBD-104                 |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200 °F                           |
| MINIMUM DESIGN TEMPERATURE:         | -49 °F                           |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150 °F TO 1175 °F FOR 1HR MIN.  |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

|                           |                                    |                          |           |    |     |     | <b>AS BUILT</b>         |
|---------------------------|------------------------------------|--------------------------|-----------|----|-----|-----|-------------------------|
| 08562-6                   | BATH ASSEMBLY                      |                          |           |    |     |     |                         |
| 08562-3                   | SKID ASSEMBLY                      |                          |           |    |     |     |                         |
| 08562-2A                  | WELDED PIPING                      |                          |           |    |     |     |                         |
| 08562-1                   | PIPING AND INSTRUMENTATION DIAGRAM |                          |           |    |     |     |                         |
| 08562                     | GENERAL ARRANGEMENT                | 0                        | OCT 05/12 | VW |     |     | ISSUED FOR CONSTRUCTION |
| DOCUMENT NO.              | DESCRIPTION                        | REV                      | DATE      | BY | CHK | APP |                         |
| <b>REFERENCE DRAWINGS</b> |                                    | <b>DRAWING REVISIONS</b> |           |    |     |     |                         |

ISSUED FOR  
CONSTRUCTION

**SIGNED:**

DATE:

W.D. 08562-001

S/N:

ALL DIMENSIONS IN INCHES



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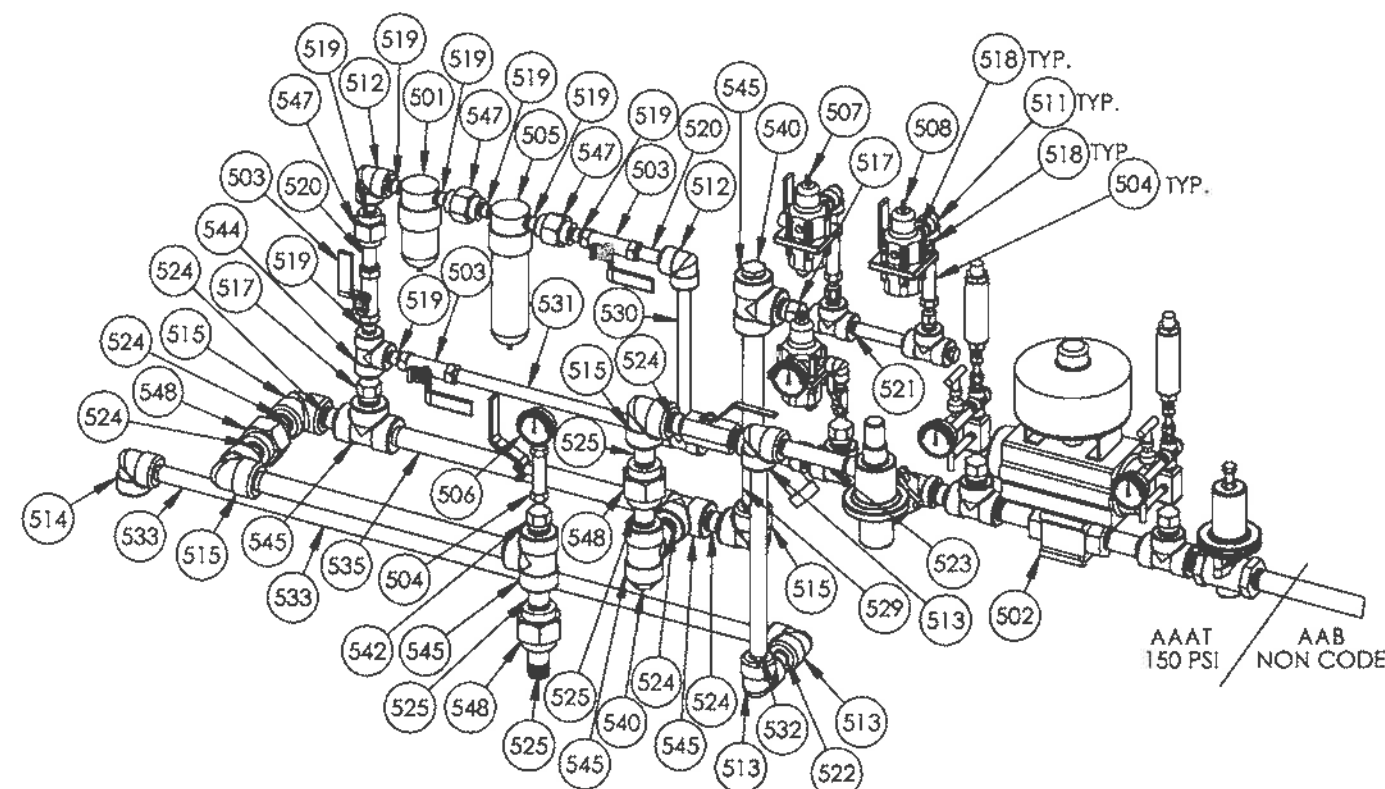
ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU

C/W 4"-2500# RTJ SPLIT COILS  
PIPING ASSEMBLY

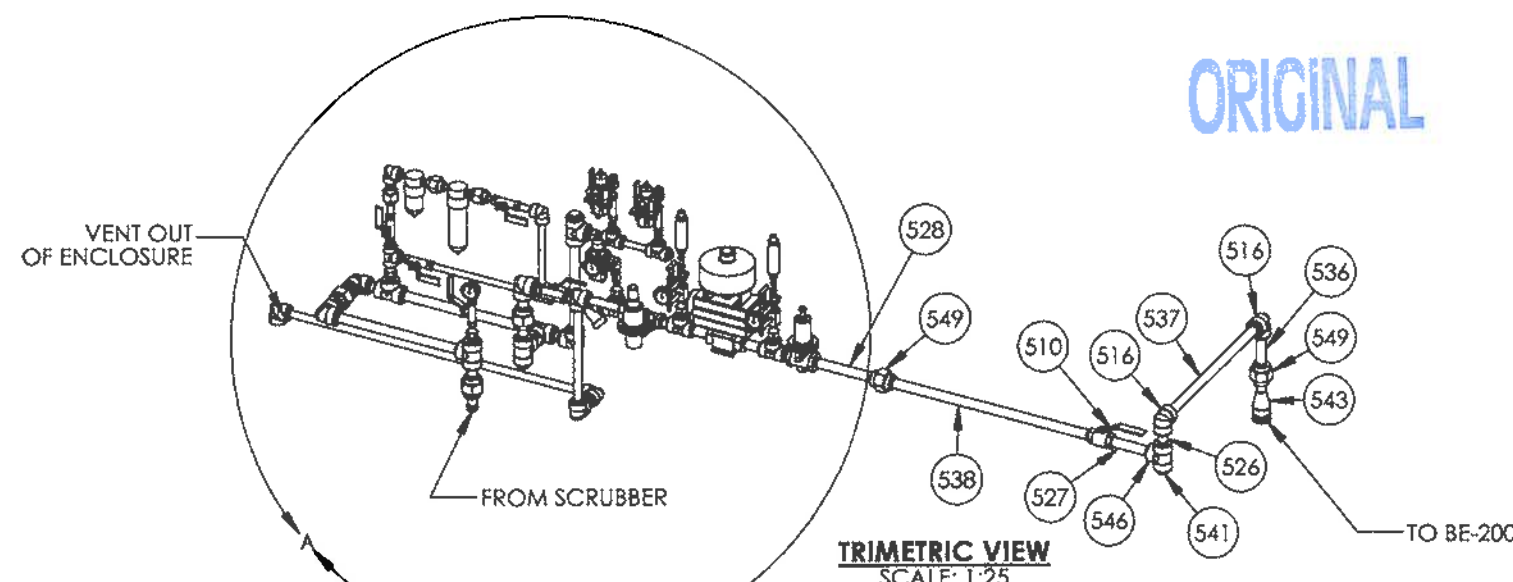
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|-----------------|-------------------|-------------------|
| DWN: VW         | CHK: <i>D</i>     | APP: <i>SK</i>    |
| DATE: OCT 05/12 | DATE: NOV 20 2012 | DATE: NOV 19 2012 |
| SCALE: 1:12     | DWG: 08562-2B     | REV: 0            |
| SHEET: 4 OF 8   |                   |                   |

| ITEM | PART #         | DESCRIPTION                                                 | MTR #     | LENGTH | QTY. |
|------|----------------|-------------------------------------------------------------|-----------|--------|------|
| 501  | 100218         | FILTER, HEADLINE, MDL 360A-70, MAWP 500 PSI, 1/2" NPT       |           |        | 1    |
| 502  | 100963         | VALVE TRIN ENCANA SPEC L-R FLOW                             |           |        | 1    |
| 503  | BUY            | BALL VALVE NUTRON 1/2" 3000 PSI NPT FP NACE T3              |           |        | 3    |
| 504  | BUY            | BALL VALVE NUTRON 1/4" 3000 PSI NPT FP STD T3               |           |        | 3    |
| 505  | BUY            | FILTER, HEADLINE, MDL 370A, MAWP 500 PSI, 1/2" NPT          |           |        | 1    |
| 506  | BUY            | PRESSURE INDICATOR WIKA 2 1/2" FACE x 1/4" NPT 0-200 PSI SS |           |        | 1    |
| 507  | BUY            | PRESSURE REGULATOR FISHER 67CFR 0-35 PSI SPRING STD TRIM    |           |        | 1    |
| 508  | BUY            | PRESSURE REGULATOR FISHER 67CFR 0-125 PSI SPRING STD TRIM   |           |        | 1    |
| 509  | BUY            | SWAGE 1/2" x 1/4" SCH XH/80 THRD 316 SST                    |           |        | 2    |
| 510  | BUY            | VALVE BALL EMICO 1" NPT 720 SERIES 600 PSI WOG FP           |           |        | 1    |
| 511  | EL9.25HYEE     | Elbow 90 Deg 1/4" 6M THRD SA105N                            |           |        | 2    |
| 512  | EL9.5HYEE      | Elbow 90 Deg 1/2" 6M THRD SA105N                            |           |        | 2    |
| 513  | EL9.75HYEE     | Elbow 90 Deg 3/4" 6M THRD SA105N                            |           |        | 3    |
| 514  | EL9.75HYEF     | ELBOW 90 DEG 3/4" 6M THRD SA350-LF2-CL1                     |           |        | 1    |
| 515  | EL9.1HYEE      | Elbow 90 Deg 1" 6M THRD SA105N                              | RDP       |        | 4    |
| 516  | EL9.1HYEF      | ELBOW 90 DEG 1" 6M THRD SA350-LF2-CL1                       | 6SA / 88F |        | 2    |
| 517  | SWA1.5Y80EE    | SWAGE 1" x 1/2" SCH XH/80 THRD SA105N                       | W196557E  |        | 2    |
| 518  | NIP.25Y80EK    | NIPPLE 1/4" x 2" SCH XH/80 316/316L SST                     |           |        | 4    |
| 519  | NIP.52Y80EA    | NIPPLE 1/2" x 2" SCH XH/80 SA106-B                          |           |        | 8    |
| 520  | NIP.53Y80EA    | NIPPLE 1/2" x 3" SCH XH/80 SA106-B                          |           |        | 2    |
| 521  | NIP.55Y80EA    | NIPPLE 1/2" x 5" SCH XH/80 SA106-B                          | A172      |        | 1    |
| 522  | NIP.752.5Y80EA | NIPPLE 3/4" x 2 1/2" SCH XH/80 SA106-B                      |           |        | 1    |
| 523  | NIP.756Y80EA   | NIPPLE 3/4" x 6" SCH XH/80 SA106-B                          |           |        | 1    |
| 524  | NIP.12.5Y80EA  | NIPPLE 1" x 2 1/2" SCH XH/80 SA106-B                        | N6M / MB5 |        | 6    |
| 525  | NIP.13Y80EA    | NIPPLE 1" x 3" SCH XH/80 SA106-B                            | KDI       |        | 4    |
| 526  | NIP.13Y80EB    | NIPPLE 1" x 3" SCH XH/80 SA333-6                            |           |        | 1    |
| 527  | NIP.18Y80EB    | NIPPLE 1" x 8" SCH XH/80 SA333-6                            |           |        | 1    |

| ITEM | PART #       | DESCRIPTION                                | MTR #  | LENGTH    | QTY. |
|------|--------------|--------------------------------------------|--------|-----------|------|
| 528  | NIP110Y80EB  | NIPPLE 1" x 10 SCH XH/80 SA333-6           | 030226 |           | 1    |
| 529  | NIP115Y80EA  | NIPPLE 1" x 15" SCH XH/80 SA106-B          |        |           | 1    |
| 530  | PIP.580A     | PIPE 1/2" SCH XH/80 SA106B TE              |        | 11"       | 1    |
| 531  | PIP.580A     | PIPE 1/2" SCH XH/80 SA106B TE              |        | 16 3/16"  | 1    |
| 532  | PIP.7580A    | PIPE 3/4" SCH XH/80 SA106B TE              |        | 15 5/8"   | 1    |
| 533  | PIP.7580B    | PIPE 3/4" SCH XH/80 SA333-6 TE             |        | 45 11/16" | 1    |
| 534  | PIP180A      | PIPE 1" SCH XH/80 SA106B                   | 102-56 | 19 11/16" | 1    |
| 535  | PIP180A      | PIPE 1" SCH XH/80 SA106B                   | 102-56 | 20 1/16"  | 1    |
| 536  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE               | 030226 | 5 7/8"    | 1    |
| 537  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE               | 030226 | 25 13/16" | 1    |
| 538  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE               | 030226 | 31 5/16"  | 1    |
| 539  | PLH.5HYEE    | PLUG HEX 1/2" 6M THRD SA105N               |        |           | 1    |
| 540  | PLH.1HYEE    | PLUG HEX 1" 6M THRD SA105N                 |        |           | 2    |
| 541  | PLH.1HYEF    | PLUG HEX 1" 6M THRD SA350-LF2-CL1          |        |           | 1    |
| 542  | SWA1.25Y80EK | SWAGE 1" x 1/4" SCH XH/80 THRD 316 SST     |        |           | 1    |
| 543  | SWA21Y80EF   | SWAGE 2" x 1" SCH XH/80 THRD SA350-LF2-CL1 |        |           | 1    |
| 544  | TEE.5HYEE    | Tee 1/2" 6M THRD SA105N                    | H2190  |           | 4    |
| 545  | TEE.1HYEE    | Tee 1" 6M THRD SA105N                      | T30    |           | 5    |
| 546  | TEE.1HYEF    | TEE 1" 6M THRD SA350-LF2-CL1               | 58130  |           | 1    |
| 547  | UNN.5HYEE    | UNION 1/2" 6M THRD SA105N                  |        |           | 3    |
| 548  | UNN.1HYEE    | UNION 1" 6M THRD SA105N                    | 4875   |           | 3    |
| 549  | UNN.1HYEF    | UNION 1" 6M THRD SA350-LF2-CL1             | PSJF   |           | 2    |



**DETAIL 'A'**  
SCALE: 1:8



**TRIMETRIC VIEW**  
SCALE: 1:25

| DESIGN DATA                 |                                  |
|-----------------------------|----------------------------------|
| LINE NUMBER:                | FG-1"-C-80A/BD-304               |
| CLIENT SPECIFICATION:       | ENCANA AAAT/AAB                  |
| DESIGN & FABRICATE TO:      | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:            | 150 PSIG                         |
| MAXIMUM DESIGN TEMPERATURE: | 100°F                            |
| MINIMUM DESIGN TEMPERATURE: | -20°F/-49°F                      |
| SERVICE:                    | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:  | 225 PSIG                         |
| JOINT SEALANT:              | JET LUBE TF-15                   |
| CORROSION ALLOWANCE:        | 1/16"                            |
| Q.C. PROGRAM NO.:           | AQP-1253                         |

# **NOTES**

1. SHOP TO ADJUST RANDOM PIPE LENGTHS AS REQUIRED.
2. 10% XRAY ON NWP MANUFACTURED THREADED PIPING.

| REFERENCE DRAWINGS |                                    |     |           |    |                         |
|--------------------|------------------------------------|-----|-----------|----|-------------------------|
| 08562-6            | BATH ASSEMBLY                      |     |           |    |                         |
| 08562-3            | SKID ASSEMBLY                      |     |           |    |                         |
| 08562-2A           | WELDED PIPING                      |     |           |    |                         |
| 08562-1            | PIPING AND INSTRUMENTATION DIAGRAM |     |           |    |                         |
| 08562              | GENERAL ARRANGEMENT                | 0   | OCT 05/12 | VW | ISSUED FOR CONSTRUCTION |
| DOCUMENT NO.       | DESCRIPTION                        | REV | DATE      | BY | CHK                     |
| DRAWING REVISIONS  |                                    |     |           |    |                         |

**AS BUILT**

**ISSUED FOR CONSTRUCTION**

SIGNED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
W.O.: 08562-001  
S/N: \_\_\_\_\_



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ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
C/W 4"-2500# RTJ SPLIT COILS  
PIPING ASSEMBLY

DWN: VW CHK: APP: *[Signature]*  
DATE: OCT 05/12 DATE: NOV 21 2012 DATE: NOV 21 2012  
SCALE: 1:25 DWG: 08562-2B REV: 0  
SHEET: 5 OF 8



This diagram shows an exploded perspective view of a mechanical assembly. The components are labeled with circled numbers: 606, 611, 619, 621, 629, 630, 631, 636, and 639. The assembly includes a long shaft (631) with a nut (639) at one end, a central housing or bracket (606) with a flange (611), and a vertical assembly consisting of a shaft (630) with a nut (639) at the top, a flange (611), and a lower section (619) with a nut (639) and a pin (621). A bracket (629) is also shown. The components are shown in their relative positions as they would be assembled.

ORIGINAL

2. 10% XRAY ON NWP MANUFACTURED THREADED PIPING.  
100% XRAY ON PSV-300 CONNECTIONS.

ISOMETRIC VIEW  
SCALE: 1:8

FROM  
FG-1"-C-160A/BE-301

Labels: XT-1, XT-2, XT-3, XT-4, XT-5, XT-6, XT-7, XT-8, XT-9, XT-10, XT-12, XT-13

Callouts: 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

| ITEM | PART #       | DESCRIPTION                                                             | MTR # | LENGTH          | QTY. |
|------|--------------|-------------------------------------------------------------------------|-------|-----------------|------|
| 601  | 385935       | SCRUBBER BASE FORMED 9" W x 11" LG x 2" H x 10 GA. SA-36/44W            |       |                 | 1    |
| 602  | 599928       | SCRUBBER FLOAT - 2" FOR HLSD                                            |       |                 | 1    |
| 603  | 926312       | 8 5/8" OD x 23" S/S SWEET FUEL GAS SCRUBBER                             |       |                 | 1    |
| 604  | BOL.52KY     | BOLT 1/2" x 2" LG GR. 5 HEX HEAD                                        |       |                 | 4    |
| 605  | BUY          | BALL VALVE NUTRON 1" 3000 PSI T3                                        |       |                 | 1    |
| 606  | BUY          | BALL VALVE NUTRON 1" 3000 PSI NPT RP LOW TEMP T3                        |       |                 | 3    |
| 607  | BUY          | BALL VALVE NUTRON 3/4" 3000 PSI T3                                      |       |                 | 1    |
| 608  | BUY          | TAYLOR RELIEF VALVE 1" x 1 1/2". SET @ 150 PSI. NACE TRIM (8200 SERIES) |       | -               | 1    |
| 609  | BUY          | VALVE SWING CHECK WHEATLEY 1" NPT 2160 PSI P/N 9D-822-013216-166        |       |                 | 1    |
| 610  | EL91HYEE     | Elbow 90 Deg 1" 6M THRD SA105N                                          |       |                 | 6    |
| 611  | EL91HYEF     | ELBOW 90 DEG 1" 6M THRD SA350-LF2-CL1                                   |       |                 | 1    |
| 612  | EL91.5HYEE   | ELBOW 90 DEG 1 1/2" 6M THRD SA105N                                      |       |                 | 1    |
| 613  | EL91.5HYEF   | ELBOW 90 DEG 1 1/2" 6M THRD SA350-LF2-CL1                               |       |                 | 1    |
| 614  | NIP.753Y80EA | NIPPLE 3/4" x 3" SCH XH/80 SA106-B                                      |       |                 | 1    |
| 615  | NIP1.53Y80EA | Nipple 1-1/2" X 3" S/80 SA106B                                          |       |                 | 1    |
| 616  | NIP1.54Y80EA | Nipple 1-1/2" X 4" S/80 SA106B                                          |       |                 | 1    |
| 617  | NIP12Y80EA   | NIPPLE 1 x 2" SCH XH/80 SA106-B                                         |       | -               | 1    |
| 618  | NIP13Y80EA   | NIPPLE 1" x 3" SCH XH/80 SA106-B                                        |       | -               | 3    |
| 619  | NIP13Y80EB   | NIPPLE 1" x 3" SCH XH/80 SA333-6                                        |       | -               | 3    |
| 620  | NIP14Y80EA   | NIPPLE 1" x 4" SCH XH/80 SA106-B                                        |       | -               | 7    |
| 621  | NIP17Y80EB   | NIPPLE 1" x 7" SCH XH/80 SA333-6                                        |       | -               | 1    |
| 622  | NUT.5YBAA    | NUT 1/2" GR. 2 HEX PLATED                                               |       |                 | 4    |
| 623  | PIP.7580B    | PIPE 3/4" SCH XH/80 SA333-6 TE                                          |       | 18 5/16"        | 1    |
| 624  | PIP1.580B    | PIPE 1 1/2" SCH XH/80 SA333-6 TE                                        |       | 41 3/16"        | 1    |
| 625  | PIP180A      | PIPE 1" SCH XH/80 SA106B                                                |       | 4 1/16"         | 1    |
| 626  | PIP180A      | PIPE 1" SCH XH/80 SA106B                                                |       | 8 1/2"          | 1    |
| 627  | PIP180A      | PIPE 1" SCH XH/80 SA106B                                                |       | 9 5/16"         | 1    |
| 628  | PIP180A      | PIPE 1" SCH XH/80 SA106B                                                |       | 10 5/8"         | 1    |
| 629  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE                                            |       | 4 1/16"         | 1    |
| 630  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE                                            |       | 9"              | 1    |
| 631  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE                                            |       | 20 7/8"         | 1    |
| 632  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE                                            |       | 69<br>15 1/16"  | 1    |
| 633  | PIP180B      | PIPE 1" SCH XH/80 SA333-6 TE                                            |       | 162<br>13 1/16" | 1    |
| 634  | PLH.75HYEF   | PLUG HEX 3/4" 6M THRD SA350-LF2-CL1                                     |       |                 | 1    |
| 635  | TEE1HYEE     | Tee 1" 6M THRD SA105N                                                   |       |                 | 2    |
| 636  | TEE1HYEF     | TEE 1" 6M THRD SA350-LF2-CL1                                            |       |                 | 1    |
| 637  | UNN.75HYEF   | UNION 3/4" 6M THRD SA350-LF2-CL1                                        |       |                 | 1    |
| 638  | UNN1HYEE     | UNION 1" 6M THRD SA105N                                                 |       |                 | 5    |
| 639  | UNN1HYEF     | UNION 1" 6M THRD SA350-LF2-CL1                                          |       |                 | 4    |
| 640  | UNN1.5HYEE   | UNION 1 1/2" 6M THRD SA105N                                             |       |                 | 1    |
| 641  | WAS.5YKYA    | FLAT WASHER 1/2" GR. 5 PLATED                                           |       |                 | 8    |

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DATE: \_\_\_\_\_  
W.O.: 08562-001  
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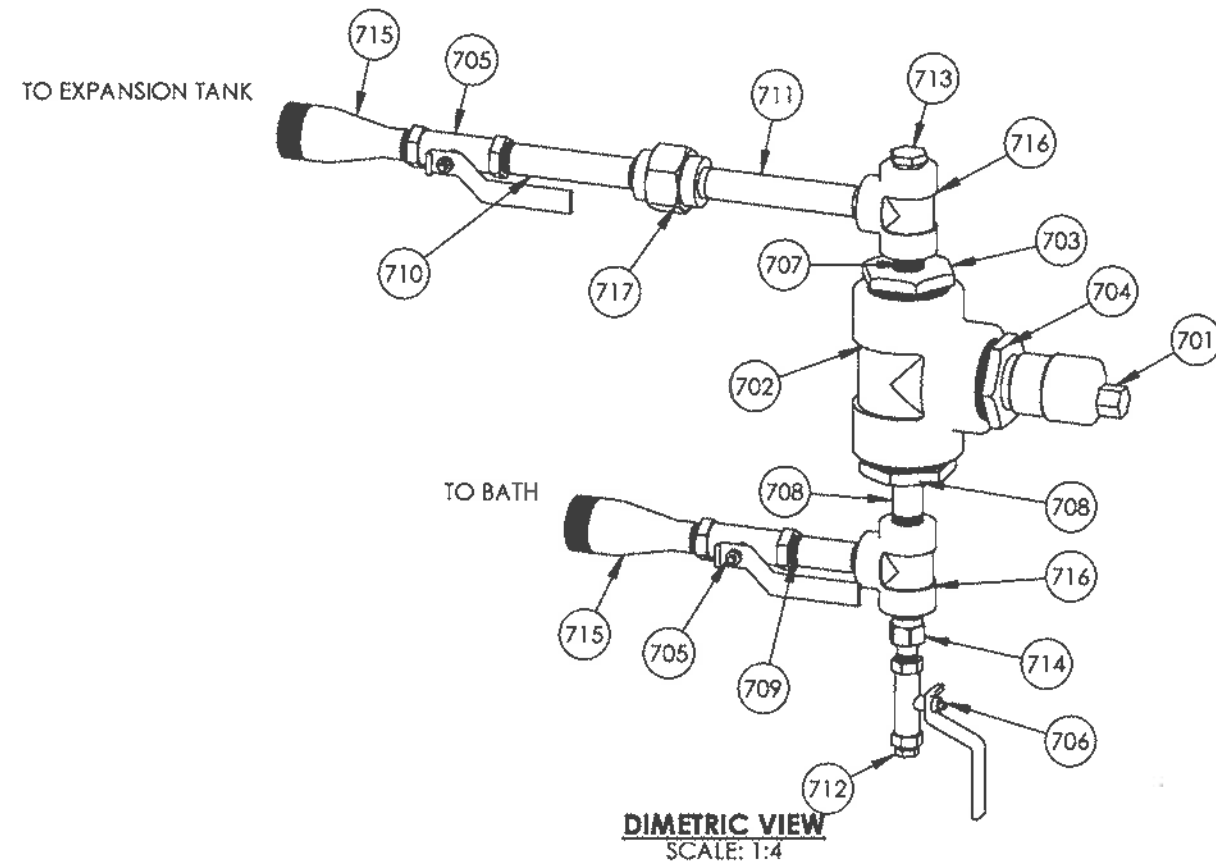
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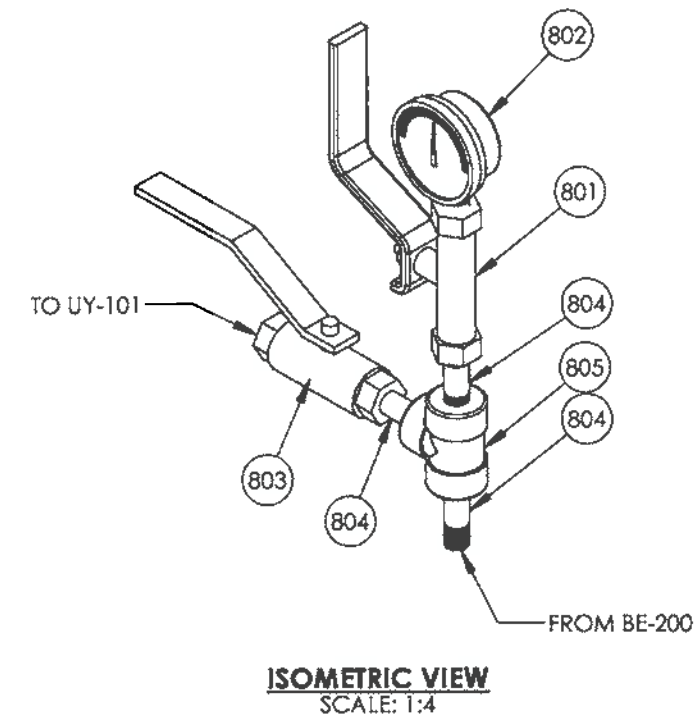
ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
c/w 4"-2500# RTJ SPLIT COILS  
PIPING ASSEMBLY

|                 |                   |                   |
|-----------------|-------------------|-------------------|
| DWN: VW         | CHK: <i>o</i>     | APP: <i>h</i>     |
| DATE: OCT 05/12 | DATE: NOV 20 2012 | DATE: NOV 20 2012 |
| SCALE: 1:8      | DWG: 08562-2B     | REV: 0            |
| SHEET: 6 OF 8   |                   |                   |

| ITEM | PART #       | DESCRIPTION                                                       | MTR #  | LENGTH | QTY. |
|------|--------------|-------------------------------------------------------------------|--------|--------|------|
| 701  | BUY          | LEVEL SWITCH ELECTRIC SOR 2" NPT MODEL T510C-G2A-C-L9-ES-CSNCCVMC |        |        | 1    |
| 702  | 140813       | TEE 3" FS 3M THREADED                                             |        |        | 1    |
| 703  | BUS31YYEE    | BUSHING 3" x 1" SA 105N                                           |        |        | 2    |
| 704  | BUS32YYEE    | BUSHING 3" x 2" SA 105N                                           |        |        | 1    |
| 705  | BUY          | BALL VALVE NUTRON 1" 3000 PSI NPT RP NACE T3                      |        |        | 2    |
| 706  | BUY          | BALL VALVE NUTRON 1/2" 3000 PSI NPT FP STD T3                     |        |        | 1    |
| 707  | NIP12Y80EA   | NIPPLE 1 x 2" SCH XH/80 SA 106-B                                  |        | -      | 1    |
| 708  | NIP13.5Y80EA | NIPPLE 1" x 3 1/2" SCH XH/80 SA 106-B                             |        | -      | 1    |
| 709  | NIP14.5Y80EA | NIPPLE 1" x 4 1/2" SCH XH/80 SA 106-B                             |        | -      | 1    |
| 710  | NIP17.5Y80EA | NIPPLE 1" x 7 1/2" SCH XH/80 SA 106-B                             |        | -      | 1    |
| 711  | PIP180A      | PIPE 1" SCH XH/80 SA 106B                                         | 102-56 | 8 3/4" | 1    |
| 712  | PLH.5HYEE    | PLUG HEX 1/2" 6M THRD SA 105N                                     |        |        | 1    |
| 713  | PLH1HYEE     | PLUG HEX 1" 6M THRD SA 105N                                       |        |        | 1    |
| 714  | SWA1.5Y80EE  | SWAGE 1" x 1/2" SCH XH.80 THRD SA 105N                            |        |        | 1    |
| 715  | SWA21Y80EE   | SWAGE 2" x 1" SCH XH/80 THRD SA 105N                              |        |        | 2    |
| 716  | TEE1HYEE     | Tee 1" 6M THRD SA 105N                                            |        |        | 2    |
| 717  | UNN1HYEE     | UNION 1" 6M THRD SA 105N                                          |        |        | 1    |



| ITEM | PART #       | DESCRIPTION                                                | MTR # | LENGTH | QTY. |
|------|--------------|------------------------------------------------------------|-------|--------|------|
| 801  | BUY          | BALL VALVE NUTRON 1/4" 3000 PSI LOW TEMP T3                |       |        | 1    |
| 802  | BUY          | PRESSURE INDICATOR WIKA 2 1/2" FACE x 1/4" NPT 0-30 PSI SS |       |        | 1    |
| 803  | BUY          | VALVE BALL EMICO 1/4" NPT 720 SERIES 600 PSI SS FP         |       |        | 1    |
| 804  | NIP.252Y80EB | NIPPLE 1/4" x 2" SCH XH/80 SA333-6                         |       | -      | 3    |
| 805  | TEE.25HYFF   | TEE 1/4" 6M SW SA350-LF2-CL1                               |       |        | 1    |



**NOTES**  
1. SHOP TO ADJUST RANDOM PIPE LENGTHS AS REQUIRED.

ORIGINAL

|                           |                                    |                          |           |    |     |     | <b>AS BUILT</b>         |
|---------------------------|------------------------------------|--------------------------|-----------|----|-----|-----|-------------------------|
| 08562-6                   | BATH ASSEMBLY                      |                          |           |    |     |     |                         |
| 08562-3                   | SKID ASSEMBLY                      |                          |           |    |     |     |                         |
| 08562-2A                  | WELDED PIPING                      |                          |           |    |     |     |                         |
| 08562-1                   | PIPING AND INSTRUMENTATION DIAGRAM |                          |           |    |     |     |                         |
| 08562                     | GENERAL ARRANGEMENT                | 0                        | OCT 05/12 | VW |     |     | ISSUED FOR CONSTRUCTION |
| DOCUMENT NO.              | DESCRIPTION                        | REV                      | DATE      | BY | CHK | APP |                         |
| <b>REFERENCE DRAWINGS</b> |                                    | <b>DRAWING REVISIONS</b> |           |    |     |     |                         |

ISSUED FOR  
CONSTRUCTION

SIGNED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
W.O.: 08562-001  
S/N: \_\_\_\_\_  
ALL DIMENSIONS IN INCHES



P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

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THIS DRAWING MUST BE RETURNED UPON REQUEST.

ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
c/w 4"-2500# RTJ SPLIT COILS  
PIPING ASSEMBLY

|                 |                   |                   |
|-----------------|-------------------|-------------------|
| DWN: VW         | CHK: <i>Q</i>     | APP: <i>Q</i>     |
| DATE: OCT 05/12 | DATE: NOV 20 2012 | DATE: NOV 19 2012 |
| SCALE: 1:4      | DWG: 08562-2B     | REV: 0            |
| SHEET: 7 OF 8   |                   |                   |



Table 2: Summary of Piping Classes

| Piping Class | Pipe Sch | Fitting Rating PSI | Flange Rating | Mat.    | MDMT Deg F | Service                         | Corrosion Allowance Inches |
|--------------|----------|--------------------|---------------|---------|------------|---------------------------------|----------------------------|
| AAA          | 80       | 3000               | 150           | CS      | -20        | Sweet hydrocarbons              | 1/16                       |
| AAAT         | 80       | 2000               | 150           | CS      | -20        | Sweet hydrocarbons, threaded    | 0.0394                     |
| AAB          | 80       | 3000               | 150           | LT \ CS | -49        | Low temp, sweet hydrocarbons    | 1/16                       |
| ASA          | 160      | 3000               | 150           | CS      | -20        | Sour hydrocarbons               | 1/8                        |
| ASB          | 160      | 3000               | 150           | LT \ CS | -49        | Low temp, sour hydrocarbons     | 1/8                        |
| AWA          | 160      | 3000               | 150           | CS      | -20        | Produced water, corrosive       | 1/8                        |
| BAA          | 160      | 3000               | 300           | CS      | -20        | Sweet hydrocarbons              | 1/16                       |
| BAAT         | 80       | 3000               | 300           | CS      | -20        | Sweet hydrocarbons, threaded    | 0.0394                     |
| BAB          | 160      | 3000               | 300           | LT \ CS | -49        | Low temp, sweet hydrocarbons    | 1/16                       |
| BSA          | XXH      | 3000               | 300           | CS      | -20        | Sour hydrocarbons               | 1/8                        |
| BSB          | XXH      | 3000               | 300           | LT \ CS | -49        | Low temp, sour hydrocarbons     | 1/8                        |
| CAA          | 160      | 3000               | 600           | CS      | -20        | Sweet hydrocarbons              | 1/16                       |
| CAAT         | 80       | 3000               | 600           | CS      | -29        | Sweet hydrocarbons, threaded    | 0.0394                     |
| CAB          | 160      | 3000               | 600           | LT \ CS | -49        | Low temp, sweet hydrocarbons    | 1/16                       |
| CSA          | XXH      | 6000               | 600           | CS      | -20        | Sour hydrocarbons               | 1/8                        |
| CSB          | XXH      | 6000               | 600           | LT \ CS | -49        | Low temp, sour hydrocarbons     | 1/8                        |
| CWA          | 160      | 3000               | 600           | CS      | -20        | Produced / Brackish water, sour | 1/8                        |
| DAA          | 160      | 6000               | 900           | CS      | -20        | Sweet hydrocarbons              | 1/16                       |
| DAB          | 160      | 6000               | 900           | LT \ CS | -49        | Low temp, sweet hydrocarbons    | 1/16                       |
| DSA          | XXH      | 6000               | 900           | CS      | -20        | Sour hydrocarbons               | 1/8                        |
| DSB          | XXH      | 6000               | 900           | LT \ CS | -49        | Low temp, sour hydrocarbons     | 1/8                        |
| EAA          | XXH      | 6000               | 1500          | CS      | -20        | Sweet hydrocarbons              | 1/16                       |
| EAB          | XXH      | 6000               | 1500          | LT \ CS | -49        | Low temp, sweet hydrocarbons    | 1/16                       |
| ESA          | XXH      | 6000               | 1500          | CS      | -20        | Sour hydrocarbons               | 1/8                        |
| ESB          | XXH      | 6000               | 1500          | LT \ CS | -49        | Low temp, sour hydrocarbons     | 1/8                        |
| FAA          | XXH      | SW ONLY            | 2500          | CS      | -20        | Sweet hydrocarbons              | 1/16                       |
| FAB          | XXH      | SW ONLY            | 2500          | LT \ CS | -49        | Low temp, sweet hydrocarbons    | 1/16                       |
| FSA          | XXH      | SW ONLY            | 2500          | CS      | -20        | Sour hydrocarbons               | 1/8                        |
| FSB          | XXH      | SW ONLY            | 2500          | LT \ CS | -49        | Low temp, sour hydrocarbons     | 1/8                        |



2016 addenda 01/03/12  
 VT. 175 -181  
 "Conforms with ASME"

Sec II, Part A, 2010 edition  
 YANGZHOU LONTRIN STEEL TUBE CO., LTD.  
 INSPECTION CERTIFICATE (EN10204-3.1B)

CUSTOMER: MARUBENI-TOCHU TUBULARS CANADA LTD (COMCO)  
 PRODUCT: SEAMLESS CARBON STEEL PIPE

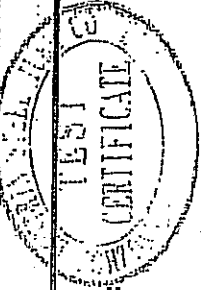
Order#: 113937 -A Seq: 9 PO#: 700442 Heat#: 006-41 Mill: Yangzhou Lonlin Steel Tube Co., Ltd  
 Part#: P 1 XS S6 S PL Part Desc: Pipe 1 (33.4mm O.D.) EXTRA HEAVY SMLS A/SA106-B SRL PLAIN END (com.)

ISO REGISTRATION NO: 44 100 072544  
 CONTRACT NO: TC8224A/B  
 PO:852  
 CERTIFICATE NUMBER: 05067A-04

SPEC: ASTM / ASME A / SA106 GR.B (2010) / API 5L (44th edition) PSL-1 GR.B MR0175/ISO15156-2003 & NACE MR0103-2007

| TOTAL: |                       |          | 21 BUNDLES     |                          | 1874 PIECES     |              | 35972 KG                                |                        | PACKING IN BUNDLES |                 |              |              |                     |              |       |       |                 |      |                     |  |
|--------|-----------------------|----------|----------------|--------------------------|-----------------|--------------|-----------------------------------------|------------------------|--------------------|-----------------|--------------|--------------|---------------------|--------------|-------|-------|-----------------|------|---------------------|--|
| NO.    | HEAT NO.              | LOT NO.  | STEEL GRADE    | SIZE (MM)                | PCS             | WEIGHT Kg    | CHEMICAL COMPOSITION (Ladle Analysis) % |                        |                    |                 |              |              |                     |              |       |       | SURFACE QUALITY |      | DIMENSION TOLERANCE |  |
|        |                       |          |                |                          |                 |              | C                                       | Si                     | Mn                 | P               | S            | Cr           | Ni                  | Cu           | Mo    | V     |                 |      |                     |  |
| 1      | 006-42                | W60      | A106B          | 33.4X3.38X6400           | 364             | 5828         | 0.19                                    | 0.27                   | 0.54               | 0.009           | 0.007        | 0.04         | 0.02                | 0.10         | 0.001 | 0.007 | 0.006           | 0.02 | 0.                  |  |
| 2      | 006-42                | W61      | A106B          | 33.4X3.38X6400           | 238             | 3795         | 0.19                                    | 0.27                   | 0.54               | 0.009           | 0.007        | 0.04         | 0.02                | 0.10         | 0.001 | 0.007 | 0.006           | 0.02 | 0.                  |  |
| 3      | 006-41                | 728      | A106B          | 33.4X4.55X6400           | 364             | 7540         | 0.23                                    | 0.25                   | 0.52               | 0.006           | 0.010        | 0.01         | 0.01                | 0.02         | 0.002 | 0.003 | 0.005           | 0.04 | 0.                  |  |
| 4      | 006-41                | 1C282    | A106B          | 33.4X4.55X6400           | 180             | 3729         | 0.23                                    | 0.25                   | 0.52               | 0.006           | 0.010        | 0.01         | 0.01                | 0.02         | 0.002 | 0.003 | 0.005           | 0.04 | 0.                  |  |
| 5      | 006-41                | W12      | A106B          | 33.4X4.55X6400           | 364             | 7540         | 0.23                                    | 0.25                   | 0.52               | 0.006           | 0.010        | 0.01         | 0.01                | 0.02         | 0.002 | 0.003 | 0.005           | 0.04 | 0.                  |  |
| 6      | 006-41                | W13      | A106B          | 33.4X4.55X6400           | 364             | 7540         | 0.23                                    | 0.25                   | 0.52               | 0.006           | 0.010        | 0.01         | 0.01                | 0.02         | 0.002 | 0.003 | 0.005           | 0.04 | 0.                  |  |
| NO.    | MECHANICAL PROPERTIES |          |                | TECHNOLOGICAL PROPERTIES |                 |              | NONDESTRUCTIVE TEST                     |                        |                    | SURFACE QUALITY |              |              | DIMENSION TOLERANCE |              |       |       |                 |      |                     |  |
|        | ReL (MPa)             | Rm (MPa) | ELONGATION A % | HARDNESS HRB             | FLATTENING TEST | FLARING TEST | BENDING                                 | H.T Hold Time (5 Sec.) | ET                 | UT              | IN           | OUT          | O.D.                | W.T.         |       |       |                 |      |                     |  |
| 1      | 350/335               | 480/475  | 42.5/43        | 72/73                    | —               | —            | Satisfactory                            | 5MPA                   | Satisfactory       | Satisfactory    | Satisfactory | Satisfactory | Satisfactory        | Satisfactory |       |       |                 |      |                     |  |
| 2      | 335/325               | 480/470  | 40/43          | 73/72                    | —               | —            | Satisfactory                            | 5MPA                   | Satisfactory       | Satisfactory    | Satisfactory | Satisfactory | Satisfactory        | Satisfactory |       |       |                 |      |                     |  |
| 3      | 295/300               | 460/465  | 49.5/50.5      | 72/72.5                  | —               | —            | Satisfactory                            | 6MPA                   | Satisfactory       | Satisfactory    | Satisfactory | Satisfactory | Satisfactory        | Satisfactory |       |       |                 |      |                     |  |
| 4      | 275/275               | 430/440  | 53/52          | 71/72                    | —               | —            | Satisfactory                            | 6MPA                   | Satisfactory       | Satisfactory    | Satisfactory | Satisfactory | Satisfactory        | Satisfactory |       |       |                 |      |                     |  |
| 5      | 290/285               | 445/450  | 44/43          | 73.5/72.5                | —               | —            | Satisfactory                            | 6MPA                   | Satisfactory       | Satisfactory    | Satisfactory | Satisfactory | Satisfactory        | Satisfactory |       |       |                 |      |                     |  |
| 6      | 280/290               | 440/450  | 45/43          | 72.5/73.5                | —               | —            | Satisfactory                            | 6MPA                   | Satisfactory       | Satisfactory    | Satisfactory | Satisfactory | Satisfactory        | Satisfactory |       |       |                 |      |                     |  |

REMARKS: 1. Steel making process : Cold drawn. 2. Steel fully killed. 3. Heat treatment : Normalizing 900-930°C. Hold time 30Min.



DATE: October 15, 2010

STAMPER:

MANAGING REPRESENTATIVE: Xiao Dong Yuan



"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda" DEC 10 2012

| TPCO              |  | ADD:JINTANG ROAD DONGLI<br>DISTRICT,TIANJIN,CHINA<br>TEL:86-22-24801139<br>FAX:86-22-24801291                  |  | TIANJIN PIPE(GROUP)CORPORATION LTD.<br>TEST CERTIFICATE<br>(EN10204 3.1) |        |                    |       |                              |      |                       |         |                              |      | L/C No.:<br>No.: C12852789208 |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
|-------------------|--|----------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------|--------|--------------------|-------|------------------------------|------|-----------------------|---------|------------------------------|------|-------------------------------|----------|-------------------------------------------------------------------------------------------------------|-----|-------------------|------|-----|---------|--------------|---------|--------------|---------|-----|---------|
| Contract No.      |  | 2012SSG-EI-12-331                                                                                              |  | Product                                                                  |        | PIPE               |       | O.D.*W.T.                    |      | 1/2"XS(21.3x3.73mm) ✓ |         | Packing                      |      | IN LOOSE                      |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| Order             |  | Trans Am Piping Products Ltd.,                                                                                 |  | DIMENSION                                                                |        |                    |       | Manu Method                  |      | COLD DRAWN SEAMLESS   |         | Total pieces                 |      | 280                           |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| P.O.No.           |  | EI-12-331                                                                                                      |  | STANDARD                                                                 |        | ASME B36.10        |       | Length range                 |      | SRL                   |         | Total metres                 |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| Material Standard |  | ASTM A 106-B-08, ASME SA 106-B-08, API 5L X42 PSL1 -07, CSA Z245.1-07 Gr.280 Cst I, NACE MR0175-09/ISO 15156 ✓ |  |                                                                          |        |                    |       |                              |      |                       |         | Total weight                 |      | 2.700MT                       |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| Heat No.          |  | Lot No.                                                                                                        |  | Quantity                                                                 |        | Delivery condition |       | Sample No.                   |      | Tensile test(Mpa)     |         |                              |      |                               |          | Impact test(J)                                                                                        |     |                   |      |     |         |              |         |              |         |     |         |
|                   |  |                                                                                                                |  | Pieces                                                                   | Meters | Bundles            | Tons  |                              |      | 1"                    | Tem. °C | T.S.                         | Type | Y.S.                          | Elong. % | Shrink %                                                                                              | 2"  | Tem. °C           | Size | AK1 | share % | AK2          | share % | AK3          | share % | AVE | share % |
| 030226            |  | 130                                                                                                            |  | 280                                                                      |        |                    | 2.700 | NORMALIZED                   |      | 130-7-1010            | A       |                              | 535  |                               | 380      | 37.5                                                                                                  |     |                   |      |     |         |              |         |              |         |     |         |
| Total             |  | 280                                                                                                            |  |                                                                          |        |                    | 2.700 | Note:                        |      | A:L,Full,Lo=50        |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| Heat No.          |  | Lot No.                                                                                                        |  | Sample No.                                                               |        | Hardness Brinell   |       | Hardness Brinell(HB)(inside) |      |                       |         | Hardness Brinell(HB)(middle) |      |                               |          | Hardness Brinell(HB)(outside)                                                                         |     |                   |      | NDE |         | Fla. test(1) |         | Fla. test(2) |         |     |         |
|                   |  |                                                                                                                |  |                                                                          |        |                    |       | 1                            | 2    | 3                     | 4       | AVE                          | 1    | 2                             | 3        | 4                                                                                                     | AVE | 1                 | 2    | 3   | 4       | AVE          |         |              |         |     |         |
| 030226            |  | 130                                                                                                            |  | 130-7-1010                                                               |        |                    |       | 162                          | 163  | 162                   | 163     | 163                          | 162  | 162                           | 163      | 162                                                                                                   | 162 | 163               | 162  | 163 | 163     | 163          | EMI,L4  |              | G       |     |         |
| Heat No.          |  | Steel spec.                                                                                                    |  | Chemical composition%(L:Ladle analysis P:Product analysis)               |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     | Hydro.Test (Pa/s) |      |     |         |              |         |              |         |     |         |
|                   |  |                                                                                                                |  | C                                                                        | Si     | Mn                 | P     | S                            | Ni   | Cr                    | Mo      | Cu                           | V    | B                             | Ti       | Nb                                                                                                    |     |                   |      |     |         | CE           | CE(CSA) |              |         |     |         |
| 030226            |  | L                                                                                                              |  | 0.16                                                                     | 0.31   | 1.18               | 0.020 | 0.010                        | 0.05 | 0.05                  | 0.02    | 0.06                         | 0.01 | 0                             | 0        | 0                                                                                                     |     |                   |      |     |         | 0.38         | 0.37    | 2465/5       |         |     |         |
| 20                |  | P                                                                                                              |  | 0.16                                                                     | 0.32   | 1.18               | 0.020 | 0.009                        | 0.05 | 0.04                  | 0.02    | 0.05                         | 0.01 | 0                             | 0        | 0                                                                                                     |     |                   |      |     |         | 0.38         | 0.37    |              |         |     |         |
|                   |  | P                                                                                                              |  | 0.16                                                                     | 0.32   | 1.18               | 0.020 | 0.009                        | 0.05 | 0.04                  | 0.02    | 0.05                         | 0.01 | 0                             | 0        | 0                                                                                                     |     |                   |      |     |         | 0.38         | 0.37    |              |         |     |         |
|                   |  | L                                                                                                              |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
|                   |  | P                                                                                                              |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
|                   |  | P                                                                                                              |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
|                   |  | L                                                                                                              |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
|                   |  | P                                                                                                              |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
|                   |  | P                                                                                                              |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| NDE(100%)         |  | Visual and dimension                                                                                           |  | Hydro.Test                                                               |        | Pipe end NDE       |       | Pipe end beveling            |      | Residual mag Test     |         | SSCC                         |      | HIC                           |          | We hereby state that all pipes are manufactured and inspected according to above standards and order. |     |                   |      |     |         |              |         |              |         |     |         |
| G                 |  | G                                                                                                              |  | G                                                                        |        | G                  |       | G                            |      | G                     |         | G                            |      | G                             |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| Note:             |  | CE(CSA)=C+Fe(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B) CE=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/16                        |  |                                                                          |        |                    |       |                              |      |                       |         |                              |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |
| No.               |  | Page (1)                                                                                                       |  |                                                                          |        |                    |       |                              |      |                       |         | Date 2012-7-9                |      |                               |          |                                                                                                       |     |                   |      |     |         |              |         |              |         |     |         |

Remark: destl.=destination; tem.=temperature; steel spec.=steel specification; destl.=destination; Manu.=Manufacture; G=Good

VT.165-169

HT#030226

|                                                                                                                              |  |                                                                                                                                                        |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------|--------|--------------------|------|------------------------------|-----|-------------------------|---------|--------------|------------------------------|-------------------------------|------------|---------------------------------------------------------------------------------------------|-----|-------------------------------|------|-----------|---------|------|---------|-----|--------------|-----|--------------|----|-----|------|--|---------|--|--------------------|--|
|                                             |  | ADD: JINTANG ROAD DONGLI<br>DISTRICT, TIANJIN, CHINA<br>TEL: 86-22-24801139<br>FAX: 86-22-24801291                                                     |  | TIANJIN PIPE(GROUP) CORPORATION LTD.<br>TEST CERTIFICATE<br>(EN10204 3.1) |        |                    |      |                              |     |                         |         |              |                              | L/C No.:<br>No.: C12854623558 |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Contract No.                                                                                                                 |  | 2012SSG-CI-12-330                                                                                                                                      |  | Product                                                                   |        | PIPE               |      | O.D.xW.T.                    |     | 1"XS(33.4x 4.55mm)      |         | Packing      |                              | IN LOOSE                      |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Order                                                                                                                        |  | Trans Am Piping Products Ltd.,                                                                                                                         |  | DIMENSION                                                                 |        | ASME B36.10        |      | Manu Method                  |     | COLD DRAWN SEAMLESS     |         | Total places |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| P.O.No.                                                                                                                      |  | CI-12-330                                                                                                                                              |  | STANDARD                                                                  |        |                    |      | Length range                 |     | SRL                     |         | Total weight |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Material Standard                                                                                                            |  | ASTM A333 GR 6-10/ASME SA333 GR6-10, CSA Z245.1-07 Gr.290 Cat II SS, NACE MR0175-09/ISO 15156 ✓                                                        |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Heat No.                                                                                                                     |  | Lot No.                                                                                                                                                |  | Quantity                                                                  |        | Delivery condition |      | Sample No.                   |     | Tensile test(Mpa)       |         |              |                              |                               |            | Impact test(J)                                                                              |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  |                                                                                                                                                        |  | Pieces                                                                    | Meters | Bundles            | Tons |                              |     | 1"                      | Tem. °C | T.S. ✓       | Type                         | Y.S. ✓                        | Elong. % ✓ | Shink %                                                                                     | 2"  | Tem. °C                       | Size | AK1       | share % | AK2  | share % | AK3 | share %      | AVE | share %      |    |     |      |  |         |  |                    |  |
| 030226                                                                                                                       |  | 130                                                                                                                                                    |  |                                                                           |        |                    |      | NORMALIZED                   |     | 130-7-1176              |         | A            |                              | 540                           |            | 390                                                                                         | 39  |                               | A    | -45°C     | 10X3.3  | 19   | 100     | 22  | 100          | 20  | 100          | 20 | 100 |      |  |         |  |                    |  |
| Total                                                                                                                        |  |                                                                                                                                                        |  |                                                                           |        |                    |      |                              |     | Note: A: L, Full, Lo=50 |         |              |                              |                               |            | A: VL, B: VT                                                                                |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Heat No.                                                                                                                     |  | Lot No.                                                                                                                                                |  | Sample No.                                                                |        | Hardness Brinell   |      | Hardness Brinell(HB)(inside) |     |                         |         |              | Hardness Brinell(HB)(middle) |                               |            |                                                                                             |     | Hardness Brinell(HB)(outside) |      |           |         |      | NDE     |     | Fla. test(1) |     | Fla. test(2) |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  |                                                                                                                                                        |  |                                                                           |        |                    |      | 1                            | 2   | 3                       | 4       | AVE          | 1                            | 2                             | 3          | 4                                                                                           | AVE | 1                             | 2    | 3         | 4       | AVE  | EMI, L4 |     | G            |     | G            |    |     |      |  |         |  |                    |  |
| 030226                                                                                                                       |  | 130                                                                                                                                                    |  | 130-7-1176                                                                |        |                    |      | 162                          | 163 | 161                     | 162     | 162          | 162                          | 162                           | 161        | 162                                                                                         | 162 | 163                           | 162  | 163       | 162     | 163  |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Heat No.                                                                                                                     |  | Steel spec.                                                                                                                                            |  | C                                                                         |        | Si                 |      | Mn                           |     | P                       |         | S            |                              | Ni                            |            | Cr                                                                                          |     | Mo                            |      | Cu        |         | V    |         | B   |              | Ti  |              | Nb |     | CE   |  | CE(CSA) |  | Hydro Test (Psi/s) |  |
|                                                                                                                              |  |                                                                                                                                                        |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| 030226                                                                                                                       |  | L                                                                                                                                                      |  | 0.16                                                                      |        | 0.31               |      | 1.18                         |     | 0.020                   |         | 0.010        |                              | 0.05                          |            | 0.05                                                                                        |     | 0.02                          |      | 0.08      |         | 0.01 |         | 0   |              | 0   |              | 0  |     | 0.38 |  | 0.37    |  | 2455/5             |  |
| A333 GR 6                                                                                                                    |  | P                                                                                                                                                      |  | 0.16                                                                      |        | 0.32               |      | 1.18                         |     | 0.020                   |         | 0.009        |                              | 0.05                          |            | 0.04                                                                                        |     | 0.02                          |      | 0.05      |         | 0.01 |         | 0   |              | 0   |              | 0  |     | 0.38 |  | 0.37    |  |                    |  |
|                                                                                                                              |  | R                                                                                                                                                      |  | 0.16                                                                      |        | 0.32               |      | 1.18                         |     | 0.020                   |         | 0.009        |                              | 0.05                          |            | 0.04                                                                                        |     | 0.02                          |      | 0.05      |         | 0.01 |         | 0   |              | 0   |              | 0  |     | 0.38 |  | 0.37    |  |                    |  |
|                                                                                                                              |  | L                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  | P                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  | L                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  | P                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  | L                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  | P                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
|                                                                                                                              |  | P                                                                                                                                                      |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| NDE(100%)                                                                                                                    |  | Visual and dimension                                                                                                                                   |  | Hydro Test                                                                |        | Pipe end NDE       |      | Pipe end bevelling           |     | Residual mag Test       |         | SSCC         |                              | HIC                           |            | We hereby state that all pipes are manufactured and inspected according to above standards. |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| G                                                                                                                            |  | G                                                                                                                                                      |  | G                                                                         |        | G                  |      | G                            |     | G                       |         | G            |                              |                               |            |                                                                                             |     |                               |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Note:                                                                                                                        |  | Heat Treatment Condition For Pipe Normalized: 900°C X 10MIN CE(CSA)=C+Fx(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B)<br>CE=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15 |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            | MATERIAL (Page 1) GRMS                                                                      |     | Date                          |      | 2012-7-10 |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |
| Remark: destl.=destination; tem.=temperature; steel spec.=steel specification; destl.=destination; Manu.=Manufacture; G=Good |  |                                                                                                                                                        |  |                                                                           |        |                    |      |                              |     |                         |         |              |                              |                               |            |                                                                                             |     | CUSTOMER                      |      |           |         |      |         |     |              |     |              |    |     |      |  |         |  |                    |  |

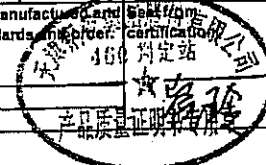
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"  
DEC 1 0 2012

SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: Enlana

DEC 1 0 2012

Date:



|                                            |                                                                                   |                                          |
|--------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                          |
| Date of Issue: March 13, 2008              |                                                                                   | QCFOFinalInspectionReleaseCertificateR00 |

## FINAL INSPECTION RELEASE CERTIFICATE

|                                            |                        |
|--------------------------------------------|------------------------|
| CUSTOMER: <b>NWP STOCK</b>                 | SALES ORDER#:          |
| PRODUCT: <b>Scrubber Mounting Brackets</b> | WO#: <b>08226</b>      |
| Qty: 30                                    | DATE: <b>DEC 13/11</b> |

### FINAL INSPECTION DOCUMENTATION

|                                                                                                                       |           |           |
|-----------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                          | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                  |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC.) |           |           |

|                                        |                          |
|----------------------------------------|--------------------------|
| Q.C. FILE CLOSURE BY: <i>Kasha Fox</i> | DATE: <b>Dec 13 2011</b> |
|----------------------------------------|--------------------------|

### LOOSE COMPONENTS REQUIRED / PREPARED

|                 |                             |
|-----------------|-----------------------------|
| ITEMS REQUIRED: | NO. OF BOXES OR PKGS. _____ |
|-----------------|-----------------------------|

**QTY 43 - SCRUBBER MOUNTING BRACKETS**

|                                           |                                                                     |
|-------------------------------------------|---------------------------------------------------------------------|
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
|-------------------------------------------|---------------------------------------------------------------------|

### PREPARATION FOR SHIPMENT / STORAGE

|                                |
|--------------------------------|
| PREPARATION NEEDED / COMPLETED |
|--------------------------------|

**RELEASE TO NEXT PROCESS**

|                                                                                             |
|---------------------------------------------------------------------------------------------|
| LOT # <b>08226</b>                                                                          |
| PART # <b>SCR-B-1</b>                                                                       |
| INVENTORY TAGS ATTACHED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

### SHIPPING INSTRUCTIONS

|                                                                                             |
|---------------------------------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
|---------------------------------------------------------------------------------------------|

|                                                     |
|-----------------------------------------------------|
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: _____ |
| PHONE: _____ FAX: _____                             |

|                                        |                        |
|----------------------------------------|------------------------|
| RELEASED TO INVENTORY: <i>RW Speed</i> | DATE: <b>DEC 13/11</b> |
| RELEASED TO CUSTOMER:                  | DATE:                  |

NWP Industries  
Job Order Paperwork



Order: 08226

Item: SCR-B-1

Description SCRUBBER MOUNTING BRACKET 10 GA

Ordered: 30.00

Qty To Mfg: 30.00

Entered: 10/31/11

Delv Req: 11/07/11

Customer: STOCK

Name: STOCK

Customer PO:

Contact:

Parent Order: 08226

Drawing: SCR-B-1 R0

*REP. 11/22/11*

| OPER | S | WORK CENTER | QTY | SETUP | RUN | START/END | DESCRIPTION | U/M | QTY |
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|

|    |  |     |       |      |      |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|
| 10 |  | CNC | 30.00 | 0.00 | 1.00 |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|

Plasma/Shear/Brk

OPER:

WC:

Structural Welding As Per CSA W47.1 and W59

Employee Identification:

*CYRUS HARKONEN*

MTR

*NI HT# 57065*

*WILL NOT BE USED*

*NI USED #57065*

Fabrication:

*C.N.C*

Date:

*NOV 29/2011*

Quality:

*LR*

Date:

*DEC 6/11*

*43 pieces cut LR*

*43 CUT*

PLAH4896A

Each

0.99

Plate 10 Gauge 48" x 96" SA36/44W



*9*  
NOV 02 2011

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

|                                |            |            |              |               |         |         |            |
|--------------------------------|------------|------------|--------------|---------------|---------|---------|------------|
| CUSTOMER PURCHASE ORDER NUMBER | ENTRY DATE | SHIP DATE  | TALLY NUMBER | SHIPPER'S NO. | CARRIER | PAGE    | MILL ORDER |
| M51027375                      | 2009/06/23 | 2009/07/28 | 135945       | -             | CP      | -346901 | 49269      |

|                                     |                                   |   |   |
|-------------------------------------|-----------------------------------|---|---|
| CHARGE TO CUSTOMER NAME AND ADDRESS | SHIP TO CUSTOMER NAME AND ADDRESS | 4 | 7 |
|-------------------------------------|-----------------------------------|---|---|

RUSSEL METALS INC ( NORTH )  
PO BOX 39  
WINNIPEG MANITOBA  
R3C 2G3

CUSTOMER SPECIFICATION

HOT ROLLED STEEL SHEET - CARBON - ASTM A1011 TYPE B/SAE J403 GR 1008 (07) (01)  
- CS - TEMPER ROLLED - CUT EDGE ACCEPTABLE - RESTRICTED GAUGE 1/2 TOL. - GEN.  
MFG. SEMI-CRIT SURFACE IMPROVD SHPE

ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

Checked against SA-36

**J. JOHNSTON**  
**MANAGING METALLURGIST**

THIS MILL TEST REPORT MAY NOT BE  
REPRODUCED EXCEPT IN FULL WITHOUT  
WRITTEN APPROVAL OF ESSAR STEEL  
ALUMINUM. IF YOU RECEIVE THIS  
DOCUMENT AND ARE NOT THE INTENDED  
RECIPIENT, PLEASE CALL 1705945-2624  
COLLECT FOR INSTRUCTIONS ON METHOD  
OF DISPOSAL OF DOCUMENT.

2009/08/06 08:42  
JST  
RESALE

[illegible]

CUSTOMER ITEM 00009 OUR ITEM 011 DIMENSIONS .127 MIN X 60 X COIL  
PRODUCT SHIPPED \*\*\*\*\*

|                           |                  |                    |                 |
|---------------------------|------------------|--------------------|-----------------|
| COIL<br>NUMBER<br>9574202 | HEAT<br>5706J-03 | NO.<br>PIECES<br>1 | WEIGHT<br>47750 |
| COIL<br>NUMBER<br>9574203 | HEAT<br>5706J-53 | NO.<br>PIECES<br>1 | WEIGHT<br>48550 |

| BEAT  | (WT %) | C        | MN       | P        | S         | SI       | CR       | NI       | CU | MO | AL  | CB  | V   | B |
|-------|--------|----------|----------|----------|-----------|----------|----------|----------|----|----|-----|-----|-----|---|
| 5706J |        | TI<br>04 | SN<br>16 | N<br>008 | AS<br>005 | ZR<br>02 | PB<br>02 | SB<br>01 | 03 | 00 | 026 | 000 | 000 |   |
|       |        | 001      |          | 0035     |           | 002      |          |          |    |    |     |     |     |   |

Conforms with ASME

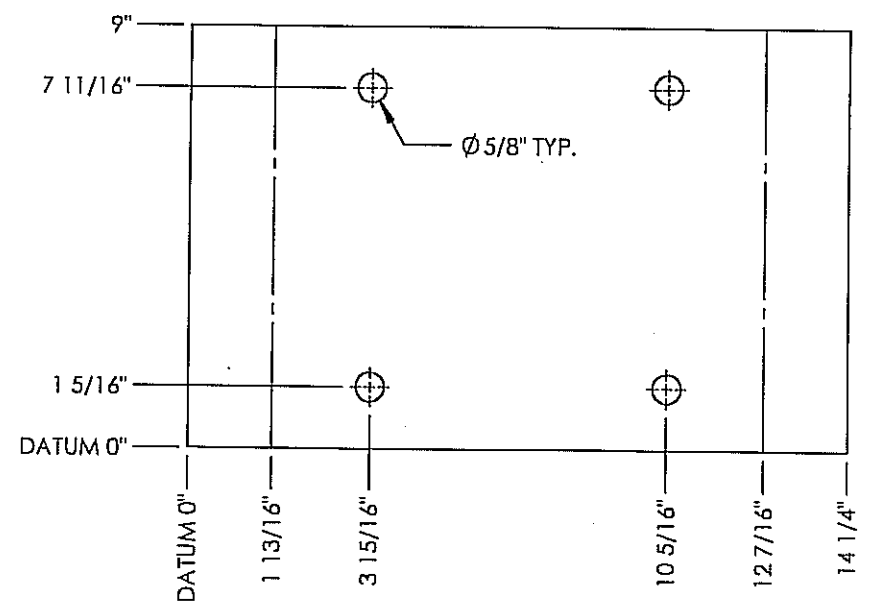
Sec II, Part A, 2010 edition"

LR June 22, 2011

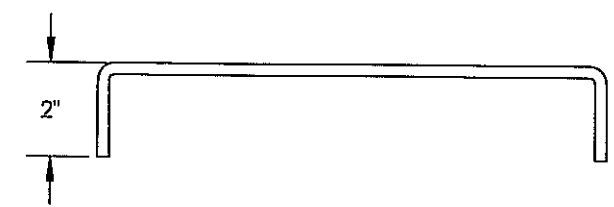
PAGE 3 OF 3 EDIT

**\*\*WARNING\*\***  
THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM REQUIREMENTS SPECIFIED IN THE STANDARD AND (2) THE CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE STANDARD.

| ITEM | PART # | DESCRIPTION                         | MTR # | LENGTH | QTY. |
|------|--------|-------------------------------------|-------|--------|------|
| 1    | PLAHYA | PLATE 10ga x 9" x 11" x 2" SA36/44W |       |        | 1    |

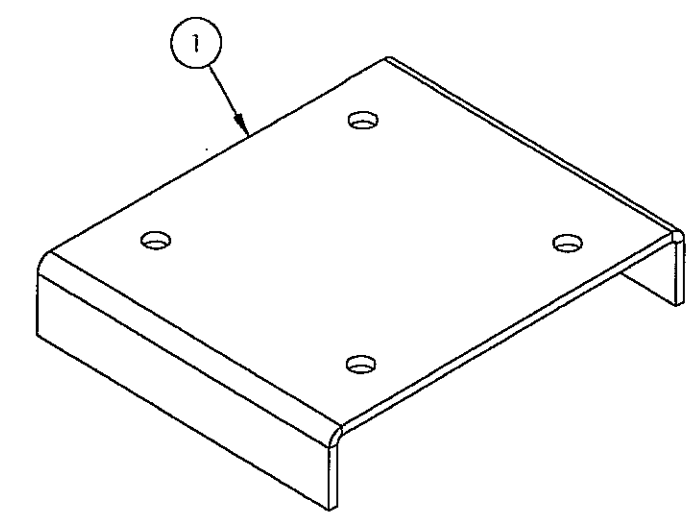


FLAT VIEW  
SCALE: 1:4

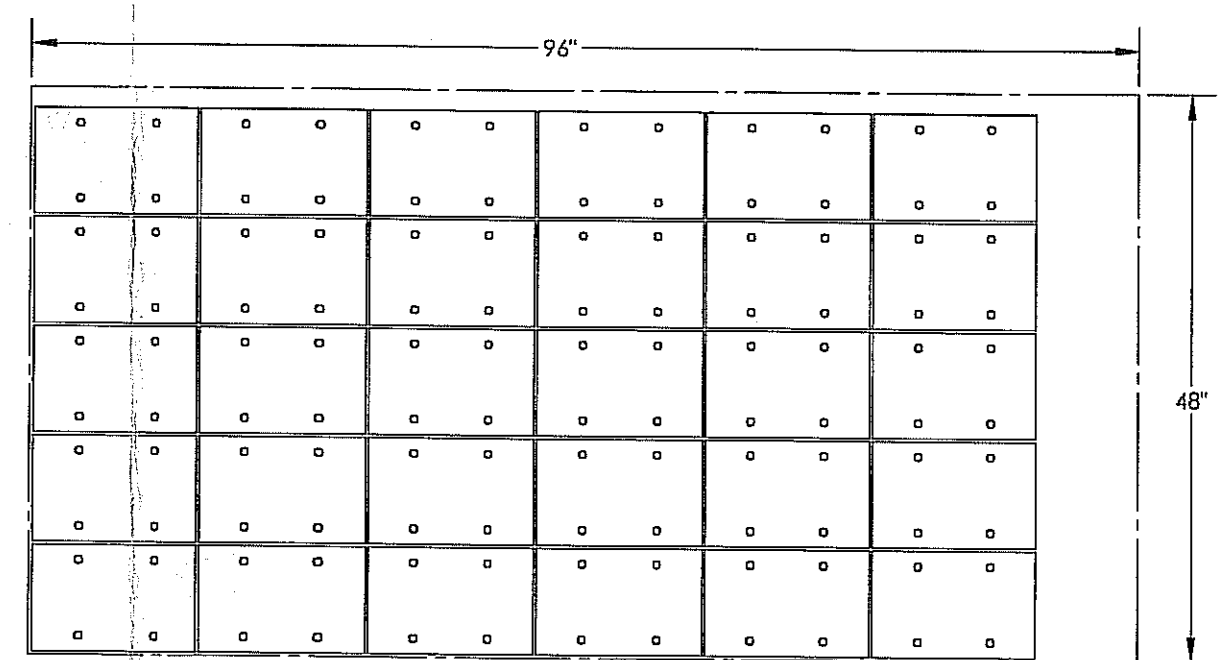


FRONT VIEW  
SCALE: 1:4

ISSUED FOR CONSTRUCTION



ISOMETRIC VIEW  
SCALE: 1:4



CNC LAYOUT  
SCALE: 1:4

|                    |  |  |  |  |  |                   |  |  |  |  |  |                          |  |  |  |  |  |                         |  |  |  |  |  |                     |  |  |  |  |  |                    |  |  |  |  |  |             |  |  |  |  |  |                         |  |  |  |  |  |                     |  |  |  |  |  |                                      |  |  |  |  |  |                                        |  |  |  |  |  |                                                                                                                                           |  |  |  |  |  |                    |  |  |  |  |  |                          |  |  |  |  |  |                      |  |  |  |  |  |                     |  |  |  |  |  |          |  |  |  |  |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                 |  |  |  |  |  |                   |  |  |  |  |  |            |  |  |  |  |  |              |  |  |  |  |  |        |  |  |  |  |  |
|--------------------|--|--|--|--|--|-------------------|--|--|--|--|--|--------------------------|--|--|--|--|--|-------------------------|--|--|--|--|--|---------------------|--|--|--|--|--|--------------------|--|--|--|--|--|-------------|--|--|--|--|--|-------------------------|--|--|--|--|--|---------------------|--|--|--|--|--|--------------------------------------|--|--|--|--|--|----------------------------------------|--|--|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--------------------|--|--|--|--|--|--------------------------|--|--|--|--|--|----------------------|--|--|--|--|--|---------------------|--|--|--|--|--|----------|--|--|--|--|--|------------------|--|--|--|--|--|------------------|--|--|--|--|--|------------------|--|--|--|--|--|-----------------|--|--|--|--|--|-------------------|--|--|--|--|--|------------|--|--|--|--|--|--------------|--|--|--|--|--|--------|--|--|--|--|--|
| DOCUMENT NO.       |  |  |  |  |  | DESCRIPTION       |  |  |  |  |  | REV                      |  |  |  |  |  | DATE                    |  |  |  |  |  | BY                  |  |  |  |  |  | CHK                |  |  |  |  |  | APP         |  |  |  |  |  | ISSUED FOR CONSTRUCTION |  |  |  |  |  |                     |  |  |  |  |  |                                      |  |  |  |  |  |                                        |  |  |  |  |  |                                                                                                                                           |  |  |  |  |  |                    |  |  |  |  |  |                          |  |  |  |  |  |                      |  |  |  |  |  |                     |  |  |  |  |  |          |  |  |  |  |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                 |  |  |  |  |  |                   |  |  |  |  |  |            |  |  |  |  |  |              |  |  |  |  |  |        |  |  |  |  |  |
| 0                  |  |  |  |  |  | 2011.08.31        |  |  |  |  |  | JHK                      |  |  |  |  |  | [Signature]             |  |  |  |  |  | [Signature]         |  |  |  |  |  | [Signature]        |  |  |  |  |  | [Signature] |  |  |  |  |  | [Signature]             |  |  |  |  |  | [Signature]         |  |  |  |  |  |                                      |  |  |  |  |  |                                        |  |  |  |  |  |                                                                                                                                           |  |  |  |  |  |                    |  |  |  |  |  |                          |  |  |  |  |  |                      |  |  |  |  |  |                     |  |  |  |  |  |          |  |  |  |  |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                 |  |  |  |  |  |                   |  |  |  |  |  |            |  |  |  |  |  |              |  |  |  |  |  |        |  |  |  |  |  |
| REFERENCE DRAWINGS |  |  |  |  |  | DRAWING REVISIONS |  |  |  |  |  | ALL DIMENSIONS IN INCHES |  |  |  |  |  | ISSUED FOR CONSTRUCTION |  |  |  |  |  | SIGNED: [Signature] |  |  |  |  |  | DATE: OCT 31, 2011 |  |  |  |  |  | W.O.: 08226 |  |  |  |  |  | S.O.: [Signature]       |  |  |  |  |  | NWP INDUSTRIES INC. |  |  |  |  |  | P.O. BOX 6280, INNISFAIL, AB T4G 1S9 |  |  |  |  |  | PH: (403) 227-4100 FAX: (403) 227-4102 |  |  |  |  |  | THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST. |  |  |  |  |  | NWP INDUSTRIES INC |  |  |  |  |  | FG SCRUBBER BASE SUPPORT |  |  |  |  |  | 9" x 11" x 2" x 10ga |  |  |  |  |  | FORMED PART DRAWING |  |  |  |  |  | DWN: JHK |  |  |  |  |  | CHK: [Signature] |  |  |  |  |  | APP: [Signature] |  |  |  |  |  | DATE: 2011.08.31 |  |  |  |  |  | DATE: Aug 30/11 |  |  |  |  |  | DATE: [Signature] |  |  |  |  |  | SCALE: 1:4 |  |  |  |  |  | DWG: SCR-B-1 |  |  |  |  |  | REV: 0 |  |  |  |  |  |



NWP Industries  
Job Order Paperwork



Order: 08517-B

Item: BRACKET-FG-1

Description Fuel Gas Vent Header Bracket 1"

Ordered: 40.00

Qty To Mfg: 40.00

Entered: 08/29/12

Delv Req: 08/31/12

Customer: STOCK

Name: STOCK

Customer PO:

Contact:

Parent Order: 08517

Drawing: BRACKET-FG-1 REV 1

| OPER | S | WORK CENTER | QTY | SETUP | RUN | START/END | DESCRIPTION | U/M | QTY |
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|

|    |  |     |       |      |      |  |       |  |  |
|----|--|-----|-------|------|------|--|-------|--|--|
| 10 |  | CNC | 40.00 | 0.00 | 1.33 |  | Shear |  |  |
|----|--|-----|-------|------|------|--|-------|--|--|

Plasma/Shear/Brk

OPER:

WC:

Structural Welding As Per CSA W47.1 and W59

Employee Identification: CYNUS HARKONEN

MTR NI USED HT# 488386

Fabrication: C.N.C

Date: SEPT 21 / 2012

Quality: Terega Com

Date: OCT 9/12

40 CUT

FLTC2A

Foot

16.80

Flat Bar 1/4" x 2" SA36/44W



Foot

13.20

PIP.580A

Pipe 1/2" S/80 SA106B



NWP Industries  
Job Order Paperwork



Order: 08517-B

Item: BRACKET-FG-1

Description Fuel Gas Vent Header Bracket 1"

Ordered: 40.00

Qty To Mfg: 40.00

Entered: 08/29/12

Delv Req: 08/31/12

Customer: STOCK

Name: STOCK

Customer PO:

Contact:

Parent Order: 08517

Drawing: BRACKET-FG-1 REV 1

| OPER | S | WORK CENTER | QTY   | SETUP | RUN   | START/END | DESCRIPTION | U/M | QTY |
|------|---|-------------|-------|-------|-------|-----------|-------------|-----|-----|
| 20   |   | G Weld      | 40.00 | 0.00  | 10.00 |           |             |     |     |

G Weld

OPER:



Structural Welding As Per CSA W47.1 and W59

Employee Identification:

21739

CH

MTR

HT# 400306

WC:



Fabrication:

G weld

Date:

Oct 5 2012

Quality:

Date:

PCL1

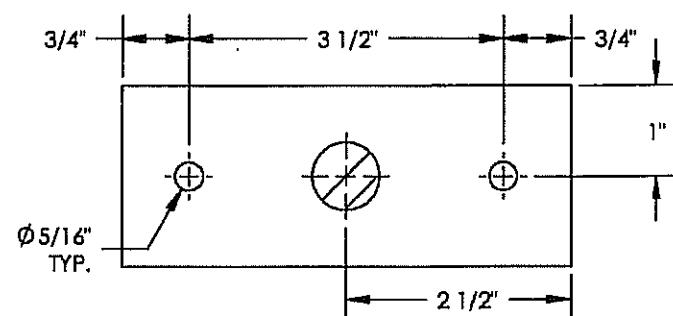
Pipe Clamp 1" Fig 212

Each

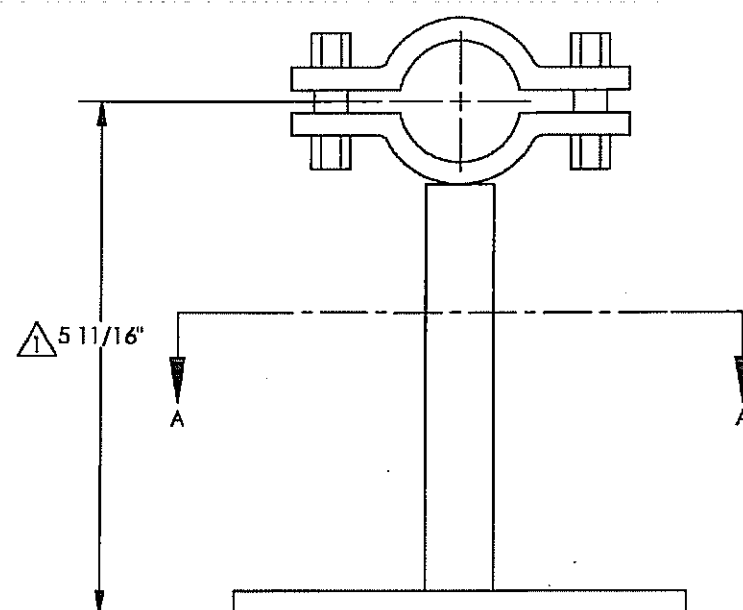
40.00



Took 2 on Oct 5 2012  
Chris Craig

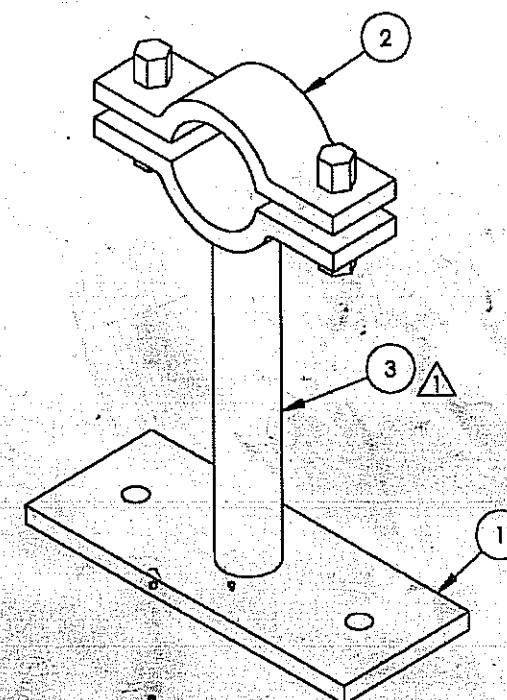


**SECTION A-A**  
SCALE: 1:2



**FRONT VIEW**  
SCALE: 1:2

| ITEM | PART # | DESCRIPTION                 | MTR #     | LENGTH | QTY. |
|------|--------|-----------------------------|-----------|--------|------|
| 1    | FLTC2A | FLAT BAR 1/4" x 2" SA36/44W |           | 5"     | 1    |
| 2    | PCL1   | PIPE CLAMP 1" FIG. 212      |           |        | 1    |
| 3    | RBRGYA | ROUND BAR 3/4" SA36/44W     | 11 04 224 | 4 1/2" | 1    |



**ISOMETRIC VIEW**  
SCALE: 1:2

**ORIGINAL**

- NOTES**
1. FABRICATE TO CSA W47.1 AND W59.
  2. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  3. DEBURR AND RADIUS ALL SHARP EDGES.
  4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED. WPDS FC1-15, FC1-10.
  5. ALL WELDS TO BE 1/4" CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.

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EVRAZ INC. NA

# Test Certificate

Form TCI: Revision 1: Date 31 Oct 2000

Customer:  
WILKINSON  
A DIVISION OF PREMETAL CO INC.  
6125 51ST ST. S.E.  
CALGARY  
AB T2C3V2

Customer P.O. No.: P20117ME001C

Mill Order No.: 41-244124-03

Shipping Manifest: C1031508

Product Description: CSA G40.21(2004)44W/300W / ASTM A36(05)

A709(01A)36/ASME SA36(01ED)

Ship Date: 22 Feb 12  
Cert Date: 22 Feb 12  
Cert No: 051061366  
(Page 1 of 1)

Size: 0.250 X 72.00 X 150.0 (IN)

## Tested Pieces

| Heat Id | Piece Id | Piece Dimensions    | Tst Loc | YS (PSI) | UTS (PSI) | %RA | Elong % 2in 8in | Tst Dir | Average Hardness | Abs. Energy(FTLB) | % Shear | Tst Temp | Tst Dir | BDVTT Temp %Shear |
|---------|----------|---------------------|---------|----------|-----------|-----|-----------------|---------|------------------|-------------------|---------|----------|---------|-------------------|
| 488386  | B0011    | 0.245 X 72.00 (CUT) | L67000  | 62000    | 75000     | 35  | 17              | T       |                  |                   |         |          |         |                   |
| 488386  | B0014    | 0.308 X 72.00 (CUT) | L66000  | 62000    | 75000     | 43  | 22              | T       |                  |                   |         |          |         |                   |

## Tensiles

## Charpy Impact Tests

## Chemical Analysis

| Heat Id | C    | Mn   | P     | S     | Si   | Al    | Cu   | Ni   | Cr   | Mo   | Co    | V     | Ti    | B     | N      | ORGN |
|---------|------|------|-------|-------|------|-------|------|------|------|------|-------|-------|-------|-------|--------|------|
| 488386  | 0.05 | 0.73 | 0.015 | 0.005 | 0.25 | 0.029 | 0.39 | 0.12 | 0.19 | 0.05 | 0.024 | 0.002 | 0.018 | 0.001 | 0.0078 | CAN  |

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT  
MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL  
\* 488386 B0012 PCS: 43, WGT: 32924

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2014a addenda"

60138112  
[Signature]

(9) Cust Part # :

WE HEREBY CERTIFY THAT THIS MATERIAL  
WAS TESTED IN ACCORDANCE WITH THE  
APPROPRIATE SPECIFICATION

Jason Wall  
Checked by



# INSPECTION CERTIFICATION AND MILL TEST REPORT

## According to EN 10204 3.1 B

Customer:  
Pinnacle Stainless Steel Inc.  
455 AMBASSADOR DRIVE,  
MISSISSAUGA, ONTARIO,  
Canada L5T 2J3

Manufacturer's Symbol  
**SC-HF**

Order No. 52331 SC MFG GROUP P.O.#SC-15190

SC MFG GROUP (CHINA) INC. / SECOND DIVISION  
Manghuang Mao Industry Area, Yunhe District,  
Cangzhou City, Hebei Province, CHINA  
Tel: 86-317-2120955 Fax: 86-317-2120700

|                           |                                             |
|---------------------------|---------------------------------------------|
| MIR No.                   | GWKH-2010018                                |
| Date of issue             | 28-Mar-10                                   |
| Grade                     | TP316L 80S                                  |
| Made From                 | SMLS Pipe                                   |
| Material Specification    | ASAS312-1985                                |
| Dimensional Specification | ANSI/ASME B1.20.1-1983(R2001), ASTM A733-03 |

### Chemical Analysis

| Item No. | Item Description           | Heat No. | MTR  | QTY  | %C      | %Si    | %Mn    | %P      | %S      | %Cr     | %Ni     | %Mo    |
|----------|----------------------------|----------|------|------|---------|--------|--------|---------|---------|---------|---------|--------|
| 1        | 1/4 x 1-1/2 80S NIPPLE TBE | 0912182  | 316L | 1500 | 0.026   | 0.41   | 0.95   | 0.034   | 0.006   | 16.66   | 11.07   | 2.02   |
| 2        | 1/4 x 2 80S NIPPLE TBE     | 0912182  | 316L | 2500 | 0.026 ✓ | 0.41 ✓ | 0.95 ✓ | 0.034 ✓ | 0.006 ✓ | 16.66 ✓ | 11.07 ✓ | 2.02 ✓ |
| 3        | 1/4 x 3 80S NIPPLE TBE     | 0912182  | 316L | 500  | 0.026   | 0.41   | 0.95   | 0.034   | 0.006   | 16.66   | 11.07   | 2.02   |
| 4        | 1/4 x CLOSE 80S NIPPLE TBE | 0912182  | 316L | 3000 | 0.026   | 0.41   | 0.95   | 0.034   | 0.006   | 16.66   | 11.07   | 2.02   |
| 5        | 3/8 x 1-1/2 80S NIPPLE TBE | 0912182  | 316L | 1500 | 0.026   | 0.41   | 0.95   | 0.034   | 0.006   | 16.66   | 11.07   | 2.02   |
| 6        | 3/8 x 3 80S NIPPLE TBE     | 0912182  | 316L | 500  | 0.026   | 0.41   | 0.95   | 0.034   | 0.006   | 16.66   | 11.07   | 2.02   |

### Mechanical Properties

| Heat No. | Item Description           | Tensile<br>MPa | Yield<br>MPa | Elong<br>% | Red Area<br>% | Bend<br>Test | Flattening<br>Test | Hardness<br>HRC | Impact<br>Test | Hydrostat.<br>Test | Xray<br>Test | Heat<br>Test |
|----------|----------------------------|----------------|--------------|------------|---------------|--------------|--------------------|-----------------|----------------|--------------------|--------------|--------------|
| 0912182  | 1/4 x 1-1/2 80S NIPPLE TBE | 550            | 245          | 55         | -             | OK           | OK                 | 71              | OK             | 15Mpa              | -            | 1060 I       |
| 0912182  | 1/4 x 2 80S NIPPLE TBE     | 550 ✓          | 245 ✓        | 55 ✓       | -             | OK           | OK                 | 71              | OK             | 15Mpa              | -            | 1060 I       |
| 0912182  | 1/4 x 3 80S NIPPLE TBE     | 550            | 245          | 55         | -             | OK           | OK                 | 71              | OK             | 15Mpa              | -            | 1060 I       |
| 0912182  | 1/4 x CLOSE 80S NIPPLE TBE | 550            | 245          | 55         | -             | OK           | OK                 | 71              | OK             | 15Mpa              | -            | 1060 I       |
| 0912182  | 3/8 x 1-1/2 80S NIPPLE TBE | 550            | 245          | 55         | -             | OK           | OK                 | 71              | OK             | 15Mpa              | -            | 1060 I       |
| 0912182  | 3/8 x 3 80S NIPPLE TBE     | 550            | 245          | 55         | -             | OK           | OK                 | 71              | OK             | 15Mpa              | -            | 1060 I       |

Heat Treatment: SOLUTION TREATED, 1060 °C (20 Minutes) Water Quenched

Misc: Material in accordance with NACE MR0175-2003 Free from Mercury contamination Addition of filler metal? ☐ No ☒ Yes  
WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED IN  
ACCORDANCE WITH ALL REQUIREMENTS OF THE SPECIFICATION(S) AND THE  
RESULTS OF ALL EXAMINATIONS ARE ACCEPTABLE.

WUJIANG  
Quality Assurance Manager

Checked Against SA-312 (TP316L)  
"Conforms with ASME  
Sec II, Part A, 2010 edition"  
Oct. 17/2011

PO# 710404 Item# 2  
Heat Number: 09/36890  
Trans AM Piping Products Ltd. - Rev'd By: JES  
P.O. Seq #: 12805  
MACH TO RTJ FACE

2" CL 2500 BLIND FLGE FULL  
FACE C/W SOLID HUB  
A350-LF2 CL1  
D/T 3/4"



**METALFAR**  
PRODOTTI INDUSTRIALI S.P.A.

STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

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

COMPANY WITH QUALITY MANAGEMENT  
SYSTEM CERTIFIED BY DNV  
= ISO 9001:2008 =

**CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE**

|                                                                                         |                                              |                                                                                                           |                                   |
|-----------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------|
| Certif. N. 4836<br>DDT / Del Note N. 3939                                               | Del/Dated 15.10.2012<br>Del/Dated 15.10.2012 | Fattura / Invoice N. 3342<br>Ns.Ord. / Our ref. N.                                                        | Del/Dated 15.10.2012<br>Del/Dated |
| TRANS AM PIPING PRODUCTS LTD<br>9335 ENDEAVOR DRIVE S.E.<br>T3S 0A1 CALGARY, ALBERTA CA |                                              | Dest.: F.F.F. c/o TRANS AM PIPING PRODUCTS LTD<br>9335 Endeavor Drive S.E.<br>T3S 0A1 CALGARY, ALBERTA CA |                                   |

Pag. 28 - 29

**SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT**

|                                                                    |           |              |                  |              |                                  |                                           |                                      |       |       |       |              |                  |       |                           |       |                  |       |
|--------------------------------------------------------------------|-----------|--------------|------------------|--------------|----------------------------------|-------------------------------------------|--------------------------------------|-------|-------|-------|--------------|------------------|-------|---------------------------|-------|------------------|-------|
| COD. COL.                                                          | COLATA    | POS.         | VS.ORDINE        | Q.TA'        | DESCRIZIONE                      | DIM.IN ACC. A                             |                                      |       |       |       |              |                  |       |                           |       | VISIVO E DIMENS. |       |
| HEAT CODE                                                          | HEAT      | ITEM         | YOUR REFERENCE   | Q.TY         | DESCRIPTION                      | DIM. ACCORDANCE TO                        |                                      |       |       |       |              |                  |       |                           |       | VIS. & DIMENS.   |       |
|                                                                    | 12/30723  | 100          | 3878/TRANS AM    | 15,00        | BOSSED 1500 RTJ 1" NO GR. LF2CL1 | ASME/ANSI B16.5-2009                      |                                      |       |       |       |              |                  |       |                           |       | SATISFACTORY     |       |
| MATERIALE / MATERIAL                                               |           |              | C%               | Si%          | Mn%                              | S%                                        | P%                                   | Cr%   | Ni%   | Mo%   | Ti%          | Cu%              | V%    | Nb%                       | N%    | Al%              | C.E.% |
| ASTM A350 LF2 CL1/2 (LADLE)                                        |           |              | 0,200            | 0,230        | 0,950                            | 0,010                                     | 0,013                                | 0,110 | 0,050 | 0,010 | 0,018        | 0,140            | 0,001 | 0,002                     | 0,000 | 0,025            | 0,395 |
| PROVETTA / TEST SPECIMEN                                           | FORMA     | SNERVAMENTO  | ROTTURA          | ALLUNGAMENTO | CONTRAZIONE                      | DUREZZA                                   | RESILIENZA / IMPACT TEST - JOULE/cm2 |       |       |       | SNERVAMENTO  | Na.RIF.          |       |                           |       |                  |       |
| SEZ. mm2                                                           | LUNG. mm  | YIELD POINT  | TENSILE STRENGTH | ELONGATION   | REDUCTION OF AREA                | HARDNESS                                  | TIPO / TYPE 10x10mm                  |       |       |       | YIELD POINT  | OUR REF.         |       |                           |       |                  |       |
| SECT. mm2                                                          | LENGHT mm | N/mm2 >=0,2% | N/mm2 >=         | %>=          | %>=                              | HBW                                       | °C                                   |       |       |       | N/mm2 >=1,0% |                  |       |                           |       |                  |       |
| 126,60                                                             | 50,80     | 342,0        | 626,0            | 31,0         | 58,0                             | 159,0 - 163,0                             | KV                                   |       |       |       | 0,0          |                  |       |                           |       |                  |       |
| MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO                       |           |              |                  |              |                                  | TRATTAMENTO TERMICO / HEAT TREATMENT      |                                      |       |       |       |              | FORNO / FURNACE  |       | ORIGINE / ORIGIN OF STEEL |       |                  |       |
| ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010 |           |              |                  |              |                                  | NORMALIZED AT 930 C - COOLED IN STILL AIR |                                      |       |       |       |              | ELECTRIC FURNACE |       | EUROPEAN UNION            |       |                  |       |
| CSA Z245.12-09 GRADE 248 CAT.II SOUR SERVICE                       |           |              |                  |              |                                  |                                           |                                      |       |       |       |              |                  |       |                           |       |                  |       |

|                                                                    |        |           |                |                  |                                  |                                           |               |                            |       |       |       |                  |       |       |       |                           |       |       |       |       |
|--------------------------------------------------------------------|--------|-----------|----------------|------------------|----------------------------------|-------------------------------------------|---------------|----------------------------|-------|-------|-------|------------------|-------|-------|-------|---------------------------|-------|-------|-------|-------|
| COD. COL.                                                          | COLATA | POS.      | VS.ORDINE      | Q.TA'            | DESCRIZIONE                      | DIM.IN ACC. A                             |               |                            |       |       |       |                  |       |       |       | VISIVO E DIMENS.          |       |       |       |       |
| HEAT CODE                                                          | HEAT   | ITEM      | YOUR REFERENCE | Q.TY             | DESCRIPTION                      | DIM. ACCORDANCE TO                        |               |                            |       |       |       |                  |       |       |       | VIS. & DIMENS.            |       |       |       |       |
| 09/36890                                                           |        | 101       | 3878/TRANS AM  | 10,00            | BOSSED 2500 RTJ 2" NO GR. LF2CL1 | ASME/ANSI B16.5-2009                      |               |                            |       |       |       |                  |       |       |       | SATISFACTORY              |       |       |       |       |
| MATERIALE / MATERIAL                                               |        |           |                |                  |                                  | C%                                        | Si%           | Mn%                        | S%    | P%    | Cr%   | Ni%              | Mo%   | Ti%   | Cu%   | V%                        | Nb%   | N%    | Al%   | C.E.% |
| ASTM A350 LF2 CL1/2 (LADLE)                                        |        |           |                |                  |                                  | 0,200                                     | 0,230         | 1,140                      | 0,012 | 0,010 | 0,080 | 0,050            | 0,010 | 0,016 | 0,100 | 0,022                     | 0,001 | 0,000 | 0,025 | 0,420 |
| PROVETTA / TEST SPECIMEN                                           |        | FORMA     | SNERVAMENTO    | ROTTURA          | ALLUNGAMENTO                     | CONTRAZIONE                               | DUREZZA       | RESILIENZA / IMPACT TEST - |       |       |       | SNERVAMENTO      |       |       |       |                           |       |       |       |       |
| SEZ. mm2                                                           |        | LUNG. mm  | YIELD POINT    | TENSILE STRENGTH | ELONGATION                       | REDUCTION OF AREA                         | HARDNESS      | JOULE/cm2                  |       |       |       | YIELD POINT      |       |       |       |                           |       |       |       |       |
| SECT. mm2                                                          |        | LENGHT mm | N/mm2 >=0,2%   | N/mm2 >=         | %>=                              | %>=                                       | HBW           | TIPO / TYPE 10x10mm        |       |       |       | N/mm2 >=1,0%     |       |       |       |                           |       |       |       |       |
| 126,80                                                             |        | 50,80     | 382,0          | 544,0            | 30,0                             | 67,0                                      | 164,0 - 166,0 | KV                         |       |       |       | 0,0              |       |       |       |                           |       |       |       |       |
|                                                                    |        |           |                |                  |                                  |                                           |               | °C                         |       |       |       |                  |       |       |       |                           |       |       |       |       |
|                                                                    |        |           |                |                  |                                  |                                           |               | 1                          |       |       |       | 2                |       |       |       |                           |       |       |       |       |
|                                                                    |        |           |                |                  |                                  |                                           |               | 69                         |       |       |       | 70               |       |       |       |                           |       |       |       |       |
|                                                                    |        |           |                |                  |                                  |                                           |               | °C                         |       |       |       | 63               |       |       |       |                           |       |       |       |       |
| MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO                       |        |           |                |                  |                                  | TRATTAMENTO TERMICO / HEAT TREATMENT      |               |                            |       |       |       | FORNO / FURNACE  |       |       |       | ORIGINE / ORIGIN OF STEEL |       |       |       |       |
| ASTM/ASME A 350/SA 350 M - 11 ASME CODE SECT. II, PART A, ED. 2010 |        |           |                |                  |                                  | NORMALIZED AT 930 C - COOLED IN STILL AIR |               |                            |       |       |       | ELECTRIC FURNACE |       |       |       | EUROPEAN UNION            |       |       |       |       |
| CSA Z245.12-09 GRADE 248 CAT.II SOUR SERVICE                       |        |           |                |                  |                                  |                                           |               |                            |       |       |       |                  |       |       |       |                           |       |       |       |       |

2012/12/16 S. Naso  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

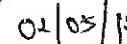
Name: S. Naso  
2012/12/16

|                                                                                                                                                                                                                                                  |                                                                                      |                                                    |                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| NOTE 100% MANUFACTURED IN ITALY<br>NOTES MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION<br>MATERIAL IN ACCORDANCE WITH NACE MR-0175/2009 ISO 15156-2009 - SOUR SERVICE<br>MATERIAL IN ACCORDANCE WITH NACE MR-0103/2010 - SOUR SERVICE | UFFICIO CONTROLLO QUALITA'<br>QUALITY CONTROL DEPARTMENT<br>S. Corti<br>Carlo Sergio | ENTE UFFICIALE DI COLLAUDO<br>INSPECTION AUTHORITY | MARCHIO PRODUZIONE<br>MANUFACTURER'S SYMBOL<br>MFF |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|



VT. 171-175 ✓

- Encana
- Threaded



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**华友特钢**  
HUYOU SPECIAL STEEL

## MILL TEST CERTIFICATE

(EN10204 3.1)

| 序号<br>NO.                                                                                               | 生产批号<br>WORK NO.                                                                                                                                                                                        | 炉号<br>HEAT NO. | 支数<br>PCS | 化 学 成 份 %<br>CHEMICAL COMPOSITION |             |                          |       |              |       |                                               |                                  |              |               |                             |                          |             |       |      |         | 非金属夹杂物 (级)<br>Non-Metallic Inclusions (GR) |      |      |      |
|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|-----------------------------------|-------------|--------------------------|-------|--------------|-------|-----------------------------------------------|----------------------------------|--------------|---------------|-----------------------------|--------------------------|-------------|-------|------|---------|--------------------------------------------|------|------|------|
|                                                                                                         |                                                                                                                                                                                                         |                |           | *1                                | 碳           | 硅                        | 锰     | 磷            | 硫     | 铜                                             | 镍                                | 铬            | 钼             | 钒                           | 硼                        | 铌           | 钛     | Mn/C | CE(CSA) | A                                          | B    | C    | D    |
|                                                                                                         |                                                                                                                                                                                                         |                |           | C                                 | Si          | Mn                       | P     | S            | Cu    | Ni                                            | Cr                               | Mo           | V             | B                           | Nb                       | Ti          |       |      |         |                                            |      |      |      |
|                                                                                                         |                                                                                                                                                                                                         |                |           | Max                               | 0.260       | 0.500                    | 1.060 | 0.030        | 0.030 | 0.400                                         | 0.400                            | 0.400        | 0.150         | 0.080                       | 0.001                    | 0.110       | 0.110 |      | 0.40    | ≤2.5                                       | ≤2.5 | ≤2.5 | ≤2.5 |
| Min                                                                                                     |                                                                                                                                                                                                         | 0.100          | 0.290     |                                   |             |                          |       |              |       |                                               |                                  |              |               |                             | 2.5                      |             |       |      |         |                                            |      |      |      |
| 1                                                                                                       | 120253                                                                                                                                                                                                  | 10253          | 519       | H                                 | 0.180       | 0.240                    | 0.550 | 0.009        | 0.007 | 0.058                                         | 0.010                            | 0.016        | 0.005         | 0.002                       | 0.0002                   | 0.002       | 0.001 | 3.1  | 0.28    | 0.5                                        | 0.5  | 0.5  | 0.5  |
| 同上<br>序号<br>NO.                                                                                         | 拉伸试验 TENSILE TEST                                                                                                                                                                                       |                |           |                                   |             | 冲击试验 IMPACT TEST         |       |              |       | 硬度试验<br>HARDNESS TEST<br>(HRC≤22)<br>(HB≤234) | 水压试验<br>HYDROSTATIC TEST         | 无损探伤检验       |               | 金相试验                        |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         | 标距 GAUGE LENGTH (50.8mm)                                                                                                                                                                                |                |           |                                   |             | AKV (J)                  |       |              |       |                                               |                                  | N.D.E.       |               | METALLOGRAPHIC              |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         | *2                                                                                                                                                                                                      | 抗拉强度           | 屈服强度      | 伸长率                               | 屈强比         | 试验温度 TEMPERATURE OF TEST |       |              |       |                                               |                                  | 涡流探伤<br>E.T. | 超声波探伤<br>U.T. | 显微组织<br>MICROSTRUC-<br>TURE | 晶粒度<br>(级)<br>GRAIN SIZE |             |       |      |         |                                            |      |      |      |
|                                                                                                         | *3                                                                                                                                                                                                      | T.S.           | Y.S.      | E.L.                              | Y/T         | 10×10×55 (20℃)           |       |              |       |                                               |                                  |              |               |                             |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         |                                                                                                                                                                                                         | MPa            | *4 MPa    | δ %                               |             |                          |       |              |       |                                               |                                  |              |               |                             |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         | Max                                                                                                                                                                                                     |                |           |                                   |             | 0.93                     | 1     | 2            | 3     |                                               |                                  |              |               |                             |                          | AVG         |       |      |         |                                            |      |      |      |
| Min                                                                                                     | 415                                                                                                                                                                                                     | 290            | 30        |                                   |             |                          |       |              |       |                                               |                                  |              |               |                             |                          |             |       |      |         |                                            |      |      |      |
| 1                                                                                                       | L                                                                                                                                                                                                       | 480 / 485      | 315 / 325 | 33 / 34                           | 0.66 / 0.87 | -                        | -     | -            | -     | HB 128/137/125                                | 20.7 MPa,10s                     | 合格<br>GOOD   | 合格<br>GOOD    | F+P                         | 6                        |             |       |      |         |                                            |      |      |      |
| 外观和尺寸                                                                                                   |                                                                                                                                                                                                         | 合格             |           | 压扁试验                              |             | -                        |       | 弯曲试验         |       | 合格                                            |                                  | 扩口试验         |               | -                           |                          | 卷边试验        |       | -    |         |                                            |      |      |      |
| VISUAL & DIMENSION                                                                                      |                                                                                                                                                                                                         | GOOD           |           | FLATTENING TEST                   |             | -                        |       | BENDING TEST |       | GOOD                                          |                                  | EXPAND TEST  |               | -                           |                          | SPRINT TEST |       | -    |         |                                            |      |      |      |
| 注 释<br>NOTES                                                                                            | *1、H: HEAT (LADLE) ANALYSIS; P: PRODUCT ANALYSIS.                                                                                                                                                       |                |           |                                   |             |                          |       |              |       |                                               | *2、试样尺寸 SIZE: 管状试样TUBULAR SAMPLE |              |               |                             |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         | *3、试验方向 ORIENTATION: L=纵向LONGITUDINAL.                                                                                                                                                                  |                |           |                                   |             |                          |       |              |       |                                               | *4、SY=0.2% OFFSET.               |              |               |                             |                          |             |       |      |         |                                            |      |      |      |
| WE HEREBY CONFIRM THAT OUR PRODUCTS ARE MADE WITH MATERIALS WHICH ARE FREE FROM RADIATION CONTAMINATION |                                                                                                                                                                                                         |                |           |                                   |             |                          |       |              |       |                                               |                                  |              |               |                             |                          |             |       |      |         |                                            |      |      |      |
| 会 验 者<br>SURVEYOR                                                                                       | 兹证明本表所列产品, 均依标准规定制造、取样、试验和检验, 并符合标准及合同要求。                                                                                                                                                               |                |           |                                   |             |                          |       |              |       |                                               | 检验员                              |              | 李计珍           |                             |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         | WE HEREBY CERTIFY THAT THE MATERIALS DESCRIBED HEREIN HAVE BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE CUSTOMER'S SPECIFICATION(S), AND THAT THEY SATISFY THE REQUIREMENTS. |                |           |                                   |             |                          |       |              |       |                                               | INSPECTOR                        |              | 李计珍           |                             |                          |             |       |      |         |                                            |      |      |      |
|                                                                                                         |                                                                                                                                                                                                         |                |           |                                   |             |                          |       |              |       |                                               | STAMP OF MILL INSPECTOR          |              |               |                             |                          |             |       |      |         |                                            |      |      |      |

$x \pm \text{Se20}$  A106

TO CUSTOMER  
SPECIFICATIONS

## REQUIREMENTS

Encana - 65

2011a addenda

2012/8/7 A. Nevo

ANGZHOU LONTRIN STEEL TUBE CO., LTD.  
INSPECTION CERTIFICATE (EN10204-3.1)

No.1 Xinggang Rd development area along the river  
Jiangdu City Jiangsu province, China  
Tel:86-0514-26430111 Fax:86514-3643033

ISO REGISTRATION NO: 44100072544

CUSTOMER: MARUBEN-ITOCHU TUBULARS CANADA LTD. (COMCO PEEK SUPPLY COMPANY)

COMCO's PO#: PO#E1-2265

PRODUCT: SEAMLESS CARBON STEEL PIPE

CONTRACT NO: TCB248

SPEC: ASTM/AASHE A5A 105 G1B (7010) AND A71 SL (44T ELEM) PSL-1 G2 BALANCE N90175/SD1516(205) / HACE 1A9 0103(207) HARDNESS ONLY

CERTIFICATE NUMBER: 05112A-05REVISED

| TOTAL: 25 BUNDLES                                                                                                                |           | 1616 PIECES |              | 22417 KG          |                          | PACKING IN BUNDLES |              |           |              |                     |              |              |              |              |                 |       |       |       |      |                     |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|--------------|-------------------|--------------------------|--------------------|--------------|-----------|--------------|---------------------|--------------|--------------|--------------|--------------|-----------------|-------|-------|-------|------|---------------------|--|--|--|--|
| CHEMICAL COMPOSITION (Analytical Analysis) %                                                                                     |           |             |              |                   |                          |                    |              |           |              |                     |              |              |              |              |                 |       |       |       |      |                     |  |  |  |  |
| NO.                                                                                                                              | HEAT NO.  | LOT NO.     | STEEL GRADE  | SIZE (MM)         | PCS                      | WEIGHT Kg          | C            | SI        | Mn           | P                   | S            | Cr           | Ni           | Cu           | Mo              | V     | Ti    | Al    | CE   | Mn/C                |  |  |  |  |
| 1                                                                                                                                | 107A-65 ✓ | 1A232       | GR.B ✓       | 1" X5XSRL ✓       | 364                      | 6361               | 0.17         | 0.41      | 1.27         | 0.012               | 0.004        | 0.04         | 0.02         | 0.02         | 0.003           | 0.007 | 0.004 | 0.002 | 0.39 | 7.47                |  |  |  |  |
| 2                                                                                                                                | 107A-65   | 1A233       | GR.B         | 1" X5XSRL         | 364                      | 6348               | 0.17         | 0.41      | 1.27         | 0.012               | 0.004        | 0.04         | 0.02         | 0.02         | 0.003           | 0.007 | 0.004 | 0.002 | 0.39 | 7.47                |  |  |  |  |
| 3                                                                                                                                | 107A-65   | 1A234       | GR.B         | 1" X5XSRL         | 297                      | 3616               | 0.17         | 0.41      | 1.27         | 0.012               | 0.004        | 0.04         | 0.02         | 0.02         | 0.003           | 0.007 | 0.004 | 0.002 | 0.39 | 7.47                |  |  |  |  |
| 4                                                                                                                                | 104A-199  | 1C789       | GR.B         | 1-1/4" SCH160XSRL | 185                      | 5504               | 0.13         | 0.38      | 1.29         | 0.016               | 0.004        | 0.02         | 0.02         | 0.02         | 0.001           | 0.005 | 0.003 | 0.002 | 0.35 | 9.92                |  |  |  |  |
| 5                                                                                                                                | 106A-65   | 1B842       | GR.B         | 1-1/4" STDXSRL    | 290                      | 5191               | 0.18         | 0.43      | 1.26         | 0.011               | 0.002        | 0.01         | 0.03         | 0.02         | 0.001           | 0.004 | 0.002 | 0.002 | 0.40 | 7.00                |  |  |  |  |
| 6                                                                                                                                | 905A-201  | 1A845       | GR.B         | 1-1/4" X5XSRL     | 206                      | 5057               | 0.13         | 0.42      | 1.25         | 0.019               | 0.005        | 0.03         | 0.01         | 0.01         | 0.001           | 0.005 | 0.004 | 0.002 | 0.35 | 9.62                |  |  |  |  |
| MECHANICAL PROPERTIES                                                                                                            |           |             |              |                   | TECHNOLOGICAL PROPERTIES |                    |              |           |              | NONDESTRUCTIVE TEST |              |              |              |              | SURFACE QUALITY |       |       |       |      | DIMENSION TOLERANCE |  |  |  |  |
| NO.                                                                                                                              | REL (MPa) | RM (MPa)    | ELONGATION % | HARDNESS HRB      | FLATTENING TEST          | FLANKING TEST      | BENDING      | H.T (≥55) | ET           | UT                  | TN           | OUT          | O.D.         | W.T.         |                 |       |       |       |      |                     |  |  |  |  |
| 1                                                                                                                                | 360/355 ✓ | 530/535 ✓   | 31.5/39 ✓    | 78.5/79/79.5 ✓    | —                        | —                  | Satisfactory | 2300psi   | Satisfactory | Satisfactory        | Satisfactory | Satisfactory | Satisfactory | Satisfactory |                 |       |       |       |      |                     |  |  |  |  |
| 2                                                                                                                                | 370/355   | 525/520     | 36.5/38      | 79/78.5/79        | —                        | —                  | Satisfactory | 2300psi   | Satisfactory | Satisfactory        | Satisfactory | Satisfactory | Satisfactory | Satisfactory |                 |       |       |       |      |                     |  |  |  |  |
| 3                                                                                                                                | 365/360   | 530/525     | 38.5/38      | 79.5/78.5/79      | —                        | —                  | Satisfactory | 2500psi   | Satisfactory | Satisfactory        | Satisfactory | Satisfactory | Satisfactory | Satisfactory |                 |       |       |       |      |                     |  |  |  |  |
| 4                                                                                                                                | 413/405   | 530/535     | 47/48        | 78.5/77.5/78      | —                        | —                  | Satisfactory | 2500psi   | Satisfactory | Satisfactory        | Satisfactory | Satisfactory | Satisfactory | Satisfactory |                 |       |       |       |      |                     |  |  |  |  |
| 5                                                                                                                                | 405/400   | 535/515     | 47/48        | 76.5/77/77        | —                        | —                  | Satisfactory | 2500psi   | Satisfactory | Satisfactory        | Satisfactory | Satisfactory | Satisfactory | Satisfactory |                 |       |       |       |      |                     |  |  |  |  |
| 6                                                                                                                                | 390/385   | 550/550     | 44.5/46      | 76.5/77/77.5      | —                        | —                  | Satisfactory | 2500psi   | Satisfactory | Satisfactory        | Satisfactory | Satisfactory | Satisfactory | Satisfactory |                 |       |       |       |      |                     |  |  |  |  |
| REMARKS: 1. Heat Treatment: Normalizing 900-930 °C for at least 30min; 2. Manufacture Process: Cold drawn; 3. Fully killed steel |           |             |              |                   |                          |                    |              |           |              |                     |              |              |              |              |                 |       |       |       |      |                     |  |  |  |  |

REMARKS: 1. Heat Treatment Normalizing 900-930°C for at least 30min;

## 2. Manufacture Process: Cold drawn;

### 3. Fully filled steel

## MANAGING REPRESENTATIVE:

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## STAFF

DATE: August 4, 2011

Order#: 172739 Seq: 2 P.O#: E13045 Heat#: 107a-65 Mill: Yangzhou Lontin Steel Tube Co., Ltd  
Part#: P 1 XS 56 S PL Part Desc: Pipe 1 (33.4mm O.D.) EXTRA HEAVY SMLS A/SA106-B-SRL PLAIN END (com)

Heat Transfer / Sequencing # : 116043

VT. 140-142

**BRI-CHEM**  
STEEL CORPORATION  
AMTR APPROVED

Nov 5 2011

Sec II, Part A, 2010 edition 无锡市华友特钢有限公司

**Wuxi Huayou Special Steel Co., Ltd.**

Page 5 / 10

无锡市滨湖区胡埭工业园西区西拓振湖路  
Tel : ( 0510 ) 85580556 Fax : ( 0510 ) 85580556



**华友特钢**  
HUAYOU SPECIAL STEEL

DEC 1 0 2012

# 产品质量证明书

# MILL TEST CERTIFICATE

(EN10204 3.1)

|            |                                                                                                    |      |         |        |                 |                    |                    |                  |               |                    |       |
|------------|----------------------------------------------------------------------------------------------------|------|---------|--------|-----------------|--------------------|--------------------|------------------|---------------|--------------------|-------|
| 订货单位       | BRI-CHEM STEEL CORPORATION                                                                         |      |         |        | 证书号             | 120101605          | 制造方法               |                  | 冷拔            |                    |       |
| CUSTOMER   |                                                                                                    |      |         |        | CERTIFICATE NO. |                    | MAKING METHOD      |                  | COLD-DRAWN ✓  |                    |       |
| 收货单位       | BRI-CHEM STEEL CORPORATION                                                                         |      |         |        | 信用证号            | —                  | 交货状态               |                  | 正火            |                    |       |
| PURCHASER  |                                                                                                    |      |         |        | L/C NO.         |                    | DELIVERY CONDITION |                  | NORMALIZED ✓  |                    |       |
| 产品名称       | 无缝钢管                                                                                               |      |         |        | 合同号             | 100826             | 热处理工艺              |                  | 880℃×20MIN,空冷 |                    |       |
| PRODUCT    | SEAMLESS STEEL PIPES                                                                               |      |         |        | CONTRACT NO.    |                    | HEAT TREATMENT     |                  | AIR COOLING ✓ |                    |       |
| 标准/钢级      | API 5L-B(2007) PSL1/ASTM /ASME A/SA106-06 B/CSA Z245.1 GR.290 CAT 1 NACE MR0175-2009 REGION 3 SS ✓ |      |         |        |                 |                    | 出货日期               |                  | 2012-10-16    |                    |       |
| SPEC/GRADE |                                                                                                    |      |         |        |                 |                    | DATE OF ISSUE      |                  |               |                    |       |
| 外径         | 26.7 MM                                                                                            | 壁厚   | 3.91 MM | 长度     | 6.1 M           | 总支数                | 501                | 总米数              | 3056.1        | 总重量(吨)             | 6.717 |
| O.D        | NPS 3/4                                                                                            | W.T. | XH      | LENGTH |                 | TOTAL PIECES (PCS) |                    | TOTAL METERS (M) |               | TOTAL WEIGHT(TONS) |       |

| 序号<br>NO.          | 生产批号<br>WORK NO.         | 炉号<br>HEAT NO.                                                                                                                                                                                          | 支数<br>PCS | 化 学 成 份 %<br>CHEMICAL COMPOSITION |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         | 非金属夹杂物 (级)<br>Non-Metallic Inclusions (GR) |     |              |     |       |  |
|--------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------|-------------|------------------------------------------------|-------|--------------|-------|-----------------------------------------------|--------------|----------------------------------|------------|--------------|--------|----------------|-------|-----------------------------|---------|--------------------------------------------|-----|--------------|-----|-------|--|
|                    |                          |                                                                                                                                                                                                         |           | *1                                | 碳           | 硅                                              | 锰     | 磷            | 硫     | 铜                                             | 镍            | 铬                                | 钼          | 钒            | 硼      | 铌              | 钛     | Mn/C                        | CE(CSA) | A                                          | B   | C            | D   |       |  |
|                    |                          |                                                                                                                                                                                                         |           |                                   | C           | Si                                             | Mn    | P            | S     | Cu                                            | Ni           | Cr                               | Mo         | V            | B      | Nb             | Ti    |                             |         |                                            |     |              |     |       |  |
|                    |                          |                                                                                                                                                                                                         |           |                                   | Max         | 0.260                                          | 0.500 | 1.080        | 0.030 | 0.030                                         | 0.400        | 0.400                            | 0.400      | 0.150        | 0.080  | 0.001          | 0.110 |                             |         |                                            |     |              |     | 0.110 |  |
| Min                |                          | 0.100                                                                                                                                                                                                   | 0.290     |                                   |             |                                                |       |              |       |                                               |              |                                  |            | 2.5          |        |                |       |                             |         |                                            |     |              |     |       |  |
| 1                  | X-1207040                | 129830                                                                                                                                                                                                  | 501       | H                                 | 0.200       | 0.270                                          | 0.520 | 0.013        | 0.005 | 0.050                                         | 0.020        | 0.030                            | 0.003      | 0.002        | 0.0002 | 0.002          | 0.001 | 2.6                         | 0.30    | 0.5                                        | 0.5 | 0.5          | 0.5 |       |  |
| 同上<br>序号<br>NO.    | 拉伸试验 TENSILE TEST        |                                                                                                                                                                                                         |           |                                   |             | 冲击试验 IMPACT TEST<br>AKV (J)                    |       |              |       | 硬度试验<br>HARDNESS TEST<br>(HRC≤22)<br>(HB≤234) |              | 水压试验<br>HYDROSTATIC<br>TEST      |            | 无损探伤检验       |        | 金相试验           |       |                             |         |                                            |     |              |     |       |  |
|                    | 标距 GAUGE LENGTH (50.8mm) |                                                                                                                                                                                                         |           |                                   |             |                                                |       |              |       |                                               |              |                                  |            | N.D.E.       |        | METALLOGRAPHIC |       |                             |         |                                            |     |              |     |       |  |
|                    | *2                       | 抗拉强度                                                                                                                                                                                                    | 屈服强度      | 伸长率                               | 屈强比         | 试验温度 TEMPERATURE OF TEST<br><br>10×10×55 (20℃) |       |              |       |                                               |              |                                  |            | 涡流探伤<br>E.T. |        | 超声波探伤<br>U.T.  |       | 显微组织<br>MICROSTRUC<br>-TURE |         | 晶粒度<br>(级)<br>GRAIN SIZE                   |     |              |     |       |  |
|                    | *3                       | T.S.                                                                                                                                                                                                    | Y.S.      | E.L.                              | Y/T         |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
|                    |                          | MPa                                                                                                                                                                                                     | *4 MPa    | %                                 |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
|                    | Max                      |                                                                                                                                                                                                         |           |                                   | 0.93        |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
| Min                | 415 ✓                    | 290 ✓                                                                                                                                                                                                   | 30 ✓      |                                   |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
| 1                  | L                        | 480 / 485                                                                                                                                                                                               | 310 / 305 | 36 / 37                           | 0.65 / 0.63 | —                                              | —     | —            | —     | HB 123/132/135 ✓                              | 20.7 MPa,10s | 合格<br>GOOD                       | 合格<br>GOOD | F+P          | 6      |                |       |                             |         |                                            |     |              |     |       |  |
| 外观和尺寸              |                          | 合格                                                                                                                                                                                                      |           | 压扁试验                              |             | 合格                                             |       | 弯曲试验         |       | —                                             |              | 扩口试验                             |            | —            |        | 卷边试验           |       | —                           |         |                                            |     |              |     |       |  |
| VISUAL & DIMENSION |                          | GOOD                                                                                                                                                                                                    |           | FLATTENING TEST                   |             | GOOD                                           |       | BENDING TEST |       | —                                             |              | EXPAND TEST                      |            | —            |        | WELDING TEST   |       | —                           |         |                                            |     |              |     |       |  |
| 注 册<br>NOTES       |                          | *1、H: HEAT (LADLE) ANALYSIS; P: PRODUCT ANALYSIS.                                                                                                                                                       |           |                                   |             |                                                |       |              |       |                                               |              | *2、试样尺寸 SIZE: 管状试样TUBULAR SAMPLE |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
|                    |                          | *3、试验方向 ORIENTATION: L=纵向LONGITUDINAL.                                                                                                                                                                  |           |                                   |             |                                                |       |              |       |                                               |              | *4、SY=0.2%OFFSET.                |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
|                    |                          | WE HEREBY CONFIRM THAT OUR PRODUCTS ARE MADE WITH MATERIALS WHICH ARE FREE FROM RADIATION CONTAMINATION                                                                                                 |           |                                   |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         |                                            |     |              |     |       |  |
| 会 验 者<br>SURVEYOR  |                          | 兹证明本表所列产品，均依标准规定制造、取样、试验和检验，并符合标准及合同要求。                                                                                                                                                                 |           |                                   |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         | 检验员<br>INSPECTOR                           |     | 审核人<br>CHIEF |     | 李计珍   |  |
|                    |                          | WE HEREBY CERTIFY THAT THE MATERIALS DESCRIBED HEREIN HAVE BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE CUSTOMER'S SPECIFICATION(S), AND THAT THEY SATISFY THE REQUIREMENTS. |           |                                   |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         | 王金峰                                        |     |              |     |       |  |
|                    |                          |                                                                                                                                                                                                         |           |                                   |             |                                                |       |              |       |                                               |              |                                  |            |              |        |                |       |                             |         | STAMP OF MILL INSPECTER                    |     |              |     |       |  |

"Conforms with ASME

Sec II, Part A, 2010 edition,

2011a addenda"

CLIENTE / Customer / Client

COMCO PIPE & SUPPLY COMPANY  
A DIVISION OF RUSSEL METALS  
5910-17 ST. NW PO BOX 457  
EDMONTON ALBERTA T6J 2K1 CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

FECHA:

Date:

HOJA:

Page:

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N.º

No.

09/06/2011

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DIN EN 10204 / 3.1

ISO 10474 / 3.1

SGS 1922164

SGS 6000236

SGS 6000837

ULMA

ULMA FORJA, S.COOP.

PRODUCTO

Article - Produit

FITTING

ASME B16.11-09

SU PEDIDO N.º

Your Order No.

E1-2088

DE

of - de

14/02/2011

Certified acc. PED 97/23/EC-AD2000-WI  
by TÜV Rheinland  
N.º 01 202 E/Q 02 7442

Bº Zubillaga, 3 - Aptdo. 1º  
20580 ONATI (Gipuzkoa) SPAIN  
Tel: 34 - 943 780552  
Fax: 34 - 943 781806  
E-mail: ulma@ulmapiping.com

NORMAS APLICABLES

Requirements - Normes Applicables:

MATERIAL CORRESPONDIENTE

ASTM A360/F2CL1-07\*

Material Correspondent - Qualif

MODO DE FUSION (\*)

Steel Making - Elaboration de l'acier

E = Elec. Y = Oxígeno básico



MARCA DEL FABRICANTE

Mark of factory

Marque du fabricant

DEPARTAMENTO QUALITY ASSURANCE

Section

Département

| PARTIDA            | CANTIDAD | DESCRIPCION            | LOTE | OBSERVACIONES    | COLADA N.º  | RESISTENCIA | UNITE ELAST. | ALARGAM.   | ESTRICCION | RESILIENCIA | PREVEN. APT. TEMP. | DUREZA   |
|--------------------|----------|------------------------|------|------------------|-------------|-------------|--------------|------------|------------|-------------|--------------------|----------|
| Item               | Quantity | Description            |      | Remarks          | Head No     | T-Strength  | Y-Strength   | Elongation | Red. Area  | Impact test | Media Temp.        | Hardness |
| Posta              | Quantité | Description            |      | Observations (*) | N.º Caudale | N/mm2       | N/mm2        | Lo. 4 d    | %          | Joules      | °C                 | HB       |
| 60 FS 1 6M HP T LF | 500      | HIH-PLUG 1 NPT A350LF2 |      | NE               | 192V9       | 516         | 328          | 3500       | 61,80      | 55 53 67    | 52                 | 18-55    |

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

| C %   | SI %  | Mn %  | P %   | S %   | Cr %  | Ni %  | Mo %  | Nb %  | V %   | Cu %  | Al %  | Ti %  | N %   | CEq % |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0,190 | 0,230 | 0,040 | 0,005 | 0,008 | 0,130 | 0,100 | 0,040 | 0,002 | 0,001 | 0,170 | 0,026 | 0,000 | 0,000 | 0,302 |

- Las dimensiones y la condición superficial se hallaron satisfactoria
- 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



Shell Canada

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

(\*) OBSERVACIONES:  
Remarks  
Observations

MATERIAL CONFORMS

TO CUSTOMER

SPECIFICATIONS

AS PER P.O.

REQUIREMENTS

Order#: 171595 Seq: 1 PO#: 704989 Heat#: 182v9 Mill: ULMA

Part#: FS 1 6M HP T LF Part Desc: Forged Steel 1 (33.4mm O.D.) 6000# (41.4MPa) HEX HEAD PLUG THREADED A/SA350-LF2 CL1



VT = .149 to .156 ~~8~~

|                                                                                                               |                                                                                                                                                 |                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Mannesmannrohr Sachsen GmbH<br>(A01)<br>Mannesmannrohr Sachsen GmbH<br>Mannesmannstrasse 11<br>01619 Zellheim | <br><b>VALLOUREC &amp; MANNESMANN TUBES</b><br>Vallourec Group | MATERIAL TEST REPORT (A02)<br>(3.1 NACH EN 10204:2004)<br>PARAGRAPH 16, C<br><br>No.: 715312h12 (A03)<br>Page: 1 6<br>Date: 20.03.2012 |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|

3/4 XH A333

|                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (A01)<br>Mannesmannrohr Sachsen GmbH<br><br><div style="border: 2px solid purple; border-radius: 15px; padding: 5px; display: inline-block; color: red; font-weight: bold;">Germany</div> | (A01.1)<br>V&M-Order-No. 05054062<br><br>(A01.2)<br>Suborder LA2150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (A02.1)<br>Customer<br>CCTF CORPORATION<br>5407-53RD AVENUE<br>CA-T683G2 EDMONTON, AB/CANADA                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (A02.2)<br>Orderer<br>VALLOUREC TUBES CANADA INC. / SUITE 101                                                                                                                             | (A02.2)<br>Order-No. VM2804<br>Date 18.12.2011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (A02.3)<br>Client's Client<br>CCTF CORPORATION                                                                                                                                            | (A02.3)<br>Order-No. 4090805-00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (A01, A02, A04)<br>Description of the product                                                                                                                                             | <p><b>HOT FINISHED SEAMLESS PIPE FOR LOW TEMPERATURE SERVICE</b><br/>                 MAX. 10 % SHORT LENGTHS, NOT SHORTER THAN 17 FT<br/>                 ENDS PLAIN, SQUARE CUT<br/>                 TUBE ENDS CLOSED BY PLASTIC PLUGS<br/>                 INSIDE WITHOUT RUST PROTECTION<br/>                 OUTSIDE DRY VARNISH<br/>                 IN BUNDLES OF MAX. 4000 KG, WITH 6 STEEL BANDS AND<br/>                 2 SLINGS (NYLON) FOR CONTAINER<br/>                 REPORT ELEMENTS:<br/>                 C, MN, P, S, SE, CR, CU, MO, NI, V, NB, TI, SN, AL, N<br/>                 REFERENCE-NUMBER SKU NO 2530155<br/>                 V &amp; M FRANCE NORTHEM LA2150/02</p> <p>ASTM A 333 M - 10<br/>                 ASTM A 999 M - 04 A<br/>                 ASME SA 333 M, EDITION 2010<br/>                 ASME SA 999 M, EDITION 2010<br/>                 ASME BOILER AND PRESSURE VESSEL CODE, SECTION II, PART A,<br/>                 EDITION 2010<br/>                 NACE MR 0175/ISO 15156-2:2009/<br/>                 EN ISO 15156-2:2009, ANNEX A.2.1.2<br/>                 CSA Z 245.1:2009<br/>                 NACE STANDARD MR 0103-2010, PARAGRAPH 2.1<br/>                 SPEC. CM6.CCTF, REV. 0, SEPTEMBER 2009<br/>                 GRADE 6<br/>                 / GRADE 1 / GRADE 290 (CSA Z245.1, CAT. II)</p> <p>NORMALIZED</p> <p>SOUR SERVICE AS DEFINED IN PARAGRAPH 16 OF CSA Z 245.1, BUT<br/>                 WITHOUT HIC TEST. THESE PSI. 1 PRODUCTS DO NOT CONFORM TO<br/>                 ANNEX H OF API 5L.</p> <div style="position: absolute; top: 50%; right: 10%; text-align: right;"> <p>MATERIAL CONFORMS<br/>                     TO CUSTOMER<br/>                     SPECIFICATIONS<br/>                     AS PER P.O.<br/>                     REQUIREMENTS</p> <p>Name: <u>Celi Sosa</u><br/>                     Date: <u>June 19/12</u></p> </div> |

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"  
*June 19, 2012*



|                                                                                                               |                                                                                                                                      |                                                                           |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Mannesmannrohr Sachsen GmbH<br>(A01)<br>Mannesmannrohr Sachsen GmbH<br>Mannesmannstrasse 11<br>01619 Zettlitz | <br>VALLOUREC & MANNESMANN TUBES<br>Vallourec Group | MATERIAL TEST REPORT (A02)<br>(3.1 NACH EN 10204:2004)<br>PARAGRAPH 16, C |
|                                                                                                               |                                                                                                                                      | No. : 71531Zh12 (A03)<br>Page: 2 / 6<br>Date: 20.03.2012                  |

| (A12)<br>V&M Item | (A00)<br>Cust. Item | (B14)<br>Item text | (B09)<br>Dimensions           | (B10)<br>Single length                                                 |
|-------------------|---------------------|--------------------|-------------------------------|------------------------------------------------------------------------|
| 2                 |                     |                    | NPS 3/4 IN X SCHED. 80,000 IN | FIXED LENGTH 20 FT<br>SINGLE LENGTH TOLERANCE IN IN :<br>4.00 / - 0.00 |

| (A12)<br>V&M Item | (A00)<br>Cust. Item | (B08)<br>Quantity | (B11)<br>Total length<br>ft | (B13)<br>Weight<br>lbs |
|-------------------|---------------------|-------------------|-----------------------------|------------------------|
| 2                 |                     | 210               | 4,200.00                    | 6,177                  |

(C71)

HEAT CHEMICAL ANALYSIS

| (B07.1)<br>Heat | (B15)<br>Process | C<br>%  | Si<br>% | Mn<br>% | P<br>%  | S<br>%   | Al<br>% | Cl<br>% | Cr<br>% | Ni<br>% | Mo<br>% |
|-----------------|------------------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|
| min             | -                | -       | 0.100   | 0.40    | -       | -        | -       | -       | -       | -       | -       |
| max             | -                | 0.260   | 0.500   | 1.06    | 0.025   | 0.0250   | -       | 0.400   | 0.400   | 0.400   | 0.150   |
| 255801          | Oxygen (BOF)     | 0.130 ✓ | 0.190 ✓ | 0.51 ✓  | 0.009 ✓ | 0.0020 ✓ | 0.019   | 0.040   | 0.100   | 0.060   | 0.030   |

| (B07.1)<br>Heat | V<br>% | Sn<br>% | Ti<br>% | Nb/Cb<br>% | Co<br>% | N<br>% | B<br>% | CQ 24<br>% | EF 14<br>% | EF 02<br>% |  |  |
|-----------------|--------|---------|---------|------------|---------|--------|--------|------------|------------|------------|--|--|
| min             | -      | -       | -       | -          | -       | -      | -      | -          | -          | -          |  |  |
| max             | 0.110  | -       | 0.1100  | 0.110      | -       | -      | 0.0010 | .40        | 1.0        | 0.15       |  |  |
| 255801          | 0.001  | 0.0040  | 0.0030  | 0.001      | 0.0040  | 0.0067 | 0.0002 | .29        | 0.3        | 0.01       |  |  |

|       |                                                             |
|-------|-------------------------------------------------------------|
| CQ 24 | CEV=C+F X(MN/6 + SI/24 + CU/15 + NI/20 +(CR+MO+V+CO)/5 +5B) |
| EF 14 | EF = CR + MO + NI + CU + V                                  |
| EF 02 | EF = V + Ti + NB                                            |

Heats fully killed

(C72)

PRODUCT CHEMICAL ANALYSIS

|                                                                                                             |                                                                                                                                      |                                                                           |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Mannesmannrohr Sachsen GmbH<br>(A01)<br>Mannesmannrohr Sachsen GmbH<br>Mannesmannstrasse 11<br>D1619 Zethen | <br>VALLOUREC & MANNESMANN TUBES<br>Vallourec Group | MATERIAL TEST REPORT (A07)<br>(3.1 NACH EN 10204:2004)<br>PARAGRAPH 16, C |
|                                                                                                             |                                                                                                                                      | No.: 715312h12 (A02)<br>Page: 3 / 6<br>Date: 20.03.2012                   |

(C7a)  
 PRODUCT CHEMICAL ANALYSIS

| (B07.1)<br>Heat | (C00.1)<br>Test Piece | C<br>% | Si<br>% | Mn<br>% | P<br>% | S<br>% | Al<br>% | Cu<br>% | Cr<br>% | Ni<br>% | Mo<br>% |
|-----------------|-----------------------|--------|---------|---------|--------|--------|---------|---------|---------|---------|---------|
| min             |                       | -      | 0.100   | 0.40    | -      | -      | -       | -       | -       | -       | -       |
| max             |                       | 0.260  | 0.500   | 1.05    | 0.025  | 0.0250 | -       | 0.400   | 0.400   | 0.400   | 0.150   |
| 255801          |                       | 0.133  | 0.194   | 0.92    | 0.009  | 0.0019 | 0.019   | 0.041   | 0.102   | 0.061   | 0.031   |

| (B07.1)<br>Heat | (C00.1)<br>Test Piece | V<br>% | Sn<br>% | Ti<br>% | Nb/Cb<br>% | Co<br>% | H<br>% | B<br>% |  |  |  |
|-----------------|-----------------------|--------|---------|---------|------------|---------|--------|--------|--|--|--|
| min             |                       | -      | -       | -       | -          | -       | -      | -      |  |  |  |
| max             |                       | 0.110  | -       | 0.1100  | 0.110      | -       | -      | 0.0010 |  |  |  |
| 255801          |                       | 0.001  | 0.0030  | 0.0030  | 0.001      | 0.0040  | 0.0067 | 0.0002 |  |  |  |

TENSILE TEST RESULTS

|                        |                            |
|------------------------|----------------------------|
| Type (C10.1)           | FULL SECTION TEST SPECIMEN |
| Test temperature (C03) | ROOM TEMPERATURE           |
| Direction (C02)        | longitudinal               |

| (B07.1)<br>Heat | (C00.1)<br>Test Piece | (C10)<br>Dimension | (C11)<br>YS | (C12)<br>TS           | (C13)<br>Elong. | (C14.1)<br>Ratio |  |  |  |  |  |
|-----------------|-----------------------|--------------------|-------------|-----------------------|-----------------|------------------|--|--|--|--|--|
|                 |                       | mm                 | ReH<br>psi  | R <sub>m</sub><br>psi | 2"<br>%         | R/R <sub>m</sub> |  |  |  |  |  |
| min             |                       | -                  | 42000       | 80000                 | 21.0            | -                |  |  |  |  |  |
| max             |                       | -                  | -           | -                     | -               | -                |  |  |  |  |  |
| 255801          | 79736                 | 26.70X03.75        | 52357       | 72516                 | 43.7            | 0.72             |  |  |  |  |  |
| 255801          | 79737                 | 26.70X03.85        | 52502       | 72226                 | 43.9            | 0.73             |  |  |  |  |  |
| 255801          | 79738                 | 26.70X03.85        | 52357       | 72371                 | 44.1            | 0.72             |  |  |  |  |  |
| 255801          | 79739                 | 26.70X03.90        | 52212       | 71791                 | 43.0            | 0.73             |  |  |  |  |  |
| 255801          | 79740                 | 26.70X03.80        | 52357       | 72228                 | 45.2            | 0.72             |  |  |  |  |  |
| 255801          | 79741                 | 26.70X03.90        | 52067       | 71936                 | 44.0            | 0.72             |  |  |  |  |  |
| 255801          | 79742                 | 26.70X03.80        | 53082       | 72806                 | 46.0            | 0.73             |  |  |  |  |  |
| 255801          | 79743                 | 26.70X03.85        | 52357       | 71646                 | 43.9            | 0.73             |  |  |  |  |  |
| 255801          | 79744                 | 26.70X03.85        | 53372       | 72516                 | 43.4            | 0.74             |  |  |  |  |  |
| 255801          | 79745                 | 26.70X03.85        | 53662       | 73096                 | 43.7            | 0.73             |  |  |  |  |  |
| 255801          | 79746                 | 26.70X03.90        | 53227       | 72808                 | 42.2            | 0.73             |  |  |  |  |  |
| 255801          | 79747                 | 26.70X03.90        | 53082       | 72661                 | 45.5            | 0.73             |  |  |  |  |  |

|                      |
|----------------------|
| HARDNESS HRC MAX. 22 |
|----------------------|

VT 147-151A

|                                                                                                                |                                                                                                                                                 |                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Mannesmannrohr Sachsen GmbH<br>(A01)<br>Mannesmannrohr Sachsen GmbH<br>Mannesmannstrasse 11<br>01619 Zeitzheim | <br><b>VALLOUREC &amp; MANNESMANN TUBES</b><br>Vallourec Group | <b>MATERIAL TEST REPORT</b> (A07)<br>(3.1 NACH EN 10204:2004)<br>PARAGRAPH 16, C<br><br>No.: 715312h12 (A09)<br>Page: 4 / 6<br>Date: 20.03.2012 |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|

#### IMPACT TEST RESULTS

|                        |                |
|------------------------|----------------|
| Type (C40)             | CHARPY-V 1/4   |
| Test temperature (C43) | - 50 DEGREES F |
| Direction (C42)        | longitudinal   |

| (B07.1)<br>Heat | (C00.1)<br>Test Piece | (C41)<br>sq.in. | (C42.1)<br>Impact1<br>ft-lbf | (C42.1)<br>Impact2<br>ft-lbf | (C42.1)<br>Impact3<br>ft-lbf | (C43.3)<br>Mean<br>ft-lbf | (C42.2)<br>Shear fr1<br>% | (C42.2)<br>Shear fr2<br>% | (C42.2)<br>Shear fr3<br>% |  |  |
|-----------------|-----------------------|-----------------|------------------------------|------------------------------|------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|--|
| min             |                       | -               | 4.0                          | 4.0                          | 4.0                          | 5.0                       | -                         | -                         | -                         |  |  |
| max             |                       | -               | -                            | -                            | -                            | -                         | -                         | -                         | -                         |  |  |
| 255801          | 79736                 | 0.031           | 23.9                         | 22.7                         | 22.1                         | 22.9                      | 100                       | 100                       | 100                       |  |  |

| (B07.1)<br>Heat | (C00.1)<br>Test Piece | (C41)<br>sq.in. | (C42.3)<br>L.Exp1<br>Inch | (C42.3)<br>L.Exp2<br>Inch | (C42.3)<br>L.Exp3<br>Inch |  |  |  |  |  |  |
|-----------------|-----------------------|-----------------|---------------------------|---------------------------|---------------------------|--|--|--|--|--|--|
| min             |                       | -               | -                         | -                         | -                         |  |  |  |  |  |  |
| max             |                       | -               | -                         | -                         | -                         |  |  |  |  |  |  |
| 255801          | 79736                 | 0.031           | 1.51                      | 1.48                      | 1.65                      |  |  |  |  |  |  |

#### HARDNESS TEST RESULTS

| (B07.1)<br>Heat | (C00.1)<br>Test Piece | (C31)<br>Value<br>HB | (C31)<br>Value<br>HB | (C31)<br>Value<br>HB |  |  |  |  |  |  |  |
|-----------------|-----------------------|----------------------|----------------------|----------------------|--|--|--|--|--|--|--|
| min             |                       | -                    | -                    | -                    |  |  |  |  |  |  |  |
| max             |                       | 200.0                | 200.0                | 200.0                |  |  |  |  |  |  |  |
| 255801          | 79736                 | 140.0                | 138.0                | 137.0                |  |  |  |  |  |  |  |
| 255801          | 79737                 | 136.0                | 136.0                | 135.0                |  |  |  |  |  |  |  |
| 255801          | 79738                 | 137.0                | 138.0                | 138.0                |  |  |  |  |  |  |  |
| 255801          | 79739                 | 136.0                | 135.0                | 135.0                |  |  |  |  |  |  |  |
| 255801          | 79740                 | 138.0                | 139.0                | 140.0                |  |  |  |  |  |  |  |
| 255801          | 79741                 | 134.0                | 135.0                | 136.0                |  |  |  |  |  |  |  |
| 255801          | 79742                 | 140.0                | 138.0                | 141.0                |  |  |  |  |  |  |  |
| 255801          | 79743                 | 136.0                | 137.0                | 139.0                |  |  |  |  |  |  |  |
| 255801          | 79744                 | 141.0                | 141.0                | 140.0                |  |  |  |  |  |  |  |
| 255801          | 79745                 | 139.0                | 138.0                | 137.0                |  |  |  |  |  |  |  |
| 255801          | 79746                 | 139.0                | 140.0                | 141.0                |  |  |  |  |  |  |  |
| 255801          | 79747                 | 138.0                | 137.0                | 136.0                |  |  |  |  |  |  |  |

|                                                                                                               |                                                                                                                                                 |                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Mannesmannrohr Sachsen GmbH<br>(A01)<br>Mannesmannrohr Sachsen GmbH<br>Mannesmannstrasse 11<br>01619 Zolthain | <br><b>VALLOUREC &amp; MANNESMANN TUBES</b><br>Vallourec Group | <b>MATERIAL TEST REPORT</b> (A02)<br>(3.1 NACH EN 10204:2004)<br>PARAGRAPH 16, C<br><br>No. : 715312h12 (A03)<br>Page: 5 / 6<br>Date: 20.03.2012 |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|

(D15)

**OTHER TESTS ON PIPE**

| Test                            | Conditions                    | Test rate      | Result       |
|---------------------------------|-------------------------------|----------------|--------------|
| HYDROSTATIC TEST                | 3000 PSI, HOLDING TIME 5 SEC. | EACH PIPE/TUBE | NO LEAKAGE   |
| FLATTENING TEST                 |                               |                | SATISFACTORY |
| BENDING TEST                    |                               |                | SATISFACTORY |
| APPEARANCE AND DIMENSIONS (D01) |                               | EACH PIPE/TUBE | SATISFACTORY |
| VERIFICATION TEST               |                               | EACH PIPE/TUBE | SATISFACTORY |
| HARDNESS TEST                   |                               | HB MAX. 200,0  |              |
| HARDNESS TEST                   |                               | HRC MAX. 22    | GUARANTEED   |
| PIPE PRODUCTION METHOD          | SEAMLESS, HOT-ROLLED          |                |              |

- EDDY CURRENT TEST ACC. TO CSA Z 245.1: SATISFACTORY  
- HYDROSTATIC TEST: 20,7 MPA, HOLDING TIME 5 SEC. EACH PIPE/  
TUBE: NO LEAKAGE  
- HEAT TREATMENT: NORMALIZED MIN. 890 DEGREES C  
FAIN GRAIN PRACTICE SATISFACTORY

(A04, B06)

**MARKING, IDENTIFICATION**

|                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2<br> | PAINT STENCILED ON ONE SIDE MANUFACTURER'S MARK<br>MANUFACTURER'S NAME TERMS OF DELIVERY A333/SA333/Z245.1-09<br>GRADE 6 / 1 / 200 CAT H PROCESS OF MANUFACTURE HFS HEAT-NO. 26,7 X<br>3,91 NW 3/4 X SCHED. 80 TEST TEMPERATURE CHARPY LT-45 C SS TEST<br>PRESSURE BAR HN TUBE/PIPE LENGTH MM TUBE/PIPE LENGTH FT WA<br>GERMANY CUSTOMER ORDER-NO. VM2804 ORDER-NO. USER 4890805-00 |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

(201)

The supplied products are in compliance with the requirements of the order

|                                                                                                               |                                                                                                                                      |                                                                           |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Mannesmannrohr Sachsen GmbH<br>(A01)<br>Mannesmannrohr Sachsen GmbH<br>Mannesmannstrasse 11<br>01619 Zeithain | <br>VALLOUREC & MANNESMANN TUBES<br>Vallourec Group | MATERIAL TEST REPORT (A02)<br>(3.1 NACH EN 10204:2004)<br>PARAGRAPH 16, C |
|                                                                                                               |                                                                                                                                      | No.: 71531Zh12 (A03)<br>Page: 6 / 6<br>Date: 20.03.2012                   |

(A95, 201, 201)

|              |                           |
|--------------|---------------------------|
| Date         | 20.03.2012                |
| Validated by | Inspection Representative |
|              | RACZ <i>Racz</i>          |
| ☎            | (03525) 792318            |
| ☎            | (03525) 791146            |
| @            | ULRIKE.RACZ@SMP-TUBES.DE  |
| Stamp        |                           |

Indication in parentheses corresponds to activities according to EN 10166

This document and contents respectively may neither be modified nor used for other products. Offences are regarded as falsification of documents and will be subject to criminal prosecution.

CLIENTE / Customer / Client  
COMCO PIPE & SUPPLY COMPANY  
A DIVISION OF RUSSEL METALS  
5910-17 ST. NW PO BOX 457  
EDMONTON ALBERTA T5J 2K1 CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

FECHA: 30/05/2011 N° 138715

HOLA: Page: 1



ULMA

PRODUCTO: FITTING  
Article - Produit: SU PEDIDO N° E1-1879  
Your Order No. Volte Cde. N°

DE: 10/12/2010  
of. de

Certified acc. PED 97/23/EC + AD2000-1W0  
by TÜV Rheinland  
N° 01 202 EQ 02 7443

87 Zuhilaga, 3 - Apra, 14  
20560 ONATI (Gipuzkoa) SPAIN  
TEL: 34 - 943 780552  
Fax: 34 - 943 781808  
E-mail: ulma@ulmapiping.com

NORMAS APLICABLES: ASME B16.11-09  
Requirements - Normes Applicables:

MATERIAL CORRESPONDIENTE: AISA350L.F2CL.1-07  
ASTM/A5ME

MODO DE FUSION: NACE MR-01-75/ISO15156-2-05 & MR-01-03/03  
Steel Making - Elaboration duacier

E = Eléctrico Y = Oxiacético básico

DEPARTAMENTO: QUALITY ASSURANCE  
Section



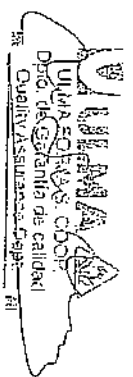
| PARTIDA<br>Item<br>Poste | CANTIDAD<br>Quantity<br>Quantité | DESCRIPCION<br>Description<br>Description | LOTE | OBSERVACIONES<br>Remarks<br>Observations | COLADA N°<br>Heat No<br>N° Coulee | RESISTENCIA<br>Y Strength<br>Y Strength<br>Y Strength | ULTRASON<br>Elongation<br>Elongation<br>Elongation | ESTRUCION<br>Red Area<br>Red Area<br>Red Area | RESILIENCIA<br>Impact test<br>Impact test | CHARPY V<br>Average<br>Average | DUREZA<br>Hardness<br>Dureté |
|--------------------------|----------------------------------|-------------------------------------------|------|------------------------------------------|-----------------------------------|-------------------------------------------------------|----------------------------------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------|------------------------------|
|                          |                                  |                                           |      |                                          |                                   |                                                       |                                                    |                                               |                                           |                                |                              |
| 22 FS. 75 MM 90 T LF     | 100                              | ELBOW 90 3/4 3000LB NPT A350LF2           |      | NE                                       | 276V1                             | 520                                                   | 323                                                | 31.90                                         | 55                                        | 61                             | 47                           |
| 24 FS. 75 MM C T LF      | 525                              | CAP 3/4 3000LB NPT A350LF2                |      | NE                                       | 283V8                             | 518                                                   | 316                                                | 33.40                                         | 45                                        | 57                             | 53                           |
| 38 FS. 75 MM HP T LF     | 800                              | HH-PLUG 3/4 NPT A350LF2                   |      | NE                                       |                                   | 513                                                   | 318                                                | 33.40                                         | 59                                        | 67                             | 63                           |

COMPOSICION QUIMICA - STEEL MAKERS LADLE ANALYSIS - ANALYSE CHIMIQUE

| COLADA N°<br>Heat No<br>N° Coulee | C %   | Si %  | Mn %  | P %   | S %   | Cr %  | Ni %  | Mo %  | Nb %  | V %   | Cu %  | Al %  | Ti %  | N %   | Ceq % |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 278V1                             | 0.220 | 0.190 | 0.880 | 0.030 | 0.005 | 0.130 | 0.120 | 0.030 | 0.000 | 0.003 | 0.350 | 0.024 | 0.000 | 0.000 | 0.431 |
| 283V8                             | 0.180 | 0.220 | 0.810 | 0.011 | 0.008 | 0.100 | 0.090 | 0.030 | 0.002 | 0.002 | 0.170 | 0.034 | 0.000 | 0.368 |       |
| 38V0                              | 0.170 | 0.170 | 1.200 | 0.011 | 0.020 | 0.130 | 0.090 | 0.010 | 0.001 | 0.001 | 0.240 | 0.020 | 0.000 | 0.000 | 0.420 |

- 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  
Monts Inspector - L'inspecteur



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

"Conforms with ASME  
Sec II Part A, 2010 edition  
2011a addenda"

MATERIAL CONFORMS

TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Pennwest

APPROVED

By Ceri Steen at 7:38 am, May 02, 2012



APPROVED  
By Carl Steen at 1:08 pm, Apr 18, 2012

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

"Conforms with ASME  
Sec II Part A, 2010 edition  
2011a addenda"



SAE ENG STEEL FORGING CO. LTD  
231 Joo Hwa Road Joo Wai District  
Kuala Lumpur, Telukang R.O.C  
TEL 03-3724249, FAX 03-3712923  
URL www.saeengsteel.com.my  
e-mail saeengsteel@saecol.com

MILL TEST CERTIFICATE  
EN320A-31 B01N090930 151  
CUSTOMER TRANS AM PIPING PRODUCTS LTD  
Order No. 7020502153 7A

Encana

Certificate No. CE 250516  
Issue 08/24/2011  
Page 1 OF 2

PRODUCT

MATERIAL SPECIFICATIONS

DIMENSIONAL SPECIFICATIONS

FORGED CARBON STEEL FLANGES

ASTM A550 LF2-15ASME SA550 LF2-15

ASME B16.5-09  
CSA Z245.12

| Item No | CODE NO | DESCRIPTION                    | QUANTITY |       | CHEMICAL COMPOSITION (%) |       |       |       |       |       |       |       |       |       |       |       |        |  |  |  |
|---------|---------|--------------------------------|----------|-------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--|--|--|
|         |         |                                | MAX      | MIN   | C                        | SI    | MN    | P     | S     | CR    | CU    | NI    | MO    | V     | NB    | N     | CEMENT |  |  |  |
| 1       |         | 150 WARRF S160 4" LF2          | 15 PCE   | 0.210 | 0.230                    | 1.115 | 0.007 | 0.040 | 0.040 | 0.450 | 0.200 | 0.400 | 0.120 | 0.010 | 0.200 | 0.008 | 0.415  |  |  |  |
| 2       |         | 150 WARRF XXS160 4" LF2        | 15 PCE   | 0.210 | 0.230                    | 1.110 | 0.007 | 0.040 | 0.040 | 0.450 | 0.200 | 0.400 | 0.120 | 0.010 | 0.200 | 0.008 | 0.415  |  |  |  |
| 3       |         | 300 WARRF S160 1" LF2          | 15 PCE   | 0.200 | 0.200                    | 1.000 | 0.007 | 0.010 | 0.010 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 0.008 | 0.365  |  |  |  |
| 4       |         | 200 WARRF S160 1" LF2          | 5 PCE    | 0.210 | 0.220                    | 1.070 | 0.010 | 0.010 | 0.010 | 0.050 | 0.070 | 0.040 | 0.005 | 0.005 | 0.005 | 0.010 | 0.465  |  |  |  |
| 5       |         | 300 WARRF S160 1 1/2" LF2      | 10 PCE   | 0.200 | 0.200                    | 1.000 | 0.007 | 0.010 | 0.010 | 0.120 | 0.070 | 0.070 | 0.005 | 0.005 | 0.005 | 0.008 | 0.365  |  |  |  |
| 6       |         | 300 WARRF S160 2" LF2          | 10 PCE   | 0.220 | 0.210                    | 1.050 | 0.008 | 0.008 | 0.008 | 0.300 | 0.230 | 0.040 | 0.005 | 0.005 | 0.005 | 0.007 | 0.415  |  |  |  |
| 7       |         | 600 WARRF S160 8" LF2          | 10 PCE   | 0.220 | 0.210                    | 1.140 | 0.015 | 0.004 | 0.004 | 0.300 | 0.220 | 0.010 | 0.004 | 0.004 | 0.004 | 0.007 | 0.415  |  |  |  |
| 8       |         | 600 BLRF 8" LF2                | 30 PCE   | 0.210 | 0.210                    | 1.150 | 0.011 | 0.009 | 0.009 | 0.400 | 0.220 | 0.010 | 0.004 | 0.004 | 0.004 | 0.007 | 0.415  |  |  |  |
| 9       |         | 2500 HUB BLRF FULL FACE 7" LF2 | 30 PCE   | 0.210 | 0.210                    | 1.150 | 0.011 | 0.009 | 0.010 | 0.400 | 0.220 | 0.010 | 0.004 | 0.004 | 0.004 | 0.007 | 0.415  |  |  |  |
| 10      |         | 2500 WARRF XXS160 1 1/2" LF2   | 3 PCE    | 0.200 | 0.200                    | 1.000 | 0.007 | 0.010 | 0.010 | 0.120 | 0.070 | 0.070 | 0.005 | 0.005 | 0.005 | 0.008 | 0.365  |  |  |  |

| Item No | Heat No. | T.S.(T)<br>(MPa) | Y.S.(T)<br>(MPa) | E.L.(T)<br>(%) | Hardness<br>(HRC) | P.A.(T)<br>(%) | Impact Test |             |           | Material Supplier | REMARKS                                                   |
|---------|----------|------------------|------------------|----------------|-------------------|----------------|-------------|-------------|-----------|-------------------|-----------------------------------------------------------|
|         |          |                  |                  |                |                   |                | Temp. -45°C | Temp. -20°C | Temp. 0°C |                   |                                                           |
| 1       | 13176    | 523.7            | 354.0            | 36.0           | 157               | 65.9           | 21.0        | 23.0        | 24.0      | OEAK              | CONFORMS WITH INACE MR0103.07 AND INACE MR0174/ISO15156-2 |
| 2       | 13176    | 523.7            | 354.0            | 36.0           | 157               | 65.9           | 21.0        | 23.0        | 24.0      | OEAK              | CONFORMS WITH 2245.12 CAT 110R 342.800R                   |
| 3       | 10859    | 489.2            | 285.2            | 40.0           | 153               | 67.7           | 25.0        | 29.0        | 21.0      | OEAK              | SERVICE 05                                                |
| 4       | 31045    | 517.0            | 340.1            | 35.4           | 153               | 67.7           | 25.0        | 29.0        | 21.0      | OEAK              | TEST SPECIMEN SIZE: 10X10                                 |
| 5       | 10859    | 489.2            | 285.2            | 40.0           | 153               | 67.7           | 25.0        | 29.0        | 21.0      | OEAK              | TEST SPECIMEN ORIENTATION TRANSVERSE                      |
| 6       | 21380    | 509.9            | 354.0            | 32.4           | 153               | 70.4           | 25.0        | 29.0        | 21.0      | ACOMINAS          | HAPACT TEST TEMP: 40°C                                    |
| 7       | 4090833  | 523.7            | 354.0            | 35.6           | 155               | 68.6           | 25.0        | 29.0        | 21.0      | ACOMINAS          |                                                           |
| 8       | 4090833  | 523.7            | 354.0            | 35.6           | 155               | 68.6           | 25.0        | 29.0        | 21.0      | ACOMINAS          |                                                           |
| 9       | 31242    | 523.7            | 354.0            | 31.8           | 157               | 68.5           | 25.0        | 29.0        | 21.0      | OEAK              |                                                           |
| 10      | 10859    | 489.2            | 285.2            | 40.0           | 153               | 67.7           | 25.0        | 29.0        | 21.0      | OEAK              |                                                           |

1. T.S. = Tensile Strength, Y.S. = Yield Strength, E.L. = Elongation, P.A. = Reduction of Area

2. N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S=Solution Treated, R=Stress Relieved.

A=C-Air Cooled, F=C-Furnace Cooled, W=C-Water Cooled, O=C-Oil Cooled

3. C.E. Value = C + (Mn/6) + (Cr + Mo + V)/16 + (Ni + Cu)/15

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

Manager of Quality Assurance Dept

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 :2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.

CERT. NO : 121507 L/C NO :

ORDER NO : 7005116 DATE : 05/16/2012

INVOICE NO : BW01110011151A PAGE : 9 ORIGIN : TAIWAN



**拍緯鐵工股份有限公司**

高雄市仁武區烏林里仁心路 303 號

**BOTH-WELL STEEL FITTINGS CO., LTD.**

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

KAOHSIUNG CITY, TAIWAN R.O.C. (81460)

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

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

An ISO 9001:2008 Registered Manufacturer

ISO 9001

BUREAU VERITAS  
Certification

N° TW11082Q



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

| ITEM                                                                                                                    | BW<br>HT.CD. | RAW MATERIAL<br>HEAT NO. | DESCRIPTION     | QUANTITY   | SPECIFICATION FOR |                       | INSPECTION                 |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|-----------------|------------|-------------------|-----------------------|----------------------------|----------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|-----|------|------------|-----|-----|-------------------|-----|-------------------------------------------|--|--|--|--|--|--|--|--|--|
|                                                                                                                         |              |                          |                 |            | MATERIAL          | FITTING               | SURFACE                    | DIM.           |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 078                                                                                                                     | 3736         | 325187                   | HEX PLUG 1" NPT | 3901 PC    | ASTM A105N -05    | ASME B16.11 - 2010    | GOOD                       | GOOD           |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3186         | 308521                   | HEX PLUG 2" NPT | 3326 PC    | ASME SA105N -A08  |                       |                            |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3649         | 324037                   | HEX PLUG 2" NPT | 2 PC       |                   |                       |                            |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3670         | 324695                   | HEX PLUG 2" NPT | 806 PC     |                   |                       |                            |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3696         | 325411                   | HEX PLUG 2" NPT | 516 PC     |                   |                       |                            |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| ITEM                                                                                                                    | BW<br>HT.CD. | CHEMICAL COMPOSITION (%) |                 |            |                   |                       |                            |                |       |                                                                                                                                                 |       |        |     |      |            |     |     | MATERIAL SUPPLIER |     |                                           |  |  |  |  |  |  |  |  |  |
|                                                                                                                         |              | C                        | Si              | Mn         | P                 | S                     | Cu                         | Cr             | Ni    | Mo                                                                                                                                              | V     | Cb(Nb) | N   | Al   | Ti         | Zr  | CE  |                   |     |                                           |  |  |  |  |  |  |  |  |  |
|                                                                                                                         |              | Min                      | Max             | Min        | Max               | Min                   | Max                        | Min            | Max   | Min                                                                                                                                             | Max   | Min    | Max | Min  | Max        | Min | Max |                   | Min | Max                                       |  |  |  |  |  |  |  |  |  |
| 078                                                                                                                     | 3736         | 0.200                    | 0.200           | 0.830      | 0.018             | 0.016                 | 0.180                      | 0.060          | 0.040 | 0.010                                                                                                                                           | 0.002 | 0.001  | -   | -    | -          | -   | -   | 0.367             |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3186         | 0.190                    | 0.190           | 0.870      | 0.021             | 0.013                 | 0.160                      | 0.090          | 0.050 | 0.010                                                                                                                                           | 0.002 | 0.001  | -   | -    | -          | -   | -   | 0.369             |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3649         | 0.200                    | 0.220           | 0.840      | 0.017             | 0.009                 | 0.170                      | 0.060          | 0.060 | 0.020                                                                                                                                           | 0.002 | 0.001  | -   | -    | -          | -   | -   | 0.372             |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3670         | 0.190                    | 0.200           | 0.840      | 0.016             | 0.009                 | 0.170                      | 0.180          | 0.070 | 0.020                                                                                                                                           | 0.002 | 0.002  | -   | -    | -          | -   | -   | 0.386             |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3696         | 0.200                    | 0.190           | 0.810      | 0.021             | 0.010                 | 0.140                      | 0.080          | 0.060 | 0.010                                                                                                                                           | 0.002 | 0.001  | -   | -    | -          | -   | -   | 0.367             |     |                                           |  |  |  |  |  |  |  |  |  |
| ITEM                                                                                                                    | BW<br>HT.CD. | MECHANICAL PROPERTIES    |                 |            |                   |                       |                            | HEAT TREATMENT |       | ADDITIONAL TEST/REMARKS<br>CONFORMS TO NACE MR0175-09 /MR0103-10<br>STEEL MAKING PROCESS : ELECTRIC FURNACE<br>CONFORMS TO NACE ISO15156-3 2009 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
|                                                                                                                         |              | T. S.<br>(KSI)           | Y. S.<br>(KSI)  | EL.<br>(%) | R of A<br>(%)     | Hardness<br>(HB)(AVG) | Charpy Impact<br>°F / 0 °C |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
|                                                                                                                         |              | Min                      | Max             | Min        | Max               | Min                   | Max                        | Min.           | AVG.  |                                                                                                                                                 |       |        |     |      |            |     |     | / ( Joule )       |     |                                           |  |  |  |  |  |  |  |  |  |
| 078                                                                                                                     | 3736         | 76.0                     | 46.0            | 33.0       | 65.0              | 147                   | 147                        |                |       | 1                                                                                                                                               |       | 2      | 3   | AVG. | 860°C A.C. |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3186         | 76.2                     | 51.2            | 33.6       | 65.3              | 143                   | 143                        |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3649         | 74.6                     | 51.5            | 35.0       | 65.5              | 141                   | 141                        |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3670         | 73.8                     | 51.0            | 35.6       | 61.6              | 141                   | 141                        |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| 080                                                                                                                     | 3696         | 75.7                     | 52.5            | 34.6       | 65.5              | 140                   | 141                        |                |       |                                                                                                                                                 |       |        |     |      |            |     |     |                   |     |                                           |  |  |  |  |  |  |  |  |  |
| WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT. |              |                          |                 |            |                   |                       |                            |                |       | C.C. Huang<br>Q.C.MANAGER<br>CHEN CHI HUANG                                                                                                     |       |        |     |      |            |     |     |                   |     | Y.Y. Chang<br>INSPECTOR<br>YUAN YAO CHANG |  |  |  |  |  |  |  |  |  |

☉ BW-D0839 REV:1

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/8/28 L. Nason

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : TRANS AM  
CERT. NO : 120703  
ORDER NO : 7004918  
INVOICE NO : BM0110010052



**怡緯鐵工股份有限公司**  
高雄市仁武區烏林里仁心路 303 號  
**BOTH-WEEL STEEL FITTINGS CO., LTD.**  
NO.303, JEN-HSIN ROAD JEN-WU DISTRICT  
KAOHSIUNG CITY, TAIWAN R.O.C. (81460)  
TEL: 886-7-871-0497, 871-1536, 872-0260  
web site: <http://www.bathwell.com.tw> e-mail: [bathwell@bathwell.com.tw](mailto:bathwell@bathwell.com.tw)



An ISO 9001:2008 Registered Manufacturer

FAX: 886-7-871-8864, 371-8882

| ITEM | BW HT. CD. | RAW MATERIAL HEAT NO. | DESCRIPTION                   | QUANTITY | SPECIFICATION FOR MATERIAL | INSPECTION SURFACE | DIM. |
|------|------------|-----------------------|-------------------------------|----------|----------------------------|--------------------|------|
| 039  | 3103       | 306318                | RED. CPLG 1"x3/4" 3000# NPT   |          | ASTM A105N -05             |                    |      |
| 040  | 3594       | 322609                | RED. CPLG 1-1/2"x1" 3000# NPT |          | ASME B16.11 - 2009         |                    |      |
| 041  | 3727       | 325417                | RED. CPLG 4"x3" 3000# NPT     |          |                            |                    |      |
| 042  | 3698       | 325193                | 90D ELBOW 1/2" 6000# NPT      |          |                            | GOOD               | GOOD |
| 043  | 3708       | 325200                | 90D ELBOW 3/4" 6000# NPT      |          |                            |                    |      |

| ITEM | BW HT. CD. | C     | SI    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo    | V     | Co(Nb) | N | Al | Ti | Zr | CE    | MATERIAL SUPPLIER |
|------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---|----|----|----|-------|-------------------|
| 039  | 3103       | 0.210 | 0.180 | 0.830 | 0.022 | 0.013 | 0.180 | 0.090 | 0.060 | 0.010 | 0.002 | 0.001  | - | -  | -  | -  | 0.430 |                   |
| 040  | 3594       | 0.190 | 0.190 | 0.820 | 0.013 | 0.012 | 0.120 | 0.090 | 0.060 | 0.020 | 0.002 | 0.002  | - | -  | -  | -  | 0.385 |                   |
| 041  | 3727       | 0.199 | 0.180 | 0.830 | 0.025 | 0.009 | 0.220 | 0.130 | 0.080 | 0.010 | 0.002 | 0.001  | - | -  | -  | -  | 0.361 |                   |
| 042  | 3698       | 0.150 | 0.180 | 0.820 | 0.024 | 0.008 | 0.260 | 0.070 | 0.056 | 0.010 | 0.002 | 0.001  | - | -  | -  | -  | 0.377 |                   |
| 043  | 3708       | 0.200 | 0.190 | 0.830 | 0.016 | 0.008 | 0.110 | 0.110 | 0.040 | 0.010 | 0.002 | 0.001  | - | -  | -  | -  | 0.360 |                   |

| ITEM | BW HT. CD. | T. S. (ksi) | Y. S. (ksi) | EL. (%) | R of A (%) | Hardness (HB)(AVG) | Charpy Impact F / 0 °C | HEAT TREATMENT | ADDITIONAL TEST / REMARKS |
|------|------------|-------------|-------------|---------|------------|--------------------|------------------------|----------------|---------------------------|
| 039  | 3103       | 74.4        | 49.2        | 34.2    | 63.8       | 143                | 146                    |                |                           |
| 040  | 3594       | 75.6        | 50.4        | 33.8    | 63.6       | 141                | 141                    |                |                           |
| 041  | 3727       | 75.7        | 39.2        | 34.6    | 64.5       | 145                | 145                    |                |                           |
| 042  | 3698       | 74.8        | 52.5        | 36.0    | 66.4       | 141                | 140                    |                | 860°C A.C.                |
| 043  | 3708       | 74.2        | 54.1        | 37.2    | 63.6       | 141                | 141                    |                |                           |

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

REV:1

Paramount

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS

Q.C. MANAGER CHEN CHI HUANG

INSPECTOR YUAN YAO CHANGSME

C.C. Huang

Y.Y. Chang

"Conforms with" 2010 edition, Sec II, Part A, 2010 edition,

2011a addenda

Name: Chen Chi Huang

Date: 06/13/2013

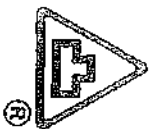
June 13 12



# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.  
 CERT. NO : 121322 L/C NO :  
 ORDER NO : 7005116 DATE : 05/08/2012  
 INVOICE NO : BW0110011151 PAGE : 25 ORIGIN : TAIWAN



**裕隆鐵工股份有限公司**  
 高雄市仁武區烏林里仁心路 303 號  
**BOTH-WEEL STEEL FITTINGS CO., LTD.**  
 NO.303, JEN-HSIN ROAD JEN-WU DISTRICT  
 KAOHSIUNG CITY, TAIWAN R.O.C. (81460)  
 TEL: 886-7-371-0497, 371-1536, 372-0260  
 web site: <http://www.botwell.com.tw> e-mail: [botwell@botwell.com.tw](mailto:botwell@botwell.com.tw)



An ISO 9001:2008 Registered Manufacturer

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

| ITEM | BW HT. CD. | RAW MATERIAL HEAT NO. | DESCRIPTION                   | QUANTITY | SPECIFICATION FOR MATERIAL | FITTING | INSPECTION SURFACE | DIT. |
|------|------------|-----------------------|-------------------------------|----------|----------------------------|---------|--------------------|------|
| 110  | 3649       | 324037                | HEX BUSHING 2"x1-1/2" NPT     | 105 PC   | ASTM A105N -05             |         |                    |      |
| 111  | 3631       | 323494                | HEX BUSHING 2-1/2"x1-1/4" NPT | 6 PC     | ASME B16.11 - 2010         |         |                    |      |
| 114  | 3693       | 325194                | HEX BUSHING 3"x1" NPT         | 100 PC   | ASME SA105N -A08           |         | GOOD               | GOOD |
| 115  | 3142       | 307340                | HEX BUSHING 3"x1-1/2" NPT     | 16 PC    |                            |         |                    |      |
| 116  | 3717       | 326146                | HEX BUSHING 3"x2" NPT         | 300 PC   |                            |         |                    |      |

| ITEM | BW HT. CD. | C     | SI    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo    | V     | Co(Nb) | N | Al | Ti | Zr | CE    | MATERIAL SUPPLIER |
|------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---|----|----|----|-------|-------------------|
| 110  | 3649       | 0.200 | 0.220 | 0.840 | 0.017 | 0.009 | 0.170 | 0.060 | 0.060 | 0.020 | 0.002 | 0.001  | - |    |    |    | 0.430 |                   |
| 111  | 3631       | 0.210 | 0.190 | 0.830 | 0.017 | 0.014 | 0.170 | 0.070 | 0.060 | 0.020 | 0.002 | 0.002  | - |    |    |    | 0.382 |                   |
| 114  | 3693       | 0.190 | 0.190 | 0.800 | 0.014 | 0.009 | 0.200 | 0.070 | 0.050 | 0.010 | 0.002 | 0.001  | - |    |    |    | 0.356 |                   |
| 115  | 3142       | 0.200 | 0.190 | 0.850 | 0.025 | 0.009 | 0.130 | 0.150 | 0.050 | 0.020 | 0.003 | 0.001  | - |    |    |    | 0.370 |                   |
| 116  | 3717       | 0.200 | 0.190 | 0.850 | 0.025 | 0.009 | 0.130 | 0.150 | 0.050 | 0.020 | 0.003 | 0.001  | - |    |    |    | 0.388 |                   |

| ITEM | BW<br>HT. CD. | MECHANICAL PROPERTIES |                |            |               |                       |                                         |   | HEAT TREATMENT | ADDITIONAL TEST /REMARKS |            |                                                                                                                      |
|------|---------------|-----------------------|----------------|------------|---------------|-----------------------|-----------------------------------------|---|----------------|--------------------------|------------|----------------------------------------------------------------------------------------------------------------------|
|      |               | T. S.<br>(KSI)        | Y. S.<br>(KSI) | EL.<br>(%) | R of A<br>(%) | Hardness<br>(HB)(AVG) | Charpy Impact<br>°F / 0 °C<br>( Joule ) |   |                |                          |            |                                                                                                                      |
| Min  |               | 70.0                  | 36.0           | 22.0       | 30.0          |                       | MIN /AVG                                | 2 | 3              | AVG.                     | NORMALIZED | CONFORMS TO NACE MR0175-09 /MR0103-10<br>STEEL MAKING PROCESS : ELECTRIC FURNACE<br>CONFORMS TO NACE ISO15156-3 2009 |
| Max  |               | -                     | -              | -          | -             | 187                   |                                         |   |                |                          |            |                                                                                                                      |
| 110  | 3649          | 74.6                  | 51.5           | 35.0       | 65.5          | 141 141               | 1                                       |   |                |                          |            |                                                                                                                      |
| 111  | 3631          | 75.7                  | 52.0           | 32.0       | 65.5          | 141 141               |                                         |   |                |                          |            |                                                                                                                      |
| 114  | 3693          | 75.1                  | 53.6           | 35.6       | 65.5          | 144 144               |                                         |   |                |                          |            |                                                                                                                      |
| 115  | 3142          | 75.8                  | 53.8           | 32.6       | 65.3          | 143 141               |                                         |   |                |                          | 860°C A.C. |                                                                                                                      |
| 116  | 3717          | 74.8                  | 46.2           | 32.6       | 65.5          | 144 145               |                                         |   |                |                          |            |                                                                                                                      |

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS

BW-D0839 REV:1

Name: **Petro Bakken**  
 Date: **June 12, 2012**

**Petro Bakken**

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.

CERT. NO : 123084

ORDER NO : 7005764

INVOICE NO : BM01210105096

L/C NO :

DATE : 09/01/2012

PAGE : 13

ORIGIN : TAIWAN



**怡和鋼鐵有限公司**

高雄市仁武區嘉林里仁心路 303 號

**BOTHEWELL STEEL FITTINGS CO., LTD.**

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

KAHSIUNG CITY, TAIWAN R.O.C. (81460)

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

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

web site: <http://www.bothewell.com.tw> e-mail: [bothewell@bothewell.com.tw](mailto:bothewell@bothewell.com.tw)

An ISO 9001:2008 Registered Manufacturer



| ITEM | RAW MATERIAL | DESCRIPTION | QUANTITY | SPECIFICATION FOR |                    |         |      | INSPECTION |  |
|------|--------------|-------------|----------|-------------------|--------------------|---------|------|------------|--|
|      |              |             |          | MATERIAL          | FITTING            | SURFACE | DIM. |            |  |
| 025  | 3869         | 329602      | 400 PC   | ASTM A105N .05    | ASME B16.11 - 2011 |         |      |            |  |
| 026  | 3787         | 328084      | 600 PC   |                   |                    |         |      |            |  |
| 027  | 3806         | 328433      | 350 PC   | ASME SA105N .A08  |                    |         |      |            |  |
| 027  | 3820         | 328897      | 1200 PC  |                   |                    |         |      |            |  |
| 027  | 3899         | 330044      | 250 PC   |                   |                    |         |      |            |  |

| ITEM | BR   | HT. CD. | CHEMICAL COMPOSITION (%) |       |       |       |       |       |       |       |       |       |       |        |   |   | N | Al | Ti | Zr | CE    | MATERIAL SUPPLIER |
|------|------|---------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---|---|---|----|----|----|-------|-------------------|
|      |      |         | C                        | Si    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo    | V     | Co    | Cr(Nb) |   |   |   |    |    |    |       |                   |
| 025  | 3869 | 3869    | 0.35                     | 0.10  | 0.60  | 0.035 | 0.010 | 0.40  | 0.30  | 0.40  | 0.12  | 0.08  | -     | -      | - | - | - | -  | -  | -  | 0.43  |                   |
| 026  | 3787 | 3869    | 0.190                    | 0.190 | 0.830 | 0.017 | 0.010 | 0.170 | 0.130 | 0.060 | 0.020 | 0.002 | 0.001 | 0.001  | - | - | - | -  | -  | -  | 0.374 |                   |
| 027  | 3806 | 3869    | 0.190                    | 0.190 | 0.830 | 0.016 | 0.012 | 0.150 | 0.070 | 0.040 | 0.010 | 0.002 | 0.001 | 0.001  | - | - | - | -  | -  | -  | 0.361 |                   |
| 027  | 3820 | 3869    | 0.200                    | 0.190 | 0.850 | 0.015 | 0.011 | 0.110 | 0.080 | 0.040 | 0.010 | 0.002 | 0.001 | 0.001  | - | - | - | -  | -  | -  | 0.370 |                   |
| 027  | 3899 | 3869    | 0.200                    | 0.200 | 0.870 | 0.015 | 0.015 | 0.150 | 0.080 | 0.060 | 0.020 | 0.002 | 0.001 | 0.001  | - | - | - | -  | -  | -  | 0.379 |                   |
| 027  | 3899 | 3869    | 0.21                     | 0.20  | 0.84  | 0.016 | 0.011 | 0.18  | 0.10  | 0.05  | 0.02  | 0.002 | 0.001 | 0.001  | - | - | - | -  | -  | -  | 0.390 |                   |

| ITEM | BW   | HT. CD. | MECHANICAL PROPERTIES |             |         |            |                    |                        |             |   |   |   | HEAT TREATMENT |  | ADDITIONAL TEST/REMARKS |
|------|------|---------|-----------------------|-------------|---------|------------|--------------------|------------------------|-------------|---|---|---|----------------|--|-------------------------|
|      |      |         | T. S. (KSI)           | Y. S. (KSI) | BL. (%) | R of A (%) | Hardness (HBM/AVG) | Charpy Impact T / 0 °C | MIN. / AVG. | 1 | 2 | 3 | AVG.           |  |                         |
| 025  | 3869 | 3869    | 73.8                  | 49.1        | 33.0    | 65.2       | 145                | 149                    |             |   |   |   |                |  |                         |
| 026  | 3787 | 3869    | 74.4                  | 46.8        | 35.4    | 64.5       | 140                | 141                    |             |   |   |   |                |  |                         |
| 027  | 3806 | 3869    | 71.4                  | 47.5        | 34.4    | 65.6       | 140                | 146                    |             |   |   |   |                |  |                         |
| 027  | 3820 | 3869    | 72.5                  | 48.2        | 34.8    | 66.0       | 141                | 140                    |             |   |   |   |                |  |                         |
| 027  | 3899 | 3869    | 76.8                  | 55.9        | 35.4    | 63.2       | 144                | 147                    |             |   |   |   |                |  |                         |

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS

TO CUSTOMER

BW-D0839 REV.1

AS PER P.O. REQUIREMENTS

Name: *David Lee* TAGA North

Date: *Oct 05/12*

O.C. MANAGER

CHEN CHI HUANG

INSPECTOR

YUAN YAO CHANG

"Conforms with ASME

Sec II, Part A, 2010 edition,

2011a addenda"

*October 2012*



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# CERTIFIED MILL TEST REPORT

LOG NO. F00000000018035

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(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4808

www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

CUSTOMER

ORDER NO.: 4029307-00

SHIP TO: CCTF CORPORATION (OAKVILLE)

1387 CORNWALL ROAD  
OAKVILLE ON L6J 7T5  
Canada

DATE 08/17/2011

BONNEY ORDER NO. B000102444

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

7/2 Apr 19.12

Name:

7/2 Apr 19.12

| ITEM    | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.                                                                                                                                                                                                                    | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|---------|----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| 23      |          | 4677    | 11/2 6000 A105N UNAR T                                                                                                                                                                                                                        | SA/A105N                                         |
| 7527136 |          | NUT     | Al 0.023 C 0.195 Cr 0.140 Cu 0.190 Mn 0.990 Mo 0.040 N 0.010 Nb 0.020<br>Ni 0.110 P 0.012 S 0.020 Si 0.260 V 0.002<br>CE(Long Formula) = 0.42<br>T/S(PSI) 78,750 Y/S(PSI) 46,875 EL(%) 32.60 RA(%) 62.05<br>Brinell 147 BHN 150 BHN           |                                                  |
|         |          | 4896    | 11/2 6000 A105N UNAR T                                                                                                                                                                                                                        | SA/A105N                                         |
| 7527136 |          | FEMALE  | Al 0.022 C 0.210 Co 0.004 Cr 0.040 Cu 0.180 Mn 1.050 Mo 0.010 Nb 0.014<br>Ni 0.040 P 0.009 S 0.020 Si 0.200 V 0.004<br>CE(Long Formula) = 0.41<br>T/S(PSI) 75,000 Y/S(PSI) 52,500 EL(%) 30.95 RA(%) 63.25<br>Brinell 139 BHN 132 BHN          |                                                  |
| 23      | 9        | 4745    | 11/2 6000 A105N UNAR T                                                                                                                                                                                                                        | SA/A105N                                         |
| 7527136 |          | MALE    | Al 0.021 C 0.210 Co 0.000 Cr 0.050 Cu 0.180 Mn 1.010 Mo 0.010<br>Ni 0.006 Nb 0.012 Ni 0.040 P 0.007 S 0.023 Si 0.190 V 0.003<br>CE(Long Formula) = 0.41<br>T/S(PSI) 70,625 Y/S(PSI) 45,500 EL(%) 31.75 RA(%) 63.75<br>Brinell 135 BHN 132 BHN |                                                  |
| 26      |          | 58343   | 2 3000 A105N TEE S                                                                                                                                                                                                                            | SA/A105N                                         |
| 7525869 |          |         | Al 0.019 C 0.200 Co 0.003 Cr 0.030 Cu 0.130 Mn 1.050 Mo 0.020 N 0.006<br>Nb 0.014 Ni 0.050 P 0.007 S 0.022 Si 0.180 V 0.004<br>CE(Long Formula) = 0.40<br>T/S(PSI) 74,121 Y/S(PSI) 51,508 EL(%) 31.05 RA(%) 61.61<br>Brinell 132 BHN 132 BHN  |                                                  |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2



# CERTIFIED MILL TEST REPORT



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CUSTOMER: CCTF CORPORATION

DATE 08/17/2011

CUSTOMER

ORDER NO.: 4029307-00

BONNEY ORDER NO. B000102444

SHIP TO: CCTF CORPORATION (OAKVILLE)  
1387 CORNWALL ROAD  
OAKVILLE ON L6J 7T5  
Canada

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.

CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE MATERIAL SUPPLIED IDENTIFIED AS SA/A105-QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

CMTR: REV2

by

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

# CERTIFIED MILL TEST REPORT



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LOG NO. F00000000011390

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www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 02/23/2011

CUSTOMER

BONNEY ORDER NO. B000090044

ORDER NO.: S759092861

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

NOV 2 9 2012

| ITEM                                                                              | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------|----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 86<br>18C12943                                                                    | 25       | 4622    | 1/2 6000 A105N UNAR T SA/A105N<br>Al 0.025 C 0.200 Cb 0.000 Co 0.002 Cr 0.040 Cu 0.100 Mn 1.000 Mo 0.000<br>Nb 0.015 Ni 0.020 P 0.007 S 0.023 Si 0.210 Sn 0.010 V 0.003<br>CE(Long Formula) = 0.38<br>T/S(Psi) 72,500 Y/S(Psi) 49,375 EL(%) 32.85 RA(%) 63.75<br>Brinell 130 BHN 130 BHN                                                      |
| 18C12943                                                                          |          | 4627    | 1/2 6000 A105N UNAR T SA/A105N<br>Al 0.026 C 0.200 Cb 0.000 Co 0.003 Cr 0.030 Cu 0.090 Mn 1.070 Mo 0.010<br>Nb 0.015 Ni 0.030 P 0.008 S 0.024 Si 0.210 Sn 0.010 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(Psi) 73,750 Y/S(Psi) 48,750 EL(%) 34.00 RA(%) 62.55<br>Brinell 130 BHN 135 BHN                                                      |
| 18C12943                                                                          |          | 4744    | 1/2 6000 A105N UNAR T ✓ SA/A105N<br>Al 0.023 C 0.185 ✓ Cr 0.140 ✓ Cu 0.120 ✓ Mn 0.990 ✓ Mo 0.030 ✓ Nb 0.001 ✓ Ni 0.100 ✓<br>P 0.012 ✓ S 0.024 ✓ Si 0.240 ✓ V 0.003 ✓<br>CE(Long Formula) = 0.40<br>T/S(Psi) 76,000 ✓ Y/S(Psi) 48,100 ✓ EL(%) 34.00 ✓ RA(%) 69.00<br>Brinell 143 BHN 140 BHN ✓                                                 |
| 18<br>18C10474                                                                    | 175      | 58162   | 1 3000 LF2 90EL T SA/A350 LF2 CL1<br>Al 0.024 C 0.200 Cb 0.000 Co 0.003 Cr 0.030 Cu 0.080 Mn 1.050 Mo 0.000<br>N 0.004 Nb 0.015 Ni 0.020 P 0.006 S 0.020 Si 0.210 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 75,000 Y/S(Psi) 50,000 EL(%) 33.50 RA(%) 63.95<br>Brinell 141 BHN 137 BHN<br>Charpy -50 F 54/30/32 (Ft-Lbs)<br>Average 38.70 |
| MATERIAL CONFORMS<br>TO CUSTOMER<br>SPECIFICATIONS<br>AS PER P.O.<br>REQUIREMENTS |          |         |                                                                                                                                                                                                                                                                                                                                               |
| Name: <u>Encara</u>                                                               |          |         |                                                                                                                                                                                                                                                                                                                                               |
| Date: <u>NOV 2 9 2012</u>                                                         |          |         |                                                                                                                                                                                                                                                                                                                                               |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

# CERTIFIED MILL TEST REPORT



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CUSTOMER: MRC MIDFIELD

DATE 02/23/2011

CUSTOMER

BONNEY ORDER NO. B000090044

ORDER NO.: S759092861

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. ITEM - 56, 86 -THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. ITEM - 56, 86 -THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
- ✓ 3. ITEM - 56, 86 -THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2. ✓
4. ITEM - 56, 86 -CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
5. ITEM - 56, 86 -THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. ITEM - 56, 86 -THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ITEM - 56, 86 -ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

08214-001

Order#: 130652 Seq: 8 PO#: 701782 Heat#: 4875/4644/4391 Mill: Bonney Forge  
 Part#: FS 1 6M U T 5 Part Desc: Forged Steel 1 (33.4mm O.D.) 6000# (41.4MPa) UNION THREADED A/SA105N  
**CERTIFIED MILL TEST REPORT**



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LOG NO. F00000000015006

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www.bonneyforge.com

CUSTOMER: COMCO PIPE &amp; SUPPLY (PUSLINC)

DATE 05/26/2011

CUSTOMER

BONNEY ORDER NO. B000096024

ORDER NO.: G1-2341

SHIP TO: COMCO PIPE &amp; SUPPLY (PUSLINC)

14 KERR CRESCENT  
 PUSLINC ON NOB 2JO  
 Canada

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 Sec II, Part A, 2010 edition"

8011a addenda

Jan 31/2

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS | PHYSICAL PROPERTIES | REMARKS |
|------|----------|---------|----------------------------|-------------------|---------------------|---------|
|------|----------|---------|----------------------------|-------------------|---------------------|---------|

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS                                             | PHYSICAL PROPERTIES | REMARKS |
|------|----------|---------|----------------------------|---------------------------------------------------------------|---------------------|---------|
| 24   | 25       | 4644    | 1 6M A105N UNAR T          | SA/A105N                                                      |                     |         |
|      |          | MALE    |                            | Al 0.025 C 0.200 Co 0.000 Cr 0.030 Cu 0.070 Mn 1.040 Mo 0.010 |                     |         |
|      |          |         |                            | N 0.003 Nb 0.013 Ni 0.020 P 0.007 S 0.025 Si 0.220 V 0.004    |                     |         |
|      |          |         |                            | CE(Long Formula) = 0.39                                       |                     |         |
|      |          |         |                            | T/S(Psi) 71,250 Y/S(Psi) 50,625 EL(%) 32.05 RA(%) 57.00       |                     |         |
|      |          |         |                            | Brinell 130 BHN 132 BHN                                       |                     |         |

Shell Canada

PARAMOUNT  
 MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS

Name: Roy L. SmithDate: Jul 13/11

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS                                                      | PHYSICAL PROPERTIES | REMARKS |
|------|----------|---------|----------------------------|------------------------------------------------------------------------|---------------------|---------|
|      |          | 4169    | 1 6M A105N UNAR T          | SA/A105N                                                               |                     |         |
|      |          | FEMALE  |                            | Al 0.028 C 0.200 Co 0.002 Cr 0.030 Cu 0.040 Mn 1.100 Mo 0.010 Nb 0.015 |                     |         |
|      |          |         |                            | Ni 0.010 P 0.008 S 0.020 Si 0.230 V 0.000                              |                     |         |
|      |          |         |                            | CE(Long Formula) = 0.39                                                |                     |         |
|      |          |         |                            | T/S(Psi) 74,885 Y/S(Psi) 48,904 EL(%) 33.50 RA(%) 65.60                |                     |         |
|      |          |         |                            | Brinell 139 BHN 139 BHN                                                |                     |         |

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS                                                      | PHYSICAL PROPERTIES | REMARKS |
|------|----------|---------|----------------------------|------------------------------------------------------------------------|---------------------|---------|
|      |          | 4391    | 1 6M A105N UNAR T          | SA/A105N                                                               |                     |         |
|      |          | FEMALE  |                            | Al 0.028 C 0.200 Co 0.004 Cr 0.040 Cu 0.110 Mn 1.040 Mo 0.020 Nb 0.014 |                     |         |
|      |          |         |                            | Ni 0.040 P 0.009 S 0.018 Si 0.230 V 0.001                              |                     |         |
|      |          |         |                            | CE(Long Formula) = 0.40                                                |                     |         |
|      |          |         |                            | T/S(Psi) 75,000 Y/S(Psi) 52,500 EL(%) 32.20 RA(%) 61.55                |                     |         |
|      |          |         |                            | Brinell 130 BHN 130 BHN                                                |                     |         |



| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS                                                     | PHYSICAL PROPERTIES | REMARKS |
|------|----------|---------|----------------------------|-----------------------------------------------------------------------|---------------------|---------|
|      |          | 4875    | 1 6M A105N UNAR T          | SA/A105N                                                              |                     |         |
|      |          | NUT     |                            | Al 0.024 C 0.185 Co 0.000 Cr 0.120 Cu 0.120 Mn 0.970 Mo 0.030 N 0.008 |                     |         |
|      |          |         |                            | Nb 0.000 Ni 0.100 P 0.010 S 0.024 Si 0.250 V 0.002                    |                     |         |
|      |          |         |                            | CE(Long Formula) = 0.39                                               |                     |         |
|      |          |         |                            | T/S(Psi) 72,500 Y/S(Psi) 50,000 EL(%) 32.55 RA(%) 64.45               |                     |         |
|      |          |         |                            | Brinell 135 BHN 135 BHN                                               |                     |         |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2

Order#: 130652 Seq: 8 PO#: 701782 Heat#: 4875/4644/4391 Mill: Bonney Forge  
Part#: FS 1 6M U T 5 Part Desc: Forged Steel 1 (33.4mm O.D.) 6000# (41.4MPa) UNION THREADED A/SA105N

### CERTIFIED MILL TEST REPORT



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LOG NO. F00000000015006

Page 4 of 4

BONNEY FORGE CORPORATION

P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330

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

www.bonneyforge.com

CUSTOMER: COMCO PIPE & SUPPLY (PUSLINCH)

DATE 05/26/2011

CUSTOMER

BONNEY ORDER NO. B000096024

ORDER NO.: G1-2341

SHIP TO: COMCO PIPE & SUPPLY (PUSLINCH)

14 KERR CRESCENT

PUSLINCH ON NOB 210

Canada

*Rec'd JUL 13/11*  
"Conforms with ASME

Sec II, Part A, 2010 edition" *2011a addenda*

*CO Jan 3.12*

| ITEM | QUANTITY | LOT NO | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS |
|------|----------|--------|----------------------------|-------------------------------------------------|
|------|----------|--------|----------------------------|-------------------------------------------------|

4870

1 1/2 3M A105N UNAR T

SA/A105N

NUT-HD

AI 0.025 C 0.200 Co 0.000 Cr 0.140 Cu 0.140 Mn 0.980 Mo 0.050 Nb 0.000

Ni 0.100 P 0.013 S 0.020 Si 0.250 V 0.002

CE(Long Formula) = 0.42

T/S(PSI) 75,000 Y/S(PSI) 48,375 EL(%) 28.45 RA(%) 62.56

Brinell

135 BHN

135 BHN

4811

3/4X1/2 3M/6M A105N/GALV HXBU

SA/A105N

AI 0.025 C 0.200 Co 0.004 Cr 0.090 Cu 0.170 Mn 0.990 Mo 0.010 N 0.004

Nb 0.013 Ni 0.040 P 0.014 S 0.017 Si 0.200 V 0.004

CE(Long Formula) = 0.40

T/S(PSI) 74,375 Y/S(PSI) 51,875 EL(%) 33.05 RA(%) 65.40

Brinell

137 BHN

139 BHN

*PERMANENT*  
MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: *Don E. Smith*

Date: *JUL 13/11*

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

**ENCANA**

MATERIAL CONFORMS TO CUSTOMER SPEC

By ceris at 9:08:36 AM, 4/3/2012

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Kylee Ruiz*

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2

|                                     |        |           |          |            |        |        |          |
|-------------------------------------|--------|-----------|----------|------------|--------|--------|----------|
| HT # 4391                           | C      | Mn        | Cr       | Mo         | Ni     | Cu     | V        |
|                                     | Carbon | Manganese | Chromium | Molybdenum | Nickel | Copper | Vanadium |
| Fill in Product Analysis from MTR's | 0.2    | 1.04      | 0.04     | 0.02       | 0.04   | 0.11   | 0.001    |

|                              |       |      |      |          |       |
|------------------------------|-------|------|------|----------|-------|
|                              |       | Mn   | C    | Standard | Ratio |
| Do Not Fill in these Numbers | Ratio | Mn/C | 1.04 | 0.2      | >3.00 |
|                              |       |      |      |          | Ratio |

|                              |     |      |      |      |       |      |      |
|------------------------------|-----|------|------|------|-------|------|------|
|                              | C   | Mn   | Cr   | Mo   | V     | Ni   | Cu   |
| Do Not Fill in these Numbers | 0.2 | 1.04 | 0.04 | 0.02 | 0.001 | 0.04 | 0.11 |

|                                        |          |     |    |    |   |    |    |
|----------------------------------------|----------|-----|----|----|---|----|----|
| CE=C+(Mn/6)+((Cr+Mo+V)/5)+((Ni+Cu)/15) | CE       | Mn  | Cr | Mo | V | Ni | Cu |
| Do Not Fill in these Numbers           | Standard | <45 |    |    |   |    |    |



|                                     |        |           |          |            |        |        |          |
|-------------------------------------|--------|-----------|----------|------------|--------|--------|----------|
| HT # 4875                           | C      | Mn        | Cr       | Mo         | Ni     | Cu     | V        |
|                                     | Carbon | Manganese | Chromium | Molybdenum | Nickel | Copper | Vanadium |
| Fill in Product Analysis from MTR's | 0.185  | 0.97      | 0.12     | 0.03       | 0.1    | 0.12   | 0.002    |

|                              |       |      |      |              |              |
|------------------------------|-------|------|------|--------------|--------------|
|                              |       | Mn   | C    | Standard     | Ratio        |
| Do Not Fill in these Numbers | Ratio | Mn/C | 0.97 | 0.185 > 3.00 | 0.185 > 3.00 |

|                              |       |      |      |      |       |     |      |
|------------------------------|-------|------|------|------|-------|-----|------|
|                              | C     | Mn   | Cr   | Mo   | V     | Ni  | Cu   |
| Do Not Fill in these Numbers | 0.185 | 0.97 | 0.12 | 0.03 | 0.002 | 0.1 | 0.12 |

|                                        |  |          |      |
|----------------------------------------|--|----------|------|
| CE=C+(Mn/6)+((Cr+Mo+V)/5)+((Ni+Cu)/15) |  | Standard | < 45 |
| Do Not Fill in these Numbers           |  |          |      |

|                                     |        |           |          |            |        |        |          |
|-------------------------------------|--------|-----------|----------|------------|--------|--------|----------|
| HT # 4870                           | C      | Mn        | Cr       | Mo         | Ni     | Cu     | V        |
|                                     | Carbon | Manganese | Chromium | Molybdenum | Nickel | Copper | Vanadium |
| Fill in Product Analysis from MTR's | 0.2    | 0.98      | 0.14     | 0.05       | 0.1    | 0.14   | 0.002    |

| Do Not Fill in these Numbers |  |  |  |  |  | C   | Mn   | Cr   | Mo   | V     | Ni  | Cu   |
|------------------------------|--|--|--|--|--|-----|------|------|------|-------|-----|------|
|                              |  |  |  |  |  | 0.2 | 0.98 | 0.14 | 0.05 | 0.002 | 0.1 | 0.14 |

|                                        |          |     |
|----------------------------------------|----------|-----|
| CE=C+(Mn/6)+((Cr+Mo+V)/5)+((Ni+Cu)/15) | Standard | <45 |
| Do Not Fill in these Numbers           |          |     |

# CERTIFIED MILL TEST REPORT



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LOG NO. F00000000016902

BONNEY FORGE CORPORATION

P.O. BOX 300 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330

(814) 542-7445 • (800) 345-7546 • FAX (814) 542-4908

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 07/19/2011

CUSTOMER

ORDER NO.: S759114630

BONNEY ORDER NO. B000100069

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.

CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

4978 1/4 3M/6M A105 Q&T HXPL T

SA/A105-QT

8C12607

C 0.170 ✓ Cb 0.000 Co 0.000 Mn 0.140 ✓ Cu 0.014 ✓ Mn 0.690 ✓ Mo 0.016 Ni 0.060 ✓  
P 0.014 ✓ S 0.011 ✓ Si 0.190 ✓ V 0.001 ✓  
CE(Long Formula) = 0.52  
T/S(PSI) 0 Y/S(PSI) 0 EL(%) 0.00 RA(%) 0.00  
Brinell 147 BHN 156 BHN

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO105/ISO 15156-2.
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE MATERIAL SUPPLIED IDENTIFIED AS SA/A105-QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

*Quenched  
No mechanical*

ENCANA

Tourmaline  
Shell Canada

MATERIAL MEETS CUSTOMER SPECIFICATIONS

By: *colleent* at 1:00:06 PM, 16/05/2012

Cenovus

March 13/2012  
conforms with ASME  
Section Part A, 2010 edition,  
2011a addenda"

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

WTR: REV 2

# CERTIFIED MILL TEST REPORT



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BONNEY FORGE CORPORATION

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 11/22/2011

CUSTOMER

BONNEY ORDER NO. B000107310

ORDER NO.: S759131474

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

| ITEM            | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                                                        |
|-----------------|----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 93<br>18C13309  | 675      | 58490   | <p>5-4X1 3M A105N THRD T SA/A105N</p> <p>Al 0.027 C 0.200 Co 0.002 Cr 0.040 Cu 0.070 Mn 1.040 Mo 0.000 N 0.003<br/>Nb 0.015 Ni 0.020 P 0.008 S 0.021 Si 0.200 V 0.003<br/>CE(Long Formula) = 0.39<br/>T/S(PSI) 71,875 Y/S(PSI) 48,750 EL(%) 34.30 RA(%) 64.45<br/>Brinell 132 BHN 132 BHN</p>         |
| 100<br>18C13537 | 50       | 58059   | <p>36-3/4 X 1/2 6M A105N FLEX T SA/A105N</p> <p>Al 0.001 C 0.200 Cb 0.000 Co 0.000 Cr 0.114 Cu 0.260 Mn 0.820 Mo 0.021<br/>Nb 0.023 Ni 0.079 P 0.011 S 0.027 Si 0.220 V 0.002<br/>CE(Long Formula) = 0.39<br/>T/S(PSI) 76,000 Y/S(PSI) 50,000 EL(%) 33.00 RA(%) 60.00<br/>Brinell 146 BHN 146 BHN</p> |
| 76<br>18C12631  | 2,525    | 5062    | <p>1/2 3M/6M A105 Q&amp;T HXPL T SA/A105-QT</p> <p>C 0.150 Co 0.000 Cr 0.070 Cu 0.100 Mn 0.640 Mo 0.020 N 0.007 Nb 0.001<br/>Ni 0.060 P 0.008 S 0.008 Si 0.180 V 0.001<br/>CE(Long Formula) = 0.29<br/>T/S(PSI) 0 Y/S(PSI) 0 EL(%) 0.00 RA(%) 0.00<br/>Brinell 150 BHN 162 BHN</p>                    |

Encana/Shell

Petro Bakken

ALL INFORMATION CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Encana  
Pennwest  
Paramount

"Conforms with ASME  
Sec II Part A, 2010 edition  
2011a addenda"

Name: Ceri Steen

Date: Dec 22/11

APPROVED

By Ceri Steen at 12:10 pm, May 16, 2012

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Meloney Specht

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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LOG NO. F00000000021867

BONNEY FORGE CORPORATION

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 11/22/2011

CUSTOMER

BONNEY ORDER NO. B000107310

ORDER NO.: S759131474

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE MATERIAL SUPPLIED IDENTIFIED AS SA/A105-QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
8. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2



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

**BENTELER**   
Stahl/Rohr

*PO# 9114664-00*

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

Dokument-Nr.: 41-509916/001/P  
Document No.:  
No. du document:

Kunden-Bestell-Nr.: BST 08-5898 / E.W. 9114664-00  
Purchase Order No.:  
No. de commande du client:

Benteler Auftrags-Nr.: 1534413  
Benteler Order No.:  
No. de commande Benteler:

Versandanzeigen-Nr.: 4142657  
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/Zieherei  
Manufacturer: ISO/TS 16949 (ISO 9001) DNV CERT-11674A-2003  
Producteur: PED 97/23/EC TÜV CERT 07-202-5635 WZ-0606/07

Herstellerzeichen:  
Manufacturer's brand:  
Marque du producteur:

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

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

Blatt: 1 / 5  
Page:  
Page:

Lieferbedingungen: ✓ ASME SA-106, ASME Section II Part A Edition 2007, S5, ASTM-A 106-2006a, S5, API Specification 5L  
Terms of delivery: Forty-Third Edition, March 2004, PSL 1, CSA Standard Z245.1-07 Category I, NACE MR0175/ISO  
Conditions de livraison: 15156-1:2001, NACE MR0175/ISO 15156-2:2003

Maße - Toleranzen: ASME B36.10M-2004, ASME SA-530, ASME Section II Part A Edition 2007, ASTM-A 530-2004a  
Dimensions-tolérances:  
Dimensions-tolérances:

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

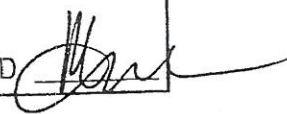
Lieferzustand: Hot rolled  
Delivery condition:  
État de livraison:

Produktkennzeichnung: FS: BENTELER Z.245.1-07, Spec.5L-PSL1 - A/SA106 S5 B/X42/290 HEAT-NO. TEST PRESSURE NDE  
Product marking: DIMENSIONS SCHEDULE WA GERMANY P.O. 9114664

Marquage du produit:

AEZ = Ätzintensbeschriftung, Etching ink marking, Gravure à l'encre FK = Farbkennzeichnung, colour marking, marquage par couleur FS = Farbschablonierung, paint stencilling, marquage par peinture FSD = Farbstahldrucker, Colour jet printer, Imprimante à jet d'encre de LS = Längsschablonierung, 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

VERIFIED BY

WESTLUND 

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/12/5 S. Nader

EXCHANGED  
FOR BAD

HEAT #

NIP-1x 7 1/2 3/80

8562-001

8562-002

8563-001

8563-002

PO# 710342

PO# 710343

PO# 710344

PO# 710345



Benteler Stahl/Rohr GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: +49.5254.81-0 Fax: +49.5254.13668

**BENTELER**   
Stahl/Rohr

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

Dokument-Nr.: 41-509916/001/P  
Document No.:  
No. du document:

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

Blatt: 2 / 5  
Page:  
Page:

| Pos.  | Stück  | Maße                                | Länge    | Gewicht | Schmelzen-Nr. | Prüfdruck          | Rohr-Nr.-Gruppe        | Vielfachlängen      |
|-------|--------|-------------------------------------|----------|---------|---------------|--------------------|------------------------|---------------------|
| Item  | Number | Dimensions                          | Length   | Weight  | Heat No.      | Test pressure      | Tube number group      | Multiple lengths    |
| Poste | Nombre | Dimensions                          | Longueur | Poids   | No. de coulée | Pression d'épreuve | Série de no. des tubes | Longueurs multiples |
|       |        |                                     | feet     | lbs     |               | bar                |                        |                     |
| 0009  | 1147   | 1" NPS * Sched. 80<br>20 FT - 22 FT | 24949,51 | 53634   | 551789        | 207 5              | 252-0370-              |                     |

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 |       |       |      |       |       |      |      |      |      |       |       |       |        |
| 0009  | 551789        | 0,130 | 0,205 | 0,83 | 0,009 | 0,004 | 0,14 | 0,04 | 0,10 | 0,17 | 0,002 | 0,001 | 0,002 | 0,0001 |

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

Formelerggebnisse / 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 |
| 0009  | 551789        | 0,323      | 0,290      | 6,385      | 0,452      |

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

| Pos.  | Schmelzen-Nr. | C     | SI    | MN   | P     | S     | CR   | MO   | NI   | CU   | V     | NB    | TI    | B      |
|-------|---------------|-------|-------|------|-------|-------|------|------|------|------|-------|-------|-------|--------|
| Item  | Heat No.      |       |       |      |       |       |      |      |      |      |       |       |       |        |
| Poste | No. de coulée |       |       |      |       |       |      |      |      |      |       |       |       |        |
| 0009  | 551789        | 0,140 | 0,220 | 0,83 | 0,009 | 0,004 | 0,15 | 0,04 | 0,11 | 0,19 | 0,001 | 0,002 | 0,002 | 0,0003 |
| 0009  | 551789        | 0,140 | 0,220 | 0,84 | 0,009 | 0,004 | 0,15 | 0,04 | 0,11 | 0,19 | 0,001 | 0,002 | 0,002 | 0,0003 |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/12/15 S. Zacher

Benteler Stahl/Rohr GmbH  
Postfach 13 40  
33042 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.: 41-509916/001/P  
Document No.:  
No. du document:

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

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Page:  
Page:

1. Formel:  $CE_{IIW} = C + (Mn/6) + ((Cr+Mo+V)/5) + ((Cu+Ni)/15) \leq 0,40 \%$
2. Formel:  $CEV = C + F * ((Mn/6) + (Si/24) + (Cu/15) + (Ni/20) + ((Cr+Mo+V+Nb)/5) + (5*B)) \leq 0,40$
3. Formel:  $Mn/C \geq 3/1$
4. 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 |
| 0009  | 551789        | 0,337      | 0,315      | 5,929      | 0,491      |
| 0009  | 551789        | 0,338      | 0,316      | 6,000      | 0,491      |

Prüfergebnisse / Test results / Résultats des essais

|                                                                                                                                                                |                                                                                             |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------|
| Die Rohre sind auf Dichtheit geprüft durch:<br>The tubes have been submitted to a leak tightness test by:<br>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 |
| Die Rohre wurden zerstörungsfrei geprüft:<br>The tubes are non destructive tested:<br>Les tubes ont passé un essai non destructif:                             | ET-test: acc. to CSA Z245.1; imperfections; drilled hole: 3,20 mm                           | PASSED |
| Augensichtkontrolle:<br>Visual inspection:<br>Examen visuel:                                                                                                   | PASSED                                                                                      | PASSED |
| Biegeversuch:<br>Bending test:<br>Essai de cintrage:                                                                                                           | PASSED                                                                                      | PASSED |
| Maßkontrolle:<br>Dimensions examination:<br>Vérification des dimensions:                                                                                       | PASSED                                                                                      | PASSED |

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.

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/12/15 J. Nason



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.: 41-509916/001/P

Document No.:  
No. du document:

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

Blatt: 4 / 5  
Page:  
Page:

Zugversuch Vollprobe / Tensile test Full section test specimen / Essai de traction Eprouvette a section complete

| Pos.<br>Item<br>Poste                      | Proben-Nr.<br>Specimen No.<br>No. de l'éprouvette | Schmelzen-Nr.<br>Heat No.<br>No. de coulée | Probenabmessung<br>Specimen dimensions<br>Dimensions de l'éprouv. | Streckgrenze<br>Yield strength<br>Limite élastique | Zugfestigkeit<br>Tensile strength<br>Résistance à la traction | Dehnung<br>Elongation<br>Allongement | Einschnürung<br>Area reduction<br>Coefficient de striction | Re/Rm<br>Re/Rm<br>Re/Rm |
|--------------------------------------------|---------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------|--------------------------------------|------------------------------------------------------------|-------------------------|
| Anforderungen<br>Requirements<br>Exigences |                                                   |                                            | mm                                                                | ReH<br>MPa<br>290-495                              | Rm<br>MPa<br>415-760                                          | A2"<br>%<br>MIN 30                   | 1. Formel<br>1. Formula<br>1. Formule                      |                         |
| 0009                                       | 000001                                            | 551789                                     | 33,40 X 4,50                                                      | 349                                                | 488                                                           | 46,00                                |                                                            |                         |
| 0009                                       | 000002                                            | 551789                                     | 33,40 X 4,50                                                      | 346                                                | 485                                                           | 48,00                                |                                                            |                         |
| 0009                                       | 000003                                            | 551789                                     | 33,40 X 4,50                                                      | 346                                                | 485                                                           | 46,00                                |                                                            |                         |

Härteprüfung / Hardness test / Essai de dureté

| Pos.<br>Item<br>Poste                      | Proben-Nr.<br>Specimen No.<br>No. de l'éprouv. | Schmelzen-Nr.<br>Heat No.<br>No. de coulée | Härte<br>Hardness<br>Dureté | HRC | HB      | HV | HRB | HBW |
|--------------------------------------------|------------------------------------------------|--------------------------------------------|-----------------------------|-----|---------|----|-----|-----|
| Anforderungen<br>Requirements<br>Exigences |                                                |                                            |                             |     | MAX 200 |    |     |     |
| 0009                                       | 000001                                         | 551789                                     |                             |     | 144     |    |     |     |
| 0009                                       | 000002                                         | 551789                                     |                             |     | 144     |    |     |     |
| 0009                                       | 000003                                         | 551789                                     |                             |     | 146     |    |     |     |

Restmagnetismus / Demagnetize / Démagnétiser

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

Vermerk / Remark / Remarque

NACE Standard: Hardness acc. to NACE MR0175/ISO 15156: HRC max 22., The material meets the requirements of NACE MR0103;  
Certificate remarks: The Material is Aluminium deoxydized and inclusion shape controlled with Calcium-Silicon treatment, This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-07 meets the requirement for micro hardness of max. 248 HV 500 gf.; Bend test: mandrel diameter 12D; Bending angle: 90 °

Verkäufer(in) / Salesman/ woman in charge / Personne chargée : Mr Buerger, Tel.: 05254/81-4266, Fax: 4299

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2011a addenda"

2012/12/5 S. Rason

Benteler Stahl/Rohr GmbH  
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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.:  
Document No.:  
No. du document:

41-509916/001/P

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

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Page:  
Page:

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Sec II, Part A, 2010 edition,  
2011a addenda"

2012/12/5 J. Nason

Paderborn Schloß Neuhaus, 10.10.2008, TEL.: 05254.81-1767 FAX: 05254.81-1752



Abnahmebeauftragter  
Inspection representative

Contrôleur

ALWIN PANKRATZ / TEM

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.

# CERTIFIED MILL TEST REPORT

195793



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BONNEY FORGE CORPORATION

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(814) 542-2545 • (800) 346-7548 • FAX (814) 542-4908

www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 12/17/2010

CUSTOMER

ORDER NO.: 4889016-00

BONNEY ORDER NO. B000087296

SHIP TO: CCTF CORPORATION (EDMONTON)  
5407 - 53RD AVE.  
EDMONTON AB T6B 3G2  
Canada

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Sec II, Part A, 2010 edition  
2011a addenda"

2012/11/5 S. Brown

| ITEM    | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.                                                                                                                                                                                                                                     | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS |
|---------|----------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| 23      | 125      | 58171   | 1 3M A105N STEEL T                                                                                                                                                                                                                                             | SA/A105N                                        |
| 7520085 |          |         | Al 0.023 C 0.210 Cb 0.000 Co 0.004 Cr 0.040 Cu 0.100 Mn 1.070 Mo 0.010<br>N 0.005 Nb 0.015 Ni 0.030 P 0.008 S 0.020 Si 0.210 V 0.004<br>CE(Long Formula) = 0.41<br>T/S(Psi) 75,000 Y/S(Psi) 51,250 EL(%) 31.50 RA(%) 64.20<br>Brinell 132 BHN 132 BHN          |                                                 |
| 25      | 73       | 58079   | 1/2 3M A105N 45 EL T                                                                                                                                                                                                                                           | SA/A105N                                        |
| 7522932 |          |         | Al 0.023 C 0.200 Cb 0.000 Co 0.004 Cr 0.040 Cu 0.150 Mn 0.990 Mo 0.010<br>N 0.004 Nb 0.013 Ni 0.050 P 0.010 S 0.021 Si 0.210 Sn 0.010 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 71,250 Y/S(Psi) 48,750 EL(%) 32.50 RA(%) 64.90<br>Brinell 130 BHN 130 BHN |                                                 |
| 30      | 15       | 57961   | 3 3M A105N TEE T                                                                                                                                                                                                                                               | SA/A105N                                        |
| 7523351 |          |         | Al 0.020 C 0.200 Cr 0.150 Cu 0.200 Mn 1.000 Mo 0.020 Nb 0.001 Ni 0.080<br>P 0.018 S 0.024 Si 0.180 Sn 0.010 V 0.004<br>CE(Long Formula) = 0.42<br>T/S(Psi) 76,250 Y/S(Psi) 51,250 EL(%) 32.75 RA(%) 64.90<br>Brinell 137 BHN 135 BHN                           |                                                 |
| 50      | 40       | 4470    | 4 3M A105N HCP T                                                                                                                                                                                                                                               | SA/A105N                                        |
| 7529023 |          |         | Al 0.021 C 0.240 Cr 0.050 Cu 0.210 Mn 0.790 Mo 0.020 Nb 0.001 Ni 0.130<br>P 0.010 S 0.006 Si 0.230 V 0.002<br>CE(Long Formula) = 0.41<br>T/S(Psi) 75,000 Y/S(Psi) 51,350 EL(%) 32.70 RA(%) 61.05<br>Brinell 130 BHN 130 BHN                                    |                                                 |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Lavonne Brown

Lavonne Brown

QUALITY PROCESS MANAGER

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DATE 12/17/2010

CUSTOMER

ORDER NO.: 4889016-00

BONNEY ORDER NO. B000087296

SHIP TO: CCTF CORPORATION (EDMONTON)  
5407 - 53RD AVE.  
EDMONTON AB T6B 3G2  
Canada

*2012/11/15 J. Nelson*  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS.

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Lavonne Brown*

Lavonne Brown

QUALITY PROCESS MANAGER

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# CERTIFIED MILL TEST REPORT

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

www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 12/03/2010

CUSTOMER

ORDER NO.: 4888948-00

BONNEY ORDER NO. B000086578

SHIP TO: CCTF CORPORATION (EDMONTON)  
5407 - 53RD AVE.  
EDMONTON AB T6B 3G2  
Canada

Sept. 26, 2011 of  
"Conforms with ASME  
Sec II, Part A, 2010 edition"

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS |
|------|----------|---------|----------------------------|-------------------------------------------------|
|------|----------|---------|----------------------------|-------------------------------------------------|

|         |     |      |                                                                                                                                                                                                                                                        |          |
|---------|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 83      | 100 | 4611 | 11/2X3/4 3M/6M A105N HXBU T                                                                                                                                                                                                                            | SA/A105N |
| 7525010 |     |      | Al 0.027 C 0.200 Cb 0.000 Co 0.004 Cr 0.030 Cu 0.150 Mn 1.030 Mo 0.010<br>Nb 0.013 Ni 0.030 P 0.009 S 0.020 Si 0.230 Sn 0.010 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 75,625 Y/S(Psi) 52,500 EL(%) 33.70 RA(%) 66.10<br>Brinell 135 BHN 137 BHN |          |

|         |     |      |                                                                                                                                                                                                                                                       |          |
|---------|-----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 84      | 100 | 4642 | 11/2X 1 3M/6M A105N HXBU T                                                                                                                                                                                                                            | SA/A105N |
| 7525044 |     |      | Al 0.023 C 0.200 Cb 0.000 Co 0.002 Cr 0.030 Cu 0.060 Mn 1.040 Mo 0.010<br>N 0.004 Nb 0.013 Ni 0.020 P 0.006 S 0.024 Si 0.220 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 73,750 Y/S(Psi) 48,750 EL(%) 31.30 RA(%) 63.00<br>Brinell 130 BHN 130 BHN |          |

|         |    |       |                                                                                                                                                                                                                                                       |          |
|---------|----|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 85      | 24 | 58068 | 3 X1 3M/6M A105N HXBU T                                                                                                                                                                                                                               | SA/A105N |
| 7528833 |    |       | Al 0.022 C 0.200 Cb 0.000 Co 0.005 Cr 0.050 Cu 0.190 Mn 1.030 Mo 0.010<br>N 0.006 Nb 0.015 Ni 0.050 P 0.007 S 0.018 Si 0.200 V 0.004<br>CE(Long Formula) = 0.40<br>T/S(Psi) 73,125 Y/S(Psi) 50,000 EL(%) 34.45 RA(%) 63.95<br>Brinell 132 BHN 132 BHN |          |

|         |    |       |                                                                                                                                                                                                                                                        |          |
|---------|----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 85      | 24 | 58003 | 3 X1 3M/6M A105N HXBU T                                                                                                                                                                                                                                | SA/A105N |
| 7528833 |    |       | Al 0.024 C 0.200 Cb 0.000 Co 0.003 Cr 0.050 Cu 0.050 Mn 1.030 Mo 0.006<br>Nb 0.013 Ni 0.010 P 0.008 S 0.020 Si 0.240 Sn 0.010 V 0.004<br>CE(Long Formula) = 0.38<br>T/S(Psi) 73,750 Y/S(Psi) 48,750 EL(%) 33.05 RA(%) 64.20<br>Brinell 132 BHN 132 BHN |          |

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2011a addenda"  
LR Dec 10/12

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: LR  
Date: Dec 10/12

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by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTM REVZ

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CUSTOMER: CCTF CORPORATION

DATE 12/03/2010

CUSTOMER

ORDER NO.: 4888948-00

BONNEY ORDER NO. B000086578

SHIP TO: CCTF CORPORATION (EDMONTON)

5407 - 53RD AVE.

EDMONTON AB T6B 3G2

Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS |
|------|----------|---------|----------------------------|-------------------------------------------------|
|------|----------|---------|----------------------------|-------------------------------------------------|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
3. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
4. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
5. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.
6. ITEM - 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 77, 78, 80, 81, 82, 83, 84, 85, 86, 88, 89, 90, 91 -THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. ITEM - 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 77, 78, 80, 81, 82, 83, 84, 85, 86, 88, 89, 90, 91 -THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
8. ITEM - 76 -THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF NACE MRO175/ISO 15156-2.
9. ITEM - 76 -THE MATERIAL SUPPLIED IDENTIFIED AS A105QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.

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by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

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CUSTOMER: CCTF CORPORATION

DATE 12/03/2010

CUSTOMER

BONNEY ORDER NO. B000086578

ORDER NO.: 4888948-00

SHIP TO: CCTF CORPORATION (EDMONTON)

5407 - 53RD AVE.

EDMONTON AB T6B 3G2

Canada

Sept. 26, 2011  
"Conforms with ASME  
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| ITEM          | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.              | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS                                                                                                                                                                                                                                       |
|---------------|----------|---------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83<br>7525010 | 100      | 4611    | 11/2X3/4 3M/6M A105N HXBU T<br>SA/A105N | Al 0.027 C 0.200 Cb 0.000 Co 0.004 Cr 0.030 Cu 0.150 Mn 1.030 Mo 0.010<br>Nb 0.013 Ni 0.030 P 0.009 S 0.020 Si 0.230 Sn 0.010 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 75,625 Y/S(Psi) 52,500 EL(%) 33.70 RA(%) 66.10<br>Brinell 135 BHN 137 BHN                                |
| 84<br>7525044 | 100      | 4642    | 11/2X 1 3M/6M A105N HXBU T<br>SA/A105N  | Al 0.023 C 0.200 Cb 0.000 Co 0.002 Cr 0.030 Cu 0.060 Mn 1.040 Mo 0.010<br>N 0.004 Nb 0.013 Ni 0.020 P 0.006 S 0.024 Si 0.220 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 73,750 Y/S(Psi) 48,750 EL(%) 31.30 RA(%) 63.00<br>Brinell 130 BHN 130 BHN                                 |
| 85<br>7528833 | 24       | 58068   | 3 X1 3M/6M A105N HXBU T<br>SA/A105N     | Al 0.022 C 0.200 ✓ Cb 0.000 Co 0.005 ✓ Cr 0.050 ✓ Cu 0.190 ✓ Mn 1.030 ✓ Mo 0.010 ✓<br>N 0.006 Nb 0.015 Ni 0.050 ✓ P 0.007 ✓ S 0.018 ✓ Si 0.200 ✓ V 0.004 ✓<br>CE(Long Formula) = 0.40<br>T/S(Psi) 73,125 ✓ Y/S(Psi) 50,000 ✓ EL(%) 34.45 ✓ RA(%) 63.95<br>Brinell 132 BHN ✓ 132 BHN ✓ |
| 85<br>7528833 | 24       | 58003   | 3 X1 3M/6M A105N HXBU T<br>SA/A105N     | Al 0.024 C 0.200 Cb 0.000 Co 0.003 Cr 0.030 Cu 0.050 Mn 1.030 Mo 0.000<br>Nb 0.013 Ni 0.010 P 0.008 S 0.020 Si 0.240 Sn 0.010 V 0.004<br>CE(Long Formula) = 0.38<br>T/S(Psi) 73,750 Y/S(Psi) 48,750 EL(%) 33.05 RA(%) 64.20<br>Brinell 132 BHN 132 BHN                                |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

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www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 12/03/2010

CUSTOMER

BONNEY ORDER NO. B000086578

ORDER NO.: 4888948-00

SHIP TO: CCTF CORPORATION (EDMONTON)

5407 - 53RD AVE.

EDMONTON AB T6B 3G2

Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|------|----------|---------|--------------------------------------------------------------------------------|
|------|----------|---------|--------------------------------------------------------------------------------|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
3. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
4. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
5. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.
6. ITEM - 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 77, 78, 80, 81, 82, 83, 84, 85, 86, 88, 89, 90, 91 -THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. ITEM - 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 77, 78, 80, 81, 82, 83, 84, 85, 86, 88, 89, 90, 91 -THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
8. ITEM - 76 -THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF NACE MRO175/ISO 15156-2.
9. ITEM - 76 -THE MATERIAL SUPPLIED IDENTIFIED AS A105QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2



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# CERTIFIED MILL TEST REPORT

LOG NO. F00000000019197

Page 6 of 11

BONNEY FORGE CORPORATION

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(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4908  
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 09/16/2011

CUSTOMER

ORDER NO.: 4890301-00

BONNEY ORDER NO. B000104389

SHIP TO: CCTF CORPORATION (EDMONTON)

5407 - 53RD AVE.  
EDMONTON AB T6B 3G2  
Canada

*copy OCT 21/11*  
"Conforms with ASME  
Sec II, Part A, 2010 edition"

| ITEM                                                                                                                                                                                                                                                                                                       | QUANTITY       | LOT NO.          | GRADE OR SPECIFICATION NO. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|----------------------------|
| CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                                                                                           |                |                  |                            |
| 7680029                                                                                                                                                                                                                                                                                                    | 4826<br>FEMALE | 2 3M LF2 UNAR T  | SA/A350 LF2 CL1            |
| AL 0.024 C 0.200 Cb 0.000 Co 0.004 Cr 0.030 Cu 0.120 Mn 1.030 Mo 0.010<br>N 0.005 Nb 0.015 Ni 0.040 P 0.007 S 0.021 Si 0.190 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 75,000 Y/S(Psi) 48,750 EL(%) 30.25 RA(%) 63.25<br>Brinell 132 BHN 132 BHN<br>Charpy -50 F 101/28/108 (Ft-Lbs)<br>Average 79.00 |                |                  |                            |
| 7680029                                                                                                                                                                                                                                                                                                    | 4895<br>NUT    | 2 3M LF2 UNAR T  | SA/A350 LF2 CL1            |
| Al 0.026 C 0.190 Cr 0.150 Cu 0.160 Mn 1.000 Mo 0.040 Nb 0.001 Ni 0.160<br>P 0.009 S 0.022 Si 0.250 V 0.002<br>CE(Long Formula) = 0.42<br>T/S(Psi) 75,000 Y/S(Psi) 47,875 EL(%) 33.25 RA(%) 64.45<br>Brinell 137 BHN 135 BHN<br>Charpy -50 F 43/41/51 (Ft-Lbs)<br>Average 45.00                             |                |                  |                            |
| 7680079                                                                                                                                                                                                                                                                                                    | 15<br>ENCAMP   | 1 6000 LF2 TEE T | SA/A350 LF2 CL1            |
| Al 0.020 C 0.210 Cb 0.000 Co 0.004 Cr 0.050 Cu 0.150 Mn 1.050 Mo 0.010<br>N 0.006 Nb 0.015 Ni 0.040 P 0.007 S 0.022 Si 0.170 V 0.003<br>CE(Long Formula) = 0.41<br>T/S(Psi) 73,000 Y/S(Psi) 47,300 EL(%) 31.00 RA(%) 67.00<br>Brinell 143 BHN 143 BHN<br>Charpy -50 F 42/31/30 (Ft-Lbs)<br>Average 34.30   |                |                  |                            |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: *[Signature]*

Date: *OCT 21/11*

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

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## CERTIFIED MILL TEST REPORT

LOG NO. F00000000019197

Page 11 of 11

BONNEY FORGE CORPORATION

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(814) 542-2545 • (800) 345-7548 • FAX (814) 542-4906

www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 09/16/2011

CUSTOMER

ORDER NO.: 4890301-00

BONNEY ORDER NO. B000104389

SHIP TO: CCTF CORPORATION (EDMONTON)  
5407 - 53RD AVE.  
EDMONTON AB T6B 3G2  
Canada

ITEM QUANTITY LOT NO

GRADE OR SPECIFICATION NO  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS.

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
9. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

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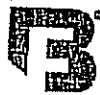
by

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

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# CERTIFIED MILL TEST REPORT

LOG NO. F00000000021586

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(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4908

www.bonneyforge.com

DATE 11/16/2011

BONNEY ORDER NO. B000108237

| ITEM          | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.       | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS                                                                                                                                                                                                                              |
|---------------|----------|---------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17<br>7522711 |          | 58406   | 1 3000 A105N 90EL T<br>SA/A105N  | Al 0.024 C 0.200 Co 0.003 Cr 0.050 Cu 0.060 Mn 1.000 Mo 0.010 N 0.004<br>Nb 0.013 Ni 0.030 P 0.008 S 0.022 Si 0.200 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 73,125 Y/S(Psi) 49,375 EL(%) 33.00 RA(%) 64.45<br>Brinell 135 BHN 132 BHN                                 |
| 7522711       |          | 58314   | 1 3000 A105N 90EL T<br>SA/A105N  | Al 0.024 C 0.190 Co 0.004 Cr 0.030 Cu 0.200 Mn 1.000 Mo 0.010 N 0.007<br>Nb 0.014 Ni 0.050 P 0.008 S 0.018 Si 0.200 V 0.003<br>CE(Long Formula) = 0.38<br>T/S(Psi) 75,000 Y/S(Psi) 50,000 EL(%) 32.25 RA(%) 63.95<br>Brinell 135 BHN 135 BHN                                 |
| 55<br>7526547 |          | → 58259 | 1/2 6000 A105N TEE T<br>SA/A105N | Al 0.022 C 0.190 ✓ Co 0.000 ✓ Cr 0.040 ✓ Cu 0.100 ✓ Mn 1.020 ✓ Mo 0.010 ✓<br>N 0.005 Nb 0.012 Ni 0.040 ✓ P 0.007 ✓ S 0.016 ✓ Si 0.180 ✓ V 0.004 ✓<br>CE(Long Formula) = 0.38<br>T/S(Psi) 76,875 ✓ Y/S(Psi) 52,500 ✓ EL(%) 33.55 ✓ RA(%) 66.10<br>Brinell 137 BHN ✓ 137 BHN ✓ |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

"Conforms with ASME  
Sec II, Part A, 2010 edition"

2011a addenda  
LK Jan. 8/12

Name: LF

Date: Jan. 8/12

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2011a addenda"

by

Meloney Specht

Meloney Specht  
QUALITY PROCESS MANAGER

Jan 17/12



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## CERTIFIED MILL TEST REPORT

LOG NO. F00000000021586

Page 2 of 2

BONNEY FORGE CORPORATION

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

www.bonneyforge.com

DATE 11/16/2011

BONNEY ORDER NO. B000108237

| ITEM | QUANTITY | LOT/NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|------|----------|---------|----------------------------|--------------------------------------------------|
|------|----------|---------|----------------------------|--------------------------------------------------|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2. ✓
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

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by

*Meloney Specht*

CMTR: REV2

Meloney Specht  
QUALITY PROCESS MANAGER



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# CERTIFIED MILL TEST REPORT

LOG NO. F00000000026340

BONNEY FORGE CORPORATION

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 03/08/2012

CUSTOMER

ORDER NO.: S759153651

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

BONNEY ORDER NC

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Shell Canada  
Pennwest  
Encana  
Paramount

| ITEM     | QUANTITY  | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                                                                |
|----------|-----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18C14053 |           | 58631   | 2 3000 A105N 90EL T<br>SA/A105N<br>Al 0.022 C 0.200 Co 0.004 Cr 0.040 Cu 0.040 Mn 1.040 Mo 0.000 N 0.003<br>Nb 0.016 Ni 0.020 P 0.006 S 0.019 Si 0.200 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 71,960 Y/S(Psi) 48,215 EL(%) 32.00 RA(%) 64.94<br>Brinell 132 BHN 135 BHN                               |
| 18C11737 | 37<br>120 | 58543   | 2 3000 LF2 TEE T<br>SA/A350 LF2 CL1<br>Al 0.024 C 0.200 Co 0.002 Cr 0.030 Cu 0.050 Mn 1.030 Mo 0.000 N 0.003<br>Nb 0.015 Ni 0.020 P 0.006 S 0.016 Si 0.200 V 0.003<br>T/S(Psi) 72,032 Y/S(Psi) 46,382 EL(%) 33.50 RA(%) 62.32<br>Brinell 135 BHN 132 BHN<br>Charpy -50 F 62/51/66 (Ft-Lbs)<br>Average 59.70   |
| 18C12667 | 53<br>600 | 6007    | 1 3M/6M LF2 HXPL T<br>SA/A350 LF2 CL1<br>Al 0.026 C 0.220 Co 0.002 Cr 0.030 Cu 0.040 Mn 1.020 Mo 0.000 N 0.004<br>Nb 0.014 Ni 0.020 P 0.007 S 0.021 Si 0.190 V 0.004<br>T/S(Psi) 74,575 Y/S(Psi) 49,300 EL(%) 33.00 RA(%) 61.34<br>Brinell 132 BHN 132 BHN<br>Charpy -50 F 22/16/26 (Ft-Lbs)<br>Average 21.30 |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

*CD May 3/12*

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by

*Lavonne Brown*

Lavonne Brown  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 03/08/2012

CUSTOMER

BONNEY ORDER NO. B000116139

ORDER NO.: S759153651

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|------|----------|---------|--------------------------------------------------------------------------------|
|------|----------|---------|--------------------------------------------------------------------------------|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
4. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
5. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
6. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
7. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
8. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
9. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
10. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
11. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
12. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

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by

*Lavonne Brown*

Lavonne Brown  
QUALITY PROCESS MANAGER

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# CERTIFIED MILL TEST REPORT

LOG NO. F00000000025766

BONNEY FORGE CORPORATION

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www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 02/27/2012

CUSTOMER

BONNEY ORDER NO. B000115279

ORDER NO.: S759151679

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

| ITEM           | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.               | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                             |
|----------------|----------|---------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49<br>18C12250 | 100      | 4960    | 3/4X 1/4 3M/6M A105N HXBU T<br>SA/A105N  | C 0.210 Co 0.002 Cr 0.030 Cu 0.080 Mn 1.040 Mo 0.000 Ni 0.020 P 0.006<br>S 0.018 Si 0.250 V 0.003<br>T/S(PSI) 75,000 Y/S(PSI) 52,500 EL(%) 33.90 RA(%) 65.85<br>Brinell 139 BHN 139 BHN                                                      |
| 50<br>18C12262 | 75       | 4887    | 3/4 X 3/8 3M/6M A105N HXBU T<br>SA/A105N | Al 0.026 C 0.200 Co 0.004 Cr 0.060 Cu 0.140 Mn 1.020 Mo 0.010 N 0.005<br>Nb 0.014 Ni 0.040 P 0.011 S 0.023 Si 0.190 V 0.003<br>CE(Long Formula) = 0.40<br>T/S(PSI) 76,000 Y/S(PSI) 51,500 EL(%) 32.00 RA(%) 68.00<br>Brinell 143 BHN 143 BHN |
| 51<br>18C12283 | 25       | 4955    | 1 X 1/8 3M/6M A105N HXBU T<br>SA/A105N   | C 0.200 Cb 0.000 Co 0.002 Cr 0.040 Cu 0.110 Mn 1.010 Mo 0.010 Ni 0.020<br>P 0.007 S 0.023 Si 0.200 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 71,250 Y/S(PSI) 48,750 EL(%) 33.75 RA(%) 63.50<br>Brinell 135 BHN 135 BHN                  |
| 52<br>18C12292 | 150      | 6007    | 1X1/4 3M/6M A105N HXBU T<br>SA/A105N     | Al 0.026 C 0.220 Co 0.002 Cr 0.030 Cu 0.040 Mn 1.020 Mo 0.000 N 0.004<br>Nb 0.014 Ni 0.020 P 0.007 S 0.021 Si 0.190 V 0.004<br>T/S(PSI) 74,575 Y/S(PSI) 49,300 EL(%) 33.00 RA(%) 61.34<br>Brinell 132 BHN 132 BHN                            |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Encana

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

May 3/12

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by

Kylee Ruiz

Kylee Ruiz  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 03/05/2012

CUSTOMER

BONNEY ORDER NO. B000115279

ORDER NO.: S759151679

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

| ITEM | QUANTITY | LOT NO. |
|------|----------|---------|
|------|----------|---------|

| GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|--------------------------------------------------------------------------------|
|--------------------------------------------------------------------------------|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2



# CERTIFIED MILL TEST REPORT

Page 1 of 2



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**LOG NO.** F00000000027151

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**CUSTOMER:** MRC MIDFIELD

**DATE** 03/28/2012

**CUSTOMER**

**BONNEY ORDER NO.** B000117492

**ORDER NO.:** S729156508

**SHIP TO:** MRC MIDFIELD  
487 POLYMOORE DRIVE  
CORUNNA ON N0N 1G0  
Canada

| ITEM          | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.                                             |  |                 |  | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS |  |             |  |
|---------------|----------|---------|------------------------------------------------------------------------|--|-----------------|--|-------------------------------------------------|--|-------------|--|
| 13            | 5        | 58395   | 2 X2 X1 1/2 3000 A105N TEE S                                           |  |                 |  | SA/A105N                                        |  |             |  |
|               |          |         | C 0.200 Cb 0.000 Co 0.004 Cr 0.030 Cu 0.100 Mn 1.020 Mo 0.020 Ni 0.040 |  |                 |  |                                                 |  |             |  |
|               |          |         | P 0.007 S 0.022 Si 0.200 V 0.004                                       |  |                 |  |                                                 |  |             |  |
|               |          |         | CE(Long Formula) = 0.39                                                |  |                 |  |                                                 |  |             |  |
|               |          |         | T/S(PSI) 72,500                                                        |  | Y/S(PSI) 50,000 |  | EL(%) 32.00                                     |  | RA(%) 63.50 |  |
|               |          |         | Brinell                                                                |  | 130 BHN         |  | 130 BHN                                         |  |             |  |
| 7<br>18C12631 | 50       | 6056    | 1/2 3M/6M A105 Q&T HXPL T                                              |  |                 |  | SA/A105-QT                                      |  |             |  |
|               |          |         | Al 0.026 C 0.150 Co 0.000 Cr 0.070 Cu 0.100 Mn 0.640 Mo 0.020 N 0.007  |  |                 |  |                                                 |  |             |  |
|               |          |         | Nb 0.001 Ni 0.060 P 0.008 S 0.008 Si 0.180 V 0.001                     |  |                 |  |                                                 |  |             |  |
|               |          |         | CE(Long Formula) = 0.29                                                |  |                 |  |                                                 |  |             |  |
|               |          |         | T/S(PSI) 0                                                             |  | Y/S(PSI) 0      |  | EL(%) 0.00                                      |  | RA(%) 0.00  |  |
|               |          |         | Brinell                                                                |  | 150 BHN         |  | 162 BHN                                         |  |             |  |
| 8<br>18C12643 | 50       | 6077    | 3/4 3M/6M A105 Q&T HXPL T                                              |  |                 |  | SA/A105-QT                                      |  |             |  |
|               |          |         | C 0.150 Cb 0.000 Co 0.000 Cr 0.080 Cu 0.090 Mn 0.630 Mo 0.010 Ni 0.040 |  |                 |  |                                                 |  |             |  |
|               |          |         | P 0.007 S 0.014 Si 0.170 V 0.001                                       |  |                 |  |                                                 |  |             |  |
|               |          |         | CE(Long Formula) = 0.28                                                |  |                 |  |                                                 |  |             |  |
|               |          |         | T/S(PSI) 0                                                             |  | Y/S(PSI) 0      |  | EL(%) 0.00                                      |  | RA(%) 0.00  |  |
|               |          |         | Brinell                                                                |  | 144 BHN         |  | 150 BHN                                         |  |             |  |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

*2012/9/24 S. Mason*

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

## CERTIFIED MILL TEST REPORT



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

LOG NO. F00000000027151

Page 2 of 2

BONNEY FORGE CORPORATION

P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 03/28/2012

CUSTOMER

BONNEY ORDER NO. B000117492

ORDER NO.: S729156508

SHIP TO: MRC MIDFIELD  
487 POLYMOORE DRIVE  
CORUNNA ON N0N 1G0  
Canada

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE MATERIAL SUPPLIED IDENTIFIED AS SA/A105-QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
8. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/9/24 S. Nason

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Meloney Specht

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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

**LOG NO.** F0000000032275

Page 8 of 14

**BONNEY FORGE CORPORATION**

P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330  
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906  
www.bonneyforge.com

**CUSTOMER:** MRC MIDFIELD

**DATE** 07/31/2012

**CUSTOMER**

**BONNEY ORDER NO.** B000125660

**ORDER NO.:** S759172971

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

*2012/11/5 S. Nason*  
**"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"**

| ITEM           | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS                                                                                                                                                                                                                                                                    |
|----------------|----------|---------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 78<br>18C12658 | 990      | 6156    | 1 3M/6M A105N HXPL T       | SA/A105N<br>Al 0.028 C 0.196 Co 0.005 Cr 0.030 Cu 0.060 Mn 1.050 Mo 0.004 N 0.003<br>Nb 0.014 Ni 0.020 P 0.005 S 0.020 Si 0.180 V 0.004<br>CE(Long Formula) = 0.38<br>T/S(Psi) 71,345 Y/S(Psi) 47,632 EL(%) 35.65 RA(%) 59.02<br>Brinell 130 BHN 130 BHN                                                           |
| 78<br>18C12658 | 1,085    | 6129    | 1 3M/6M A105N HXPL T       | SA/A105N<br>Al 0.019 C 0.204 Co 0.003 Cr 0.070 Cu 0.100 Mn 1.010 Mo 0.007 N 0.004<br>Nb 0.015 Ni 0.030 P 0.008 S 0.020 Si 0.200 V 0.003<br>CE(Long Formula) = 0.40<br>T/S(Psi) 73,514 Y/S(Psi) 48,822 EL(%) 35.85 RA(%) 63.76<br>Brinell 132 BHN 132 BHN                                                           |
| 76<br>18C12643 | 1,700    | 4985    | 3/4 3M/6M A105 Q&T HXPL T  | SA/A105-QT<br>C 0.160 Co 0.000 Cr 0.080 Cu 0.090 Mn 0.660 Mo 0.010 Ni 0.040 P 0.006<br>S 0.008 Si 0.230 V 0.001<br>CE(Long Formula) = 0.30<br>T/S(Psi) 0 Y/S(Psi) 0 EL(%) 0.00 RA(%) 0.00<br>Brinell 150 BHN 159 BHN                                                                                               |
| 14<br>18C10498 | 60       | 58695   | 11/2 3000 LF2 90EL T       | SA/A350 LF2 CL1<br>Al 0.022 C 0.198 Co 0.003 Cr 0.040 Cu 0.080 Mn 1.020 Mo 0.006 N 0.003<br>Nb 0.015 Ni 0.030 P 0.006 S 0.018 Si 0.210 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 75,558 Y/S(Psi) 48,949 EL(%) 35.30 RA(%) 62.99<br>Brinell 130 BHN 130 BHN<br>Charpy -50 F 35/58/42 (Ft-Lbs)<br>Average 45.00 |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by *Meloney Specht*  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



The Best Value -  
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LOG NO. F00000000032275

Page 14 of 14

BONNEY FORGE CORPORATION

P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 07/31/2012

CUSTOMER

ORDER NO.: S759172971

BONNEY ORDER NO. B000125660

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

*2012/11/15 J. Nason*  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
4. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
5. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
6. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
7. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
8. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
9. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
10. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
11. THE MATERIAL SUPPLIED IDENTIFIED AS SA/A105-QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
12. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
13. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Meloney Specht*

Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2



IML

INDUSTRIA MECCANICA LIGURE SPA

16030 CASARZA LIGURE Genova - Italy - Via Giancarlo Farina 26 - Tel 0185.467661 - Fax 0185.466910 / MATERIAL TEST DEPARTMENT

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

Jan 10/2012

INSPECTION CERTIFICATE EN 10204:2004 J 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001:2000  
CERTIFIED BY RINA

TRANS AM PIPING PRODUCTS LTD.

9335 Engadiner Dr. S.E.  
Calgary, Alberta T2S 0A1

CA

Certificate N° 20689

Invoice N° 494

Date 22.06.2010  
Date 21.05.2010  
Date 27.06.2010

| HEAT CODE                                                                                                                                                                         | HEAT  | ITEM | YOUR P.O.                        | OUR REFERENCE                  | Q.TY                                              | DESCRIPTION                              | DIM. ACC. TO                                                                        | VISUAL & DIMENS. |           |                 |             |                 |         |             |        |         |         |       |                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|----------------------------------|--------------------------------|---------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|------------------|-----------|-----------------|-------------|-----------------|---------|-------------|--------|---------|---------|-------|----------------|
| 65A                                                                                                                                                                               | 75242 | 203  | CL-10-238                        | 2010-2E201-0000-65-0203        |                                                   | FITTING 90 ELB. THIRD NPT 3M L" A350/LF2 | SEE NOTE                                                                            | SATISFACTORY     |           |                 |             |                 |         |             |        |         |         |       |                |
| HEAT CODE                                                                                                                                                                         | HEAT  | ITEM | MATERIAL                         | C%                             | S%                                                | Mn%                                      | I S%                                                                                | P%               | C-%       | N%              | Mo%         | Ti%             | Cu%     | V%          | Nb%    | N%      | Al%     | C.E.% | OTHER ELEMENTS |
| 65A                                                                                                                                                                               | 75242 | 203  | ASTM A350 LF2 cl.1               | ✓ 0.185                        | ✓ 0.240                                           | ✓ 1.050                                  | ✓ 0.010                                                                             | ✓ 0.008          | ✓ 0.080   | ✓ 0.050         | ✓ 0.010     | ✓ 0.018         | ✓ 0.120 | ✓ 0.023     | ✓ 0.00 | ✓ 0.000 | ✓ 0.020 | 0.394 |                |
| HEAT CODE                                                                                                                                                                         | HEAT  | ITEM | TEST SPECIFICATION               | YIELD POINT                    | TENSILE STRENGTH                                  | ELONGATION                               | REDUCTION OF AREA                                                                   | HARDNESS HB      | BEND TEST | FLATTENING TEST | IMPACT TEST | CHARACTERISTICS | SHAPE   | YIELD POINT |        |         |         |       |                |
| 65A                                                                                                                                                                               | 75242 | 203  | RECT. mm2<br>LENGHT mm<br>305.00 | 395.0                          | 541.0                                             | 30.0                                     | 35.0                                                                                | 164.0 - 185.0    | 0.0       | 0.0             | KV          | 40 40 50 55     | 1       | 0.0         |        |         |         |       |                |
| HEAT CODE                                                                                                                                                                         | HEAT  | ITEM | MATERIAL IN ACCORDANCE TO        | HEAT TREATMENT                 | FURNACE                                           | ORIGIN                                   | Our Ref.                                                                            |                  |           |                 |             |                 |         |             |        |         |         |       |                |
| 65A                                                                                                                                                                               | 75242 | 203  | ASME SA A350-LF2 Cl.1            | Normalized at 900°C / Air Cool | ELECTRIC FURNACE                                  | EUROPE                                   | 092117                                                                              |                  |           |                 |             |                 |         |             |        |         |         |       |                |
| NOTES: ASME B16.11/08, ANSI B31.1/B31.3, MIL-STD, ANSI B1.1-B16.2.2, NACE MR0175 ISO 15156, NACE MR0103, MSS SP-83, SUPPLIED MATERIALS MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |       |      | INSPECTION AUTHORITY             |                                | QUALITY CONTROL DEPARTMENT, MANUFACTURER'S SYMBOL |                                          | MANUFACTURER'S SYMBOL                                                               |                  |           |                 |             |                 |         |             |        |         |         |       |                |
|                                                                                                                                                                                   |       |      | B. PIZZOTTI                      |                                | FITTINGS                                          |                                          | IMIL                                                                                |                  |           |                 |             |                 |         |             |        |         |         |       |                |
|                                                                                                                                                                                   |       |      | Bow's Mark                       |                                | STUDBOLTS                                         |                                          |  |                  |           |                 |             |                 |         |             |        |         |         |       |                |

NOTES: ASME B16.11/08 - ANSI B31.1B31.3 - ML STD - ANSI B1.1-B16.2.2 - NACE MR0175 ISO 15156 - NACE MR0175 MSS SP 83 - SUPPLIED MATERIALS MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTHORITY

QUALITY CONTROL DEPARTMENT

MANUFACTURER'S SYMBOL

B. Fuzgeni

FITTINGS

IML

STUD BOLTS



- EUGANIA  
THREADED

"Conforms with ASME

See II, Part A, 2010 edition,  
2011a addenda"

Name: Carl Stefan  
Date: Nov. 28. 19

**INSPECTION CERTIFICATE**  
**CERTIFICAT DE INSPECTIE**

|                                 |                |
|---------------------------------|----------------|
| Number / Numar:                 | Page / Pagina: |
| 02/11/21991                     | 4 / 6          |
| Date / Data: September 08, 2011 |                |

Silcolub S.A. Plant  
93, Avenue Vitor Hugo (Third  
Floor) 22000, Sidi  
Raménia  
Tel.: 41 350 830720  
Fax: +41 350 541531

# STARS

## Index of Citations

## REALIZED MALIZATE

106a nr.3

15" O.D.

4mm O.D. x 4.55mm W.T.

Delivery Notes  
 Note de livraison

0031334093 / 000030  
81195301 - 00/09/2011  
MEME

Town / Oras: T6P 1R EDMONTON  
Country / Tera: Canada

**Delivery Notes**  
**Nota de livrare**

DELIVERY NOTES / NOTE DE LIVRAIRE

# END OF THE TEST/TEST DE TRACTION

| Heat N°   | Sample N°  | Condition approval |    |      | Specimen dimensions |              | Test            | Y.S. | U.T.S. | Y.S./U.T.S. | Engagement / Average |      |      |       |       |
|-----------|------------|--------------------|----|------|---------------------|--------------|-----------------|------|--------|-------------|----------------------|------|------|-------|-------|
| Surita N° | Fritida N° | Lg                 | Sc | Type | Qn                  | Dimensions   | Area            | Temp | Min    | Max         | Req. Mex             | Lo   | Mfn  | Mfn   | Out   |
|           |            |                    |    | Tip  |                     | mm           | mm <sup>2</sup> | °C   | KSI    | KSI         |                      | coil | mm   | %     | %     |
| 703403    | A4446T     | B                  | N  | Ss   | L                   | 4.05 x 33.42 | 431.70          | +20  | 57.00  | ✓           | 75.00                | 0.76 | 58.0 | 27.6% | 48.8% |
| 703495    | A4446T     | B                  | N  | Ss   | L                   | 4.86 x 33.63 | 437.70          | +20  | 57.00  | ✓           | 75.00                | 0.75 | 50.0 | 27.0% | 40.0% |

3: Body / Corp      Max: Maximum / Máxim

| Observed Maximum / Actual | Mean: Minimum / Maximum | Min: Normalized / Normalized | Obs: Observed / Chlimit |
|---------------------------|-------------------------|------------------------------|-------------------------|
|                           |                         |                              |                         |

Orig: Orientation / Orientare  
Reqd. Mater: Required maximum / Cerința maximă  
Reqd: Required / Cerințe  
Spec: Specimen condition / Starea probei

| Se: Strip specimen / Rectangular                            |
|-------------------------------------------------------------|
| U.T.S: Ultimate Tensile Strength / Resistencia a<br>ruptura |
| Y.S: Yield Strength / Resistencia In cingura                |

The certificate is issued by a competent system and it is valid until accurate signature. On the client certificate the user's name is stored and it is damaged. In each the entry of the signed certificate would reduce a copy of it. The user must be responsible for the original one taking on himself the responsibility for any uncolored or not allowed use. Any alteration under examination will be subjected to the law.

[illegible]

APPROVED BY \_\_\_\_\_ FOR03171







**INSPECTION CERTIFICATE**  
**CERTIFICAT DE INSPECTIE**  
(UNI EN 10204 3.1 / ISO 10474 3.1 B)

Number / Numar: 02/11/21991  
Page / Pagina: 2 / 6  
Date / Data: September 08, 2011

Shenchi S.A. P.L.U.  
93, Avenue 14/12010101  
150112, Zambé, 0202  
Rendón  
Tel + 43 260 02020  
Fax + 40 760 02150

Customer / Client: 46004412

Customer's Order Item / Comanda clientului - Item:

Customer's Reference / Referinta clientului:

Manufacturer's Work's Order N° / Comanda de fabricatie:

2231313/003

Surface / Suprafata:

See note nr.2

Ends / Capete:

PLAIN ENDS (SQUARE CUT)

CAPETE NETEDE (TALATE DREPT)

Nominal Weight / Greutate nominala:

Product Type / Tip de produs:

See note nr.1

Verzi nota nr.1

Length / Lungime:

5400 mm + 5950 mm

**CHEMICAL COMPOSITION / COMPOZITIE CHIMICA**

|           |           | Composition % / Compozitie % |     |     |     |    |     |    |    |    |    | X 100 |    | X 100 |     | X 1000 |  |
|-----------|-----------|------------------------------|-----|-----|-----|----|-----|----|----|----|----|-------|----|-------|-----|--------|--|
|           |           | C                            | Mn  | Si  | Ni  | Cr | Mo  | V  | Cu | Co | Fe | P     | S  | Ti    | Nb  | B      |  |
| H         | Max       | 25                           | 135 | 50  | 100 | -- | --  | 1  | -- | 40 | 40 | 25    | 25 | 110   | 110 | 10     |  |
| Min       | --        | 40                           | 10  | --  | --  | -- | --  | -- | -- | -- | -- | --    | -- | --    | --  | --     |  |
| Heat N°   | Sample N° | P                            | Max | 25  | 135 | 50 | 100 | -- | -- | 40 | 40 | 25    | 25 | 110   | 110 | 10     |  |
| Proble N° |           | Min                          | --  | 40  | 10  | -- | --  | 1  | -- | -- | -- | --    | -- | --    | --  | --     |  |
| 703889    |           |                              |     |     |     |    |     |    |    |    |    |       |    |       |     |        |  |
| 703889    | A4439/L   | H                            | 12  | 128 | 29  | 14 | 9   | 9  | 15 | 10 | 34 | 15    | 2  | 3     | 14  | 2      |  |
|           |           | P                            | 13  | 126 | 31  | 15 | 8   | 8  | 14 | 40 | 36 | 14    | 2  | 3     | 14  | 4      |  |
| 703889    | A4439/T   | P                            | 13  | 123 | 30  | 15 | 8   | 8  | 17 | 10 | 35 | 14    | 2  | 1     | 13  | 3      |  |

Co L.F. C: Mn 0.05 Cr 0.05 Ni 0.05 V 0.05 Cu 0.05

H: Heat / Saie

Max: Maximum / Maxim  
Min: Minimum / Minim

P: Product / Produs

**SUPERFICIAL HARDNESS / DURIMITE SUPERFICIALA**

| Heat N° | Sample N° | Lc | Sc | External Indicator |
|---------|-----------|----|----|--------------------|
| 703889  | A4439/T   | B  | 11 | 154.6              |
|         |           |    |    | 153.0              |

Req. Min: -- Req. Max: 237.0

Lc: Location of sample / Locatia probei

N: Normalized / Normalizat

Sc: Specimen condition / Starea epruvetei

Heat condition is listed by a compliance system and its valid with electronic signature. On the original certificate the trade name must appear. The certificate is valid only if the original one is not altered. Any alteration of the original one will be subject to the law.

FOR03171





# Tenaris

## INSPECTION CERTIFICATE

### CERTIFICAT DE INSPECTIE

(UNI EN 10204 3.1 / ISO 10474 3.1.B)

Number / Numar: **02/11/21991** Page / Pagina: **4 / 6**

Site: S.A. Murt  
S.S. Valea Văii  
20137 Zăneș, Sibiu  
România  
Tel: +40 268 620720  
Fax: +40 268 604261

Customer / Client:

Manufacturer / Producător:

Product / Produs:

Standard / Norma:

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

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See note nr. 3

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See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

See note nr. 3

## SUPPLEMENTARY INFORMATION / INFORMAȚII SUPPLEMENTARE

### STANDARD EDITIONS

### EDITION NORMELOR

Norma ASTM A 333 An 2010 ✓  
Norma ASME SA 333 An 2010 ✓  
Norma CSA Z245.1 An 2007 ✓  
Norma EN 10204 3.1 B An 2003 ✓  
Norma EN 10204 3.1 B An 2007 ✓

### PRODUCT DESCRIPTION NOTES

### NOTE DESCRIERII PRODUS

Note 1: The full description of the product type.  
Note 2: The full description of the 'Surface'.  
Note 3: The full description of the 'Standard or Specification'.  
Note 4: The full description of the 'Steel grade'.  
Note 5: The full description of the 'Product type'.

Note 6: The full description of the 'Product type'.

Note 7: The full description of the 'Product type'.

Note 8: The full description of the 'Product type'.

Note 9: The full description of the 'Product type'.

FOR03171



|                                 |               |
|---------------------------------|---------------|
| Number / Nummer:                | Page / Pagina |
| 02/11/21991                     | 5 / 6         |
| Date / Data: September 08, 2011 |               |

**Emcolub S.A. Plant  
D3, Zona Industrial Sur,  
440131 Zedec, Cdo.  
Yucatán  
Tel + 90 269 620726  
Fax + 90 269 631501**

### Abstract / Procesos de fabricación:

note nr.3

315" O.D.

**Journal O.D., 114, 55 March 1971.**

| Schedule / Program | BB |
|--------------------|----|
|--------------------|----|

Langsh / Luogme

6450 mm ÷ 5850 mm

କାହାଣୀ ଶ୍ରୀରାମଚନ୍ଦ୍ର / ଗୋପାଳ ଦତ୍ତ ରାୟ

See note on p. 10.

Verb: 11018 hr.9  
 Quantity / Capacity: 156 Pcs/Box  
 2056 04 #

3015349

Ends / Capable:

## PLAIN ENDS

CAPEETE NETEDE (TAIATE DREPT  
Nominal Weight / Graduate nominalis;

10

CONTEMPORARY INFORMATION SUPPLEMENTARY

### PRODUCT DESCRIPTION NOTES

## NOTE DESCRIVERE PRODUCE

AS 333 ASBME BA 383, GH, b NSA 333 CSA 2, 245, 1-07 GR359 CAT II 39

Supplementary Information

## Informative Supplement

DESTRUCTIVE TEST - ENI ACC. TO ASTM E 570: WITHOUT OBJECTIONS

GENERAL ACO 10 PLACE FOR UT75 + NACE AIR 0103

TREATMENT NORMALIZED AT 920/4-30°C, soaking time 10 min

... GREATER THAN 20 GAUSS

AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULTS FULLY FILLED AND OPENED BY A COLD CHAMBER.

**PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER**

CONTROL, NEDISTRUCTIV EDDY CURRENT CONFORM ASTM E 309, PĂRĂ OBIECTI  
CONTROL, NEDISTRUCTIV ENI CONFORM ASTM E 570, PĂRĂ OBIECTI  
TRATAMENT TERMIC NORMALIZARE LA  $920 \pm 30^{\circ}\text{C}$ , timp de mentinere 10 min.  
DUPĂ INSPECTIE MATERIALUL NU PREZINTĂ MAGNETISM REZIDUAL  
MĂRI MARE DE 20 GAUSS  
CONTROLUL VIZUAL DIMENSIONAL S-A REALIZAT CU REZULTATE SATISFĂCĂTOARE  
OTELUL ESTE PRODUS ÎN CUPTOR ELECTRIC COMPLET CALDAT CONFORM UNEI PRACTICI DE ÎNȚINERE A UNUI  
GAUȚULE FIN  
PRODUSUL LĂRĂT ESTE ÎN CONFORMITATE CU CERINȚELE COMENZII

It is **strongly recommended** that the original certificate be submitted to the original endorser for signature. In case the owner of the original certificate would refuse a signature, he must inform us explicitly to the original endorser that he is **not** responsible for any unlawful or not allowed use. Any statement and/or specification will be submitted in the form.

[illegible]

FOI03171



Customer / Client

Manufacture Process / Procés de fabricació:

NORMALIZED

NORMALIZATE

Standard or Specification / Norma seu especificació:

See note nr.3

See note nr.3

See note nr.3

See note nr.3

See note nr.3

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See note nr.3

**INSPECTION CERTIFICATE**  
**CERTIFICAT DE INSPECTIE**  
(UNI EN 10204 3.1 / ISO 10474 3.1 B)

Customer's Order Item / Comanda clientului - Item:

Product Type / Tip de produs:

See note nr.1

See note nr.1

See note nr.1

See note nr.1

See note nr.1

See note nr.1

See note nr.1

See note nr.1

See note nr.1

See note nr.1

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See note nr.1

See note nr.1

See note nr.1

See note nr.1

Number / Numar: **02/11/21991**  
Page / Pagina: **6 / 6**

Customer's Reference / Referința clientului:

Manufacturer's Works Order / Comanda de fabricație:

See note nr.2

See note nr.2

See note nr.2

See note nr.2

See note nr.2

See note nr.2

See note nr.2

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See note nr.2

See note nr.2

See note nr.2

**CUSTOMER / THIRD PARTY**

INSPECTION COMPANY  
FERRA TENARIS DE INSPECTIE

**TENARIS QUALITY DEPARTMENT SIGNATURE**

QUALITY CERTIFICATION DEPT.  
DEPARTAMENT CERTIFICARE CALITATE  
PUSCASA Daniela

QUALITY RESERCH. MANAGER  
MANAGER RECHERCH. DE CALITE  
MORENT LARDO

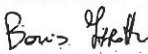
This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance with the purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

For use as a reference, the purchaser is advised that the product described here is not a declaration of origin nor may it be used as a declaration of origin.

FOR0371

|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   |                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
|  <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.ima@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> |                                                                                                                                                                                           | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b> |                                                        |
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                                                                                                         |                                                                                                                                                                                           | Nr 23264                                                                                                          | Dated 31.07.2012                                       |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1<br>CA                                                                                                                                                                                                                        |                                                                                                                                                                                           | Purchase Order Nr CI-12 - 335<br>Item Nr 087<br>Packing List Nr 897<br>Invoice Nr 810                             |                                                        |
| Heat Code<br>88F                                                                                                                                                                                                                                                                                                          | Heat Nr<br>11/79860                                                                                                                                                                       | Quantity<br>100,00                                                                                                | Description<br>FITTING 90 ELB. THRD NPT 6M 1" A350/LF2 |
| Element                                                                                                                                                                                                                                                                                                                   | C                                                                                                                                                                                         | Si                                                                                                                | Mn                                                     |
| ASTM A350 LF2 cl.1 (LADLE)                                                                                                                                                                                                                                                                                                | 0,180                                                                                                                                                                                     | 0,250                                                                                                             | 1,100                                                  |
|                                                                                                                                                                                                                                                                                                                           | S                                                                                                                                                                                         | P                                                                                                                 | Cr                                                     |
|                                                                                                                                                                                                                                                                                                                           | 0,009                                                                                                                                                                                     | 0,012                                                                                                             | 0,090                                                  |
|                                                                                                                                                                                                                                                                                                                           | Ni                                                                                                                                                                                        | Mo                                                                                                                | Ti                                                     |
|                                                                                                                                                                                                                                                                                                                           | 0,050                                                                                                                                                                                     | 0,010                                                                                                             | 0,020                                                  |
|                                                                                                                                                                                                                                                                                                                           | Cu                                                                                                                                                                                        |                                                                                                                   |                                                        |
|                                                                                                                                                                                                                                                                                                                           | 0,140                                                                                                                                                                                     |                                                                                                                   |                                                        |
| Element                                                                                                                                                                                                                                                                                                                   | V                                                                                                                                                                                         | Nb                                                                                                                | N                                                      |
| ASTM A350 LF2 cl.1 (LADLE)                                                                                                                                                                                                                                                                                                | 0,003                                                                                                                                                                                     | 0,003                                                                                                             | -                                                      |
|                                                                                                                                                                                                                                                                                                                           | AL                                                                                                                                                                                        |                                                                                                                   |                                                        |
|                                                                                                                                                                                                                                                                                                                           | 0,026                                                                                                                                                                                     |                                                                                                                   |                                                        |
|                                                                                                                                                                                                                                                                                                                           | C.E.                                                                                                                                                                                      | PRE                                                                                                               |                                                        |
|                                                                                                                                                                                                                                                                                                                           | 0,397                                                                                                                                                                                     | -                                                                                                                 |                                                        |
| Test specimen<br>Sect. mm2                                                                                                                                                                                                                                                                                                | Shape<br>1=O - 2=□                                                                                                                                                                        | Tensile<br>N/mm2                                                                                                  | Yield Point >0,2%<br>N/mm2                             |
| 122,65                                                                                                                                                                                                                                                                                                                    | 50,00                                                                                                                                                                                     | 1                                                                                                                 | 535,0                                                  |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | 332,0                                                  |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | -                                                      |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | 31,0                                                   |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | 58,0                                                   |
| <b>HARDNESS</b>                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           | <b>IMPACT TEST</b>                                                                                                |                                                        |
| HBW                                                                                                                                                                                                                                                                                                                       | TYPE                                                                                                                                                                                      | Test specimen                                                                                                     | °C                                                     |
| 163,0 - 165,0                                                                                                                                                                                                                                                                                                             | KV                                                                                                                                                                                        | 10x10mm                                                                                                           | -46                                                    |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | 50                                                     |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | 48                                                     |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                   | 45                                                     |
| Heat treatment                                                                                                                                                                                                                                                                                                            | Normalized at 900°C / Air Cool                                                                                                                                                            |                                                                                                                   | ELECTRIC FURNACE                                       |
| Dimension in accordance                                                                                                                                                                                                                                                                                                   | ASME B16.11 Ed.2011 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009- NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                                                                                                                   |                                                        |
| Material in accordance                                                                                                                                                                                                                                                                                                    | ASME SA ASTM A350-11 Gr. LF2 cl.1                                                                                                                                                         |                                                                                                                   |                                                        |
| Visual & Dimensional                                                                                                                                                                                                                                                                                                      | SATISFACTORY                                                                                                                                                                              | Origin                                                                                                            | EUROPE                                                 |
|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           | Our Ref.                                                                                                          | 2012-2E201-0000511-0087                                |
| Notes                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                           |                                                                                                                   |                                                        |

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"  
 2012/11/28 J. Nason

|                                                                                                                                       |                             |                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALITY CONTROL DEPT.</b><br>Boris Fizzotti<br> | <b>INSPECTION AUTHORITY</b> | <b>MANUFACTURER'S SYMBOL</b><br>IML or  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|





**ANVIL**  
INTERNATIONAL, INC.



Simcoe, Ontario  
Edmonton, Alberta  
Montreal, Quebec

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

## Certificate of Test

Part Number: Y3055 Description: 1/2x5 B XS SML NIP 106B  
Heat Code: AI72 ✓  
Reference No.:  
Part Specification: Y

Starting Material: P00136 Description:  
Specification: ASTM A106-02 GRADE B/ ASME SA106 GRADE B  
Fitting Trademark: NIKOPOL

Petro Bakken

"C" Sec II Part A, 2010 edition  
"Conforms with ASME ME  
2011a addenda" dition"

**APPROVED**

By Ceri Steen at 9:07 am, May 28, 2012

### Chemical Analysis %

| Heat No.                   | C      | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Mo     | V        | Cb/Nb |
|----------------------------|--------|--------|---------|---------|--------|--------|--------|--------|--------|----------|-------|
| 620214                     | 0.20 ✓ | 0.57 ✓ | 0.019 ✓ | 0.031 ✓ | 0.24 ✓ | 0.06 ✓ | 0.03 ✓ | 0.03 ✓ | 0.01 ✓ | < 0.01 ✓ |       |
| CE (LONG FORMULA) = 0.32 ✓ |        |        |         |         |        |        |        |        |        |          |       |

### Mechanical Properties

| Yield Strength                    |          | Tensile Strength |          | Elongation % <sup>2</sup> | Reduction Area | Hardness BHN |
|-----------------------------------|----------|------------------|----------|---------------------------|----------------|--------------|
| psi                               | 47,700 ✓ | psi              | 67,000 ✓ | 42.00 ✓                   | 0.00           | N/R          |
| MPa                               | 000      | MPa              | 000      |                           |                |              |
| Heat Treatment:                   |          |                  |          |                           |                |              |
| MEETS NACE MR0175                 |          |                  |          |                           |                |              |
| HARDNESS LESS THAN OR EQUAL 22HRC |          |                  |          |                           |                |              |
| Hydrotest/NDE: NDE                |          |                  |          |                           | Bend: GOOD     |              |

We certify that this is a true and correct copy of the mill certificate, issued by the manufacturer of the steel employed or the laboratory which has determined it, as retained in the records of the company. We make no representation beyond those of the manufacturer or its agent.



**ANVIL**  
INTERNATIONAL, INC.



Simcoe, Ontario  
Edmonton, Alberta  
Montreal, Quebec

## Certificate of Test

Part Number: Y30725 Description: 3/4x2-1/2 B XS SML NIP 106B  
Heat Code: AG59  
Reference No.:  
Specification: ASTM A106-04 GRADE B/ ASME SA106 GRADE B  
Fitting Trademark: STELPIPE LTD

### Chemical Analysis %

| Heat No.                 | C      | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Mo       | V        | Cb/Nb |
|--------------------------|--------|--------|---------|---------|--------|--------|--------|--------|----------|----------|-------|
| 28930                    | 0.21 ✓ | 0.72 ✓ | 0.012 ✓ | 0.009 ✓ | 0.30 ✓ | 0.22 ✓ | 0.01 ✓ | 0.08 ✓ | < 0.01 ✓ | < 0.01 ✓ |       |
| CE (LONG FORMULA) = 0.37 |        |        |         |         |        |        |        |        |          |          |       |

### Mechanical Properties

| Yield Strength                                           | Tensile Strength        | Elongation % | Reduction Area | Hardness BHN |
|----------------------------------------------------------|-------------------------|--------------|----------------|--------------|
| psi 61,300 ✓<br>MPa 000                                  | psi 78,500 ✓<br>MPa 000 | 42.00 ✓      | 0.00           | N/R          |
| Heat Treatment:                                          |                         |              |                |              |
| COUNTRY OF ORIGIN: CANADA                                |                         |              |                |              |
| MEETS NACE MR0175-2003 HARDNESS LESS THAN OR EQUAL 22HRC |                         |              |                |              |
| Hydrotest/NDE: 2500 PSI                                  |                         |              | Bend: GOOD     |              |

We certify that this is a true and correct copy of the mill certificate, issued by the manufacturer of the steel employed or the laboratory which has determined it, as retained in the records of the company. We make no representation beyond those of the manufacturer or its agent.

OCT 11/11  
"Conforms with ASME  
Sec II, Part A, 2010 edition"

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

10/16/12



**ANVIL**  
INTERNATIONAL, INC.



Simcoe, Ontario  
Edmonton, Alberta  
Montreal, Quebec

## Certificate of Test

Part Number: 0332605005 Description: 1/4 X 1-1/2 BLK XH SMLS NIP  
Heat Code: BB5317  
Reference No.:  
Part Specification: Y

Starting Material: 0332605005 Description: 1/4 X 1-1/2 BLK XH SMLS NIP  
Specification: ASTM A106/A106M-08 Grade B, ASME SA-106/2007 Grade B  
Fitting Trademark: BECK MANUFACTURING

### Chemical Analysis %

| Heat No. | C      | Mn     | P       | S       | Si     | Cu     | Ni      | Cr      | Mo     | V      | Cb/Nb |
|----------|--------|--------|---------|---------|--------|--------|---------|---------|--------|--------|-------|
| 560150   | 0.28 ✓ | 0.80 ✓ | 0.007 ✓ | 0.002 ✓ | 0.22 ✓ | 0.10 ✓ | 00.08 ✓ | 00.12 ✓ | 0.04 ✓ | 0.00 ✓ | 0.00  |

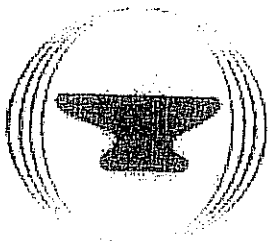
### Mechanical Properties

| Yield Strength                                                        | Tensile Strength         | Elongation % | Reduction Area | Hardness BHN |
|-----------------------------------------------------------------------|--------------------------|--------------|----------------|--------------|
| psi 053,412 ✓<br>MPa 000                                              | psi 074,264 ✓<br>MPa 000 | 000047 ✓     |                |              |
| Heat Treatment: MEETS NACE MR0175 . HARDNESS LESS THAN OR EQUAL 22HRC |                          |              |                |              |
| HYDROSTATIC: 2500                                                     |                          | Bend: GOOD   |                | FLATTEN: OK  |

We certify that this is a true and correct copy of the mill certificate, issued by the manufacturer of the steel employed or the laboratory which has determined it, as retained in the records of the company. We make no representation beyond those of the manufacturer or its agent.

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

*Jan 2011*  
*EA*



**ANVIL**  
INTERNATIONAL, INC.



Simcoe, Ontario  
Edmonton, Alberta  
Montreal, Quebec

## Certificate of Test

Part Number: YT3022 Description: 1/4x2 B XS SML NIP 333G6  
Heat Code: BH5002  
Reference No.:  
Specification: ASTM A/ASME SA 333/333M (GRADE 6)  
Fitting Trademark: BECK MANUFACTURING

*Encara, Murphy & Paramore*  
MATERIAL CONFORMS

TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: *Cari Steen*

Date: *Aug 12/2011*

### Chemical Analysis %

| Heat No. | C            | Mn           | P     | S     | Si   | Cu   | Ni    | Cr    | Mo   | V    | Cb/Nb |
|----------|--------------|--------------|-------|-------|------|------|-------|-------|------|------|-------|
| 31367    | 0.16         | 0.96         | 0.012 | 0.006 | 0.25 | 0.05 | 00.02 | 00.16 | 0.00 | 0.00 | 0.00  |
|          | <u>ISSmm</u> | <u>TSSmm</u> |       |       |      |      |       |       |      |      |       |
|          | 5.08         | 50.8         |       |       |      |      |       |       |      |      |       |

### Mechanical Properties

| Yield Strength | Tensile Strength | Elongation % 2 | Reduction Area | Hardness BHN |
|----------------|------------------|----------------|----------------|--------------|
| psi 046,970    | psi 071,828      | 000035         |                |              |
| MPa 000        | MPa 000          |                |                |              |

Heat Treatment: Heat Treatment-Normalized  
MEETS NACE MR0175 . HARDNESS LESS THAN OR EQUAL  
22HRC

HYDROSTATIC: NDE FLATTEN: OK

| Testing Temp. | Charpy Impact @     |                     |                     |                      |
|---------------|---------------------|---------------------|---------------------|----------------------|
| Deg. °F       | Ft. Lbs. (1)        | Ft. Lbs. (2)        | Ft. Lbs. (3)        | Ft. Lbs. Avg.        |
| -53°C         | Joules (1)<br>00028 | Joules (2)<br>00038 | Joules (3)<br>00037 | Joules Avg.<br>00034 |

We certify that this is a true and correct copy of the mill certificate, issued by the manufacturer of the steel employed or the laboratory which has determined it, as retained in the records of the company. We make no representation beyond those of the manufacturer or its agent.

*AUGUST 12 2011*  
"Conforms with ASME  
Sec II, Part A, 2010 edition"

[http://www.anvil-mtr.com/cgi-bin/mtr/cert.pl?part\\_string=YT3022++++++BH5002+++](http://www.anvil-mtr.com/cgi-bin/mtr/cert.pl?part_string=YT3022++++++BH5002+++) 8/9/2011

|                                     |        |           |          |            |        |        |          |
|-------------------------------------|--------|-----------|----------|------------|--------|--------|----------|
| Hit# BH5002                         | C      | Mn        | Si       | Mo         | Ni     | Cu     | V        |
| Fill in Product Analysis from MTR's | Carbon | Manganese | Chromium | Molybdenum | Nickel | Copper | Vanadium |
|                                     | 0.16   | 0.96      | 0.16     | 0.01       | 0.02   | 0.05   | 0        |

|                              |       |      |    |      |             |        |
|------------------------------|-------|------|----|------|-------------|--------|
| Do Not Fill in these Numbers | Ratio | Mn/C | Mn | C    | Standard    | Ratio  |
|                              |       |      |    | 0.96 | 0.16 > 3.00 | 6.0000 |

|                              |      |      |      |      |   |      |      |
|------------------------------|------|------|------|------|---|------|------|
| Do Not Fill in these Numbers | C    | Mn   | Si   | Mo   | V | Ni   | Cu   |
|                              | 0.16 | 0.96 | 0.16 | 0.01 | 0 | 0.02 | 0.05 |

|                                             |          |        |
|---------------------------------------------|----------|--------|
| CE = C/(Mn/6) + ((C+Mo+V)/5) + ((Ni+Cu)/15) | CE =     | 0.3587 |
| Do Not Fill in these Numbers                | Standard | < 4.5  |

\* 3922  
40 lb  
Paramount



Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard™

Certified Mill Test Report

8/30/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 177317

Heat No 106744

Heat Code BXV

Phoenix Order # 880142

Material ASTM A106-2011 / ASME SA106-2010 Edition

Part Number

15110703

Description

3/4 X 1-1/2" XHSM L BK STL NIPL

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1600 | 0.7000 | 0.0100 | 0.0050 | 0.2200 | 0.2800 | 0.1200 | 0.0900 | 0.3377     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0600 | 0.0020 |        |        |        |        |        |        |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.4900       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 73,824        | 49,747      | 42.0%             |        | 152 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/10/16 S. Nason

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

CapProducts, Ltd.

25 Winnipeg St

Vancouver, ON N0M 1L0



# ENCANA

MATERIAL CONFORMS TO CUSTOMER SPECS  
By cert at 6:56:59 AM, 4/3/2012

Shell Canada

TAQA NORTH

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

EE-Janale.R



INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1  
COMPANY WITH QUALITY SYSTEM ISO 9001:2000  
CERTIFIED BY RINA

TRANS AM PIPING PRODUCTS LTD.  
9335 Endeavour Drive S.E.  
Calgary, Alberta T2S 0A1  
CA  
Certificate No. 16771  
Invoice No. 532  
Del. Note No. 912  
Date 29.05.2008  
Date 29.05.2008

10030 CASARZA LIGURE - Genova - Italy - Via Clementino Paffia, 25 - Tel. 010.55.407601 - Fax 010.55.466510 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to EN 10204 Page 4 - 4

| HEAT CODE | HEAT    | ITEM | YOUR P.O. | QUR REFERENCE          | Q.TY | DESCRIPTION                            | DIM. ACC. TO | VISUAL & DIMENS. |
|-----------|---------|------|-----------|------------------------|------|----------------------------------------|--------------|------------------|
| DHP       | 77401   | 012  | CI-08-284 | 2008-2E201-0000432-012 |      | FITTING 90 ELB. THRD NPT 3M 3/4" A105N | SEE NOTE     | SATISFACTORY     |
| A75       | 78483   | 025  | CI-08-284 | 2008-2E201-0000432-025 |      | FITTING 45 ELB. THRD NPT 3M 4" A105N   | SEE NOTE     | SATISFACTORY     |
|           | 8742388 | 038  | CI-08-284 | 2008-2E201-0000432-038 |      | FITTING COUPLING THRD NPT 3M 4" A105N  | SEE NOTE     | SATISFACTORY     |
| 73K       | 747866  | 038  | CI-08-284 | 2008-2E201-0000432-038 |      | FITTING COUPLING THRD NPT 3M 4" A105N  | SEE NOTE     | SATISFACTORY     |
| HP5       | 72966   | 005  | CI-08-284 | 2008-2E201-0000432-005 |      | FITTING TEE THRD NPT 2M 1" A105N       | SEE NOTE     | SATISFACTORY     |

| HEAT CODE | HEAT    | ITEM | MATERIAL  | C%    | S%    | Mn%   | S%    | P%    | Cr%   | Ni%   | Mo%   | Ti%   | Cu%   | V%    | Nb%   | N%    | Al%   | C.E.% | OTHER ELEMENTS |
|-----------|---------|------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
| DHP       | 77401   | 012  | ASTM A105 | 0.180 | 0.200 | 0.940 | 0.017 | 0.018 | 0.140 | 0.060 | 0.020 | 0.005 | 0.230 | 0.001 | 0.001 | 0.000 | 0.014 | 0.390 |                |
| A75       | 78483   | 025  | ASTM A105 | 0.190 | 0.190 | 0.890 | 0.020 | 0.017 | 0.090 | 0.030 | 0.010 | 0.005 | 0.190 | 0.003 | 0.001 | 0.000 | 0.012 | 0.392 |                |
|           | 8742388 | 038  | ASTM A105 | 0.181 | 0.165 | 1.220 | 0.003 | 0.008 | 0.081 | 0.024 | 0.023 | 0.000 | 0.060 | 0.080 | 0.000 | 0.000 | 0.033 | 0.427 |                |
| 73K       | 747866  | 038  | ASTM A105 | 0.175 | 0.165 | 1.280 | 0.008 | 0.011 | 0.066 | 0.025 | 0.024 | 0.000 | 0.073 | 0.080 | 0.000 | 0.000 | 0.027 | 0.429 |                |
| HP5       | 72966   | 005  | ASTM A105 | 0.185 | 0.200 | 0.950 | 0.017 | 0.019 | 0.110 | 0.060 | 0.010 | 0.005 | 0.190 | 0.003 | 0.000 | 0.000 | 0.021 | 0.385 |                |

| HEAT CODE | HEAT    | ITEM | TEST SPECIMEN | YIELD POINT | TENSILE STRENGTH | ELONGATION | REDUCTION OF AREA | HARDNESS | BEND TEST | FLATTENING TEST | IMPACT TEST - JOULES | BRINELL | YIELD POINT |
|-----------|---------|------|---------------|-------------|------------------|------------|-------------------|----------|-----------|-----------------|----------------------|---------|-------------|
| DHP       | 77401   | 012  | 122.65 50.00  | 319.0       | 515.0            | 33.0       | 61.0              | 158-159  | 0.0       | 0.0             | 20                   | 108     | 102         |
| A75       | 78483   | 025  | 122.65 50.00  | 309.0       | 549.0            | 38.0       | 70.0              | 158-168  | 0.0       | 0.0             | 20                   | 104     | 109         |
|           | 8742388 | 038  | 122.65 50.00  | 306.0       | 536.0            | 31.0       | 54.0              | 160-164  | 0.0       | 0.0             | 20                   | 108     | 100         |
| 73K       | 747866  | 038  | 122.65 50.00  | 309.0       | 568.0            | 31.0       | 56.0              | 160-164  | 0.0       | 0.0             | 20                   | 105     | 104         |
| HP5       | 72966   | 005  | 122.65 50.00  | 314.0       | 537.0            | 33.2       | 58.0              | 162-169  | 0.0       | 0.0             | 20                   | 104     | 101         |
|           |         |      |               |             |                  |            |                   |          |           |                 |                      |         | 110         |
|           |         |      |               |             |                  |            |                   |          |           |                 |                      |         | 110         |

| HEAT CODE | HEAT    | ITEM | MATERIAL IN ACCORDANCE TO | HEAT TREATMENT                      | FURNACE          | ORIGIN |
|-----------|---------|------|---------------------------|-------------------------------------|------------------|--------|
| DHP       | 77401   | 012  | ASME SA ASTM A105-05      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE |
| A75       | 78483   | 025  | ASME SA ASTM A105-05      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE |
|           | 8742388 | 038  | ASME SA ASTM A105-05      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE |
| 73K       | 747866  | 038  | ASME SA ASTM A105-05      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE |
| HP5       | 72966   | 005  | ASME SA ASTM A105-05      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE |

NOTES: ASME B16.1/05 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

| INSPECTION AUTHORITY | QUALITY CONTROL DEPARTMENT | MANUFACTURER'S SYMBOL | MANUFACTURER'S SYMBOL |
|----------------------|----------------------------|-----------------------|-----------------------|
| BORIS FIZZOTTI       | IML                        | STUDBOLTS             |                       |



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Date 15.03.2011  
Date 15.03.2011

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| HEAT CODE | HEAT | ITEM | YOUR P.O. | OUR REFERENCE | Q.TY | DESCRIPTION | DIM. ACC. TO | VISUAL & DIMENS. |
|-----------|------|------|-----------|---------------|------|-------------|--------------|------------------|
|-----------|------|------|-----------|---------------|------|-------------|--------------|------------------|

|         |      |     |     |                         |  |                                               |          |              |
|---------|------|-----|-----|-------------------------|--|-----------------------------------------------|----------|--------------|
| 37403   | HEAT | 135 | 673 | 2010-2E201-0001317-0135 |  | FITTING RED COUPL. SW 3M 2"x3/4" A105N        | SEE NOTE | SATISFACTORY |
| 34025   | HEAT | 135 | 673 | 2010-2E201-0001317-0135 |  | FITTING RED COUPL. SW 3M 2"x3/4" A105N        | SEE NOTE | SATISFACTORY |
| 35668   | HEAT | 135 | 673 | 2010-2E201-0001317-0135 |  | FITTING RED COUPL. SW 3M 2"x3/4" A105N        | SEE NOTE | SATISFACTORY |
| 73600   | HEAT | 013 | 674 | 2010-2E201-0001318-0013 |  | FITTING ROUND H. PLUG THRD NPT 1 1/2" A350LF2 | SEE NOTE | SATISFACTORY |
| 72147   | HEAT | 021 | 674 | 2010-2E201-0001318-0021 |  | FITTING COUPLING THRD NPT 6M 2" A350LF2       | SEE NOTE | SATISFACTORY |
| 0836400 | HEAT | 080 | 656 | 2010-2E201-0001318-0080 |  | FITTING COUPLING THRD NPT 6M 2" A350LF2       | SEE NOTE | SATISFACTORY |
| 74083   | HEAT | 080 | 656 | 2010-2E201-0001318-0080 |  | FITTING 90 ELB. THRD NPT 6M 2" A350LF2        | SEE NOTE | SATISFACTORY |
| 1071855 | HEAT | 082 | 656 | 2010-2E201-0001318-0082 |  | FITTING 90 ELB. THRD NPT 6M 2" A350LF2        | SEE NOTE | SATISFACTORY |
| 73435   | HEAT | 097 | 656 | 2010-2E201-0001318-0097 |  | FITTING 90 ELB. THRD NPT 6M 2" A350LF2        | SEE NOTE | SATISFACTORY |
| 73435   | HEAT | 013 | 703 | 2011-2E201-0000138-0013 |  | FITTING RED TEE SW 3M 1"x1/2" A350LF2         | SEE NOTE | SATISFACTORY |

| HEAT CODE | HEAT | ITEM | MATERIAL           | C%    | S%    | M%    | S%    | P%    | C%    | N%    | Mo%   | T%    | Cu%   | V%    | Nb%   | N%    | Al%   | C.E.% | OTHER ELEMENTS |
|-----------|------|------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
| 37403     | HEAT | 135  | ASTM A105          | 0.180 | 0.220 | 1.020 | 0.014 | 0.014 | 0.120 | 0.080 | 0.010 | 0.008 | 0.110 | 0.002 | 0.000 | 0.000 | 0.010 | 0.388 |                |
| 34025     | HEAT | 135  | ASTM A105          | 0.185 | 0.240 | 0.980 | 0.018 | 0.010 | 0.120 | 0.080 | 0.010 | 0.008 | 0.110 | 0.002 | 0.000 | 0.000 | 0.006 | 0.388 |                |
| 35668     | HEAT | 135  | ASTM A105          | 0.185 | 0.240 | 0.980 | 0.018 | 0.010 | 0.120 | 0.080 | 0.010 | 0.008 | 0.110 | 0.002 | 0.000 | 0.000 | 0.006 | 0.388 |                |
| 73600     | HEAT | 013  | ASTM A350 LF2 cl.1 | 0.180 | 0.260 | 0.980 | 0.024 | 0.014 | 0.180 | 0.080 | 0.020 | 0.008 | 0.180 | 0.004 | 0.000 | 0.000 | 0.000 | 0.412 |                |
| 72147     | HEAT | 021  | ASTM A350 LF2 cl.1 | 0.180 | 0.260 | 0.980 | 0.024 | 0.014 | 0.180 | 0.080 | 0.020 | 0.008 | 0.180 | 0.004 | 0.000 | 0.000 | 0.000 | 0.412 |                |
| 0836400   | HEAT | 021  | ASTM A350 LF2 cl.1 | 0.200 | 0.260 | 0.980 | 0.024 | 0.014 | 0.180 | 0.080 | 0.020 | 0.008 | 0.180 | 0.004 | 0.000 | 0.000 | 0.000 | 0.412 |                |
| 74083     | HEAT | 080  | ASTM A350 LF2 cl.1 | 0.185 | 0.210 | 0.980 | 0.009 | 0.018 | 0.120 | 0.080 | 0.010 | 0.008 | 0.150 | 0.002 | 0.000 | 0.000 | 0.028 | 0.407 |                |
| 1071855   | HEAT | 082  | ASTM A350 LF2 cl.1 | 0.185 | 0.210 | 0.980 | 0.009 | 0.018 | 0.120 | 0.080 | 0.010 | 0.008 | 0.150 | 0.002 | 0.000 | 0.000 | 0.028 | 0.407 |                |
| 73435     | HEAT | 097  | ASTM A350 LF2 cl.1 | 0.185 | 0.230 | 1.040 | 0.009 | 0.010 | 0.110 | 0.070 | 0.020 | 0.015 | 0.200 | 0.002 | 0.000 | 0.000 | 0.021 | 0.403 |                |
| 73435     | HEAT | 013  | ASTM A350 LF2 cl.1 | 0.185 | 0.250 | 1.130 | 0.010 | 0.013 | 0.080 | 0.070 | 0.020 | 0.024 | 0.200 | 0.003 | 0.002 | 0.000 | 0.028 | 0.410 |                |

| HEAT CODE | HEAT | ITEM | TEST SPECIMEN      | YIELD POINT | TENSILE STRENGTH | ELONGATION | REDUCTION OF AREA | HARDENING     | BEND TEST | FLATNESS TEST | TYPE | TEMPERATURE | IMPACT TEST | CHARACTERISTICS | SHAPE | YIELD POINT |
|-----------|------|------|--------------------|-------------|------------------|------------|-------------------|---------------|-----------|---------------|------|-------------|-------------|-----------------|-------|-------------|
| 37403     | HEAT | 135  | ASTM A105          | 351.0       | 505.0            | 30.7       | 57.0              | 182.0 - 188.0 | 0.0       | 0.0           | KV   | -10         | 88          | 74              | 71    | 0.0         |
| 34025     | HEAT | 135  | ASTM A105          | 348.0       | 510.0            | 30.2       | 58.4              | 183.0 - 188.0 | 0.0       | 0.0           | KV   | -10         | 76          | 75              | 73    | 0.0         |
| 35668     | HEAT | 135  | ASTM A105          | 332.0       | 504.0            | 31.0       | 58.0              | 183.0 - 188.0 | 0.0       | 0.0           | KV   | -10         | 78          | 78              | 70    | 0.0         |
| 73600     | HEAT | 013  | ASTM A350 LF2 cl.1 | 331.0       | 512.0            | 30.6       | 58.0              | 183.0 - 188.0 | 0.0       | 0.0           | KV   | -10         | 51          | 47              | 48    | 0.0         |
| 72147     | HEAT | 021  | ASTM A350 LF2 cl.1 | 347.0       | 528.0            | 31.0       | 58.2              | 182.0 - 170.0 | 0.0       | 0.0           | KV   | -48         | 54          | 50              | 50    | 0.0         |
| 0836400   | HEAT | 021  | ASTM A350 LF2 cl.1 | 320.0       | 515.0            | 32.0       | 55.2              | 182.0 - 180.0 | 0.0       | 0.0           | KV   | -48         | 53          | 51              | 50    | 0.0         |
| 74083     | HEAT | 080  | ASTM A350 LF2 cl.1 | 314.0       | 533.0            | 31.3       | 55.0              | 183.0 - 170.0 | 0.0       | 0.0           | KV   | -48         | 52          | 47              | 50    | 0.0         |
| 1071855   | HEAT | 082  | ASTM A350 LF2 cl.1 | 311.0       | 522.0            | 31.6       | 55.0              | 182.0 - 168.0 | 0.0       | 0.0           | KV   | -48         | 54          | 64              | 65    | 0.0         |
| 73435     | HEAT | 097  | ASTM A350 LF2 cl.1 | 324.0       | 532.0            | 31.6       | 55.0              | 183.0 - 170.0 | 0.0       | 0.0           | KV   | -48         | 51          | 52              | 55    | 0.0         |
| 73435     | HEAT | 013  | ASTM A350 LF2 cl.1 | 324.0       | 532.0            | 31.6       | 55.0              | 183.0 - 170.0 | 0.0       | 0.0           | KV   | -48         | 52          | 52              | 48    | 0.0         |

| HEAT CODE | HEAT | ITEM | MATERIAL                  | HEAT TREATMENT                                       | ORIGIN | Our Ref. |
|-----------|------|------|---------------------------|------------------------------------------------------|--------|----------|
| 37403     | HEAT | 135  | ASTM A105-08              | Normalized at 880°C / Air Cool                       | EUROPE | 091383   |
| 34025     | HEAT | 135  | ASTM A105-08              | Normalized at 880°C / Air Cool                       | EUROPE | 071470   |
| 35668     | HEAT | 135  | ASTM A105-08              | Normalized at 880°C / Air Cool                       | EUROPE | M10032   |
| 73600     | HEAT | 013  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | M10358   |
| 72147     | HEAT | 021  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | 101152   |
| 0836400   | HEAT | 021  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | 081252   |
| 74083     | HEAT | 080  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | 101351   |
| 1071855   | HEAT | 082  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | 102052   |
| 73435     | HEAT | 097  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | 101297   |
| 73435     | HEAT | 013  | ASTM A350-07 Gr. LF2 cl.1 | Normalized at 800°C / Air Cool and Tempered at 620°C | EUROPE | 101297   |

| NOTES                                                                                                                                                                            | INSPECTION AUTHORITY | QUALITY CONTROL DEPARTMENT | MANUFACTURER'S SYMBOL | MANUFACTURER'S SYMBOL |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------|-----------------------|-----------------------|
| ASME B16.1/08 - ANSI B31.1/BS3.1 - IMI STD - ANSI B1.1-BS12.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 63 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS | B. FIZZI             | Bois                       | IMI                   | STUDBOLTS             |



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Page 7 of 7

Name: *Shell Canada*  
Date: *2010 02/11*

DIM. ACC. TO VISUAL & DIMENS.

| SPECIFICATIONS           |  |  |  |  |  |  |  |  |  | DIM. ACC. TO |  | VISUAL & DIMENS. |  |
|--------------------------|--|--|--|--|--|--|--|--|--|--------------|--|------------------|--|
| AS PER P.O. REQUIREMENTS |  |  |  |  |  |  |  |  |  |              |  |                  |  |
| Name: <u>Wafar Syed</u>  |  |  |  |  |  |  |  |  |  |              |  |                  |  |
| Date: <u>June 27/11</u>  |  |  |  |  |  |  |  |  |  |              |  |                  |  |
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**Phoenix \* Capitol \* Camco**  
**Cap Products**

Commanding a Higher Standard<sub>sm</sub>

**Certified Mill Test Report**

10/18/2012

**Customer**

MRC CANADA ULC  
7072 - 112 AVE SE  
CALGARY, AB T2C 4Z1

**P.O.** S 759 184525

**Heat No** 8970G

**Heat Code** GZI

**Phoenix Order #** 892260

**Material** ASTM A106-2011 / ASME SA106-2010 Edition

**Part Number**

15111508

**Description**

✓ 1-1/2 X 4" XHSML BK STL NIPL

**Chemical Properties**

|        |        |        |        |        |        |        |        |            |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
| 0.1620 | 0.7000 | 0.0140 | 0.0040 | 0.2400 | 0.1800 | 0.0800 | 0.0600 | 0.3159     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0240 | 0.0020 |        | 0.0230 | 0.0020 |        |        | 0.0130 |            | 0.0024 |

**Additional Chemical Properties**

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

|              |
|--------------|
| Cr + Cu + Ni |
| 0.3200       |

**Mechanical Properties**

|               |             |                  |        |     |      |
|---------------|-------------|------------------|--------|-----|------|
| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in | R of A | HBW | HBW2 |
| 72,295        | 47,845      | 37.2%            |        | 136 |      |

**Charpy Minimum Impact - ft/lbs**

|        |        |        |         |
|--------|--------|--------|---------|
| Test 1 | Test 2 | Test 3 | Average |
| N/A    | N/A    | N/A    | N/A     |

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

**"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"**

*2012/11/27 S. Raab*

✓ **CapProducts. Ltd.**

25 Winnipeg St

Vaanastra, ON N0M 1L0



2012/8/27 S. Nason  
"Conforms with ASME  
12510032  
Sec II, Part A, 2010 edition,  
2011a addenda"

VT.216-.220

Doesnt meet Encana  
Ratio for welded  
piping mn:c= 2.7

BRI-CHEM  
STEEL CORPORATION  
MTR APPROVED

May 17 2012

无锡市华友特钢有限公司  
Wuxi Huayou Special Steel Co., Ltd.



# 产品质量证明书

WILL TEST CERTIFICATE

(EN10204 3.1)

Page 3 / 3

无锡市滨湖区胡埭工业园西区西拓振湖路  
Tel: (0510)85580556 Fax: (0510)85580556

|            |                                                                                         |      |         |        |                 |                    |                    |                  |         |                     |       |
|------------|-----------------------------------------------------------------------------------------|------|---------|--------|-----------------|--------------------|--------------------|------------------|---------|---------------------|-------|
| 订货单位       | BRI-CHEM STEEL CORPORATION                                                              |      |         |        | 证书号             | 12044423           | 制造方法               | 冷拔               |         |                     |       |
| CUSTOMER   |                                                                                         |      |         |        | CERTIFICATE NO. |                    | MAKING METHOD      | COLD-DRAWN       |         |                     |       |
| 收货单位       | BRI-CHEM STEEL CORPORATION                                                              |      |         |        | 信用证号            | —                  | 交货状态               | 正火               |         |                     |       |
| PURCHASER  |                                                                                         |      |         |        | L/C NO.         |                    | DELIVERY CONDITION | NORMALIZED       |         |                     |       |
| 产品名称       | 无缝钢管                                                                                    |      |         |        | 合同号             | 100688             | 热处理工艺              | 880℃×20MIN,空冷    |         |                     |       |
| PRODUCT    | SEAMLESS STEEL PIPES                                                                    |      |         |        | CONTRACT NO.    |                    | HEAT TREATMENT     | AIR COOLING      |         |                     |       |
| 标准/钢级      | API 5L-B(2007) PSL1/ASTM/A516-06 B/CSA Z245.1 GR.290 C45.1 MACE MR0175-2009 REGION 3 SS |      |         |        |                 |                    | 出货日期               | 2012-3-27        |         |                     |       |
| SPEC/GRADE |                                                                                         |      |         |        |                 |                    | DATE OF ISSUE      |                  |         |                     |       |
| 外径         | 60.3 MM                                                                                 | 壁厚   | 5.54 MM | 长度     | 6.1 M           | 总支数                | 2032               | 总米数              | 12395.2 | 总重量 (吨)             | 92.71 |
| O.D        | NPS 2                                                                                   | W.T. | XH      | LENGTH |                 | TOTAL PIECES (PCS) |                    | TOTAL METERS (M) |         | TOTAL WEIGHT (TONS) |       |

| 序号<br>NO.          | 生产批号<br>WORK NO.                                                                                                                                                                                        | 炉号<br>HEAT NO. | 支数<br>PCS | 化 学 成 份 %            |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         | 非金属夹杂物 (级)                   |              |               |                             |                          |  |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|----------------------|-------------|--------------------------|-------|--------------|-------|----------------|--------------------------------------|-------------|-------|-------|---------------|------------------|-------|------|---------|------------------------------|--------------|---------------|-----------------------------|--------------------------|--|
|                    |                                                                                                                                                                                                         |                |           | CHEMICAL COMPOSITION |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         | Non-Metallic Inclusions (GR) |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           | *1                   | C           | Si                       | Mn    | P            | S     | Cu             | Ni                                   | Cr          | Mo    | V     | B             | Nb               | Ti    | Mn/C | CE(CSA) | A                            | B            | C             | D                           |                          |  |
|                    |                                                                                                                                                                                                         |                |           | Max                  | 0.260       | 0.500                    | 1.060 | 0.030        | 0.030 | 0.400          | 0.400                                | 0.400       | 0.150 | 0.080 | 0.001         | 0.110            | 0.110 |      | 0.40    |                              |              |               |                             |                          |  |
| Min                |                                                                                                                                                                                                         | 0.100          | 0.290     |                      |             |                          |       |              |       |                |                                      |             |       |       | 2.5           |                  |       |      |         |                              |              |               |                             |                          |  |
| 1                  | 120414                                                                                                                                                                                                  | H01540         | 2032      | H                    | 0.200       | 0.260                    | 0.546 | 0.008        | 0.008 | 0.058          | 0.010                                | 0.014       | 0.003 | 0.004 | 0.0002        | 0.002            | 0.001 | 2.7  | 0.30    | 0.5                          | 0.5          | 0.5           | 0.5                         |                          |  |
| 同上<br>序号<br>NO.    | 拉伸试验 TENSILE TEST                                                                                                                                                                                       |                |           |                      |             | 冲击试验 IMPACT TEST         |       |              |       |                | 硬度试验                                 |             |       |       |               | 水压试验             |       |      |         |                              | 无损探伤检测       |               | 金相试验                        |                          |  |
|                    | 标距 GAUGE LENGTH (50.8mm)                                                                                                                                                                                |                |           |                      |             | AKV (J)                  |       |              |       |                | HARDNESS TEST                        |             |       |       |               | HYDROSTATIC TEST |       |      |         |                              | N.D.E.       |               | METALLOGRAPHIC              |                          |  |
|                    | *2                                                                                                                                                                                                      | 抗拉强度           | 屈服强度      | 伸长率                  | 屈强比         | 试验温度 TEMPERATURE OF TEST |       |              |       |                | (HRC≤22)                             |             |       |       |               | (HB≤234)         |       |      |         |                              | 涡流探伤<br>E.T. | 超声波探伤<br>U.T. | 显微组织<br>MICROSTRUC-<br>TURE | 晶粒度<br>(级)<br>GRAIN SIZE |  |
|                    | *3                                                                                                                                                                                                      | T.S.           | Y.S.      | E.L.                 | Y/T         | 10×10×55 (20℃)           |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         | MPa            | MPa       | %                    |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    | Max                                                                                                                                                                                                     |                |           |                      | 0.93        |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
| Min                | 415                                                                                                                                                                                                     | 280            | 22        |                      | 1           | 2                        | 3     | AVG          |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
| 1                  | L                                                                                                                                                                                                       | 475 / 485      | 320 / 325 | 30 / 31              | 0.67 / 0.67 | -                        | -     | -            | -     | HB 120/127/135 |                                      |             |       |       | 20.7 MPa, 10s |                  |       |      |         | 合格<br>GOOD                   | 合格<br>GOOD   | F+P           | 6                           |                          |  |
| 外观和尺寸              |                                                                                                                                                                                                         | 合格             |           | 压扁试验                 |             | 0                        |       | 弯曲试验         |       | 合格             |                                      | 扩口试验        |       | —     |               | 卷边试验             |       | —    |         |                              |              |               |                             |                          |  |
| VISUAL & DIMENSION |                                                                                                                                                                                                         | GOOD           |           | FLATTENING TEST      |             | 0                        |       | BENDING TEST |       | GOOD           |                                      | EXPAND TEST |       | —     |               | FLARING TEST     |       | —    |         |                              |              |               |                             |                          |  |
| 注 册<br>NOTES       | *1. H, HEAT (LADLE) ANALYSIS; P, PRODUCT ANALYSIS.                                                                                                                                                      |                |           |                      |             |                          |       |              |       |                | *2. 试样尺寸 SIZE: 弧形试样 STRIP T×19.05mm. |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    | *3. 试验方向 ORIENTATION: L=纵向 LONGITUDINAL.                                                                                                                                                                |                |           |                      |             |                          |       |              |       |                | *4. SY=0.2% OFFSET.                  |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    | WE HEREBY CONFIRM THAT OUR PRODUCTS ARE MADE WITH MATERIALS WHICH ARE FREE FROM RADIATION CONTAMINATION                                                                                                 |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
| 会 验 者<br>SURVEYOR  | 兹证明本表所列产品, 均依标准规定制造、取样、试验和检验, 并符合标准及合同要求。                                                                                                                                                               |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    | WE HEREBY CERTIFY THAT THE MATERIALS DESCRIBED HEREIN HAVE BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE CUSTOMER'S SPECIFICATION(S), AND THAT THEY SATISFY THE REQUIREMENTS. |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         | 检验员                          |              | 王             |                             | 李计珍                      |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         | INSPECTOR                    |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |                                      |             |       |       |               |                  |       |      |         |                              |              |               |                             |                          |  |





**WESTBROOK****Material Test Report****005203****MRC MIDFIELD****Description:****1/2 X 1/4 S80 CONC SWG TBE A420 WPL6****\*\*\*\*\* Specifications - Heat Code H1980: \*\*\*\*\***

A350/A350M-04A LF2, SA350 LF2, A105, SA105, A420-05 WPL6,  
 SA420 WPL6, A234-04 WPB, SA234 WPB, A788, ASME B16.5,  
 B16.9, B16.11, B16.47, B1.20.1, MSS SP-25, SP-44, SP-79,  
 SP-83, SP-95, API 605, A.W.W.A.  
**STARTING MATERIAL: BAR**

MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS

**Encana****Chemical Composition:**

|            |            |            |            |            |              |            |            |
|------------|------------|------------|------------|------------|--------------|------------|------------|
| <b>C:</b>  | <b>Mn:</b> | <b>P:</b>  | <b>S:</b>  | <b>Si:</b> | <b>Cr:</b>   | <b>Ni:</b> | <b>Mo:</b> |
| 0.160      | 0.880      | 0.009      | 0.031      | 0.270      | 0.090        | 0.080      | 0.015      |
| <b>Cu:</b> | <b>V:</b>  | <b>Al:</b> | <b>Cb:</b> | <b>Sn:</b> | <b>C.E.:</b> |            |            |
| 0.200      | 0.001      | 0.005      | 0.020      | 0.013      | .346         |            |            |

**Mechanical Properties:**

|                      |                    |                  |               |                  |
|----------------------|--------------------|------------------|---------------|------------------|
| <b>Tensile(PSI):</b> | <b>Yield(PSI):</b> | <b>Elong(%):</b> | <b>RA(%):</b> | <b>Hardness:</b> |
| 86967                | 67824              | 30.00            | 69.40         | HB 160           |

**Impact Results:**

|                   |                         |                           |                    |
|-------------------|-------------------------|---------------------------|--------------------|
| <b>Test Temp:</b> | <b>Achieved Values:</b> | <b>Lateral Expansion:</b> | <b>% of Shear:</b> |
| -50F              | 149-135.3-143.2FT/LB    | .087-.091-.090"           | 62-66-59%          |

**Comments:**

Hardness only to NACE MR-01-75/2003.  
 Austenitized 1562F - 35 min. - Quenched in water at 68F.  
 Tempered 1116F - 60 min.- Cooled in air at room temp. stress free.  
 Hot rolled.

**"Conforms with ASME  
 Sec II Part A, 2010 edition  
 2011a addenda"**

**APPROVED**

By Ceri Steen at 8:53 am, Oct 29, 2012

We certify only the chemistry and physical results shown for the referenced Heat Code as furnished by the Producing Mill. The Description is the responsibility of the requesting party. This document was electronically transmitted and is in accordance with EN10204 3.1/DIN50049 3.1B.

# WESTBROOK

## MATERIAL TEST REPORT

Sold To: **MRC MIDFIELD**  
Order No.: **529317** Order Date: **4/12/2012**

Purchase Order: **S759159319**

Printed: **5/10/2012**

Line: **Description:**  
**23 2 X 1 S80 A420 WPL6 CONC SWG TBE**

\*\*\*\*\* Specifications - Heat Code **H2140** \*\*\*\*\*  
**A350/A350M-07 LF2, SA350 LF2, A105, SA105, A420-07 WPL6,**  
**SA420 WPL6, A234-07 WPB, SA234 WPB, A788, ASME B16.5,**  
**B16.9, B16.11, B16.47, B1.20.1, MSS SP-25, SP-44, SP-79,**  
**SP-83, SP-95, API 605, A.W.W.A.**  
**STARTING MATERIAL: BAR**

### Chemical Composition:

|         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|
| C:      | Mn:     | P:      | S:      | Si:     | Cr:     | Ni:     | Mo:     |
| 0.170 ✓ | 0.700 ✓ | 0.018 ✓ | 0.020 ✓ | 0.250 ✓ | 0.100 ✓ | 0.070 ✓ | 0.030 ✓ |
| Cu:     | V:      | Al:     | Ch:     | Ti:     | C.E.:   |         |         |
| 0.220 ✓ | 0.004 ✓ | 0.021   | 0.008 ✓ | 0.002   | .332 ✓  |         |         |

### Mechanical Properties:

|               |             |           |        |           |
|---------------|-------------|-----------|--------|-----------|
| Tensile(PSI): | Yield(PSI): | Elong(%): | RA(%): | Hardness: |
| 70000 ✓       | 42300 ✓     | 34.50 ✓   | 64.00  | BHN 136 ✓ |

### Impact Results:

|            |                  |
|------------|------------------|
| Test Temp: | Achieved Values: |
| -50F       | 16-16-28 FT/LBS  |

### Comments:

Hardness only to NACE MR-01-75/2009..  
Normalized.  
Also meets MR-01-03/2010 and ISO 15156/2009.

Line: **Description:**  
**24 2 X 1 1/2 S80 A234WPB SP95 CONC SWG**  
**\*\*BARE\*\* BXT**

\*\*\*\*\* Specifications - Heat Code **W19084 VW** \*\*\*\*\*  
**A106-08 GR.B, SA106 GR.B, A234-07 WPB, SA234 WPB, A530,**  
**A733, ASME B36.10, B1.20.1, MSS SP-25, SP-95**  
**STARTING MATERIAL: A106B PIPE & TUBE**  
**A234-07 WPBN, SA234 WPBN**

### Chemical Composition:

|       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|
| C:    | Mn:   | P:    | S:    | Si:   | Cr:   | Ni:   | Mo:   |
| 0.220 | 0.520 | 0.008 | 0.003 | 0.240 | 0.090 | 0.100 | 0.020 |
| Cu:   | V:    | Al:   | Ch:   | N:    | Ti:   | AS:   | C.E.: |
| 0.160 | 0.000 | 0.020 | 0.000 | 0.006 | 0.000 | .005  | .345  |

### Mechanical Properties:

|               |             |           |             |       |
|---------------|-------------|-----------|-------------|-------|
| Tensile(PSI): | Yield(PSI): | Elong(%): | Hardness:   | Bend: |
| 75000         | 50000       | 35.00     | HRB 142-146 | OK    |

### Comments:

Hardness only to NACE MR-01-75/2009..  
Normalized.  
NDE-passed.  
Also meets MR-01-03/2010.

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/7/5

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: Sandra Nason

Date: July 5/2012

|  <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.ilm@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b>                                                                                                                                                     |                         | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b>                                                                         |                                                              |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------|------------|-------------------|-------------------|-----------------|------------|-------------------|-------------------|---------------|---------|---------|-------------------|---------|-------------|--------|---------|-------|-------|-------|-------|-------|-------|
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |                         | <b>Nr</b> 22821                                                                                                                                                                           | <b>Dated</b> 06.03.2012                                      |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1                                                                                                                                                                                                                                                                                                                                                                                  |                         | <b>Purchase Order Nr</b> 3830<br><b>Item Nr</b> 074<br><b>Packing List Nr</b> 263<br><b>Invoice Nr</b> 237                                                                                | <b>CA</b>                                                    |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>Heat Code</b><br>H57                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Heat Nr</b><br>74379 | <b>Quantity</b><br>30,00                                                                                                                                                                  | <b>Description</b><br>FITTING 90 ELB. THRD NPT 6M 1/4" A105N |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th>Element</th> <th>C</th> <th>SI</th> <th>Mn</th> <th>S</th> <th>P</th> <th>Cr</th> <th>NI</th> <th>Mo</th> <th>TI</th> <th>Cu</th> </tr> </thead> <tbody> <tr> <td>ASTM A105 (LADLE)</td> <td>0,190</td> <td>0,220</td> <td>0,820</td> <td>0,019</td> <td>0,013</td> <td>0,120</td> <td>0,050</td> <td>0,010</td> <td>0,014</td> <td>0,230</td> </tr> </tbody> </table>                                                                    |                         |                                                                                                                                                                                           |                                                              | Element                 | C          | SI                | Mn                | S               | P          | Cr                | NI                | Mo            | TI      | Cu      | ASTM A105 (LADLE) | 0,190   | 0,220       | 0,820  | 0,019   | 0,013 | 0,120 | 0,050 | 0,010 | 0,014 | 0,230 |
| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | C                       | SI                                                                                                                                                                                        | Mn                                                           | S                       | P          | Cr                | NI                | Mo              | TI         | Cu                |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| ASTM A105 (LADLE)                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,190                   | 0,220                                                                                                                                                                                     | 0,820                                                        | 0,019                   | 0,013      | 0,120             | 0,050             | 0,010           | 0,014      | 0,230             |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th>Element</th> <th>V</th> <th>Nb</th> <th>N</th> <th>AL</th> <th>C.E.</th> <th>PRE</th> </tr> </thead> <tbody> <tr> <td>ASTM A105 (LADLE)</td> <td>0,002</td> <td>-</td> <td>-</td> <td>0,005</td> <td>0,389</td> <td>-</td> </tr> </tbody> </table>                                                                                                                                                                                        |                         |                                                                                                                                                                                           |                                                              | Element                 | V          | Nb                | N                 | AL              | C.E.       | PRE               | ASTM A105 (LADLE) | 0,002         | -       | -       | 0,005             | 0,389   | -           |        |         |       |       |       |       |       |       |
| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | V                       | Nb                                                                                                                                                                                        | N                                                            | AL                      | C.E.       | PRE               |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| ASTM A105 (LADLE)                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,002                   | -                                                                                                                                                                                         | -                                                            | 0,005                   | 0,389      | -                 |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th>Test specimen</th> <th>Shape</th> <th>Tensile</th> <th>Yield Point &gt;0,2%</th> <th>Yield Point &gt;1%</th> <th>Elongation</th> <th>Reduction of area</th> </tr> <tr> <th>Sect. mm2</th> <th>Length mm</th> <th>1=O-2=□</th> <th>N/mm2</th> <th>N/mm2</th> <th>%</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>122,65</td> <td>50,00</td> <td>1</td> <td>549,0</td> <td>367,0</td> <td>31,0</td> <td>49,0</td> </tr> </tbody> </table> |                         |                                                                                                                                                                                           |                                                              | Test specimen           | Shape      | Tensile           | Yield Point >0,2% | Yield Point >1% | Elongation | Reduction of area | Sect. mm2         | Length mm     | 1=O-2=□ | N/mm2   | N/mm2             | %       | %           | 122,65 | 50,00   | 1     | 549,0 | 367,0 | 31,0  | 49,0  |       |
| Test specimen                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Shape                   | Tensile                                                                                                                                                                                   | Yield Point >0,2%                                            | Yield Point >1%         | Elongation | Reduction of area |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| Sect. mm2                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Length mm               | 1=O-2=□                                                                                                                                                                                   | N/mm2                                                        | N/mm2                   | %          | %                 |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| 122,65                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50,00                   | 1                                                                                                                                                                                         | 549,0                                                        | 367,0                   | 31,0       | 49,0              |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th colspan="2">HARDNESS</th> <th colspan="4">IMPACT TEST</th> </tr> <tr> <th>HBW</th> <th>TYPE</th> <th>Test specimen</th> <th>°C</th> <th>1-Joule</th> <th>2-Joule</th> <th>3-Joule</th> </tr> </thead> <tbody> <tr> <td>160,0-164,0</td> <td>KV</td> <td>10x10mm</td> <td>-10</td> <td>70</td> <td>73</td> <td>78</td> </tr> </tbody> </table>                                                                                             |                         |                                                                                                                                                                                           |                                                              | HARDNESS                |            | IMPACT TEST       |                   |                 |            | HBW               | TYPE              | Test specimen | °C      | 1-Joule | 2-Joule           | 3-Joule | 160,0-164,0 | KV     | 10x10mm | -10   | 70    | 73    | 78    |       |       |
| HARDNESS                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         | IMPACT TEST                                                                                                                                                                               |                                                              |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| HBW                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TYPE                    | Test specimen                                                                                                                                                                             | °C                                                           | 1-Joule                 | 2-Joule    | 3-Joule           |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| 160,0-164,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | KV                      | 10x10mm                                                                                                                                                                                   | -10                                                          | 70                      | 73         | 78                |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>Heat treatment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         | Normalized at 880±920°C / Air Cool                                                                                                                                                        |                                                              | <b>ELECTRIC FURNACE</b> |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>Dimension in accordance</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         | ASME B16.11 Ed.2009 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009 - NACE MR 0103 Ed.2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                                                              |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>Material in accordance</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         | ASME/SA/ASTM A105-11                                                                                                                                                                      |                                                              |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>Visual &amp; Dimensional</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               |                         | SATISFACTORY                                                                                                                                                                              | <b>Origin</b> EUROPE                                         | <b>Our Ref.</b> 051107  |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |
| <b>Notes</b> -                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                                                                                                                                                                                           |                                                              |                         |            |                   |                   |                 |            |                   |                   |               |         |         |                   |         |             |        |         |       |       |       |       |       |       |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"  
*May 15, 12*

|                                                                         |                             |                                                                                                                              |
|-------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALITY CONTROL DEPT.</b><br>Boris Fizzotti<br><i>Boris Fizzotti</i> | <b>INSPECTION AUTHORITY</b> | <b>MANUFACTURER'S SYMBOL</b><br>IML or  |
|-------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|



Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sup>sm</sup>

Certified Mill Test Report

8/30/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 177317

Heat No E22654

Heat Code HMI

Phoenix Order # 880142

Material ASTM A106-2011 / ASME SA106-2010 Edition

Part Number

15111008

Description

1 X 4" XHSM BLK NIPL

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| 0.1700 | 0.7500 | 0.0090 | 0.0070 | 0.2300 | 0.0180 | 0.0400 | 0.0120 | 0.3058     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0030 | 0.0010 |        | 0.0290 |        |        |        | 0.0010 |            | 0.0020 |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0700       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 80,412        | 64,038      | 42.4%             |        | 159 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

Sept 19-12  
AI

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vanastra, ON N0M 1L0

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

dhana

Name: Christen

Date: Sept. 19.12



# Phoenix \* Capitol \* Camco Cap Products

Commanding a Higher Standard<sub>sm</sub>

## Certified Mill Test Report

10/16/2012

**Customer**

MRC CANADA ULC  
7072 - 112 AVE SE  
CALGARY, AB T2C 4Z1

**P.O.** S 759 183452

**Heat No** 23220

**Heat Code** IOJ

**Phoenix Order #** 891212

**Material** ASTM A106-2011 / ASME SA106-2010 Edition

**Part Number**

15110706

**Description**

3/4 X 3" XHSML BK STL NIPL

**Chemical Properties**

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| 0.1900 | 0.7800 | 0.0090 | 0.0110 | 0.2400 | 0.1700 | 0.0500 | 0.0700 | 0.3514     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0200 | 0.0070 |        |        | 0.0020 |        |        |        |            | 0.0020 |

**Additional Chemical Properties**

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.2900       |

**Mechanical Properties**

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 80,040        | 62,930      | 38.4%             |        |     |      |

**Charpy Minimum Impact - ft/lbs**

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/11/27 S. Nason

\* Hydro test passed. at 3000 psi.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

**Comments:**

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

**CapProducts, Ltd.**

25 Winnipeg St

Vaughan, ON M0M 1L0



Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sub>sm</sub>

Certified Mill Test Report

6/29/2011

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 113612

Heat No E18190

Heat Code IY4

Phoenix Order # 774538

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

Part Number

15111506

Description

1-1/2 X 3" XHSML BK STL NIPL

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1750 | 0.8300 | 0.0210 | 0.0050 | 0.2200 | 0.0180 | 0.0300 | 0.0150 | 0.3223     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0030 | 0.0010 |        | 0.0250 |        |        |        | 0.0010 |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0630       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 70,886        | 51,799      | 35.6%             |        | 136 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: CD

Date: Apr 19, 12

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

CD Apr 19, 12

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts. Ltd.

25 Winnipeg St

Vaughan, ON N0M 1L0





# Phoenix \* Capitol \* Camco Cap Products

Commanding a Higher Standard<sub>sm</sub>

## Certified Mill Test Report

7/5/2012

### Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

### Part Number

15110506

P.O. S 759 169296

Heat No 268694

Heat Code JIW

Phoenix Order # 864910

Material ASTM A106-2011 / ASME SA106-2010 Edition

### Description

1/2 X 3" XHSML BK STL NIPL

Encana

### Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| 0.1960 | 0.7300 | 0.0160 | 0.0050 | 0.2320 | 0.0250 | 0.0900 | 0.0670 | 0.3456     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0160 | 0.0030 |        | 0.0300 | 0.0020 |        |        |        |            | 0.0030 |

TAQA NORTH

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

### Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.1820       |

### Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 78,608        | 59,173      | 41.5%             |        | 147 |      |

### Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/8/23 S. Nason

\* Hydro test passed. at 3000 psi.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

### Comments:

Flattening test passed.

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, BC V6M 1L0

Current Date: Fri, 31 Aug 2012 14:39:12 +0000

**Material Test Report**

Report Number: 18401

Date: Mon, Aug 11th 2008

Description: 1" SWAGES &amp; BULL PLUGS ✓

Heat Treatment: ANNEALED

Specification: A403-WP316/316L/SA403-  
WP316/316L ✓

Material: 316/316L ✓

CRN: OA7470.5C

Year of Revision: \_\_\_\_\_

Comment: INTERGRANULAR  
CORROSION ASTM A262 'E'  
SATISFACTORY

Additional NACE MR0103-2007 /

Comment: MR0175 / ISO 15156-2/2003 ✓

**Chemical Analysis**

Heat Code: K1591 ✓

Heat Number: OLV4

|    |         |       |          |    |       |
|----|---------|-------|----------|----|-------|
| C  | 0.018 ✓ | Cu    | 0.413    | Al | 0.000 |
| Mn | 1.364 ✓ | Ni    | 10.525 ✓ | Ti | 0.000 |
| P  | 0.028 ✓ | Cr    | 16.667 ✓ | Co | 0.181 |
| S  | 0.019 ✓ | Mo    | 2.149 ✓  |    | 0.000 |
| Si | 0.335 ✓ | V     | 0.000    |    | 0.000 |
| N  | 0.047   | Cb/Nb | 0.000    |    | 0.000 |

Carbon Equivalency Formula Used:  

$$C + (Mn/6) + (Cr + Mo + V)/5 + (Ni + Cu)/15$$
 CE= 4.74
**Mechanical Tests**

Yield PSI: 42000 ✓

Tensile PSI: 84000 ✓

Elongation: 52 % @ 2" ✓

Reduction of 67  
Area %

Size: 1.315" RND

Brinell Hardness: 161

**Charpy Impact Test**Individual  
Values:

(V1) ft/lbs (V2) ft/lbs (V3) ft/lbs

This Material Test Report meets DIN 50 049/EN 10  
204 3.1.8 Standard 1995We hereby Certify that the material described has been  
tested in accordance with the specifications, and the results  
are correct as contained in the records  
of the Company.Ian Shields  
Q.A. Manager and Customer Service**Sarnia**Toll Free: 1-866-  
511-1381  
By regular  
telephone at:  
519-336-2960  
By fax at 519-344-  
3181Mailing Address:  
PO Box 999,  
645 Kedddco St.  
Sarnia, ON  
N7T 7K6**Edmonton**Toll Free: 1-800-  
661-3809  
By regular  
telephone at:  
780-438-4944  
By fax at 780-435-  
3917Mailing Address:  
4120 - 78 Av.  
Edmonton, AB  
T6B 3M8

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"  
10 Sept 13 2012

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: EncarnaDate: Sept 13 2012



18030 CASARZA LIGURE - Genova - Italy - Via Giancarlo Farina 25 - Tel.0105.467661 - Fax 0105.466510 / MATERIAL TEST DEPARTMENT

**COMPANY WITH QUALITY SYSTEM ISO 9001:2000  
CERTIFIED BY RINA**

Calgary, Alberta T3S 0A1

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Page 8 - 10

INSPECTION CERTIFICATE EN 10204(2004 / B.1)

**Certificado Nr 21545**

Det. No 10 Mr B4

Dated 31.01.2011

TO CUSTOMER'S  
SPECIFICATIONS  
PER P.O.  
"Conforms with ASME  
2010 edition", 2010  
ASME  
Sec II, Part A  
Addenda 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 8

Paramount  
Pennwest  
Encana

| HEAT CODE | HEAT      | ITEM | MATERIAL  | C%    | SI%   | Mn%   | S%    | P%    | C-%   | NI%   | MO%   | TT%   | CU%   | V%    | NB%   | N%    | AI%   | Cr %  | OTHER ELEMENTS |
|-----------|-----------|------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
| MMU       | 10/73781  | 126  | ASTM A105 | 0.189 | 0.240 | 1.090 | 0.010 | 0.008 | 0.070 | 0.050 | 0.010 | 0.018 | 0.150 | 0.002 | 0.001 | 0.000 | 0.000 | 0.384 |                |
| MBL       | 10/131378 | 024  | ASTM A105 | 0.180 | 0.230 | 1.120 | 0.010 | 0.010 | 0.070 | 0.050 | 0.010 | 0.018 | 0.140 | 0.003 | 0.000 | 0.000 | 0.000 | 0.387 |                |
| MBL       | 78877     | 031  | ASTM A105 | 0.185 | 0.220 | 0.980 | 0.018 | 0.018 | 0.120 | 0.050 | 0.010 | 0.005 | 0.200 | 0.002 | 0.000 | 0.000 | 0.018 | 0.388 |                |
| TH4       | 77169     | 058  | ASTM A105 | 0.200 | 0.260 | 1.020 | 0.010 | 0.014 | 0.130 | 0.050 | 0.010 | 0.007 | 0.180 | 0.001 | 0.001 | 0.000 | 0.025 | 0.416 |                |
| MBL       | 10/72986  | 061  | ASTM A105 | 0.189 | 0.220 | 1.090 | 0.007 | 0.014 | 0.090 | 0.050 | 0.010 | 0.021 | 0.160 | 0.003 | 0.001 | 0.000 | 0.026 | 0.408 |                |
| K01       | 73888     | 089  | ASTM A105 | 0.185 | 0.230 | 1.110 | 0.010 | 0.012 | 0.080 | 0.060 | 0.020 | 0.018 | 0.160 | 0.003 | 0.003 | 0.000 | 0.025 | 0.407 |                |
| T25       | 79436     | 137  | ASTM A105 | 0.186 | 0.260 | 1.130 | 0.010 | 0.013 | 0.080 | 0.070 | 0.020 | 0.024 | 0.200 | 0.003 | 0.002 | 0.000 | 0.028 | 0.410 |                |
| 111       | 1071872   | 138  | ASTM A105 | 0.180 | 0.210 | 1.120 | 0.008 | 0.010 | 0.080 | 0.050 | 0.010 | 0.018 | 0.150 | 0.002 | 0.002 | 0.000 | 0.028 | 0.408 |                |
| 33T       | 76228     | 141  | ASTM A105 | 0.180 | 0.240 | 1.040 | 0.015 | 0.015 | 0.180 | 0.080 | 0.010 | 0.008 | 0.250 | 0.001 | 0.001 | 0.000 | 0.031 | 0.410 |                |
| MMU       | 10/73781  | 141  | ASTM A105 | 0.180 | 0.240 | 1.050 | 0.010 | 0.008 | 0.080 | 0.050 | 0.010 | 0.018 | 0.150 | 0.002 | 0.001 | 0.000 | 0.000 | 0.384 |                |

| HEAT CODE | HEAT    | ITEM | TEST SPECIMEN             |        | YIELD POINT<br>MPa >=23 | TENSILE STRENGTH<br>MPa >= | ELONGATION<br>% | REDUCTION OF AREA<br>% | HARDNESS<br>HB | BEND TEST | FLATTENING TEST | IMPACT TEST - JOULES |     |    |    |         | SHAPE<br>10 20 30 | YIELD POINT<br>MPa >=23 |
|-----------|---------|------|---------------------------|--------|-------------------------|----------------------------|-----------------|------------------------|----------------|-----------|-----------------|----------------------|-----|----|----|---------|-------------------|-------------------------|
|           |         |      | RECT. TEST                | LENGTH |                         |                            |                 |                        |                |           |                 | TEMP. °C             |     |    |    |         |                   |                         |
|           |         |      |                           |        |                         |                            |                 |                        |                |           |                 | 1                    | 2   | 3  | 5  |         |                   |                         |
| MMU       | 1073791 | 128  | 122.65                    | 50.00  | 340.0                   | 547.0                      | 31.0            | 58.0                   | 184.0 - 188.0  | 0.0       | 0.0             | KV                   | -10 | 82 | 82 | 89      | 1                 | 0.0                     |
| MBL       | 1083178 | 024  | 122.65                    | 50.00  | 352.0                   | 522.0                      | 30.0            | 58.0                   | 166.0 - 163.0  | 0.0       | 0.0             | KV                   | -10 | 88 | 88 | 82      | 1                 | 0.0                     |
| TH4       | 78877   | 031  | 122.65                    | 50.00  | 309.0                   | 547.0                      | 32.0            | 58.0                   | 180.0 - 183.0  | 0.0       | 0.0             | KV                   | -10 | 75 | 78 | 73      | 1                 | 0.0                     |
|           | 77188   | 058  | 122.65                    | 50.00  | 317.0                   | 525.0                      | 31.0            | 53.6                   | 156.0 - 163.0  | 0.0       | 0.0             | KV                   | -10 | 72 | 70 | 78      | 1                 | 0.0                     |
| MBI       | 1072896 | 081  | 122.65                    | 50.00  | 338.0                   | 541.0                      | 31.0            | 59.0                   | 160.0 - 170.0  | 0.0       | 0.0             | KV                   | -10 | 70 | 75 | 75      | 1                 | 0.0                     |
|           | 73688   | 088  | 122.65                    | 50.00  | 340.0                   | 544.0                      | 30.3            | 55.0                   | 185.0 - 170.0  | 0.0       | 0.0             | KV                   | -10 | 81 | 85 | 83      | 1                 | 0.0                     |
| K81       | 73435   | 137  | 122.65                    | 50.00  | 334.0                   | 528.0                      | 33.5            | 54.0                   | 162.0 - 168.0  | 0.0       | 0.0             | KV                   | -10 | 81 | 88 | 85      | 1                 | 0.0                     |
| T25       | 1071872 | 139  | 122.65                    | 50.00  | 336.0                   | 555.0                      | 31.5            | 55.0                   | 181.0 - 170.0  | 0.0       | 0.0             | KV                   | -10 | 65 | 85 | 80      | 1                 | 0.0                     |
| T11       | 76298   | 141  | 122.65                    | 50.00  | 308.0                   | 527.0                      | 34.0            | 58.0                   | 160.0 - 164.0  | 0.0       | 0.0             | KV                   | -10 | 77 | 77 | 71      | 1                 | 0.0                     |
| MMU       | 1073781 | 141  | 122.65                    | 50.00  | 340.0                   | 547.0                      | 31.0            | 58.0                   | 164.0 - 169.0  | 0.0       | 0.0             | KV                   | -10 | 82 | 82 | 89      | 1                 | 0.0                     |
| HEAT CODE | HEAT    | ITEM | MATERIAL IN ACCORDANCE TO |        |                         |                            |                 |                        |                |           | HEAT TREATMENT  |                      |     |    |    | FURNACE | ORIGIN            | Our Ref.                |

| UNITED STATES BUREAU OF STANDARDS - ANSI B31.1-B31.3 - INCL. STD. - ANSI B1.1-B10.2.2 - NACE | INSPECTION AUTHORITY | QUALITY CONTROL DEPARTMENT | MANUFACTURER'S SYMBOL               | MANUFACTURER'S SYMBOL           |
|----------------------------------------------------------------------------------------------|----------------------|----------------------------|-------------------------------------|---------------------------------|
| MMU 10173791                                                                                 | 128                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 102114  |
| MBL 10131378                                                                                 | 024                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 102094  |
| TM4 789877                                                                                   | 031                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 0811053 |
| MBI 77189                                                                                    | 089                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 091070  |
| 10172886                                                                                     | 011                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 102092  |
| 739889                                                                                       | 099                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE N10380  |
| 73435                                                                                        | 157                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 101287  |
| 10171872                                                                                     | 139                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 102092  |
| 337 78228                                                                                    | 141                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 081466  |
| MMU 10173791                                                                                 | 141                  | ASME SA ASTM A105-09       | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE EUROPE 102114  |

ASME B16.1, 1.109 - ANSI B31.1, B31.3 - MIL STD - ANSI B1.1 - B16.2, 2.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTHORITY

**QUALITY CONTROL DEPARTMENT**

**MANUFACTURER'S S**

**MANUFACTURER'S S**





Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sub>sm</sub>

Certified Mill Test Report

11/5/2012

Customer

MRC CANADA ULC  
7072 - 112 AVE SE  
CALGARY, AB T2C 4Z1

P.O. S 759 186651

Heat No 22893

Heat Code KDI

Phoenix Order # 895928

Material ASTM A333 GR6 2011/ASME SA333 GR6 2010 Edition

Part Number

15111006LT

Description

1 X 3" XHSM L BLK NIPL A333 GR6

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1600 | 0.5300 | 0.0140 | 0.0080 | 0.2500 | 0.1800 | 0.0300 | 0.0500 | 0.2709     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0000 | 0.0060 |        |        | 0.0000 |        |        |        |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.2600       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 67,140        | 50,610      | 29.0%             |        |     |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| 23     | 26     | 27     | 25.33   |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/11/27 S. Maden

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Flattening test passed.

Charpy V Impact Tested at -53° C. Specimen size - 10 x 3.33 mm.

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, BC V6M 1L0

PO# 710404 Item# 3  
Heat Number: L316  
Trans Am Piping Products Ltd. - Rev'd By: SB  
3/4" CL 6000 FS SCRD UNION  
A350-LF2 CL 1  
Shipment/ Seq #: 1271

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/12/6 J. nason

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: J. nason



I.M.L.

INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000  
CERTIFIED BY RINA

TRANS AM PIPING PRODUCTS LTD.

9335 Endeavor Drive S.E.  
Calgary, Alberta T3S 0A1

Certificate Nr 21603

Date: 2012/12/6  
Invoice Nr  
Del. Note Nr 179  
CA

Dated 25.02.2011

Dated 24.02.2011

16030 CASARZA LIGURE- Genova - Italy - Via Giancarlo Farina 25 - Tel.0185.467661 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT

| HEAT CODE | HEAT     | ITEM | YOUR P.O. | OUR REFERENCE           | Q.TY | DESCRIPTION                                         | DIM. ACC. TO | VISUAL & DIMENS. |
|-----------|----------|------|-----------|-------------------------|------|-----------------------------------------------------|--------------|------------------|
| 5EU       | 70294    | 158  | 673       | 2010-2E201-0001317-0158 |      | FITTING UNION F/F THRD NPT 3M 1.1/2" A105N EL.GALV. | SEE NOTE     | SATISFACTORY     |
| 3H6       | 10/30203 | 036  | 855       | 2010-2E201-0001154-0036 |      | FITTING TEE THRD NPT 3M 3" A105N                    | SEE NOTE     | SATISFACTORY     |
| MLZ       | 10/72681 | 073  | 855       | 2010-2E201-0001154-0072 |      | FITTING TEE THRD NPT 6M 2" A105N                    | SEE NOTE     | SATISFACTORY     |
| L316      | X19586   | 089  | 658       | 2010-2E201-0001178-0089 |      | FITTING UNION F/F THRD NPT 6M 3/4" A350/LF2         | SEE NOTE     | SATISFACTORY     |
| L821      | 78198    | 093  | 873       | 2010-2E201-0001317-0093 |      | FITTING UNION F/F THRD NPT 6M 1.1/2" A105N          | SEE NOTE     | SATISFACTORY     |
| MN9       | 73040    | 114  | 673       | 2010-2E201-0001317-0114 |      | FITTING COUPLING THRD NPT 3M 3/4" L.75mm A105N      | SEE NOTE     | SATISFACTORY     |
| MN9       | 73040    | 115  | 673       | 2010-2E201-0001317-0115 |      | FITTING COUPLING THRD NPT 3M 3/4" L.150mm A105N     | SEE NOTE     | SATISFACTORY     |
| 73T       | 77168    | 018  | 702/A     | 2011-2E201-0000137-0018 |      | FITTING CROSS THRD NPT 2M 1/2" A105N                | SEE NOTE     | SATISFACTORY     |
| TN4       | 78877    | 031  | 702/A     | 2011-2E201-0000137-0031 |      | FITTING TEE THRD NPT 3M 3/4" A105N                  | SEE NOTE     | SATISFACTORY     |
| 3H6       | 10/30203 | 036  | 702/A     | 2011-2E201-0000137-0035 |      | FITTING TEE THRD NPT 3M 3" A105N                    | SEE NOTE     | SATISFACTORY     |

RATIO = 5.0

| HEAT CODE | HEAT     | ITEM | MATERIAL           | C%    | SI%   | Mn%   | S%    | P%    | Cr%   | NI%   | Mo%   | TI%   | Cu%   | V%    | Nb%   | N%    | Al%   | C.E.% | OTHER ELEMENTS |
|-----------|----------|------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
| 5EU       | 70294    | 158  | ASTM A105          | 0.180 | 0.230 | 0.850 | 0.022 | 0.016 | 0.110 | 0.060 | 0.020 | 0.006 | 0.230 | 0.001 | 0.001 | 0.000 | 0.025 | 0.367 |                |
| 3H6       | 10/30203 | 036  | ASTM A105          | 0.190 | 0.240 | 1.100 | 0.009 | 0.009 | 0.070 | 0.040 | 0.010 | 0.018 | 0.140 | 0.002 | 0.002 | 0.000 | 0.025 | 0.402 |                |
| MLZ       | 10/72681 | 073  | ASTM A105          | 0.185 | 0.200 | 1.070 | 0.007 | 0.010 | 0.070 | 0.050 | 0.020 | 0.015 | 0.150 | 0.003 | 0.002 | 0.000 | 0.028 | 0.395 |                |
| L316      | X19586   | 089  | ASTM A350 LF2 cl.1 | 0.195 | 0.290 | 0.990 | 0.028 | 0.005 | 0.110 | 0.120 | 0.030 | 0.003 | 0.120 | 0.003 | 0.000 | 0.000 | 0.028 | 0.405 |                |
| L821      | 78198    | 093  | ASTM A105          | 0.185 | 0.230 | 0.880 | 0.010 | 0.009 | 0.050 | 0.050 | 0.010 | 0.015 | 0.180 | 0.019 | 0.004 | 0.000 | 0.028 | 0.363 |                |
| MN9       | 73040    | 114  | ASTM A105          | 0.185 | 0.190 | 1.100 | 0.010 | 0.010 | 0.100 | 0.010 | 0.010 | 0.023 | 0.170 | 0.002 | 0.002 | 0.000 | 0.027 | 0.403 |                |
| MN9       | 73040    | 115  | ASTM A105          | 0.185 | 0.190 | 1.100 | 0.010 | 0.010 | 0.100 | 0.010 | 0.010 | 0.023 | 0.170 | 0.002 | 0.002 | 0.000 | 0.027 | 0.403 |                |
| 73T       | 77168    | 018  | ASTM A105          | 0.200 | 0.250 | 1.000 | 0.010 | 0.009 | 0.080 | 0.050 | 0.010 | 0.007 | 0.180 | 0.001 | 0.001 | 0.000 | 0.029 | 0.400 |                |
| TN4       | 78877    | 031  | ASTM A105          | 0.195 | 0.220 | 0.960 | 0.018 | 0.018 | 0.120 | 0.060 | 0.010 | 0.005 | 0.200 | 0.002 | 0.000 | 0.000 | 0.018 | 0.399 |                |
| 3H6       | 10/30203 | 036  | ASTM A105          | 0.190 | 0.240 | 1.100 | 0.009 | 0.009 | 0.070 | 0.040 | 0.010 | 0.018 | 0.140 | 0.002 | 0.002 | 0.000 | 0.025 | 0.402 |                |

| HEAT CODE | HEAT     | ITEM | TEST SPECIMEN |           | YIELD POINT  | TENSILE STRENGTH | ELONGATION | REDUCTION OF AREA | HARDNESS Hb   | BEND TEST | FLATTENING TEST |    | IMPACT TEST - JOULE/cm2 |    |    |         |              | SHAPE | YIELD POINT |
|-----------|----------|------|---------------|-----------|--------------|------------------|------------|-------------------|---------------|-----------|-----------------|----|-------------------------|----|----|---------|--------------|-------|-------------|
|           |          |      | SECT. mm2     | LENGTH mm | N/mm2 >=0.2% | N/mm2 >=         | %>=        | %>=               | %>=           |           | TYPE 10x10mm    | °C | 1                       | 2  | 3  | 1=O 2=□ | N/mm2 >=1.0% |       |             |
| 5EU       | 70294    | 158  | 122.65        | 50.00     | 301.0        | 495.0            | 33.0       | 55.8              | 158.0 - 163.0 | 0,0       | 0,0             | KV | -10                     | 73 | 75 | 77      | 1            | 0,0   |             |
| 3H6       | 10/30203 | 036  | 122.65        | 50.00     | 344.0        | 538.0            | 31.5       | 58.0              | 161.0 - 170.0 | 0,0       | 0,0             | KV | -10                     | 82 | 87 | 86      | 1            | 0,0   |             |
| MLZ       | 10/72881 | 073  | 122.65        | 50.00     | 326.0        | 532.0            | 30.6       | 54.0              | 163.0 - 170.0 | 0,0       | 0,0             | KV | -10                     | 65 | 85 | 61      | 1            | 0,0   |             |
| L316      | X19586   | 089  | 122.65        | 50.00     | 380.0        | 540.0            | 30.0       | 54.8              | 154.0 - 155.0 | 0,0       | 0,0             | KV | -46                     | 50 | 55 | 65      | 1            | 0,0   |             |
| L821      | 78198    | 093  | 122.65        | 50.00     | 318.0        | 501.0            | 33.5       | 58.4              | 152.0 - 156.0 | 0,0       | 0,0             | KV | -10                     | 57 | 61 | 61      | 1            | 0,0   |             |
| MN9       | 73040    | 114  | 122.65        | 50.00     | 326.0        | 533.0            | 31.0       | 55.0              | 157.0 - 161.0 | 0,0       | 0,0             | KV | -10                     | 58 | 62 | 62      | 1            | 0,0   |             |
| MN9       | 73040    | 115  | 122.65        | 50.00     | 326.0        | 533.0            | 31.0       | 55.0              | 157.0 - 161.0 | 0,0       | 0,0             | KV | -10                     | 58 | 62 | 62      | 1            | 0,0   |             |
| 73T       | 77168    | 018  | 122.65        | 50.00     | 318.0        | 519.0            | 30.0       | 52.0              | 160.0 - 162.0 | 0,0       | 0,0             | KV | -10                     | 74 | 70 | 68      | 1            | 0,0   |             |
| TN4       | 78877    | 031  | 122.65        | 50.00     | 309.0        | 547.0            | 32.0       | 56.0              | 160.0 - 166.0 | 0,0       | 0,0             | KV | -10                     | 75 | 71 | 73      | 1            | 0,0   |             |
| 3H6       | 10/30203 | 036  | 122.65        | 50.00     | 344.0        | 538.0            | 31.5       | 58.0              | 161.0 - 170.0 | 0,0       | 0,0             | KV | -10                     | 82 | 87 | 86      | 1            | 0,0   |             |

| HEAT CODE | HEAT     | ITEM | MATERIAL IN ACCORDANCE TO         | HEAT TREATMENT                      | FURNACE          | ORIGIN | Our Ref. |
|-----------|----------|------|-----------------------------------|-------------------------------------|------------------|--------|----------|
| 5EU       | 70294    | 158  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 071528   |
| 3H6       | 10/30203 | 036  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 102111   |
| MLZ       | 10/72681 | 073  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 112003   |
| L316      | X19586   | 089  | ASME SA ASTM A350-07 Gr. LF2 cl.1 | Normalized at 900°C / Air Cool      | ELECTRIC FURNACE | EUROPE | 102008   |
| L821      | 78198    | 093  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 112022   |
| MN9       | 73040    | 114  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | N10358   |
| MN9       | 73040    | 115  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | N10356   |
| 73T       | 77168    | 018  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 081066   |
| TN4       | 78877    | 031  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 081083   |
| 3H6       | 10/30203 | 036  | ASME SA ASTM A105-09              | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 102111   |

| NOTES                                                                                                                                                                              | INSPECTION AUTHORITY | QUALITY CONTROL DEPARTMENT | MANUFACTURER'S SYMBOL | MANUFACTURER'S SYMBOL |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------|-----------------------|-----------------------|
| ASME B16.11/09 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B16.2.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                      | B. FIZZI<br>Bow & Hark     | FITTINGS IML          | STUDBOLTS             |



HEAT NUMBER : **L609**  
 TRANS AM PIPING PRODUCTS - REV'D BY:  
 Shipment/Seq #: **5 5 - 1790 61**

**1" 6000 FS SCR'D UNION**  
**A350-LF2**



**I.M.L.**

**INDUSTRIA MECCANICA LIGURE SPA**

INSPECTION CERTIFICATE EN 10204:2004 / 3.1  
 COMPANY WITH QUALITY SYSTEM ISO 9001:2000  
 CERTIFIED BY RINA

TRANS AM PIPING PRODUCTS LTD.  
 7025 - 44th Street S.E.  
 Calgary, Alberta T2C 4E8

CA

21.12.2005  
 19.12.2005

16039 CAGAZZA LIGURE - Genova - Italy - P.zza Marco Capelli 4 - Tel.010.54.67861 - Fax 010.54.68310 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204 Page

| SPECIFICATIONS AND P.O. REQUIREMENTS |  |  |  |  |  |  |  |  |  | INSPECTION AUTHORITY |  |  |  |  |  |  |  |  |  | QUALITY CONTROL DEPARTMENT |  |  |  |  |  |  |  |  |  | MANUFACTURER'S SYMBOL |  |  |  |  |  |  |  |  |  | MANUFACTURER'S SYMBOL |  |  |  |  |  |  |  |  |  |
|--------------------------------------|--|--|--|--|--|--|--|--|--|----------------------|--|--|--|--|--|--|--|--|--|----------------------------|--|--|--|--|--|--|--|--|--|-----------------------|--|--|--|--|--|--|--|--|--|-----------------------|--|--|--|--|--|--|--|--|--|
| SPECIFICATIONS AND P.O. REQUIREMENTS |  |  |  |  |  |  |  |  |  | INSPECTION AUTHORITY |  |  |  |  |  |  |  |  |  | QUALITY CONTROL DEPARTMENT |  |  |  |  |  |  |  |  |  | MANUFACTURER'S SYMBOL |  |  |  |  |  |  |  |  |  | MANUFACTURER'S SYMBOL |  |  |  |  |  |  |  |  |  |
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| <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.ima@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> |                    |                                                                                                                                                                                            |                                                          | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b> |                 |                        |                  |        |       |       |
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                       |                    |                                                                                                                                                                                            |                                                          | Nr 22603 Dated 23.12.2011                                                                                         |                 |                        |                  |        |       |       |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1 CA                                                                                                                                         |                    |                                                                                                                                                                                            |                                                          | Purchase Order Nr 3840<br>Item Nr 088<br>Packing List Nr 1508<br>Invoice Nr 1312                                  |                 |                        |                  |        |       |       |
| Heat Code<br>L027                                                                                                                                                                                                                       | Heat Nr<br>78311   | Quantity                                                                                                                                                                                   | Description<br>FITTING UNION F/F THRD NPT 6M 1" A350/LF2 |                                                                                                                   |                 |                        |                  |        |       |       |
| Element                                                                                                                                                                                                                                 | C                  | Si                                                                                                                                                                                         | Mn                                                       | S                                                                                                                 | P               | Cr                     | Ni               | Mo     | Ti    | Cu    |
| ASTM A350 LF2 cl.1 (LADLE)                                                                                                                                                                                                              | 0,190              | 0,210                                                                                                                                                                                      | 1,090                                                    | 0,008                                                                                                             | 0,008           | 0,060                  | 0,040            | --     | 0,018 | 0,120 |
| Element                                                                                                                                                                                                                                 | V                  | Nb                                                                                                                                                                                         | N                                                        | AL                                                                                                                | C.E. PRE        |                        |                  |        |       |       |
| ASTM A350 LF2 cl.1 (LADLE)                                                                                                                                                                                                              | 0,024              | 0,003                                                                                                                                                                                      | --                                                       | 0,025                                                                                                             | 0,399 --        |                        |                  |        |       |       |
| Test specimen<br>Sect. mm2 Length mm                                                                                                                                                                                                    | Shape<br>1=O - 2=□ | Tensile<br>N/mm2                                                                                                                                                                           | Yield Point >0,2%<br>N/mm2                               | Yield Point >1%<br>N/mm2                                                                                          | Elongation<br>% | Reduction of area<br>% |                  |        |       |       |
| 122,65 50,00                                                                                                                                                                                                                            | 1                  | 536,0                                                                                                                                                                                      | 331,0                                                    | --                                                                                                                | 33,0            | 54,0                   |                  |        |       |       |
| <b>HARDNESS</b>                                                                                                                                                                                                                         |                    |                                                                                                                                                                                            |                                                          | <b>IMPACT TEST</b>                                                                                                |                 |                        |                  |        |       |       |
| HBW                                                                                                                                                                                                                                     |                    | TYPE                                                                                                                                                                                       | Test specimen                                            | °C                                                                                                                | 1-Joule/cm2     | 2-Joule/cm2            | 3-Joule/cm2      |        |       |       |
| 153,0 - 161,0                                                                                                                                                                                                                           |                    | KV                                                                                                                                                                                         | 10x10mm                                                  | -46                                                                                                               | 53              | 55                     | 51               |        |       |       |
| Heat treatment                                                                                                                                                                                                                          |                    | Normalized at 900°C / Air Cool                                                                                                                                                             |                                                          |                                                                                                                   |                 |                        | ELECTRIC FURNACE |        |       |       |
| Dimension in accordance                                                                                                                                                                                                                 |                    | MSS SP83 Ed.2006 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156<br>Ed.2009 - NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                                                          |                                                                                                                   |                 |                        |                  |        |       |       |
| Material in accordance                                                                                                                                                                                                                  |                    | ASME SA ASTM A350-07 Gr. LF2 cl.1                                                                                                                                                          |                                                          |                                                                                                                   |                 |                        |                  |        |       |       |
| Visual & Dimensional                                                                                                                                                                                                                    |                    | SATISFACTORY                                                                                                                                                                               |                                                          | Origin                                                                                                            | EUROPE          |                        | Our Ref.         | 102080 |       |       |

Notes ---

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"

June 15, 2012

MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS

Name: *Chris Steen*

Date: *June 15/12*

*Alciana  
 Taramand  
 Kennelst  
 Retrofaktion*

|                                                                         |                      |                                                                                                                       |
|-------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| QUALITY CONTROL DEPT.<br><i>Boris Fizzotti</i><br><i>Boris Fizzotti</i> | INSPECTION AUTHORITY | MANUFACTURER'S SYMBOL<br>IML or  |
|-------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------|

MATERIAL CONFORMS  
TO CUSTOMER

SPECIFICATIONS  
AS PER P.O.

Sec II, Part A, 2010 edition"

Name:                     

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

Date: 2004/07/01

TRANS AUTHORITY RECORDS LTD

COMPANY WITH QUALITY SYSTEM ISO 9001:2000

GRAS ENGINEER David H.E.

CONFORME WITH QUALITY SYSTEM ISO 9001:2000  
CERTIFIED BY ANIA

5505 REVEREND DRIVE S.E.  
Calgary, Alberta T2C 0A1

|                    |        |           |
|--------------------|--------|-----------|
| Continued to 21ED3 | Distrt | 25 02 201 |
| Invoice Nr         | Usted  |           |
| Dol. Hora 34 170   | Unidad | 24 02 201 |

[illegible]

| HEAT CODE | HEAT  | ITEM | MATERIAL IN ACCORDANCE TO | HEAT TREATMENT                      | FURNACE          | ORIGIN | Our Ref. |
|-----------|-------|------|---------------------------|-------------------------------------|------------------|--------|----------|
| 68T       | 72140 | 045  | ASME SA ASTM A105-08      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 1011721  |
| 077       | 74264 | 040  | ASME SA ASTM A105-08      | Normalized at 800°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 014282   |
| HPN       | 31729 | 047  | ASME SA ASTM A105-08      | Normalized at 800°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 0192031  |
| MNS       | 78855 | 060  | ASME SA ASTM A105-09      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 1701037  |
| K35       | 77369 | 068  | ASME SA ASTM A105-09      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 301064   |
| JN9       | 72040 | 072  | ASME SA ASTM A105-09      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 1170255  |
| K113      | 72148 | 074  | ASME SA ASTM A105-08      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 101167   |
| K42       | 70109 | 077  | ASME SA ASTM A105-08      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 020155   |
| LEN       | 73201 | 008  | ASME SA ASTM A105-08      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 1012307  |
| 7075      | 73435 | 091  | ASME SA ASTM A105-09      | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE | EUROPE | 101256   |

INSPECTION AUTHORITY

## QUALITY CON

## ATTACHMENT: MANUFACTURER'S

## FACT

## LET'S SYMPHONIZE



# Phoenix \* Capitol \* Camco

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/8/31 J. Nason

## Cap Products

## Certified Mill Test Report

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Encana

Heat Code: MB5 ✓

Heat Number: 2705G ✓

Item: 15111005: 1X2-1/2 XHSML BK STL NIPL ✓

Material: ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda ✓

### Chemistry Properties

| C        | Mn       | P        | S        | Si         | Cu       | Cr       |
|----------|----------|----------|----------|------------|----------|----------|
| 0.1650 ✓ | 0.8000 ✓ | 0.0140 ✓ | 0.0030 ✓ | 0.2500 ✓   | 0.1300 ✓ | 0.0600 ✓ |
| Ni       | Mo       | V        | Co       | Al         | Cb       | N        |
| 0.0500 ✓ | 0.0200 ✓ | 0.0010 ✓ |          | 0.0320     | 0.0010   |          |
| Pb       | Sn       | Ta       | Ti       | C Eq. Long |          |          |
|          | 0.0120   |          | 0.0030   | 0.3270     |          |          |

### Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

### Mechanical Properties

| Tensile(PSI) | Yield(PSI) | Elong. % in 2 in. | Reduction | HBW | HBW 2 |
|--------------|------------|-------------------|-----------|-----|-------|
| 71469 ✓      | 47376 ✓    | 32% ✓             |           | 138 |       |

### Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Avg. | Test Temp. |
|--------|--------|--------|------|------------|
|        |        |        |      |            |

Bend Test Passed

Hydro Test Passed at 2500 psi

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and tests conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN 10204 Section 3.1B.

### Specification comments:

MEETS HARDNESS REQUIREMENTS OF NACE MRO175 AND NACE MR0103 LATEST EDITIONS  
Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

### Heat Code Remarks:



# Phoenix \* Capitol \* Camco Cap Products

Commanding a Higher Standard<sub>sm</sub>

## Certified Mill Test Report

10/20/2011

### Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 127927

Heat No E19450

Heat Code MIN

Phoenix Order # 798111

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

### Part Number

15110504

### Description

1/2 X 2" XHSML BK STL NIPL

### Chemical Properties

|        |        |        |        |        |        |        |        |            |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| C ✓    | Mn ✓   | P ✓    | S ✓    | Si ✓   | Cu ✓   | Cr ✓   | Ni ✓   | C Eq. Long |        |
| 0.1800 | 0.7700 | 0.0100 | 0.0070 | 0.2400 | 0.0280 | 0.0200 | 0.0160 | 0.3161     |        |
| Mo ✓   | V ✓    | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0030 | 0.0010 |        | 0.0300 |        |        |        | 0.0010 |            | 0.0020 |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

### Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

|              |
|--------------|
| Cr + Cu + Ni |
| 0.0640       |

CENOVUS

### Mechanical Properties

|                 |               |                     |        |     |      |
|-----------------|---------------|---------------------|--------|-----|------|
| Tensile (PSI) ✓ | Yield (PSI) ✓ | Elong. % in 2 in. ✓ | R of A | HBW | HBW2 |
| 68,397          | 62,295        | 44.6%               |        | 136 |      |

Petro Bakken  
Encana

### Charpy Minimum Impact - ft/lbs

|        |        |        |         |
|--------|--------|--------|---------|
| Test 1 | Test 2 | Test 3 | Average |
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

*DD May 10.12*

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

### Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts. Ltd.

25 Winnipeg St

Vaughan, ON N0M 1L0



Commanding a Higher Standard™

## Certified Mill Test Report

9/22/2011

## Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 124702

Heat No E19450

Heat Code MIN

Phoenix Order # 793330

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

## Part Number

15110505

## Description

1/2 X 2-1/2" XHSM L BK STL NIPL

## Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| 0.1800 | 0.7700 | 0.0100 | 0.0070 | 0.2400 | 0.0280 | 0.0200 | 0.0160 | 0.3161     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0030 | 0.0010 |        | 0.0300 |        |        |        | 0.0010 |            | 0.0020 |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Encana  
Paramount

## Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0640       |

## Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 68,397        | 62,295      | 44.6%             |        | 136 |      |

## Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

June 5, 12

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

## Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, BC V6M 1L0



Commanding a Higher Standard™

## Certified Mill Test Report

9/22/2011

## Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 124702

Heat No E19450

Heat Code MIN

Phoenix Order # 793330

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda.

## Part Number

15110508

## Description

1/2 X 4" XHSML BK STL NIPL

## Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| 0.1800 | 0.7700 | 0.0100 | 0.0070 | 0.2400 | 0.0280 | 0.0200 | 0.0160 | 0.3161     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0030 | 0.0010 |        | 0.0300 |        |        |        | 0.0010 |            | 0.0020 |

*Encana*  
MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: *Cher Steer*Date: *June 28/11*

## Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

Cr + Cu + Ni

0.0640

## Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 68,397 ✓      | 62,295 ✓    | 44.6% ✓           |        | 136 |      |

## Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

## Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, ON N0M 1L0





Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sub>sm</sub>

Certified Mill Test Report

8/13/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 729 175197

Heat No 4828G  
Heat Code NSY  
Phoenix Order # 876204

Material ASTM A106-2011 / ASME SA106-2010 Edition

Part Number  
15111004

Description  
1 X 2" XHSMLS BLK NIPL

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |        |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|
| 0.1600 | 0.7700 | 0.0235 | 0.0080 | 0.2750 | 0.1420 | 0.1720 | 0.0620 | 0.3459     |        |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti     |
| 0.0440 | 0.0040 |        | 0.0280 |        |        |        | 0.0125 |            | 0.0022 |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.3760       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 63,429        | 43,493      | 52.6%             |        | 126 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/11/19 S. Nason

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, BC V6M 1L0



Phoenix \* Capitol \* Camco ✓  
Cap Products

Commanding a Higher Standard™

Certified Mill Test Report

11/2/2011

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 130581

Heat No 112250 ✓

Heat Code N6M ✓

Phoenix Order # 802426

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda ✓

Part Number

15111006

Description

1 X 3" XHSM BLK NIPL ✓

Chemical Properties

| C        | Mn       | P        | S        | Si       | Cu       | Cr       | Ni       | C Eq. Long |    |
|----------|----------|----------|----------|----------|----------|----------|----------|------------|----|
| 0.2100 ✓ | 0.4700 ✓ | 0.0160 ✓ | 0.0280 ✓ | 0.2300 ✓ | 0.0400 ✓ | 0.0300 ✓ | 0.0200 ✓ | 0.2983 ✓   |    |
| Mo       | V        | Co       | Al       | Cb       | N        | Pb       | Sn       | Ta         | Ti |
| 0.0000 ✓ | 0.0000 ✓ |          |          |          |          |          |          |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0900       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 75,500 ✓      | 52,000 ✓    | 37.0% ✓           |        |     |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/7/12 J. Mason

\* Hydro test passed. at 2500 psi. ✓

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd. ✓

25 Winnipeg St

Vancouver, BC V6M 1L0



Phoenix \* Capitol \* Camco

Cap Products

Commanding a Higher Standard<sup>sm</sup>

## Certified Mill Test Report

11/25/2011

## Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 136277

Heat No 112250

Heat Code N6M

Phoenix Order # 810768

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

## Part Number

15111005

## Description

1 X 2-1/2" XHSML BLK NIPL

## Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.2100 | 0.4700 | 0.0160 | 0.0280 | 0.2300 | 0.0400 | 0.0300 | 0.0200 | 0.2983     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0000 | 0.0000 |        |        |        |        |        |        |            |    |

## Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0900       |

## Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 75,500        | 52,000      | 37.0%             |        |     |      |

## Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

\* Hydro test passed. at 2500 psi.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

## Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, ON N0M 1L0



Phoenix \* Capitol \* Camco

## Cap Products

Commanding a Higher Standard™

## Certified Mill Test Report

10/21/2011

## Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 131470

Heat No 112250

Heat Code N6M

Phoenix Order # 803698

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

## Part Number

15111009

## Description

1 X 4-1/2" XHSM BLK NIPL

## Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.2100 | 0.4700 | 0.0160 | 0.0280 | 0.2300 | 0.0400 | 0.0300 | 0.0200 | 0.2983     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0000 | 0.0000 |        |        |        |        |        |        |            |    |

## Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0900       |

## Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 75,500 ✓      | 52,000 ✓    | 37.0% ✓           |        |     |      |

## Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

\* Hydro test passed. at 2500 psi.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

## Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts. Ltd.

25 Winnipeg St

Vancouver, ON N0M 1L0

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011 addenda"

June 5, 12

Encara  
MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name:   
Date: June 5, 12



Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sup>sm</sup>

Certified Mill Test Report

3/8/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 153630

Heat No 2703G

Heat Code NNF ✓

Phoenix Order # 836755

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda ✓

Part Number

15110712

Description

3/4 X 6" XHSM L BK STL NIPL ✓

Chemical Properties

| C        | Mn       | P        | S        | Si       | Cu       | Cr       | Ni       | C Eq. Long |    |
|----------|----------|----------|----------|----------|----------|----------|----------|------------|----|
| 0.1700 ✓ | 0.7600 ✓ | 0.0150 ✓ | 0.0040 ✓ | 0.2500 ✓ | 0.1300 ✓ | 0.0500 ✓ | 0.0300 ✓ | 0.3206     |    |
| Mo       | V        | Co       | Al       | Cb       | N        | Pb       | Sn       | Ta         | Ti |
| 0.0150 ✓ | 0.0015 ✓ |          | 0.0290   |          |          |          | 0.0120   |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

Cr + Cu + Ni

0.2100

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 64,200 ✓      | 45,353 ✓    | 50.8% ✓           |        | 126 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

May 23/2012  
of

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts. Ltd.

25 Winnipeg St

Vaanastra, ON N0M 1L0



# Phoenix \* Capitol \* Camco Cap Products

Commanding a Higher Standard<sup>sm</sup>

## Certified Mill Test Report

11/2/2011

### Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

### Part Number

15112006

P.O. S 759 130581

Heat No 132473

Heat Code OCN

Phoenix Order # 802426

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

### Description

2 X 3" XHSML BK STL NIPL ✓

### Chemical Properties

| C ✓    | Mn ✓   | P ✓    | S ✓    | Si ✓   | Cu ✓   | Cr ✓   | Ni ✓   | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1820 | 0.4890 | 0.0100 | 0.0120 | 0.3100 | 0.0110 | 0.0200 | 0.0480 | 0.2738     |    |
| Mo ✓   | V ✓    | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0050 | 0.0070 |        |        |        |        |        |        |            |    |

### Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

Cr + Cu + Ni

0.0790

### Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| ✓ 74,114      | ✓ 50,328    | 30.0% ✓           |        |     |      |

### Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

NOV 29 2012

\* Hydro test passed. at 2494 psi.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

### Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

25 Winnipeg St

Vancouver, BC V6M 1L0





# Phoenix \* Capitol \* Camco Cap Products

Commanding a Higher Standard™

## Certified Mill Test Report

2/10/2012

Customer  
MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 144528

Heat No E18711  
Heat Code O0Z  
Phoenix Order # 822252

Material ASTM A106-2008 / ASME SA106-2007 Edition, No Addenda

Part Number  
15110704

Description  
3/4 X 2" XHSM L BK STL NIPL

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS  
**Encana**

### Chemical Properties

| C        | Mn       | P        | S        | Si       | Cu       | Cr       | Ni       | C Eq. Long |        |
|----------|----------|----------|----------|----------|----------|----------|----------|------------|--------|
| 0.1700 ✓ | 0.8100 ✓ | 0.0110 ✓ | 0.0070 ✓ | 0.2200 ✓ | 0.0170 ✓ | 0.0300 ✓ | 0.0160 ✓ | 0.3140     |        |
| Mo       | V        | Co       | Al       | Cb       | N        | Pb       | Sn       | Ta         | Ti     |
| 0.0030 ✓ | 0.0010 ✓ |          | 0.0370   |          |          |          | 0.0010   |            | 0.0010 |

### Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0630       |

### Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 63,352 ✓      | 50,786 ✓    | 52.4% ✓           |        | 132 |      |

### Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition  
2011a addenda"

March 19/12  
OK

\* Hydro test passed. at 2500 psi.

\* Eddy Current test passed.

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

### Comments:

Meets Hardness Requirements of **NACE MRO175** latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

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

SOLD VARSTEEL LTD  
TO: #330 220 4TH ST S  
LETHBRIDGE AB T1J 4J7  
CANADA

**NUCOR** ✓  
NUCOR CORPORATION  
NUCOR STEEL UTAH

**CERTIFIED MILL TEST REPORT** Page: 1  
NUCOR - PLYMOUTH IS AN I.S.O. 9001 AND AN A.B.S. CERTIFIED MILL

Ship from:  
Nucor Steel - Utah  
W Cemetery Road  
PLYMOUTH, UT 84330  
435-458-2300

Date: 30-Aug-2012  
B.L. Number: 416124  
Load Number: 231612

SHIP VARSTEEL LTD.-RED DEER  
TO: 282-28042 HWY 11 BURNTLAKE IND  
RED DEER AB T4S 2L4  
CANADA

Material Safety Data Sheets are available at [www.nucorbar.com](http://www.nucorbar.com) or by contacting your inside sales representative.

NBMG-08 January 1, 2012

| Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative. |                                  |                 |                   |                  |      |            |                |          |         |        |          |          | Name Country Address |  |
|------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------|-------------------|------------------|------|------------|----------------|----------|---------|--------|----------|----------|----------------------|--|
| LOT #<br>HEAT #                                                                                                  | DESCRIPTION                      | PHYSICAL TESTS  |                   |                  |      |            | CHEMICAL TESTS |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  | YIELD<br>P.S.I. | TENSILE<br>P.S.I. | ELONG<br>% IN 8" | BEND | WT%<br>DEF | C<br>Ni        | Mn<br>Cr | P<br>Mo | S<br>V | Si<br>Cb | Cu<br>Sn | C.E.                 |  |
| PO# =>                                                                                                           | RD-955335                        |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
| PL1210011901                                                                                                     | Nucor Steel - Utah               | 52,394          | 75,025            | 27.0%            |      | ***        | .17            | .78      | .010    | .032   | .23      | .22      |                      |  |
| PL12100119                                                                                                       | 3/4" (.7500) Round               | 361MPa          | 517MPa            |                  |      |            | .09            | .12      | .010    | .004   | .001     |          |                      |  |
|                                                                                                                  | 20' A36/44W/529GR50              | 51,851          | 75,382            | 26.0%            |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASTM A529/A529M-05 gr50/CSA G40. | 358MPa          | 520MPa            |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | 21-04 44W/ASTM A36/A36M-08       |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASTM A709/A709M-11 GR 36 [250]   |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASTM A529/A529M-05 GR 50         |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASME SA36-2007 EDITION-2011 ADDE |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | NDA                              |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASTM A36/A36M-08, A709/709M-11 G |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | R36, ASME SA36-10 Ed '11 Ad.     |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
| PO# =>                                                                                                           | RD-954837                        |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
| PL1210551601                                                                                                     | Nucor Steel - Utah               | 51,790          | 75,551            | 32.0%            |      |            | .19            | .74      | .013    | .038   | .25      | .28      |                      |  |
| PL12105516                                                                                                       | 3-1/2x2-1/2x3/8" Angle           | 357MPa          | 521MPa            |                  |      |            | .09            | .14      | .022    | .004   | .001     |          |                      |  |
|                                                                                                                  | 40' A36/44W/529gr50              | 51,514          | 75,446            | 31.0%            |      |            | CBV            | CE4020   | CEA529  |        |          |          |                      |  |
|                                                                                                                  | ASTM A529/A529M-05 gr50/CSA G40. | 355MPa          | 520MPa            |                  |      |            | 0.000          | 0.37     | 0.41    |        |          |          |                      |  |
|                                                                                                                  | 21-04 44W/50W /A36/A36M-08       |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASTM A529/A529M-05 GR 50         |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | CSA G40.21-04 GR 50W             |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASME SA36-2007 EDITION-2011 ADDE |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | NDA                              |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | ASTM A36/A36M-08, A709/709M-11 G |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  | R36, ASME SA36-10 Ed '11 Ad.     |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |
|                                                                                                                  |                                  |                 |                   |                  |      |            |                |          |         |        |          |          |                      |  |

**"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"**

2012/12/15 S. Nelson

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements.  
1.) Weld repair was not performed on this material.  
2.) Melted and Manufactured in the United States.  
3.) Mercury, Radium, or Alpha source materials in any form have not been used in the production of this material.

QUALITY  
ASSURANCE: Cory Anthony

*[Signature]*

**Customer Name**

NWP INDUSTRIES INC.

**Customer PO#**

710354

**Shipper No**

454026

**Heat Number**

PL12105565

**NUCOR****NUCOR CORPORATION  
NUCOR STEEL UTAH****Mill Certification**

10/19/2012

PO Box 100  
7285 West 21200 North  
PLYMOUTH, UT 84330  
(435) 458-2300  
Fax: (435) 458-2309Sold To: VARSTEEL LTD.-NISKU/RED DEER A  
602 13TH AVE  
NISKU AB T9E 7P6  
CANADAShip To: VARSTEEL LTD.-RED DEER  
282-28042 HWY 11 BURNTLAKE IND  
RED DEER AB T4S 2L4  
CANADA  
(403) 320-1953  
Fax: (780) 955-1901

|               |                                                            |                 |                 |
|---------------|------------------------------------------------------------|-----------------|-----------------|
| Customer P.O. | RD-957128                                                  | Sales Order     | 185475.1        |
| Product Group | Merchant Bar Quality                                       | Part Number     | 202002502403450 |
| Grade         | ASTM A529/A529M-05 gr50/CSA G40.21-04 44W/50W /A36/A36M-08 | Lot #           | PL1210556501    |
| Size          | 2x2x1/4 Angle ✓                                            | Heat #          | PL12105565 ✓    |
| Product       | 2x2x1/4 Angle 20' A36/44W/529gr50 ✓                        | B.L. Number     | U1-420157       |
| Description   | A36/44W/529gr50                                            | Load Number     | U1-235451       |
| Customer Spec |                                                            | Customer Part # |                 |

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements.

Roll Date: 8/20/2012 Melt Date: 8/13/2012 Qty Shipped LBS: 20,095 Qty Shipped Pcs: 315

ASTM A36/A36M-08, A709/709M-11 GR36, ASME SA36-10 Ed '11 Ad. ✓  
ASME SA36-2007 EDITION-2011 ADDENDA  
CSA G40.21-04 GR 50W  
ASTM A529/A529M-05 GR 50

|         |        |          |          |         |       |       |       |        |         |        |        |
|---------|--------|----------|----------|---------|-------|-------|-------|--------|---------|--------|--------|
| C       | Mn     | P        | S        | Si      | Cu    | Ni    | Cr    | Mo     | V       | Cb     | CBV    |
| 0.16% ✓ | 0.77%  | 0.012% ✓ | 0.034% ✓ | 0.27% ✓ | 0.31% | 0.20% | 0.16% | 0.023% | 0.0036% | 0.001% | 0.000% |
| CEA529  | CE4020 |          |          |         |       |       |       |        |         |        |        |
| 0.40%   | 0.36%  |          |          |         |       |       |       |        |         |        |        |

CBV: CB+V  
CEA529: A529 CARBON EQUIVALENT  
CE4020: G40.20 CARBON EQUIVALENT

Yield 1: 53,875psi (371MPa) ✓

Tensile 1: 77,145psi (532MPa) ✓

Elongation: 25% in 8"(% in 203.3mm) ✓

Yield 2: 54,099psi (373MPa) ✓

Tensile 2: 77,243psi (533MPa) ✓

Elongation 27% in 8"(% in 203.3mm) ✓

Specification Comments:

Comments: NUCOR - PLYMOUTH IS AN I.S.O. 9001 AND AN A.B.S. CERTIFIED MILL  
CMTR COMPLIES WITH DIN EN 10204 - 3.1.B

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE WELD FREE. MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

**"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"**

2012/12/5 S. Nason

Cory Anthony  
Division Metallurgist

Page 8 of 8

| M.E.G.A.                                                                         |                                                                                  | CLIENTE<br>Customer<br>Client                                  |                                                | CERTIFICATO N.<br>Certificate N.<br>Certificat N.                               |                                | FOLIO<br>Sheet<br>Feuille                      |                    |                                                                          |                                        |             |                           |                          |       |        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------|------------------------------------------------|--------------------|--------------------------------------------------------------------------|----------------------------------------|-------------|---------------------------|--------------------------|-------|--------|
| CERTIFICATO DI COLLAUDO<br>TEST CERTIFICATE<br>CERTIFICAT DE CONTROLE            |                                                                                  | COMPANY<br>WITH QUALITY SYSTEM<br>CERTIFIED BY DIN<br>ISO 9001 |                                                | DATA / Date                                                                     |                                | COMMESSA<br>Job N.<br>Confirmation de commande |                    |                                                                          |                                        |             |                           |                          |       |        |
| PROVA<br>Test<br>Epreuve                                                         | MATERIALE<br>Material / Matériau                                                 | COLATA<br>Heat / Coudée                                        | C %                                            | SI %                                                                            | Mn %                           | S %                                            | P %                | Cr %                                                                     | Mo %                                   | Si %        | Co %                      | V %                      | Al %  | CE %   |
| LSSA                                                                             | A350/D4a LF2 CL1                                                                 | 30479                                                          | 0.180                                          | 0.150                                                                           | 1.050                          | 0.012                                          | 0.014              | 00.08                                                                    | 00.12                                  | 0.030       | 0.000                     | 0.290                    | 0.000 | 0.404  |
| USLF                                                                             | A350/07 LF2 CL1                                                                  | 168930                                                         | 0.160                                          | 0.268                                                                           | 1.020                          | 0.009                                          | 0.014              | 00.21                                                                    | 00.18                                  | 0.040       | 0.000                     | 0.261                    | 0.000 | 0.355  |
| LSRU                                                                             | A350/04a LF2 CL1                                                                 | 74808                                                          | 0.190                                          | 0.250                                                                           | 0.910                          | 0.004                                          | 0.009              | 00.06                                                                    | 00.06                                  | 0.010       | 0.022                     | 0.170                    | 0.019 | 0.330  |
| PSTK                                                                             | A350/07 LF2 CL1                                                                  | 0770928                                                        | 0.190                                          | 0.190                                                                           | 0.910                          | 0.009                                          | 0.011              | 00.09                                                                    | 00.06                                  | 0.010       | 0.022                     | 0.130                    | 0.021 | 0.3417 |
| PSJF                                                                             | A350/07 LF2 CL1                                                                  | 09/79115                                                       | 0.195                                          | 0.190                                                                           | 0.900                          | 0.010                                          | 0.008              | 00.09                                                                    | 00.05                                  | 0.010       | 0.019                     | 0.140                    | 0.018 | 0.341  |
| USNN                                                                             | A350/07 LF2 CL1                                                                  | 09/79115                                                       | 0.195                                          | 0.190                                                                           | 0.900                          | 0.010                                          | 0.008              | 00.09                                                                    | 00.05                                  | 0.010       | 0.019                     | 0.140                    | 0.018 | 0.345  |
| PROVA<br>Test<br>Epreuve                                                         | PROVETTA<br>Test specimen / Epreuve                                              | SNCRVAMENTO<br>MPa                                             | ROTTURA<br>MPa                                 | ALLUNGAMENTO<br>%                                                               | CONTRAZIONE<br>%               | DUREZZA<br>HB                                  | PEDRA<br>Hard test | SCINAC<br>Flat test                                                      | RESISTENZA<br>Impact test / Résistance |             |                           |                          |       |        |
|                                                                                  | SEZIONE<br>Section / Sect.                                                       | LUNGHEZZA<br>Length / Longueur                                 | Tensione<br>Tensile strength                   | Elongation<br>Elongation                                                        | Riduzione<br>Reduction of area | Durezza<br>Hardness                            | Paga<br>Page       | Aplatisse.                                                               | UNITA' MIS.<br>UM                      | TPO<br>Type | T. °C<br>Test temp        | VALORE / Value / Données |       |        |
| LSSA                                                                             | 1 30.3 25.0                                                                      | 409.7                                                          | 544.1                                          | 29.8                                                                            | 74.1                           | 165-170                                        |                    | J                                                                        | KV                                     | -46         | 50-66-52                  |                          |       |        |
| USLF                                                                             | 1 30.6 25.0                                                                      | 339.5                                                          | 538.6                                          | 30.8                                                                            | 65.7                           | 155-160                                        |                    | J                                                                        | KV                                     | -46         | 73-80-88                  |                          |       |        |
| LSRU                                                                             | 1 30.6 25.0                                                                      | 388.0                                                          | 541.0                                          | 27.4                                                                            | 62.4                           | 163-170                                        |                    | J                                                                        | KV                                     | -46         | 74-64-70                  |                          |       |        |
| PSTK                                                                             | 1 30.5 25.0                                                                      | 378.3                                                          | 539.1                                          | 30.2                                                                            | 64.3                           | 165-170                                        |                    | J                                                                        | KV                                     | -46         | 78-82-86                  |                          |       |        |
| PSJF                                                                             | 1 30.6 25.0                                                                      | 321.0                                                          | 511.0                                          | 32.1                                                                            | 67.3                           | 149-163                                        |                    | J                                                                        | KV                                     | -46         | 76-62-70                  |                          |       |        |
| USNN                                                                             | 1 30.6 25.0                                                                      | 328.3                                                          | 524.8                                          | 32.2                                                                            | 65.2                           | 153-156                                        |                    | J                                                                        | KV                                     | -46         | 78-96-99                  |                          |       |        |
| PROVA<br>Test<br>Epreuve                                                         | NOTE / Remarks / Notes                                                           |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
|                                                                                  | EN10204/3.1                                                                      |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| LSSA                                                                             | ELECTRIC FURNACE-QUENCHED AT 930 C TEMPERED AT 640 C /CERT.214.03 ISMA* MEGA*    |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| USLF                                                                             | ELECTRIC FURNACE-QUENCHED AT 930 C TEMPERED AT 640 C /CERT.124.EVASI*578071MEGA* |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| LSRU                                                                             | ELECTRIC FURNACE-QUENCHED AT 930 C TEMPERED AT 640 C /CERT.25.03 EVASI* MEGA*    |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| PSTK                                                                             | ELECTRIC FURNACE-QUENCHED AT 930 C TEMPERED AT 640 C /CERT.106.EVASI*576448MEGA* |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| PSJF                                                                             | ELECTRIC FURNACE-QUENCHED AT 930 C TEMPERED AT 640 C /CERT.153.EVASI*573339MEGA* |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| USNN                                                                             | ELECTRIC FURNACE-QUENCHED AT 930 C TEMPERED AT 640 C /CERT.153.EVASI*578069MEGA* |                                                                |                                                |                                                                                 |                                |                                                |                    |                                                                          |                                        |             |                           |                          |       |        |
| PROVA<br>Test<br>Epreuve                                                         | POS.<br>Item<br>Pos.                                                             | QUANTITA'<br>Quantity<br>Quantité                              | CODICE CLIENTE<br>Customer code<br>Code client | DESCRIZIONE / Description / Description                                         |                                |                                                |                    |                                                                          |                                        |             | VISUAL AND<br>DIMENSIONAL |                          |       |        |
| LSSA                                                                             | 776                                                                              | 4                                                              |                                                | UNION S. 3000 NPT LF2 CL1 4                                                     |                                |                                                |                    |                                                                          |                                        |             | female+nut OK             |                          |       |        |
| USLF                                                                             | 777                                                                              | 75                                                             |                                                | UNION S. 6000 NPT LF2 CL1 1/2                                                   |                                |                                                |                    |                                                                          |                                        |             | male+fem.+nut OK          |                          |       |        |
| LSRU                                                                             | 778                                                                              | 33                                                             |                                                | UNION S. 6000 NPT LF2 CL1 3/4                                                   |                                |                                                |                    |                                                                          |                                        |             | male+fem.+nut OK          |                          |       |        |
| PSTK                                                                             | 778                                                                              | 42                                                             |                                                | UNION S. 6000 NPT LF2 CL1 3/4                                                   |                                |                                                |                    |                                                                          |                                        |             | male+fem.+nut OK          |                          |       |        |
| PSJF                                                                             | 779                                                                              | 111                                                            |                                                | UNION S. 6000 NPT LF2 CL1 1                                                     |                                |                                                |                    |                                                                          |                                        |             | male+fem.+nut OK          |                          |       |        |
| USNN                                                                             | 779                                                                              | 39                                                             |                                                | UNION S. 6000 NPT LF2 CL1 1                                                     |                                |                                                |                    |                                                                          |                                        |             | male+fem.+nut OK          |                          |       |        |
| NOTE / Remarks / Notes                                                           |                                                                                  |                                                                |                                                | ENTE UFFICIALE DI COLLAUDO<br>Inspection Authority<br>Service Inspection Office |                                |                                                |                    | CAPO COLLAUDO<br>Chief/Jurisdiction DPT<br>Responsible assurance quality |                                        |             |                           |                          |       |        |
| MATERIAL ACCORDING TO NACE MR0175/2003<br>MATERIAL ACCORDING TO NACE MR0103/2007 |                                                                                  |                                                                |                                                |                                                                                 |                                |                                                |                    | DOC. CERT. M.E.G.A.<br>Emmanuel Centemeri                                |                                        |             |                           |                          |       |        |

"Conforms with ASME  
Sec II, Part A, 2010 edition,

2011a addenda"

May 10.12

Order#: 198167 Seq: 12 PO#: 706742 Heat#: psjf Mill: MEGA  
Part#: FS 1 6M U T L F Part Desc: Forged Steel 1 (33.4mm O.D.) 6000# (41.4MPa) UNION THREADED A/SA350-LF2 CL1

FORM PAC Rev. 0 15-05-2003

# MEGA

CLIENTE  
Customer  
Client

CERTIFICATO N. 584385  
Certificate N.  
Certificat N.

FOLIO 20  
Sheet  
Feuille

DATA / Date 15/02/12

CERTIFICATO DI COLLAUDO  
TEST CERTIFICATE  
CERTIFICAT DE CONTROLE

COMPANY  
WITH QUALITY SYSTEM  
CERTIFIED BY DNV  
ISO 9001

ORDINE  
Purchase or  
Commande

CONFERMA  
Job N.  
Confirmation de commande 94566

| PROVA<br>Test<br>Epreuve | MATERIALE<br>Material / Matériau | COLATA<br>Heat / Couée | C % | SI % | Mn % | S % | P % | Cr % | NI % | Mo % | Ti % | Cu % | V % | Al % | CE % |
|--------------------------|----------------------------------|------------------------|-----|------|------|-----|-----|------|------|------|------|------|-----|------|------|
|                          |                                  |                        |     |      |      |     |     |      |      |      |      |      |     |      |      |

| PROVA<br>Test<br>Epreuve | PROVETTA<br>Test specimen / Eproutelle |                                | RINVENIMENTO<br>MPa <sub>z</sub>      | ROTTURA<br>MPa <sub>z</sub> | ALLUNGAMENTO<br>% ≥       | CONTRAZIONE<br>% ≥             | DUREZZA<br>HB      | PIEDA<br>Bend test | ECHIACC.<br>Flat. test | RESILLENZA<br>Impact test / Résilience |             |                    |                          |
|--------------------------|----------------------------------------|--------------------------------|---------------------------------------|-----------------------------|---------------------------|--------------------------------|--------------------|--------------------|------------------------|----------------------------------------|-------------|--------------------|--------------------------|
|                          | SEZIONE<br>Section / Sect.             | LUNGHEZZA<br>Length / Longueur | Yield strength<br>Limite d'élasticité | Tensile strength<br>Rupture | Elongation<br>Allongement | Reduction of area<br>Striction | Hardness<br>Dureté | Piège              | Aplattiss.             | UNITÀ MIS.<br>Unit                     | TPO<br>Type | T. °C<br>Test temp | VALORE / Value / Données |
|                          |                                        |                                |                                       |                             |                           |                                |                    |                    |                        |                                        |             |                    |                          |

| PROVA<br>Test<br>Epreuve | NOTE / Remarks / Notes                  | FORMA<br>Shape / Forme                                               |
|--------------------------|-----------------------------------------|----------------------------------------------------------------------|
|                          | THIS CERTIFICATE INCLUDES N. 20 SHEETS. | 1 = <input checked="" type="checkbox"/> 2 = <input type="checkbox"/> |

| PROVA<br>Test<br>Epreuve | POS.<br>Item<br>Pos. | QUANTITÀ<br>Quantity<br>Quantité | CODICE CLIENTE<br>Customer code<br>Code client | DESCRIZIONE / Description / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|----------------------|----------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                      |                                  |                                                | <p>Dimensional check for 45 and 90 deg elbows-tees-crosses-full and half couplings-caps-square-hexagonal and round plugs-hexagonal and flush bushings according to ASME B.16.11 (Threads according to ANSI/ASME B1.20.1)</p> <p>Outlets: ASME B.31.1 &amp; B.31.3 &amp; MSS-SP-97 Seamless swage nipples: BS3799-74 or MSS SP95-86 Unions: BS 3799 or MSS-SP-83 Seamless pipe nipples : B36.10-95 or 36.19-85</p> <p>Material according to : ASTM last Edition (2010 Books) ASME II 2010 ED.</p> <p>The chemical and mechanical values shown on this record are the values reported on mill certificate or those obtained by laboratory.</p> <p>Material: A182 F304L is according to A182 F304 / A182 F316L is according to A182 F316.</p> <p>Alloy verification on base material.</p> <p>Manufacturer approved with certificate n.75/2002/MUC by TUV (certification BODY N.0036) to issue certificate of specific product control in accordance with "PRESSURE EQUIPMENT DIRECTIVE" 97/23/EC (PED) annex 1, paragraph 4.3.</p> <p>Equipments used: tensile test GALDABINI QUASAR 250 serial VA06 / Impact test CERMAC JB-W500 serial 04031 / Hardness test Wolpert Dia Testor 2RC ser.8900298/0001 / Chemical analysis Spectrometer BAIRD DV4 ser.P017.</p> |

| NOTE / Remarks / Notes                                                           | ENTE UFFICIALE DI COLLAUDO<br>Inspection Authority<br>Service Inspection Official | CAPITO COLLAUDO<br>Chief Inspector BPT<br>Responsable assurance qualité |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| MATERIAL ACCORDING TO NACE MR0175/2003<br>MATERIAL ACCORDING TO NACE MR0103/2007 |                                                                                   | DOC. CERT. M.E.G.A.<br>Emmanuel Centemeri                               |

M.E.G.A. S.p.A. - VIA DALLA CHIESA, 3 - SCANZOROSCIATE (BG) ITALY - TEL. +39 035 661280 - TELEFAX +39 035 665535



**WESTBROOK****Material Test Report****003000****WESTBROOK CANADA LTD****Description:**

✓ 1/2 X 1/4 S80 A403 WP316/316L SP95 CONCSWG TBE ✓

**\*\*\*\*\* Specifications - Heat Code Q7342: \*\*\*\*\***

A182/182M-06 F316/316L, SA182 F316/316L A403-06 WP316/316L ✓

SA403 WP316/316L, A961, ASME B16.5, B16.11, B16.36, B1.20.1,

MSS SP-25, SP-44, SP-79, SP-83, SP-95

STARTING MATERIAL: BAR &amp; BILLET

**Chemical Composition:**

|         |         |         |         |         |          |          |         |
|---------|---------|---------|---------|---------|----------|----------|---------|
| C:      | Mn:     | P:      | S:      | Si:     | Cr:      | Ni:      | Mo:     |
| 0.020 ✓ | 1.750 ✓ | 0.040 ✓ | 0.027 ✓ | 0.430 ✓ | 16.500 ✓ | 10.030 ✓ | 2.030 ✓ |
| Cu:     | Co:     | N:      |         |         |          |          |         |
| 0.460   | 0.160   | 0.065   |         |         |          |          |         |

**Mechanical Properties:**

|               |             |           |        |           |
|---------------|-------------|-----------|--------|-----------|
| Tensile(PSI): | Yield(PSI): | Elong(%): | RA(%): | Hardness: |
| 103000 ✓      | 79000 ✓     | 40.00 ✓   | 67.00  | BHN 207   |

**Comments:**

Hardness only to NACE MR-01-75/2009..

Corrosion test per A202 Practice E.

Solution annealed @ 1050C - 1 hr/inch - water quenched.

Cold drawn.

Also meets MR-01-03/2010 &amp; ISO 15156.3/2009.

We certify only the chemistry and physical results shown for the referenced Heat Code as furnished by the Producing Mill. The Description is the responsibility of the requesting party. This document was electronically transmitted and is in accordance with EN10204 3.1/DIN50049 3.1B.

**"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"**

2012/11/7 S. Nelson





Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard™

Certified Mill Test Report

2/29/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 151673

Heat No 563323

Heat Code R3D

Phoenix Order # 833594

Material ASTM A106-2011 / ASME SA106-2010 Edition

Part Number

15110304

Description

1/4 X 2" XHSM L BK STL NIPL

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1300 | 0.7300 | 0.0080 | 0.0020 | 0.1700 | 0.1300 | 0.0900 | 0.0709 | 0.2892     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0300 | 0.0010 |        |        | 0.0140 |        |        |        |            |    |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

Cr + Cu + Ni

0.2900

Encana

Petro Bakken

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 66,716        | 50,538      | 36.0%             |        | 138 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

May 3, 12

\* Eddy Current test passed

\* Bend test passed.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Meets Hardness Requirements of NACE MRO175 latest edition. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts. Ltd.

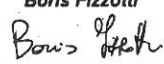
25 Winnipeg St

Vaughan, ON M0M 1L0

|  <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.iml@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b>                                                                                                                                                   |                     | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b>                                                                         |                                                     |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------|------------|-------------------------|-------------------|-----------------|------------|-------------------|-------------------|---------------|-------|---------|-------------------|---------|---------------|--------|---------|-------|-------|-------|-------|-------|-------|
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                           |                     | Nr 23164                                                                                                                                                                                  | Dated 27.06.2012                                    |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1<br>CA                                                                                                                                                                                                                                                                                                                                                                      |                     | Purchase Order Nr 3898<br>Item Nr 081<br>Packing List Nr 750<br>Invoice Nr                                                                                                                |                                                     |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| Heat Code<br>RPD                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Heat Nr<br>11/79867 | Quantity<br>480,00                                                                                                                                                                        | Description<br>FITTING 90 ELB. THRD NPT 6M 1" A105N |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th>Element</th> <th>C</th> <th>Si</th> <th>Mn</th> <th>S</th> <th>P</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>Ti</th> <th>Cu</th> </tr> </thead> <tbody> <tr> <td>ASTM A105 (LADLE)</td> <td>0,185</td> <td>0,180</td> <td>1,090</td> <td>0,010</td> <td>0,012</td> <td>0,090</td> <td>0,060</td> <td>0,010</td> <td>0,022</td> <td>0,170</td> </tr> </tbody> </table>                                                                  |                     |                                                                                                                                                                                           |                                                     | Element          | C          | Si                      | Mn                | S               | P          | Cr                | Ni                | Mo            | Ti    | Cu      | ASTM A105 (LADLE) | 0,185   | 0,180         | 1,090  | 0,010   | 0,012 | 0,090 | 0,060 | 0,010 | 0,022 | 0,170 |
| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | C                   | Si                                                                                                                                                                                        | Mn                                                  | S                | P          | Cr                      | Ni                | Mo              | Ti         | Cu                |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| ASTM A105 (LADLE)                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0,185               | 0,180                                                                                                                                                                                     | 1,090                                               | 0,010            | 0,012      | 0,090                   | 0,060             | 0,010           | 0,022      | 0,170             |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th>Element</th> <th>V</th> <th>Nb</th> <th>N</th> <th>AL</th> <th>C.E.</th> <th>PRE</th> </tr> </thead> <tbody> <tr> <td>ASTM A105 (LADLE)</td> <td>0,002</td> <td>0,002</td> <td>-</td> <td>0,030</td> <td>0,402</td> <td>-</td> </tr> </tbody> </table>                                                                                                                                                                                  |                     |                                                                                                                                                                                           |                                                     | Element          | V          | Nb                      | N                 | AL              | C.E.       | PRE               | ASTM A105 (LADLE) | 0,002         | 0,002 | -       | 0,030             | 0,402   | -             |        |         |       |       |       |       |       |       |
| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | V                   | Nb                                                                                                                                                                                        | N                                                   | AL               | C.E.       | PRE                     |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| ASTM A105 (LADLE)                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0,002               | 0,002                                                                                                                                                                                     | -                                                   | 0,030            | 0,402      | -                       |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th>Test specimen</th> <th>Shape</th> <th>Tensile</th> <th>Yield Point &gt;0,2%</th> <th>Yield Point &gt;1%</th> <th>Elongation</th> <th>Reduction of area</th> </tr> <tr> <th>Sect. mm2</th> <th>Length mm</th> <th>N/mm2</th> <th>N/mm2</th> <th>N/mm2</th> <th>%</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>122,65</td> <td>50,00</td> <td>547,0</td> <td>345,0</td> <td>-</td> <td>33,0</td> <td>56,6</td> </tr> </tbody> </table> |                     |                                                                                                                                                                                           |                                                     | Test specimen    | Shape      | Tensile                 | Yield Point >0,2% | Yield Point >1% | Elongation | Reduction of area | Sect. mm2         | Length mm     | N/mm2 | N/mm2   | N/mm2             | %       | %             | 122,65 | 50,00   | 547,0 | 345,0 | -     | 33,0  | 56,6  |       |
| Test specimen                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Shape               | Tensile                                                                                                                                                                                   | Yield Point >0,2%                                   | Yield Point >1%  | Elongation | Reduction of area       |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| Sect. mm2                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Length mm           | N/mm2                                                                                                                                                                                     | N/mm2                                               | N/mm2            | %          | %                       |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| 122,65                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50,00               | 547,0                                                                                                                                                                                     | 345,0                                               | -                | 33,0       | 56,6                    |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| <table border="1"> <thead> <tr> <th colspan="2">HARDNESS</th> <th colspan="4">IMPACT TEST</th> </tr> <tr> <th>HBW</th> <th>TYPE</th> <th>Test specimen</th> <th>°C</th> <th>1-Joule</th> <th>2-Joule</th> <th>3-Joule</th> </tr> </thead> <tbody> <tr> <td>163,0 - 170,0</td> <td>KV</td> <td>10x10mm</td> <td>-10</td> <td>65</td> <td>66</td> <td>69</td> </tr> </tbody> </table>                                                                                         |                     |                                                                                                                                                                                           |                                                     | HARDNESS         |            | IMPACT TEST             |                   |                 |            | HBW               | TYPE              | Test specimen | °C    | 1-Joule | 2-Joule           | 3-Joule | 163,0 - 170,0 | KV     | 10x10mm | -10   | 65    | 66    | 69    |       |       |
| HARDNESS                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     | IMPACT TEST                                                                                                                                                                               |                                                     |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| HBW                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TYPE                | Test specimen                                                                                                                                                                             | °C                                                  | 1-Joule          | 2-Joule    | 3-Joule                 |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| 163,0 - 170,0                                                                                                                                                                                                                                                                                                                                                                                                                                                               | KV                  | 10x10mm                                                                                                                                                                                   | -10                                                 | 65               | 66         | 69                      |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| Heat treatment                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     | Normalized at 880°-920°C / Air Cool                                                                                                                                                       |                                                     | ELECTRIC FURNACE |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| Dimension in accordance                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     | ASME B16.11 Ed.2011 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009 - NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P10 REQUIREMENTS |                                                     |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| Material in accordance                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     | ASME SA-ASTM A105-11                                                                                                                                                                      |                                                     |                  |            |                         |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |
| Visual & Dimensional                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                     | SATISFACTORY                                                                                                                                                                              | Origin                                              | EUROPE           | Our Ref.   | 2012-2E201-0000206-0081 |                   |                 |            |                   |                   |               |       |         |                   |         |               |        |         |       |       |       |       |       |       |

Notes

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"  
2012/11/28 J. nason

|                                                                                                                                       |                             |                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALITY CONTROL DEPT.</b><br>Boris Fizzotti<br> | <b>INSPECTION AUTHORITY</b> | <b>MANUFACTURER'S SYMBOL</b><br>IML or  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|



Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sub>sm</sub>

Certified Mill Test Report

2/29/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 149197

Heat No 2100629

Heat Code ST9

Phoenix Order # 829539

Material ASTM A333 GR6 2011/ASME SA333 GR6 2010 Edition

Part Number

15111014LT

Description

1 X 7" XH BLK SMLS NIP A333-GR6

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1800 | 1.2000 | 0.0170 | 0.0090 | 0.2000 | 0.0060 | 0.0060 | 0.0070 | 0.3825     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0020 | 0.0003 |        |        |        |        |        |        |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0190       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 80,812 ✓      | 54,028 ✓    | 32.8% ✓           |        | 162 |      |

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| 54     | 52     | 56     | 54.00   |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

Nov 28 2012  
et

\* Hydro test passed. at 2500 psi.

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Flattening test passed.

Charpy V Impact Tested at -45° C. Specimen size - 10 x 3.33 mm.

Meets Hardness Requirements of NACE MRO175 latest edition. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

*Area  
thickener*

CapProducts, Ltd.  
25 Winnipeg St  
Vancouver ON N6M 1L0

Name:

*C. J. Stoen*

Date:

*Nov 28 2012*



Phoenix \* Capitol \* Camco  
Cap Products

Commanding a Higher Standard<sub>sm</sub>

Certified Mill Test Report

4/16/2012

Customer

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

P.O. S 759 158238

Heat No 2100629

Heat Code ST9

Phoenix Order # 844524

Material ASTM A333 GR6 2011/ASME SA333 GR6 2010 Edition

Part Number

15111016LT

Description

1 X 8" XHSM LBLK NIPL A333-GR6

Chemical Properties

| C      | Mn     | P      | S      | Si     | Cu     | Cr     | Ni     | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.1800 | 1.2000 | 0.0170 | 0.0090 | 0.2000 | 0.0060 | 0.0060 | 0.0070 | 0.3825     |    |
| Mo     | V      | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0020 | 0.0003 |        |        |        |        |        |        |            |    |

Additional Chemical Properties

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.0190       |

Mechanical Properties

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 80,812        | 54,028      | 32.8%             |        | 162 |      |

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Charpy Minimum Impact - ft/lbs

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| 54     | 52     | 56     | 54.00   |

\* Hydro test passed. at 2500 psi.

Name

Date

Cristian

Nov 28 2012

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Sec II, Part A, 2010 edition,  
2011a addenda"

Nov 28 2012

This material meets the requirements of the governing specifications. We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

Comments:

Flattening test passed.

Charpy V Impact Tested at -45° C. Specimen size - 10 x 3.33 mm.

Meets Hardness Requirements of NACE MRO175/ISO 15156 latest editions. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession.

CapProducts, Ltd.

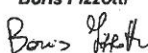
25 Winnipeg St

Vaughan, ON M0M 1L0



|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        |                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------|
|  <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.imal@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> |                                                                                                                                                                                           | <b>COMPANY WITH QUALITY SYSTEM ISO 9001: 2008 CERTIFIED BY RINA</b><br>CERT. N°23/91/S |                                                    |
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                                                                                                          |                                                                                                                                                                                           | Nr 22603                                                                               | Dated 23.12.2011                                   |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1                                                                                                                                                                                                                           |                                                                                                                                                                                           | Purchase Order Nr 3840<br>Item Nr 083<br>Packing List Nr 1508<br>Invoice Nr 1312       |                                                    |
| Heat Code<br>T29                                                                                                                                                                                                                                                                                                           | Heat Nr<br>73040                                                                                                                                                                          | Quantity<br>                                                                           | Description<br>FITTING TEE THRD NPT 6M 1" A350/LF2 |
| Element<br>ASTM A350 LF2 cl.1 (LADLE)                                                                                                                                                                                                                                                                                      | C<br>0,185                                                                                                                                                                                | Si<br>0,190                                                                            | Mn<br>1,100                                        |
|                                                                                                                                                                                                                                                                                                                            | S<br>0,010                                                                                                                                                                                | P<br>0,010                                                                             | Cr<br>0,100                                        |
|                                                                                                                                                                                                                                                                                                                            | Ni<br>0,010                                                                                                                                                                               | Mo<br>0,010                                                                            | Ti<br>0,023                                        |
|                                                                                                                                                                                                                                                                                                                            | Cu<br>0,170                                                                                                                                                                               |                                                                                        |                                                    |
| Element<br>ASTM A350 LF2 cl.1 (LADLE)                                                                                                                                                                                                                                                                                      | V<br>0,002                                                                                                                                                                                | Nb<br>0,002                                                                            | N<br>--                                            |
|                                                                                                                                                                                                                                                                                                                            | AL<br>0,027                                                                                                                                                                               |                                                                                        | C.E.<br>0,403                                      |
|                                                                                                                                                                                                                                                                                                                            | PRE<br>--                                                                                                                                                                                 |                                                                                        |                                                    |
| Test specimen<br>Sect. mm2 Lenght mm                                                                                                                                                                                                                                                                                       | Shape<br>1=O - 2=□                                                                                                                                                                        | Tensile<br>N/mm2                                                                       | Yield Point >0,2%<br>N/mm2                         |
| 122,65 50,00                                                                                                                                                                                                                                                                                                               | 1                                                                                                                                                                                         | 526,0                                                                                  | 324,0                                              |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | Yield Point >1%<br>N/mm2                           |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | --                                                 |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | Elongation<br>%                                    |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | 31,6                                               |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | Reduction of area<br>%                             |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | 53,0                                               |
| <b>HARDNESS</b><br>HBW                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                           | <b>IMPACT TEST</b>                                                                     |                                                    |
| 164,0 - 170,0                                                                                                                                                                                                                                                                                                              | TYPE<br>KV                                                                                                                                                                                | Test specimen<br>10x10mm                                                               | °C<br>-46                                          |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | 1-Joule/cm2<br>48                                  |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | 2-Joule/cm2<br>47                                  |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                           |                                                                                        | 3-Joule/cm2<br>50                                  |
| Heat treatment                                                                                                                                                                                                                                                                                                             | Normalized at 900°C / Air Cool                                                                                                                                                            |                                                                                        | ELECTRIC FURNACE                                   |
| Dimension in accordance                                                                                                                                                                                                                                                                                                    | ASME B16.11 Ed.2009 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009- NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                                                                                        |                                                    |
| Material in accordance                                                                                                                                                                                                                                                                                                     | ASME SA ASTM A350-07-Gr. LF2 cl.1                                                                                                                                                         |                                                                                        |                                                    |
| Visual & Dimensional                                                                                                                                                                                                                                                                                                       | SATISFACTORY                                                                                                                                                                              | Origin<br>EUROPE                                                                       | Our Ref.<br>N10356                                 |
| Notes                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                           |                                                                                        |                                                    |

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Sec II, Part A, 2010 edition,  
2011a addenda"  
2012/11/28 J. Mason

|                                                                                                                                 |                      |                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| QUALITY CONTROL DEPT.<br>Boris Flizzotti<br> | INSPECTION AUTHORITY | MANUFACTURER'S SYMBOL<br>IML or  |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                         |                  |                                                                                                                                                                                           |                                                   |                            |                          |                                                                                                            |                        |                  |         |        |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------|--------------------------|------------------------------------------------------------------------------------------------------------|------------------------|------------------|---------|--------|---------|
| <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.ima@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> |                  |                                                                                                                                                                                           |                                                   |                            |                          | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br>CERT. N°23/91/S |                        |                  |         |        |         |
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                       |                  |                                                                                                                                                                                           |                                                   |                            |                          | Nr 22646                                                                                                   |                        | Dated 18.01.2012 |         |        |         |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1                                                                                                                                        |                  |                                                                                                                                                                                           |                                                   |                            |                          | Purchase Order Nr 3830<br>Item Nr 033<br>Packing List Nr 45<br>Invoice Nr                                  |                        |                  |         |        |         |
| Heat Code<br>T2A                                                                                                                                                                                                                        | Heat Nr<br>33033 | Quantity                                                                                                                                                                                  | Description<br>FITTING TEE THRD NPT 3M 1/2" A105N |                            |                          |                                                                                                            |                        |                  |         |        |         |
| Element                                                                                                                                                                                                                                 |                  | C                                                                                                                                                                                         | Si                                                | Mn                         | S                        | P                                                                                                          | Cr                     | Ni               | Mo      | Ti     | Cu      |
| ASTM A105 (LADLE)                                                                                                                                                                                                                       |                  | 0,180 ✓                                                                                                                                                                                   | 0,210 ✓                                           | 1,000 ✓                    | 0,008 ✓                  | 0,009 ✓                                                                                                    | 0,100 ✓                | 0,050 ✓          | 0,010 ✓ | 0,022  | 0,130 ✓ |
| Element                                                                                                                                                                                                                                 |                  | V                                                                                                                                                                                         | Nb                                                | N                          | AL                       |                                                                                                            |                        |                  | C.E.    |        | PRE     |
| ASTM A105 (LADLE)                                                                                                                                                                                                                       |                  | 0,001 ✓                                                                                                                                                                                   | 0,001                                             | --                         | 0,026                    |                                                                                                            |                        |                  | 0,396   |        | --      |
| Test specimen<br>Sect. mm2                                                                                                                                                                                                              | Length mm        | Shape<br>1=O - 2=□                                                                                                                                                                        | Tensile<br>N/mm2                                  | Yield Point >0,2%<br>N/mm2 | Yield Point >1%<br>N/mm2 | Elongation<br>%                                                                                            | Reduction of area<br>% |                  |         |        |         |
| 122,65                                                                                                                                                                                                                                  | 50,00            | 1                                                                                                                                                                                         | 520,0 ✓                                           | 346,0 ✓                    | --                       | 33,5 ✓                                                                                                     | 54,0                   |                  |         |        |         |
| HARDNESS                                                                                                                                                                                                                                |                  |                                                                                                                                                                                           | IMPACT TEST                                       |                            |                          |                                                                                                            |                        |                  |         |        |         |
| HBW                                                                                                                                                                                                                                     | TYPE             | Test specimen                                                                                                                                                                             | °C                                                | 1-Joule/cm2                |                          | 2-Joule/cm2                                                                                                |                        | 3-Joule/cm2      |         |        |         |
| 155,0 - 162,0 ✓                                                                                                                                                                                                                         | KV               | 10x10mm                                                                                                                                                                                   | -10                                               | 63                         |                          | 63                                                                                                         |                        | 60               |         |        |         |
| Heat treatment                                                                                                                                                                                                                          |                  | Normalized at 880-920°C / Air Cool                                                                                                                                                        |                                                   |                            |                          |                                                                                                            |                        | ELECTRIC FURNACE |         |        |         |
| Dimension in accordance                                                                                                                                                                                                                 |                  | ASME B16.11 Ed.2009 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009- NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                                                   |                            |                          |                                                                                                            |                        |                  |         |        |         |
| Material in accordance                                                                                                                                                                                                                  |                  | ASME SA ASTM A105-10                                                                                                                                                                      |                                                   |                            |                          |                                                                                                            |                        |                  |         |        |         |
| Visual & Dimensional                                                                                                                                                                                                                    |                  | SATISFACTORY                                                                                                                                                                              |                                                   | Origin                     |                          | EUROPE                                                                                                     |                        | Our Ref.         |         | 101385 |         |

Notes ---

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a Addenda"

June 19/12  
✱

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: Ceri Simon

Date: June 19/12

|                                             |                      |                                     |
|---------------------------------------------|----------------------|-------------------------------------|
| QUALITY CONTROL DEPT.<br>Boris Fizzotti<br> | INSPECTION AUTHORITY | MANUFACTURER'S SYMBOL<br><br>IML or |
|---------------------------------------------|----------------------|-------------------------------------|





I.M.L.

INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 1.1  
COMPANY WITH QUALITY SYSTEM CERTIFIED BY RINA  
CERTIFIED BY RINA

CA

Credentia Nr. 11757  
Invoice Nr. 239  
Del. Note Nr. 349  
Date 05.05.2011  
Date 31.03.2011  
Date 31.03.2011

"Conforms with ASME  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: *Enicar*

"Conforms with ASME  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

"Conforms with ASME  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

2011a addenda

18030 CASARZA LIGURE - Genova - Italy - Via Giacinto Pajani 25 - Tel.0165.407461 - Fax 0165.408010 / MATERIAL TEST DEPARTMENT

Page 4 - 5

HEAT CODE HEAT ITEM : YOUR P.O. OUR REFERENCE Q.TY. DESCRIPTION DIM. ACC. TO VISUAL & DIMENS.

|           |        |      |                         |                         |       |                                          |                               |
|-----------|--------|------|-------------------------|-------------------------|-------|------------------------------------------|-------------------------------|
| HEAT CODE | HEAT   | ITEM | YOUR P.O.               | OUR REFERENCE           | Q.TY. | DESCRIPTION                              | DIM. ACC. TO VISUAL & DIMENS. |
| 74003     | 74003  | 025  | 2011-2E201-0000380-0025 | 2011-2E201-0000380-0025 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| 73040     | 73040  | 103  | 2011-2E201-0000380-0100 | 2011-2E201-0000380-0100 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| AA0085    | AA0085 | 114  | 2011-2E201-0000380-0111 | 2011-2E201-0000380-0111 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| 73000     | 73000  | 114  | 2011-2E201-0000380-0111 | 2011-2E201-0000380-0111 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| 73175     | 73175  | 116  | 2011-2E201-0000380-0112 | 2011-2E201-0000380-0112 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| AE2520    | AE2520 | 021  | 2011-2E201-0000381-0010 | 2011-2E201-0000381-0010 | 1     | FITTING UNION FIF THRD NPT 3/4" T. A105N | SEE NOTE SATISFACTORY         |
| 77188     | 77188  | 024  | 2011-2E201-0000381-0022 | 2011-2E201-0000381-0022 | 1     | FITTING UNION FIF THRD NPT 3/4" T. A105N | SEE NOTE SATISFACTORY         |
| 73040     | 73040  | 033  | 2011-2E201-0000381-0031 | 2011-2E201-0000381-0031 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| AE2520    | AE2520 | 021  | 2011-2E201-0000381-0010 | 2011-2E201-0000381-0010 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |
| 77188     | 77188  | 024  | 2011-2E201-0000381-0022 | 2011-2E201-0000381-0022 | 1     | FITTING TEE THIRD NPT 3/4" T. A105N      | SEE NOTE SATISFACTORY         |

| HEAT CODE | HEAT   | ITEM | TEST SPECIFICATION | YIELD POINT | TENSILE STRENGTH | ELONGATION | REDUCTION OF AREA | HARDNESS HRC | BRINELL TEST | FLAT TENSILE TEST | IMPACT TEST - JOULES | TEMP. °C | 1     | 2     | 3     | 4     | 5     | 6 | 7 | 8 | OTHER ELEMENTS |
|-----------|--------|------|--------------------|-------------|------------------|------------|-------------------|--------------|--------------|-------------------|----------------------|----------|-------|-------|-------|-------|-------|---|---|---|----------------|
| E36       | 74003  | 025  | ASTM A105          | 0.168       | 0.200            | 1.134      | 0.010             | 0.014        | 0.100        | 0.050             | 0.010                | 0.002    | 0.160 | 0.002 | 0.000 | 0.030 | 0.410 |   |   |   |                |
| T30       | 73040  | 103  | ASTM A105          | 0.160       | 0.180            | 1.100      | 0.010             | 0.010        | 0.023        | 0.010             | 0.023                | 0.170    | 0.023 | 0.002 | 0.000 | 0.027 | 0.403 |   |   |   |                |
| M08       | AA0085 | 114  | ASTM A105          | 0.160       | 0.200            | 0.883      | 0.002             | 0.011        | 0.150        | 0.110             | 0.020                | 0.140    | 0.002 | 0.001 | 0.000 | 0.027 | 0.401 |   |   |   |                |
| M08       | 73000  | 114  | ASTM A105          | 0.160       | 0.220            | 1.040      | 0.008             | 0.016        | 0.120        | 0.083             | 0.010                | 0.200    | 0.028 | 0.000 | 0.000 | 0.028 | 0.467 |   |   |   |                |
| M08       | 31715  | 116  | ASTM A105          | 0.160       | 0.230            | 0.980      | 0.010             | 0.008        | 0.100        | 0.070             | 0.010                | 0.140    | 0.018 | 0.000 | 0.000 | 0.023 | 0.385 |   |   |   |                |
| 4U7       | AE2520 | 021  | ASTM A105          | 0.210       | 0.250            | 0.870      | 0.015             | 0.020        | 0.100        | 0.050             | 0.010                | 0.110    | 0.003 | 0.001 | 0.000 | 0.023 | 0.420 |   |   |   |                |
| 4U7       | 77188  | 024  | ASTM A105          | 0.200       | 0.250            | 1.000      | 0.015             | 0.006        | 0.080        | 0.050             | 0.010                | 0.087    | 0.180 | 0.001 | 0.001 | 0.020 | 0.400 |   |   |   |                |
| T30       | 73040  | 033  | ASTM A105          | 0.165       | 0.180            | 1.100      | 0.010             | 0.010        | 0.100        | 0.070             | 0.010                | 0.170    | 0.023 | 0.000 | 0.000 | 0.027 | 0.463 |   |   |   |                |
| 4U7       | AE2520 | 021  | ASTM A105          | 0.210       | 0.250            | 0.970      | 0.015             | 0.020        | 0.100        | 0.070             | 0.010                | 0.110    | 0.003 | 0.001 | 0.000 | 0.021 | 0.420 |   |   |   |                |
|           | 77188  | 024  | ASTM A105          | 0.200       | 0.250            | 1.000      | 0.010             | 0.008        | 0.050        | 0.010             | 0.007                | 0.180    | 0.001 | 0.001 | 0.000 | 0.028 | 0.400 |   |   |   |                |



I.M.L.

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COMPANY WITH QUALITY SYSTEM ISO 9001-2008  
CERTIFIED BY RINA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

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Calgary, Alberta T2S 0A1

CA

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Invoice Nr 625  
Del. Note Nr 705

Dated 08.06.2011  
Dated 08.06.2011  
Dated 08.06.2011

10030 CASARZA LIGURE - Genova - Italy - Via Giancarlo Farina 25 - Tel.0185.407001 - Fax 0185.466510 - Email quality.ilm@farmas.com / MATERIAL TEST DEPARTMENT

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Sec II, Part A, 2010 edition"  
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E - Tank 6.12  
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MATERIAL CONFORMS  
TO CUSTOMER  
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AS PER P.O.  
REQUIREMENTS  
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| NOTES | QUALITY CONTROL DEPARTMENT | INSPECTION AUTHORITY | MANUFACTURER'S SYMBOL |
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|       | B. FIZZI<br>Boris Fizzi    |                      | IML or                |

MATERIAL CONFORMS  
TO CUSTOMER  
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|  | <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.ima@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b> |
|                                                                                   |                                                                                                                                                                                                                                         |                                                                                                                   |

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| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b> | <b>Nr. 22773</b> | <b>Dated 23.02.2012</b> |
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| <b>TRANS AM PIPING PRODUCTS LTD.</b><br><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1 | <b>Purchase Order Nr</b> 3898<br><b>Item Nr</b> 050<br><b>Packing List Nr</b> 199<br><b>Invoice Nr</b> |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|

| Heat Code | Heat Nr  | Quantity | Description                            |
|-----------|----------|----------|----------------------------------------|
| U50       | 10/74122 |          | FITTING UNION F/F THRD NPT 3M 1" A105N |

| Element           | C ✓   | SI ✓  | Mn ✓  | S ✓   | P ✓   | Cr ✓  | Ni ✓  | Mo ✓  | Ti    | Cu ✓  |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ASTM A105 (LADLE) | 0,185 | 0,240 | 1,090 | 0,008 | 0,013 | 0,120 | 0,050 | 0,010 | 0,023 | 0,180 |

| Element           | V     | Nb    | N   | AL    | C.E.    | PRE |
|-------------------|-------|-------|-----|-------|---------|-----|
| ASTM A105 (LADLE) | 0,003 | 0,002 | --- | 0,031 | 0,409 ✓ | -   |

| Test specimen | Shape     | Tensile | Yield Point >0,2% | Yield Point >1% | Elongation | Reduction of area |
|---------------|-----------|---------|-------------------|-----------------|------------|-------------------|
| Sect. mm2     | Length mm | 1=O 2=□ | N/mm2             | N/mm2           | %          | %                 |
| 122,65        | 50,00     | 1       | 517,0 ✓           | 331,0 ✓         | 33,2 ✓     | 55,0              |

| HARDNESS      |      | IMPACT TEST   |     |             |             |             |
|---------------|------|---------------|-----|-------------|-------------|-------------|
| HBW ✓         | TYPE | Test specimen | °C  | 1-Joule/cm2 | 2-Joule/cm2 | 3-Joule/cm2 |
| 156,0 - 160,0 | KV   | 10x10mm       | -10 | 61          | 66          | 65          |

|                |                                     |                  |
|----------------|-------------------------------------|------------------|
| Heat treatment | Normalized at 880°-920°C / Air Cool | ELECTRIC FURNACE |
|----------------|-------------------------------------|------------------|

|                         |                                                                                                                                                                                         |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension in accordance | MSS SP83 Ed.2008 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009 - NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                        |                      |
|------------------------|----------------------|
| Material in accordance | ASME SA/ASTM A105-11 |
|------------------------|----------------------|

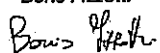
|                      |              |        |        |          |        |
|----------------------|--------------|--------|--------|----------|--------|
| Visual & Dimensional | SATISFACTORY | Origin | EUROPE | Our Ref. | 112097 |
|----------------------|--------------|--------|--------|----------|--------|

Notes

1165  
46  
0.99  
+1.09  
208 mm allowance

5.89 Ratio:

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Sec II, Part A, 2010 edition,  
2011a addenda"  
SEP 2 0 2012

|                                                                                                                                       |                             |                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALITY CONTROL DEPT.</b><br>Boris Fizzotti<br> | <b>INSPECTION AUTHORITY</b> | <b>MANUFACTURER'S SYMBOL</b><br>IML or  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|



|                                                                                                                                                                                                                                                                                                                            |                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|  <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.imal@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b> |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                   |

|                                                   |                                         |
|---------------------------------------------------|-----------------------------------------|
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b> | <b>Nr</b> 22405 <b>Dated</b> 24.10.2011 |
|---------------------------------------------------|-----------------------------------------|

|                                                                                                        |                                                                                                         |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1<br>CA | <b>Purchase Order Nr</b> 3789<br><b>Item Nr</b> 048<br><b>Packing List Nr</b> 1242<br><b>Invoice Nr</b> |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|

| Heat Code | Heat Nr  | Quantity | Description                                |
|-----------|----------|----------|--------------------------------------------|
| U51 ✓     | 10/74122 | 1250,00  | FITTING UNION F/F THRD NPT 3M 3/4" A105N ✓ |

| Element           | C     | Si    | Mn    | S     | P     | Cr    | Ni    | Mo    | Ti    | Cu    |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ASTM A105 (LADLE) | 0,185 | 0,240 | 1,090 | 0,006 | 0,013 | 0,120 | 0,050 | 0,010 | 0,023 | 0,180 |

| Element           | V     | Nb    | N | AL    | C.E.  | PRE |
|-------------------|-------|-------|---|-------|-------|-----|
| ASTM A105 (LADLE) | 0,003 | 0,002 | - | 0,031 | 0,409 | --  |

| Test specimen | Shape     | Tensile | Yield Point >0,2% | Yield Point >1% | Elongation | Reduction of area |
|---------------|-----------|---------|-------------------|-----------------|------------|-------------------|
| Sect. mm2     | Length mm | N/mm2   | N/mm2             | N/mm2           | %          | %                 |
| 122,65        | 50,00     | 1       | 522,0             | 335,0           | --         | 33,0              |

| HARDNESS      |      | IMPACT TEST   |     |             |             |              |
|---------------|------|---------------|-----|-------------|-------------|--------------|
| HBW           | TYPE | Test specimen | °C  | 1-Joule/cm2 | 2-Joule/cm2 | 3-Joule /cm2 |
| 158,0 - 165,0 | KV   | 10x10mm       | -10 | 65          | 63          | 66           |

|                       |                                     |                         |
|-----------------------|-------------------------------------|-------------------------|
| <b>Heat treatment</b> | Normalized at 880°-920°C / Air Cool | <b>ELECTRIC FURNACE</b> |
|-----------------------|-------------------------------------|-------------------------|

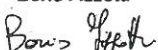
|                                |                                                                                                                                                                                         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dimension in accordance</b> | MSS SP83 Ed.2006 - ANSI/ASME B1.20.1 Ed.1992 - MSS SP25 Ed.2008 - NACE MR 0175 ISO 15156 Ed.2009 - NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                               |                      |
|-------------------------------|----------------------|
| <b>Material in accordance</b> | ASME SA ASTM A105-10 |
|-------------------------------|----------------------|

|                                 |              |               |        |                 |        |
|---------------------------------|--------------|---------------|--------|-----------------|--------|
| <b>Visual &amp; Dimensional</b> | SATISFACTORY | <b>Origin</b> | EUROPE | <b>Our Ref.</b> | 112073 |
|---------------------------------|--------------|---------------|--------|-----------------|--------|

Notes ---

2012/11/28 S. nason  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

|                                                                                                                                       |                             |                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALITY CONTROL DEPT.</b><br>Boris Fizzotti<br> | <b>INSPECTION AUTHORITY</b> | <b>MANUFACTURER'S SYMBOL</b><br><br>IML or  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------|

**WESTBROOK****Material Test Report****005203****MRC CANADA ULC****Description:****1 X 1/2 S80 A234WPBN SP95 BARE CONC SWGTBE****\*\*\*\*\* Specifications - Heat Code W19655 ZE: \*\*\*\*\*** ✓**A105/A105M-09, SA105, A234-07 WPB, SA234 WPB, ASME B16.5,  
B16.9, B16.11, B16.36, MSS SP-25, SP-44, SP-79, SP-83,  
SP-95, API-605, A.W.W.A.****STARTING MATERIAL: BAR/BILLET/FORGING****A234-07 WPBN, SA234 WPBN** ✓**Chemical Composition:**

|                       |                       |                       |                       |                       |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>C:</b><br>0.230 ✓  | <b>Mn:</b><br>0.670 ✓ | <b>P:</b><br>0.010 ✓  | <b>S:</b><br>0.009 ✓  | <b>Si:</b><br>0.210 ✓ | <b>Cr:</b><br>0.110 ✓ | <b>Ni:</b><br>0.040 ✓ | <b>Mo:</b><br>0.020 ✓ |
| <b>Cu:</b><br>0.080 ✓ | <b>V:</b><br>0.005 ✓  | <b>Cb:</b><br>0.005 ✓ | <b>C.E.:</b><br>376 ✓ |                       |                       |                       |                       |

**Mechanical Properties:**

|                                 |                               |                             |                        |                            |
|---------------------------------|-------------------------------|-----------------------------|------------------------|----------------------------|
| <b>Tensile(PSI):</b><br>70343 ✓ | <b>Yield(PSI):</b><br>39160 ✓ | <b>Elong(%):</b><br>33.50 ✓ | <b>RA(%):</b><br>62.50 | <b>Hardness:</b><br>HRB 75 |
|---------------------------------|-------------------------------|-----------------------------|------------------------|----------------------------|

**Comments:***Hardness only to NACE MR-01-75/2009.* ✓*Normalized 1600F for 10-15 minutes then still air cooled.**Cold drawn. Also meets MR-01-03/2010 and ISO 15156/2009.*

We certify only the chemistry and physical results shown for the referenced Heat Code as furnished by the Producing Mill. The Description is the responsibility of the requesting party. This document was electronically transmitted and is in accordance with EN10204 3.1/DIN50049 3.1B.

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Sec II, Part A, 2010 edition,  
2011a addenda"  
OCT 2 2011

# WESTBROOK

## MATERIAL TEST REPORT

Sold To: **MRC MIDFIELD**  
Order No.: **540091** Order Date: **7/30/2012**

Purchase Order: **S759173605**

Printed: **8/30/2012**

Line: **15** Description: **2 X 1 S80 A234WPBN SP95 BARE CONC SWG TBE**

\*\*\*\*\* Specifications - Heat Code **W19833 ZC: \*\*\*\*\***  
**A108-07 GRADE 1018 MODIFIED, SA108, A234-07 WPB, SA234 WPB, ASME B16.9, B1.20.1, MSS SP-25, SP-95, A.W.W.A. STARTING MATERIAL: BAR A234 WPBN, SA234 WPBN**

### Chemical Composition:

|                  |                  |                  |                  |                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| C: <b>0.180</b>  | Mn: <b>0.830</b> | P: <b>0.013</b>  | S: <b>0.028</b>  | Si: <b>0.280</b> | Cr: <b>0.150</b> | Ni: <b>0.090</b> | Mo: <b>0.029</b> |
| Cu: <b>0.330</b> | V: <b>0.023</b>  | Al: <b>0.003</b> | Sn: <b>0.006</b> | C.E.: <b>386</b> |                  |                  |                  |

### Mechanical Properties:

|                            |                          |                        |                         |
|----------------------------|--------------------------|------------------------|-------------------------|
| Tensile(PSI): <b>80960</b> | Yield(PSI): <b>51951</b> | Elong(%): <b>40.00</b> | Hardness: <b>HRB 82</b> |
|----------------------------|--------------------------|------------------------|-------------------------|

### Comments:

Hardness only to **NACE MR-01-75/2009**.  
Normalized 1600-1650.  
Cold finished. Also meets MR-01-03/2010 and ISO 15156/2009.

Line: **16** Description: **2 X 1 S80 A234WPBN SP95 BARE CONC SWG BXT**

\*\*\*\*\* Specifications - Heat Code **W19782 EE: \*\*\*\*\***  
**A106-10 GR.B, SA106 GR.B, A234-11 WPB, SA234 WPB, A530, A733, ASME B36.10, B1.20.1, MSS SP-25, SP-95 STARTING MATERIAL: A106B PIPE & TUBE A234-11 WPBN, SA234 WPBN**

### Chemical Composition:

|                  |                  |                  |                  |                  |                    |                   |                  |
|------------------|------------------|------------------|------------------|------------------|--------------------|-------------------|------------------|
| C: <b>0.150</b>  | Mn: <b>0.790</b> | P: <b>0.018</b>  | S: <b>0.005</b>  | Si: <b>0.260</b> | Cr: <b>0.140</b>   | Ni: <b>0.090</b>  | Mo: <b>0.030</b> |
| Cu: <b>0.310</b> | V: <b>0.004</b>  | Al: <b>0.004</b> | Cb: <b>0.001</b> | Ti: <b>0.004</b> | B: <b>&lt;.001</b> | C.E.: <b>.343</b> |                  |

### Mechanical Properties:

|                            |                          |                        |                         |                 |                         |
|----------------------------|--------------------------|------------------------|-------------------------|-----------------|-------------------------|
| Tensile(PSI): <b>71465</b> | Yield(PSI): <b>50544</b> | Elong(%): <b>40.00</b> | Hardness: <b>HRB 82</b> | Bend: <b>OK</b> | Hydro(PSI): <b>3000</b> |
|----------------------------|--------------------------|------------------------|-------------------------|-----------------|-------------------------|

### Comments:

Hardness only to **NACE MR-01-75/2009**.  
Normalized @ 900C - 6 min.  
Hot finished.  
Also meets MR-01-03/2010 & ISO 15156/2009.

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2011a addenda"  
OCT 17 2012



# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : PVP LTD  
 CMT. NO : 80257  
 ORDER NO : 7001217 (601257)  
 INVOICE NO : 700003106  
 L/C NO :  
 DATE : 06/11/2009  
 PAGE : 8  
 ORIGIN : TAIWAN



**Bothwell Steel Fittings Co., Ltd.**  
 NO.303, JENHSIN ROAD JEN-WU HSIANG  
 KAOHSIUNG HSIEN, TAIWAN R.O.C. 814480  
 TEL: 886-7-371-0497, 371-1636, 372-0260 FAX: 886-7-371-3864, 371-3862  
 web site: http://www.bwsteel.com.tw e-mail:bwsteel@bwsteel.com.tw

An ISO 9001:2000 Registered Manufacturer



| ITEM | HT. CO. | BAR MATERIAL | REAY NO. | DISCUSSION        | QUANTITY | INSPECTION |
|------|---------|--------------|----------|-------------------|----------|------------|
| 048  | Y630    | 170067       |          | THE 1/8" 30000 RT | 25 PC    |            |
| 049  | Y640    | 11655        |          | THE 1/4" 30000 RT | 25 PC    |            |
| 050  | Y653    | 11661        |          | THE 1/4" 60000 RT | 25 PC    |            |
| 051  | Y653    | 170067       |          | THE 1/4" 60000 RT | 25 PC    |            |
| 052  | Y640    | 170067       |          | THE 1/4" 60000 RT | 25 PC    |            |
| 053  | Y653    | 170067       |          | THE 1/4" 60000 RT | 25 PC    |            |
| 054  | Y640    | 170067       |          | THE 1/4" 60000 RT | 25 PC    |            |

| ITEM | HT. CO. | C     | SI    | He    | P     | S     | Ca    | Cr    | Mn    | Mo    | V     | Co (DB) | N | Al | Ti | CE |
|------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---|----|----|----|
| 048  | Y630    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |
| 049  | Y640    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |
| 050  | Y653    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |
| 051  | Y653    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |
| 052  | Y640    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |
| 053  | Y653    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |
| 054  | Y640    | 0.100 | 0.240 | 1.850 | 0.014 | 0.001 | 0.040 | 0.200 | 0.450 | 0.020 | 0.002 | 0.000   | - | -  | -  | -  |

| ITEM | HT. CO. | T. S. (TSD) | T. S. (TSD) | EL. (S) | R. OF A (S) | Hardness (HRC) | Charpy Impact (Joule) | MECHANICAL PROPERTIES | HEAT TREATMENT | ADDITIONAL TEST / RESULTS |
|------|---------|-------------|-------------|---------|-------------|----------------|-----------------------|-----------------------|----------------|---------------------------|
| 048  | Y630    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |
| 049  | Y640    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |
| 050  | Y653    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |
| 051  | Y653    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |
| 052  | Y640    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |
| 053  | Y653    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |
| 054  | Y640    | 76.0        | 54.8        | 22.0    | 80.1        | 142            | 124.2                 | 125.5                 | 116.1          | 122.533                   |

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"Conforms with ASME  
 Oct. 18. 11  
 Part A, 2010 edition"

C.C. Manager  
 CHEN CHENG HSIEN  
 INSPECTOR  
 CHEN CHEN HUANG

|                                            |                                                                                   |                                               |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                               |
| Date of Issue: March 13, 2008              |                                                                                   | QCFO Final Inspection Release Certificate R00 |

## FINAL INSPECTION RELEASE CERTIFICATE

|           |                                                         |                                                   |
|-----------|---------------------------------------------------------|---------------------------------------------------|
| CUSTOMER: | <b>ENCANA</b>                                           |                                                   |
| PRODUCT:  | <b>4" 2500# x 4" 2500# Split Coil for 3.0 mm LH Pkg</b> | WO#: <b>08562-001-A</b><br>DATE: <b>DEC 17/12</b> |

### FINAL INSPECTION DOCUMENTATION

|                                                                                                                       |           |           |
|-----------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                          | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                  |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC.) |           |           |

|                                        |                          |
|----------------------------------------|--------------------------|
| Q.C. FILE CLOSURE BY: <i>Kasha Fox</i> | DATE: <b>Dec 17 2012</b> |
|----------------------------------------|--------------------------|

### LOOSE COMPONENTS REQUIRED / PREPARED

|                                           |                                                                     |
|-------------------------------------------|---------------------------------------------------------------------|
| ITEMS REQUIRED:                           | NO. OF BOXES OR PKGS. _____                                         |
| <b>4" OH COIL - 3.0 mm LINE HEATER</b>    |                                                                     |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

### PREPARATION FOR SHIPMENT / STORAGE

|                                |
|--------------------------------|
| PREPARATION NEEDED / COMPLETED |
| <b>RELEASE TO NEXT PROCESS</b> |

|        |                        |
|--------|------------------------|
| SN #   | <b>NWP-08562-001-A</b> |
| ITEM # | <b>Coil</b>            |

|                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| INVENTORY TAGS ATTACHED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
|-------------------------|---------------------------------------------------------------------|

### SHIPPING INSTRUCTIONS

|                                                     |                                                                      |
|-----------------------------------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED                              | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: _____ |                                                                      |
| PHONE:                                              | FAX:                                                                 |

|                                         |                        |
|-----------------------------------------|------------------------|
| RELEASED TO INVENTORY:                  | DATE:                  |
| RELEASED TO CUSTOMER: <i>Roy Spruce</i> | DATE: <b>DEC 17/12</b> |

# NWP Industries Inc.

## INDIRECT FIRED HEATER COIL EXAMINATION AND INSPECTION REPORT

| DO NOT START CONSTRUCTION WITHOUT AI REVIEW                                               |                                              |                    |            |           | EXAMINATION AND INSPECTION REPORT |           |          |       |      |
|-------------------------------------------------------------------------------------------|----------------------------------------------|--------------------|------------|-----------|-----------------------------------|-----------|----------|-------|------|
| REVISION NO.: 0                                                                           |                                              |                    |            |           |                                   |           |          |       |      |
| AI REVIEW: <i>[Signature]</i>                                                             |                                              |                    |            |           | REVIEW DATE: 5 NOV 2012           |           |          |       |      |
| SERIAL NO. NWP-08562-001-A JOB NO.: 08562-001-A COIL TYPE: 4" 2500# X 4" 2500# SPLIT COIL |                                              |                    |            |           |                                   |           |          |       |      |
| DRAWING NO.: 08562-4 DWG. REVISION NO.: 0 EXAMINATION AND INSPECTION REPORT               |                                              |                    |            |           |                                   |           |          |       |      |
| 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>RMP</i> | NOV 01/12 | "                                 | <i>JF</i> | 11-5-12  |       |      |
| 2.                                                                                        | Release of App'd Dwg.                        |                    | <i>RMP</i> | NOV 01/12 | "                                 | <i>JF</i> | 11-5-12  |       |      |
| 3.                                                                                        | Heat Numbers Recorded                        |                    | <i>RMP</i> | NOV 28/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 4.                                                                                        | MTRs Checked                                 |                    | <i>RMP</i> | DEC 03/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 5.                                                                                        | Materials Checked Against Drawings and specs | HOLD               | <i>RMP</i> | NOV 08/12 |                                   |           |          |       |      |
| 6.                                                                                        | W.P.S. Checked                               |                    | <i>RMP</i> | NOV 08/12 |                                   |           |          |       |      |
| 7.                                                                                        | Welders Qualified                            | HOLD               | <i>RMP</i> | NOV 08/12 |                                   |           |          |       |      |
| 8.                                                                                        | Thicknesses Recorded                         |                    | <i>RMP</i> | DEC 03/12 |                                   |           |          |       |      |
| 9.                                                                                        | Fit-up Examination(s)                        |                    | <i>RMP</i> | NOV 28/12 | *                                 | <i>JF</i> | 12-14-12 |       |      |
| 10.                                                                                       | Impact Tests                                 | NA                 |            |           |                                   |           |          |       |      |
| 11.                                                                                       | Welds Examined                               |                    | <i>RMP</i> | NOV 28/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 12.                                                                                       | Welder I.D. Checked                          |                    | <i>RMP</i> | NOV 28/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 13.                                                                                       | Final External Inspection                    |                    | <i>RMP</i> | NOV 28/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 14.                                                                                       | Radiography                                  | HOLD               | <i>RMP</i> | NOV 29/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 15.                                                                                       | Other N.D.E.                                 | HOLD               | <i>RMP</i> | DEC 02/12 |                                   |           |          |       |      |
| 16.                                                                                       | Final Ext. Prior to P.W.H.T.                 | HOLD               | <i>RMP</i> | NOV 29/12 | Δ                                 |           |          |       |      |
| 17.                                                                                       | PWHT Chart Checked                           | HOLD               | <i>RMP</i> | DEC 05/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 18.                                                                                       | Hydrostatic Test                             | HOLD               |            |           |                                   |           |          |       |      |
|                                                                                           |                                              | Coil No. 1 Gauge # |            |           |                                   |           |          |       |      |
|                                                                                           |                                              | Coil No. 2 Gauge # | <i>RMP</i> | DEC 05/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 19.                                                                                       | CRN Drawing                                  | CRN# P9417.213     | <i>RMP</i> | NOV 01/12 | "                                 | <i>JF</i> | 11-5-12  |       |      |
| 20.                                                                                       | N.C.R. #                                     |                    |            |           |                                   |           |          |       |      |
| 21.                                                                                       | Nameplate Stamping                           |                    | <i>RMP</i> | DEC 05/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 22.                                                                                       | Data Report (AB-28) completed                |                    | <i>RMP</i> | DEC 14/12 | "                                 | <i>JF</i> | 12-14-12 |       |      |
| 23.                                                                                       | Nameplate Installation                       |                    |            |           |                                   |           |          |       |      |

The Authorized Inspector shall be presented with the Examination and Inspection Report 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



## MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL ☐

A# 605748

Manufactured By: NWP Industries Inc. 4017 60th Ave, Innisfail Alberta, T4G-1S9

Manufactured For: Encana Corporation, Suite 1800, 855-2nd Street SW, Box 2850, Calgary Alberta, T2P-2S5

Ultimate Owner: Encana Corporation, Suite 1800, 855-2nd Street SW, Box 2850, Calgary Alberta, T2P-2S5

Location of Installation: Encana Corporation, Suite 1800, 855-2nd Street SW, Box 2850, Calgary Alberta, T2P-2S5

| Manufacturer's Serial No. | Construction Drawing No. | CODE: ASME B31.3 |      |         | Year Built |
|---------------------------|--------------------------|------------------|------|---------|------------|
| NWP-08562-001-A           | 08562-4 Rev 0            | Edition          | 2010 | Addenda | 2012       |

## CONSTRUCTION

| Coil ID/Purpose   | Design Pressure | Design Temp | Design Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN        |
|-------------------|-----------------|-------------|---------------------|---------------------|------------------------|------------|
| a PS - 100/Coil A | 5171 psi        | 200 F       | -20 F               | 0.0625"             | BDD-400A REV 1         | P-9417.213 |
| b PS - 101/Coil B | 5171 psi        | 200 F       | -20 F               | 0.0625"             | BDD-400A REV 1         | P-9417.213 |
| c                 |                 |             |                     |                     |                        |            |
| d                 |                 |             |                     |                     |                        |            |
| e                 |                 |             |                     |                     |                        |            |

## COIL

| Tubes       |          |           | End Closures            |           |                     |         | Openings    |           |        |
|-------------|----------|-----------|-------------------------|-----------|---------------------|---------|-------------|-----------|--------|
| Mat'l Spec. | Diameter | Thickness | Return Bend Mat'l Spec. | Thickness | Flanges Mat'l Spec. | Rating  | Mat'l Spec. | Size/Type | Rating |
| a SA-333-6  | 4" NPS   | SCH XXH   | SA-420-WPL6             | SCH XXH   | SA-350-LF2 Cl 1     | CL 2500 | N/A         | N/A       | N/A    |
| b SA-333-6  | 4" NPS   | SCH XXH   | SA-420-WPL6             | SCH XXH   | SA-350-LF2 Cl 1     | CL 2500 | N/A         | N/A       | N/A    |
| c           |          |           |                         |           |                     |         |             |           |        |
| d           |          |           |                         |           |                     |         |             |           |        |
| e           |          |           |                         |           |                     |         |             |           |        |

## HEADERS/MANIFOLDS

| Purpose | Size | Shell Mat'l Spec. | Thickness | Ends Mat'l Spec. | Thickness | No | Openings Mat'l Spec. | Size/Type | Rating |
|---------|------|-------------------|-----------|------------------|-----------|----|----------------------|-----------|--------|
| a NA    | NA   | NA                | NA        | NA               | NA        |    | NA                   | NA        | NA     |
| b NA    | NA   | NA                | NA        | NA               | NA        |    | NA                   | NA        | NA     |
| c       |      |                   |           |                  |           |    |                      |           |        |
| d       |      |                   |           |                  |           |    |                      |           |        |
| e       |      |                   |           |                  |           |    |                      |           |        |

## 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 7757 PSI                | 100%                           | NA                       | 1150F                   | 60 MIN | 294.875' S/S   | 264 sq.ft.      | 12.2 cu.ft. |
| b 7757 PSI                | 100%                           | NA                       | 1160F                   | 60 MIN | 294.875' S/S   | 160 sq.ft.      | 7.4 cu.ft.  |
| c                         |                                |                          |                         |        |                |                 |             |
| d                         |                                |                          |                         |        |                |                 |             |
| e                         |                                |                          |                         |        |                |                 |             |
| f                         |                                |                          |                         |        |                |                 |             |
| g                         |                                |                          |                         |        |                |                 |             |

IMPACT TESTING: Exempt per table 323.2.2 Col A

REMARKS:

## 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 DEC 14/12 Signed R.M. Space For NWP Industries Inc.  
(Representative) (Manufacturer)

## CERTIFICATE OF SHOP INSPECTION

The undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 14 DEC 2012 Signed Joe Twomey NB 12505 AB AB 261

W  
RT=100%  
HT

CERTIFIED BY



**NWP**  
INDUSTRIES INC.

MADE IN CANADA

SERIAL NO. NWP- 08562-001-A

COIL A 4" CL 2500 PS-100

MAWP 51.7 PSI AT 200 °F

MDMT -20 °F AT 5171 PSI

CRN P9417-213 YEAR BUILT 2012

COIL B 4" CL 2500 PS-101

MAWP 51.7 PSI AT 200 °F

MDMT -20 °F AT 5171 PSI

CRN P0417-213

COIL C

MAWP PSI AT °F

MDMT °F AT PSI

CRN

COIL D

MAWP PSI AT °F

MDMT °F AT PSI

CRN

|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: March 30 2012                            |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.0                                         |                                                                                  | N.D.E Requirements |

### N.D.E Requirements

Client: Encana

JO# 08562-001-A

Project: 4" Coil – 3.0 mm Lineheater

Date: 09/11/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

- ☐ X-Ray  
☒ Gamma Ray  
☐ Ultrasonics  
☐ Liquid Penetrant  
☐ Magnetic Particle  
☐ Accoustic Emission  
☐ Hardness test Max 200 BHN

- ☒ 100%  
☐ Full  
☐ 25%  
☐ 10%  
☐ Other(Define)  
☐ Spot

- ☐ ASME Section VIII-UW-51  
☐ ASME Section VIII-UW-52  
☐ Customer Specification  
☒ ASME B31.3 NF5  
☐ Other (Specify)  
☒ Customer Spec  
☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID E

Shell-T=

Pipe-T= 4" XXH

Total Welds start shooting pkg (first # is X-1)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

4 Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

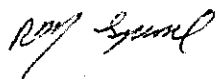
Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

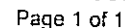
NOTE: Encana Spec for Welded Piping: acceptance is zero UC and Zero IP  
 Encana Spec for Socket Welds: acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping: acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: R.M. Spence



Date: 09/11/2012





Date: 09-Nov-12

Item Inspected: 4" COIL-3.0mm LINEHEATER

**Material:** C.S

Mailing Address  
5311-86 Street  
Edmonton, Alberta  
T6E 5T8

|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

## N D E Requirements

Client: Encana JO# 08562-001-A  
 Project: 4" Coil – 3.0mm Lineheater Date: 13/11/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define)                            | Other (Specify)                                            |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

☐ Hardness test Max 200 BHN

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID E

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-5)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

9 Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: R.M. Spence

Date: 13/11/2012



|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

## N D E Requirements

Client: Encana JO# 08562-001-A  
 Project: 4" Coil – 3.0mm Lineheater Date: 14/11/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define)                            | Other (Specify)                                            |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

☐ Hardness test Max 200 BHN

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID E

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-14)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

 Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: R.M. Spence

Date: 14/11/2012

Job / P.O. #: 08562-001-A      IRISNDT #: 255606      Date: 14-Nov-12  
Client: ENCANA C/O NWP.  
Location: Innisfail, Alberta  
Item Inspected: 4" COIL-3.0mm LINEHEATER      Material: C.S

**Mailing Address**  
5311-86 Street  
Edmonton, Alberta  
T6E 5T8

Issuing Authority: Marvin J. (Ty)

DeBelser/Dale Karg

Date of Issue: November 13 2012

Rev Status: 2.1

**NWP**  
Industries Inc.™

ABSA

FORM\_NDE\_001

N.D.E Requirements

## N D E Requirements

Client: Encana

JO# 08562-001-A

Project: 4" Coil – 3.0mm Lineheater

Date: 15/11/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

☐ X-Ray

☒ Gamma Ray

☐ Ultrasonics

☐ Liquid Penetrant

☐ Magnetic Particle

☐ Acoustic Emission

☐ Hardness test Max 200 BHN

☒ 100%

☐ Full

☐ 25%

☐ 10%

Other(Define)

☐ Spot

☐ ASME Section VIII-UW-51

☐ ASME Section VIII-UW-52

☒ Customer Specification

☒ ASME B31.3 NFS

Other (Specify)

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID E

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-19)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D.S.O.D. S.F.D on reports

### Special Requirements:

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

5 Shots

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects

Encana Spec is Zero Elongated Indications

Encana Spec for Socket Welds-acceptance is minimum 1/16" gap

Encana Spec for Threaded Piping- acceptance is 7 threads engaged

HT is a 5 Point Traverse

Prepared By: Karim Bouslama

Date: 15/11/2012





|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

### N D E Requirements

Client: Encana JO# 08562-001-A  
 Project: 4" Coil - 3.0mm Lineheater Date: 19/11/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define)                            | Other (Specify)                                            |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

☐ Hardness test Max 200 BHN

☐ CSA W47.1/W59

#### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID B

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-24)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

#### Special Requirements:

3 Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

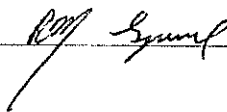
Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: R.M. Spence



Date: 19/11/2012



Job / P.O. #: 08562-001-A    IRISNDT #: 255715    Date: 20-Nov-12  
Client: ENCANA C/O NWP  
Location: INNISFAIL Alberta  
Item Inspected: 4" COIL - 3.0mm LINEHEATER    Material: C.S

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Issuing Authority: Marvin J. (Ty)

DeBelser/Dale Karg

Date of Issue: November 13 2012

Rev Status: 2.1

**NWP**  
Industries Inc.™

ABSA

FORM\_NDE\_001

N.D.E Requirements

## N D E Requirements

Client: Encana

JO# 08562-001-A

Project: 4" Coil – 3.0mm Lineheater

Date: 21/11/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

☐ X-Ray

☒ Gamma Ray

☐ Ultrasonics

☐ Liquid Penetrant

☐ Magnetic Particle

☐ Accoustic Emission

☐ Hardness test Max 200 BHN

☒ 100%

☐ Full

☐ 25%

☐ 10%

Other(Define)

☐ Spot

☐ ASME Section VIII-UW-51

☐ ASME Section VIII-UW-52

☒ Customer Specification

☒ ASME B31.3 NFS

Other (Specify)

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID B

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-27)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

2 Shots

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects

Encana Spec is Zero Elongated Indications

Encana Spec for Socket Welds-acceptance is minimum 1/16" gap

Encana Spec for Threaded Piping- acceptance is 7 threads engaged

HT is a 5 Point Traverse

Prepared By: R.M. Spence

Date: 21/11/2012

Exposure Device #: D6274 Source #: 79875B  
Cobalt 60 ☐ IR 192 ☒ X-Ray ☐ EFSS: 135  
Film Brand: AGFA #Film/cassette: 1  
Code: ASME B31.3 N & ENCANA SPEC.

Job / P.O. #: 08562-001-A      IRISNDT #: 255736      Date: 21-Nov-12  
 Client: ENCANA C/O NWP  
 Location: INNISFAIL Alberta  
 Item Inspected: 4" COIL - 3.0mm LINEHEATER      Material: C.S

[illegible]

Number of Radiation Barrier Warning Signs Erected: 5

**Number of Radiation Barrier Warning Signs Returned: 5**

**Work Location Legend:** [1] Inside Fab. Shop [2] Yard/Lay-down Area [3] Piping/Modular Fab. Area [4] N/A (Other)

|                       |          |                                                 |                            |                             |                         |
|-----------------------|----------|-------------------------------------------------|----------------------------|-----------------------------|-------------------------|
| IRIS Procedure:       | S.O.D. = | Source-to-object distance (D)                   | AB - Arc Burns             | EUC - External Undercut     | IC - Internal Concavity |
| Single Wall Exposure: |          |                                                 | BT - Burn Through          | IUC - Internal Undercut     | LF - Lack of Fusion     |
| RT 1, 2, 2A, 6, 7     | O.F.D. = | Distance from source side of object to film (d) | CK - Crack                 | HB - Hollow Bead            | LC - Low Cover          |
| Double Wall Exposure  |          |                                                 | EP - Excessive Penetration | IP - Incomplete Penetration | MA - Misalignment       |
| RT 3, 3A, 4, 5, 8     |          |                                                 | P - Porosity               | S - Slag                    |                         |

|        |                   |             |                   |
|--------|-------------------|-------------|-------------------|
| Unit#: | <u>226</u>        | Kilometers: | <u>10</u>         |
| In:    | <u>1930</u>       | Out:        | <u>2000</u>       |
|        |                   | Hrs:        | <u>.5</u>         |
| In:    | <u>          </u> | Out:        | <u>          </u> |
|        |                   | Hrs:        | <u>          </u> |

Personnel:

BS / JS / MV

| Film Quantity: |                                        |    |
|----------------|----------------------------------------|----|
| 12             | $(2 \frac{3}{4} \times 8 \frac{1}{2})$ | D5 |
|                |                                        |    |
|                |                                        |    |
|                |                                        |    |
|                |                                        |    |
|                |                                        |    |

Interpretation by:  
BRODY SMITH

\_\_\_\_\_

(Print)



\_\_\_\_\_

(Signature)

Client Representative:

(Print) \_\_\_\_\_

I am in full  
agreement with  
report contents

(Sign) 

SNT-TC-1A II

C.G.S.B. II

C.G.S.B. # 12569

5311 - 86 Street Edmonton, Alberta, T6E 5T8 Phone: (780) 437-2022 Fax: (780) 435-1438  
 Calgary (403) 279-8121  
 Lloydminster (780) 875-8455  
 Banhead (780) 874-3018  
 Nisku (780) 955-7818

|               |                |
|---------------|----------------|
| Cold Lake     | (780) 826-6105 |
| Fort McMurray | (780) 743-1538 |
| Red Deer      | (403) 347-1742 |

Deer Park, TX (281) 476-4444  
 Matrix, Houston, TX (713) 722-7177  
 Tulsa, OK (918) 446-8773

IRISNDT E-2004N

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|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

### NDE Requirements

|                                            |                         |
|--------------------------------------------|-------------------------|
| Client: <u>Encana</u>                      | JO# <u>08562-001-A</u>  |
| Project: <u>4" Coil – 3.0mm Lineheater</u> | Date: <u>22/11/2012</u> |

Piping: ☒      Pressure Vessel: ☐      Tank: ☐      Other: \_\_\_\_\_

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define) _____                      | Other (Specify) _____                                      |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

☐ Hardness test Max 200 BHN      ☐ CSA W47.1/W59

#### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material \_\_\_\_\_  
Welder ID B  
Shell-T= \_\_\_\_\_  
Pipe-T= 4" XXH  
Total Welds continue shooting pkg (first # is X-30)

Please use wire type iQi  
Please Note locations of all indications on films on reports  
Please include O.F.D-S.O.D S.F.D on reports

#### Special Requirements:

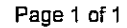
3 Shots

Buttweld Xray to be identified as X-#  
Gap Shots to be identified as GS-#  
Threaded Shots to be identified as XT-#  
Identify on Envelope part of package being shot ie. Coil, Piping, ect.  
Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date  
Mark all indicated repairs on the project

NOTE:      Encana Spec for Welded Piping-acceptance is zero root defects  
             Encana Spec is Zero Elongated Indications  
             Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
             Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
             HT is a 5 Point Traverse

Prepared By: R.M. Spence      Date: 22/11/2012





Job / P.O. #: 08562-001-A    IRISNDT #: 255772    Date: 22-Nov-12  
Client: ENCANA C/O NWP  
Location: INNISFAIL Alberta  
Item Inspected: 4" COIL - 3.0mm LINEHEATER    Material: C.S

BRANCH COPY

Issuing Authority: Marvin J. (Ty)

DeBelser/Dale Karg

Date of Issue: November 13 2012

Rev Status: 2.1

**NWP**  
Industries Inc.™

ABSA

FORM\_NDE\_001

N.D.E Requirements

### N D E Requirements

Client: Encana

JO# 08562-001-A

Project: 4" Coil – 3.0mm Lineheater

Date: 23/11/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

☐ X-Ray

☒ Gamma Ray

☐ Ultrasonics

☐ Liquid Penetrant

☐ Magnetic Particle

☐ Accoustic Emission

☐ Hardness test Max 200 BHN

☒ 100%

☐ Full

☐ 25%

☐ 10%

Other(Define)

☐ Spot

☐ ASME Section VIII-UW-51

☐ ASME Section VIII-UW-52

☒ Customer Specification

☒ ASME B31.3 NFS

Other (Specify)

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID B

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-33)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

Shots

Butt weld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects

Encana Spec is Zero Elongated Indications

Encana Spec for Socket Welds-acceptance is minimum 1/16" gap

Encana Spec for Threaded Piping- acceptance is 7 threads engaged

HT is a 5 Point Traverse

Prepared By: R.M. Spence

Date: 23/11/2012



|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

### NDE Requirements

Client: Encana JO# 08562-001-A  
 Project: 4" Coil – 3.0mm Lineheater Date: 26/11/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define)                            | Other (Specify)                                            |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

☐ Hardness test Max 200 BHN

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID B,L

Shell-T=

Pipe-T= 4" XXH

Total Welds continue shooting pkg (first # is X-35)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

5 Shots

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: R.M. Spence

Date: 26/11/2012



**Material:** CS

CUSTOMER COPY

Issuing Authority: Marvin J. (Ty)

DeBelser/Dale Karg

Date of Issue: November 13 2012

Rev Status: 2.1

ABSA

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FORM\_NDE\_001

N.D.E Requirements

### NDE Requirements

Client: Encana

JO# 08562-001-A

Project: 4" Coil – 3.0mm Lineheater

Date: 28/11/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:



X-Ray



100%



ASME Section VIII-UW-51



Gamma Ray



Full



ASME Section VIII-UW-52



Ultrasonics



25%



Customer Specification



Liquid Penetrant



10%



ASME B31.3 NFS



Magnetic Particle

Repair Shot Other(Define)

Other (Specify)



Acoustic Emission



Spot



Hardness test Max 200 BHN



CSA W47.1/W59

### General Instructions:

Vessel S/N NWP-08562-001-A

P1 Material

Welder ID B,L

Shell-T=

Pipe-T= 4" XXH

Total Welds 1 x repair shot (X-39R)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D. S.O.D. S.F.D on reports

### Special Requirements:

1 Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects

Encana Spec is Zero Elongated Indications

Encana Spec for Socket Welds-acceptance is minimum 1/16" gap

Encana Spec for Threaded Piping- acceptance is 7 threads engaged

HT is a 5 Point Traverse

Prepared By: R.M. Spence

*R.M. Spence*

Date: 28/11/2012





Issuing Authority: Marvin J. (Ty)

DeBelser/Dale Karg

Date of Issue: November 13 2012

Rev Status: 2.1

**NWP**  
Industries Inc.™

ABSA

FORM\_NDE\_001

N.D.E Requirements

### NDE Requirements

Client: Encana

JO# 08562-001-A

Project: 4" Coil – 3.0mm Lineheater

Date: 07/12/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

☐ X-Ray

☐ Gamma Ray

☐ Ultrasonics

☐ Liquid Penetrant

☐ Magnetic Particle

☐ Acoustic Emission

☒ Hardness test Max 200 BHN

☐ 100%

☐ Full

☐ 25%

☒ 10%

Other(Define)

☐ Spot

☐ ASME Section VIII-UW-51

☐ ASME Section VIII-UW-52

☒ Customer Specification

☒ ASME B31.3 NFS

Other (Specify)

☐ CSA W47.1/W59

### General Instructions:

P1 Material

Welder ID F.B.L

Shell-T=

Pipe-T= 4" XXH

Total Welds HT x 6 welds (first # is HT-1)

Vessel S/N NWP-08562-001-A

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

### Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects

Encana Spec is Zero Elongated Indications

Encana Spec for Socket Welds-acceptance is minimum 1/16" gap

Encana Spec for Threaded Piping- acceptance is 7 threads engaged

HT is a 5 Point Traverse

Prepared By: R.M. Spence

Date: 07/12/2012



## HARDNESS TEST REPORT

|                       |                                         |           |                      |                            |        |
|-----------------------|-----------------------------------------|-----------|----------------------|----------------------------|--------|
| DATE:                 | 07-Dec-12                               | REPORT #: | HJC121207-1          | PAGE                       | 1 of 1 |
| CLIENT:               | NWP                                     |           |                      | ECHO JOB #:                | 4871   |
| CONTRACTOR:           | ENCANA                                  |           |                      |                            |        |
| LOCATION:             | NWP INDUSTRIES (INNISFAIL)              |           | PROJECT:             | VESSEL SN# NWP-08562-001-A |        |
| ITEMS EXAMINED:       | 4" COIL - 3.5mm LINEHEATER (AFTER PWHT) |           |                      |                            |        |
| CODE / SPECIFICATION: | ENCANA SPEC.ASME B31.3NFS               |           | CLIENT PO # / JOB #: | JOB# 08562-001-A           |        |

### METHOD

|                 |       |                    |          |                   |               |
|-----------------|-------|--------------------|----------|-------------------|---------------|
| HARDNESS SCALE: | BHN   | MAXIMUM TOLERANCE: | 200 BHN  |                   |               |
| EQUIPMENT TYPE: | HL200 | SERIAL #:          | 39702870 | LAST CALIBRATION: | SEPT. 7, 2012 |

### TEST RESULTS

| HT# | XRAY#/STAMP | DIAMETER / SCH. | HARDNESS VALUES |       |      |       |      |
|-----|-------------|-----------------|-----------------|-------|------|-------|------|
|     |             |                 | P.M             | H.A.Z | WELD | H.A.Z | P.M. |
| 1   | X-23 / F    | 4" / XXH        | 136             | 134   | 144  | 138   | 139  |
| 2   | X-21 / F    | 4" / XXH        | 138             | 140   | 141  | 142   | 140  |
| 3   | X-20 / F    | 4" / XXH        | 142             | 137   | 140  | 147   | 132  |
| 4   | X-25 / B    | 4" / XXH        | 142             | 142   | 143  | 136   | 133  |
| 5   | X-31 / B    | 4" / XXH        | 147             | 141   | 144  | 130   | 136  |
| 6   | X-36 / L    | 4" / XXH        | 138             | 143   | 141  | 140   | 134  |
| 7   |             |                 |                 |       |      |       |      |
| 8   |             |                 |                 |       |      |       |      |
| 9   |             |                 |                 |       |      |       |      |
| 10  |             |                 |                 |       |      |       |      |
| 11  |             |                 |                 |       |      |       |      |
| 12  |             |                 |                 |       |      |       |      |
| 13  |             |                 |                 |       |      |       |      |
| 14  |             |                 |                 |       |      |       |      |
| 15  |             |                 |                 |       |      |       |      |
| 16  |             |                 |                 |       |      |       |      |
| 17  |             |                 |                 |       |      |       |      |
| 18  |             |                 |                 |       |      |       |      |
| 19  |             |                 |                 |       |      |       |      |
| 20  |             |                 |                 |       |      |       |      |

|                                 |                                          |                |              |
|---------------------------------|------------------------------------------|----------------|--------------|
| Misc Charges                    | JON CRUICKSHANK                          | Regular Hours  | SEE FIELD    |
| SEE FIELD INVOICE               |                                          | Overtime Hours | INVOICE      |
| FJC-121207-1                    | CGSB / SNT-TC-1A LII MT #16356           | Shift Premium  | FJC-121207-1 |
|                                 |                                          | Kilometers     |              |
| Client : BOB <i>[Signature]</i> | Technician Signature: <i>[Signature]</i> | Assistant:     | DYLAN F.     |

53A Burnt Park Drive | Red Deer, AB | T4P 0J7

Ph: (403) 347-7042 Fax: (403) 347-7052 www.echonde.com



## R & R Stress Relieving Service Ltd.

Nisku: 2103 - 6<sup>th</sup> Street, T9E 7X8 Tel: (780) 955-7559 Fax: (780) 955-2903  
Blackfalds: #13 Burbank Industrial Park Tel: (403) 885-2280 Fax: (403) 885-0177  
Toll Free: 1-800-499-HEAT(4328)

# CERTIFICATE OF CONFORMANCE OF RECORDING INSTRUMENTS

CERTIFIED BY: R & R Stress Relieving Service Ltd.  
TEST NUMBER: RR1112  
DATE: November 9, 2012  
DATE DUE: February 9, 2013  
INSTRUMENT MFG: Chino  
MODEL NUMBER: AH-3725 N00  
SERIAL NUMBER: AH-059C172  
RECORDER NUMBER: IR-182

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

### REFERENCE STANDARDS

DIGI MITE 311600 S/N48430-5522

CERT DATE Oct 22/12

**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.**

  
Shane Stimson

11:00 1: BURN°F 2: BURN°F 3: BURN°F 4: BURN°F 5: BURN°F 6: 980°F  
7: BURN°F 8: BURN°F 9: BURN°F 10: 1004°F 11: BURN°F 12: BURN°F

50MM/H 184 182 °F Tc: 2

### R & R Stress Relieving

Client: NWP

Date: 12/03/12 Job #: \_\_\_\_\_

PO: 710388

Operator: Chris Lewis

Chart Speed: 50mm/h

Chart #: BF32-12-874

Description:

1 Line Heater Coil. Job# 08562-001-A. S/N: NWP-08562-001-A

17 Spools. Job# 08467-013-D

17 Spools. Job# 08467-014-D

09:00 1: BURN°F 2: BURN°F 3: BURN°F 4: BURN°F 5: BURN°F 6: 1008°F  
7: BURN°F 8: BURN°F 9: BURN°F 10: 1051°F 11: BURN°F 12: BURN°F

50MM/H

500

1000

1500

2000

08:00 1: BURN°F 2: BURN°F 3: BURN°F 4: BURN°F 5: BURN°F 6: 711°F  
7: BURN°F 8: BURN°F 9: BURN°F 10: 744°F 11: BURN°F 12: BURN°F

50MM/H

07:00 1: BURN°F 2: BURN°F 3: BURN°F 4: BURN°F 5: BURN°F 6: 711°F  
7: BURN°F 8: BURN°F 9: BURN°F 10: 744°F 11: BURN°F 12: BURN°F

2012.12.02.06:58

RA/8  
DEC 05/12

Start Soak

1hr Soak



# HEAT TREATMENT REQUIREMENTS

Serial#: NWP-08562-001-A

PO# 710388

NO.: 08562-001-A

CUSTOMER: EnCana Corporation

DATE: December 3 2012

COMPONENT DESCRIPTION: 3.0 mm btu/hr Line Heater Coil

| DWG. NO. AND LINE NO. | DIAMETER | THICKNESS | MATERIAL | LENGTH  | WEIGHT    |
|-----------------------|----------|-----------|----------|---------|-----------|
| 08467-4 REV 0 Coil A  | 4" NPS   | XXH       | SA-333-6 | 294.875 | 6356      |
| Coil B                | 4" NPS   | XXH       | SA-333-6 | 294.875 | 3930      |
| Total:                |          |           |          |         | 10286 lbs |

TYPE OF HEAT TREATMENT: PRESSURE VESSEL or Process Piping STRESS RELIEVE P1 and Materials

## HEATING

Temperature to be raised from 800°F (427°C) to 1150°F (621°C) at a maximum rate of 400 ° F

( ) ° 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]

## HOLDING

Temperature to be held in range of 1150°F to 1175°F for 60 minutes.

[Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)]

## COOLING

Temperature to be lowered from 1150°F (621°C) to 800°F (427°C) at a maximum rate of 500 ° F

( ) ° 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 the operator's signature & date.
- ☐ Reporting of thermocouple attachment 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, centre 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 (121° 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 (66° C) between the highest and lowest temperature throughout the portion of the vessel being heat 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 Specification 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 <sup>2</sup> = W-Sec.]
- ☐ The method of thermocouple removal shall not damage the heat treated item.

Q.C. Inspector Signature

*PM Spence*

Date: DEC 05/12

Thermocouple Attachment Method: CAPACITOR DISCHARGE

Location(s) *Coil ends*Furnace Heat Number *H F 3 2 - 1 2 - 8 7 4*

Furnace Operator Signature

*Chris Lewis*

Date: Dec 3rd/12

Form Prepared by: Kasha Fox

Date: November 26 2012



|                     |                                                                                  |                       |
|---------------------|----------------------------------------------------------------------------------|-----------------------|
| NWP Industries Inc™ |  | Website: www.nwp.ca   |
| PO Box 6280         |                                                                                  | Phone: (403) 227-4100 |
| 4017-60 Ave.        |                                                                                  |                       |
| T4G 1S9             |                                                                                  | Fax: (403) 227-4102   |

## HYDROSTATIC TEST AFFIDAVIT

Customer: Encana Corp

JO# 08562-001-A

Project: Coil for 3.0 mm Lineheater

Project#

Test Pressure: 7757 PSI

Hold Time: 60 minutes

Code Requirements: ASME B31.3 2010 edition

All Personnel Advised of Test ☒ All Signs & Flagging Posted ☒

Prior to Filling – Fitting/Hoses & Component Meet Required Test Pressure

Sign-Off

Supervisor: ✓

Tester: ✓

Date: 14/12/2012

### Product Description:

|                                       |
|---------------------------------------|
| PS-100 & 101 / Coils A & B = 7757 PSI |
|                                       |
|                                       |
|                                       |
|                                       |
|                                       |

50% Test Pressure Leak/Systems Check Completed ☒

|                                        |
|----------------------------------------|
| 50% Coils A & B = 3879 PSI <u>PMJL</u> |
|                                        |
|                                        |
|                                        |
|                                        |
|                                        |

Equipment Drained & Flushed to Prevent Freezing:

Yes: ☐

No: ☐

|                            |                             |
|----------------------------|-----------------------------|
| Start Time: <u>8:45 am</u> | Finish Time: <u>2:45 PM</u> |
|----------------------------|-----------------------------|

| Test Gauge Identification # | Pressure Range | Calibration Date |
|-----------------------------|----------------|------------------|
| NWPG- 20,000 #1             | 0-20,000 PSI   | 31 AUG 2013      |
| NWPG- 20,000 #5             | 0-20,000 PSI   | 13 SEP 2013      |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |

|                          |                          |
|--------------------------|--------------------------|
| Test By: <u>AD</u>       | Date: <u>DEC 14/2012</u> |
| Approved By: <u>PMJL</u> | Date: <u>DEC 14/12</u>   |

|                             |                                                                                   |                       |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------|
| NWP Industries Inc.™        |  | Website: www.nwp.ca   |
| PO Box 6280<br>4017-60 Ave. |                                                                                   | Phone: (403) 227-4100 |
| T4G 1S9                     |                                                                                   | Fax: (403) 227-4102   |

## CHECKLIST FOR CLEANING OF INDIRECT FIRED HEATER COILS

Initial

- ☒ Operator has reviewed safe work practice and signed permit
- ☒ Operator has inspected pig receiver to ensure it is in good operating condition and verified that transition spools are correct size and rating for coil to be cleaned
- ☒ Operator has verified system is not under pressure
- ☒ Operator has ensured
  - block valve is in the proper position
  - valves and seal on blind flange are tight and secure
  - closure on receiver is properly installed and secure
  - working pressure of the system and pig receiver are not exceeded
- ☒ Operator has reported to supervisor any material collected
- ☒ Operator certifies that indirect fired heater coil is free of debris

Serial Number: 8562-001-A

Date: Dec 20/2013

Operator: Jon Goorts

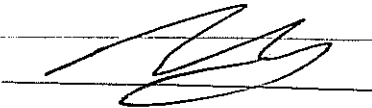
Print



Signature

Witness: Math Alexander

Print



Signature

PARTIAL ☐

A# 605748

Manufactured By: NWP Industries Inc. 4017 60th Ave, Innisfail Alberta, T4G-1S9

Manufactured For: Encana Corporation, Suite 1800, 855-2nd Street SW, Box 2850, Calgary Alberta, T2P-2S5

Ultimate Owner: Encana Corporation, Suite 1800, 855-2nd Street SW, Box 2850, Calgary Alberta, T2P-2S5

Location of Installation: Encana Corporation, Suite 1800, 855-2nd Street SW, Box 2850, Calgary Alberta, T2P-2S5

| Manufacturer's Serial No. | Construction Drawing No. | CODE: ASME B31.3 |      |         | Year Built |
|---------------------------|--------------------------|------------------|------|---------|------------|
| NWP-08562-001-A           | 08562-4 Rev 0            | Edition          | 2010 | Addenda | 2012       |

**CONSTRUCTION**

|   | Coil ID/Purpose | Design Pressure | Design Temp | Design Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN        |
|---|-----------------|-----------------|-------------|---------------------|---------------------|------------------------|------------|
| a | PS - 100/Coil A | 5171 psi        | 200 F       | -20 F               | 0.0625"             | BDD-400A REV 1         | P-9417.213 |
| b | PS - 101/Coil B | 5171 psi        | 200 F       | -20 F               | 0.0625"             | BDD-400A REV 1         | P-9417.213 |
| c |                 |                 |             |                     |                     |                        |            |
| d |                 |                 |             |                     |                     |                        |            |
| e |                 |                 |             |                     |                     |                        |            |

**COIL**

| Tubes       |          |           | End Closures |           |                 |         | Openings    |           |        |
|-------------|----------|-----------|--------------|-----------|-----------------|---------|-------------|-----------|--------|
| Mat'l Spec. | Diameter | Thickness | Mat'l Spec.  | Thickness | Mat'l Spec.     | Rating  | Mat'l Spec. | Size/Type | Rating |
| a SA-333-6  | 4" NPS   | SCH XXH   | SA-420-WPL6  | SCH XXH   | SA-350-LF2 Cl 1 | CL 2500 | N/A         | N/A       | N/A    |
| b SA-333-6  | 4" NPS   | SCH XXH   | SA-420-WPL6  | SCH XXH   | SA-350-LF2 Cl 1 | CL 2500 | N/A         | N/A       | N/A    |
| c           |          |           |              |           |                 |         |             |           |        |
| d           |          |           |              |           |                 |         |             |           |        |
| e           |          |           |              |           |                 |         |             |           |        |

**HEADERS/MANIFOLDS**

| Purpose | Size | Shell       | Ends      |             |           |    | Openings    |           |        |
|---------|------|-------------|-----------|-------------|-----------|----|-------------|-----------|--------|
|         |      | Mat'l Spec. | Thickness | Mat'l Spec. | Thickness | No | Mat'l Spec. | Size/Type | Rating |
| a NA    | NA   | NA          | NA        | NA          | NA        | NA | NA          | NA        | NA     |
| b NA    | NA   | NA          | NA        | NA          | NA        | NA | NA          | NA        | NA     |

**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 7757 PSI                | 100%                           | NA                       | 1150F                   | 60 MIN | 294.875' S/S   | 264 sq.ft.      | 12.2 cu.ft. |
| b 7757 PSI                | 100%                           | NA                       | 1150F                   | 60 MIN | 294.875' S/S   | 160 sq.ft.      | 7.4 cu.ft.  |
| c                         |                                |                          |                         |        |                |                 |             |
| d                         |                                |                          |                         |        |                |                 |             |
| e                         |                                |                          |                         |        |                |                 |             |
| f                         |                                |                          |                         |        |                |                 |             |
| g                         |                                |                          |                         |        |                |                 |             |

IMPACT TESTING: Exempt per table 323.2.2 Col A

REMARKS:

**CERTIFICATE OF COMPLIANCE**

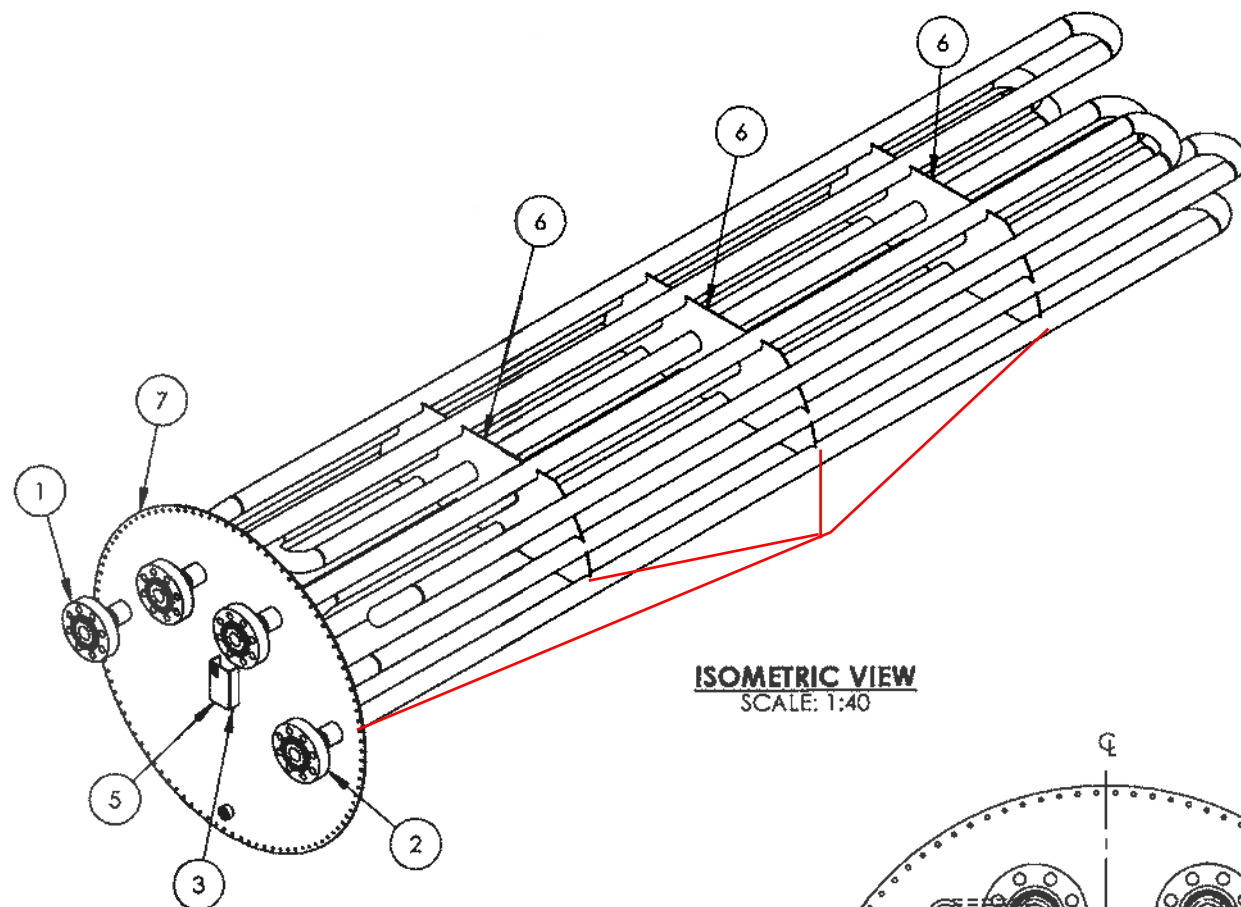
We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date DEC 14/12 Signed R.M. Spence For NWP Industries Inc.  
(Representative) (Manufacturer)

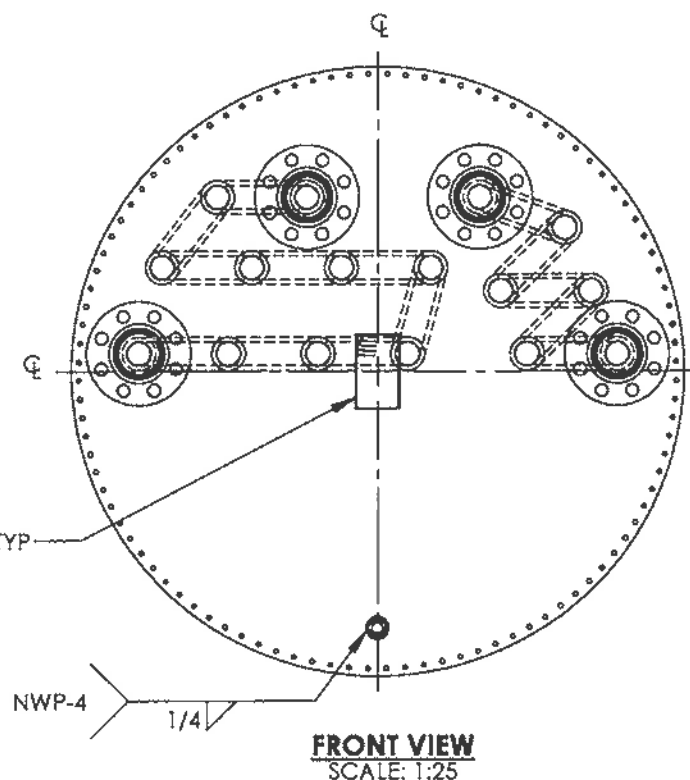
**CERTIFICATE OF SHOP INSPECTION**

The undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 14 DEC 2012 Signed Joe Twomey ID 12905 A.S. ABSA

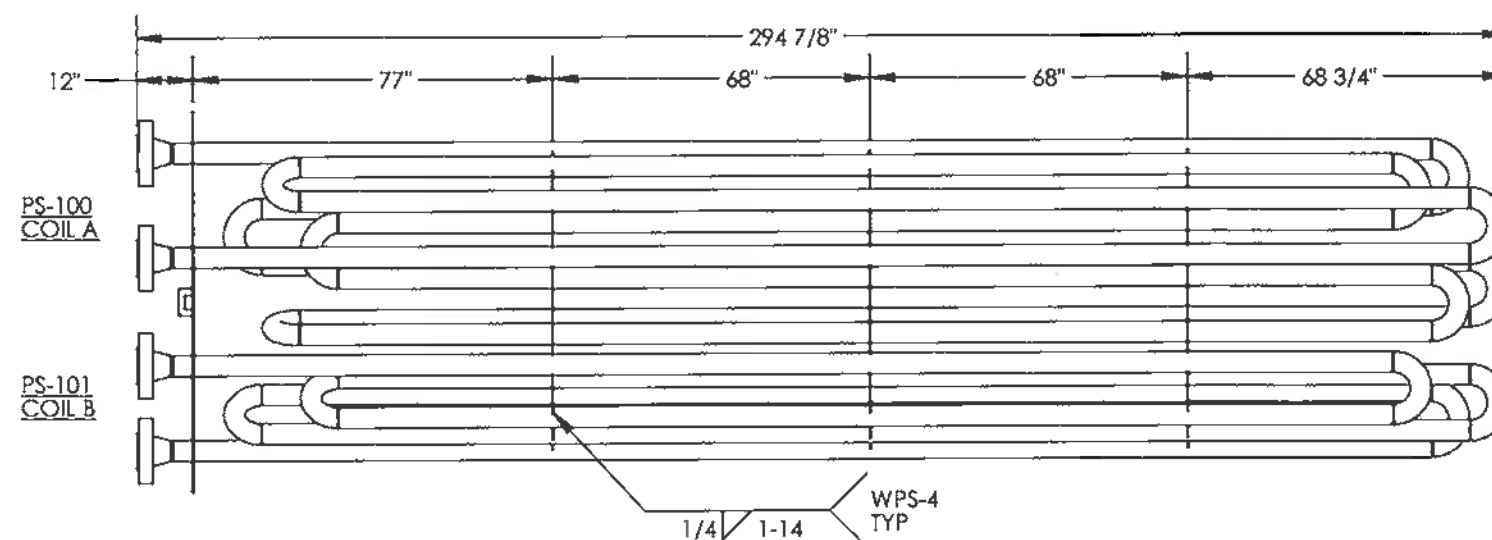


ISOMETRIC VIEW  
SCALE: 1:40



FRONT VIEW  
SCALE: 1:25

| ITEM | PART #           | DESCRIPTION                              | MTR #     | LENGTH | QTY. |
|------|------------------|------------------------------------------|-----------|--------|------|
| 1    | -                | PS-100/COIL A - SEE SHEET 2              | RDP       |        | 1    |
| 2    | -                | PS-101/COIL B - SEE SHEET 3              | 65A / 88F |        | 1    |
| 3    | BRACKET-NAME-3   | COIL NAME PLATE BRACKET SA36/44W         | W196557E  |        | 1    |
| 4    | COH2GYEE         | Coupling Half 2" 3M THRD SA105N          | A172      |        | 1    |
| 5    | COIL-NAMEPLATE-1 | COIL NAME PLATE BLACK/SILVER DEEP ETCHED | N6M / MB5 |        | 1    |
| 6    | PLABYA           | COIL TRAY PLATE 1/4" SA36/44W            |           |        | 3    |
| 7    | PLACYA           | COIL END PLATE 3/8" x 82" DIA. SA36/44W  | W2D776    |        | 1    |

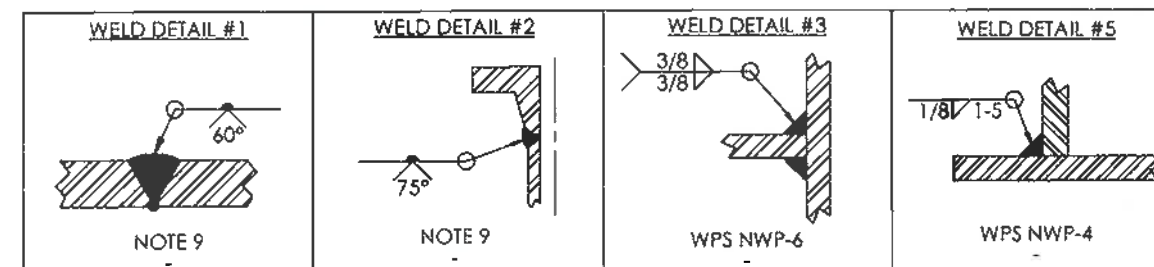


PLAN VIEW  
SCALE: 1:40

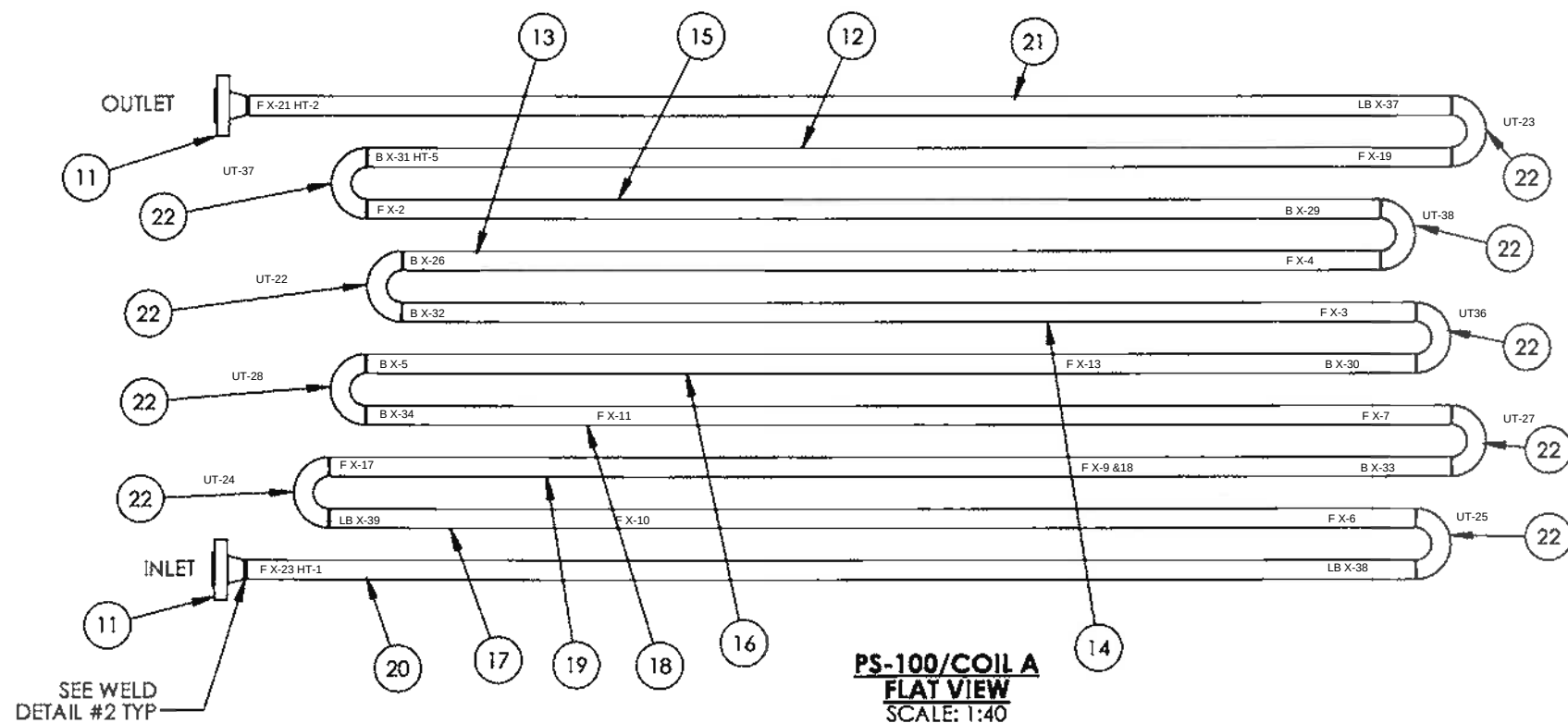
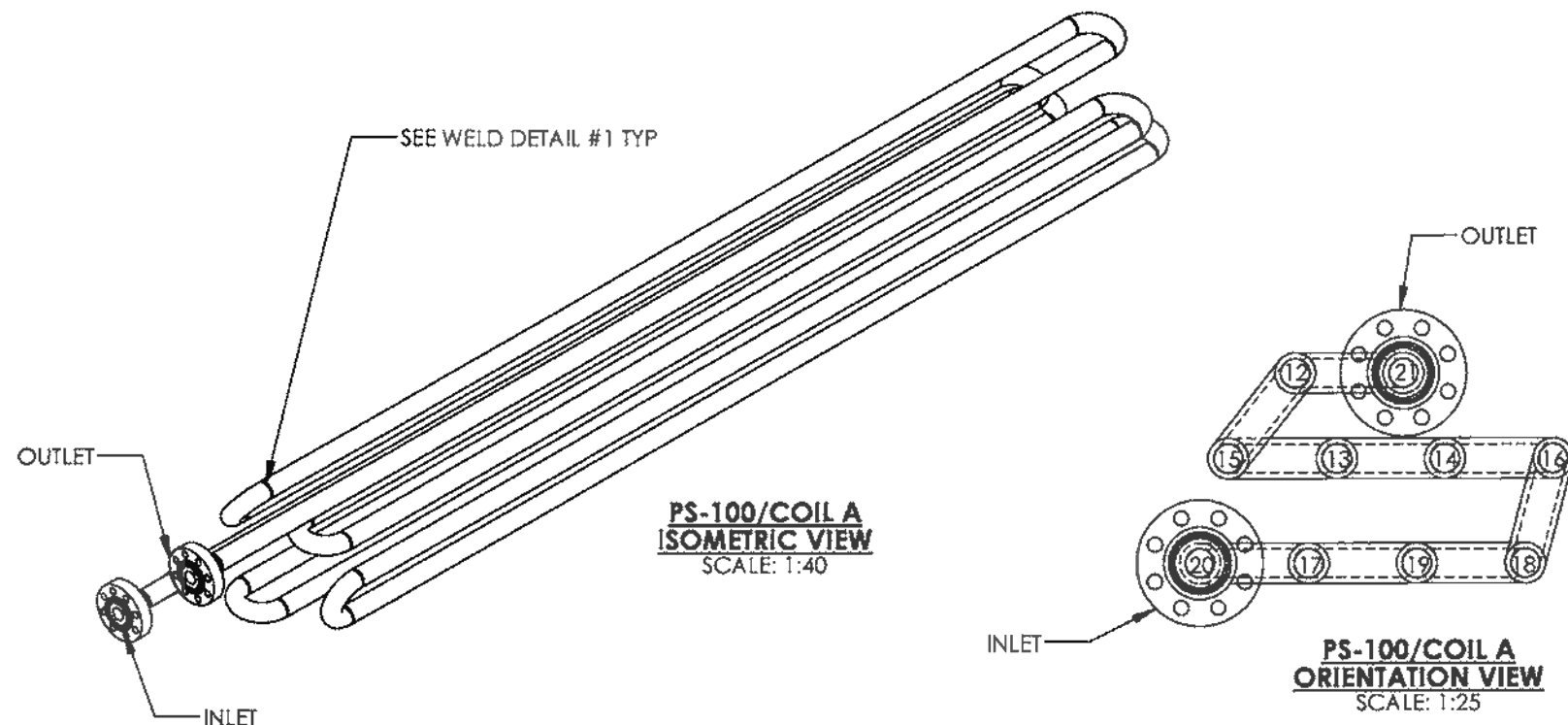
ORIGINAL

#### NOTES

1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS INCLUDE  $1/8"$  ROOT GAP.
3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY.
5. COIL TO BE CLEANED BEFORE SHIPMENT.
6. USE WELD PROCEDURE NWP-4 OR NWP-6 FOR ALL TACK WELDS.
7. HARDNESS TESTING - MAX 200 BNH 100% OF COIL BUTTWELD. BASELINE UT ON COIL RETURN BENDS.
8. APPROXIMATE WEIGHT: 11,100 LBS.
9. ROLL WELDS TO BE NWP-6, POSITION WELDS TO BE NWP-4. REFERENCE WELD DETAILS 1 & 2.



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| ITEM | PART #     | DESCRIPTION                                     | MTR #   | LENGTH         | QTY. |
|------|------------|-------------------------------------------------|---------|----------------|------|
| 11   | FLA4FXHBF  | FLANGE 4" 2500 ANSI SCH XXH RTJWN SA350-LF2-CL1 |         |                | 2    |
| 12   | PIP3XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |         | 251 1/4"       | 1    |
| 13   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |         | 226 1/2"       | 1    |
| 14   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 000132  | 234 3/4"       | 1    |
| 15   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 000132  | 234 3/4"       | 1    |
| 16   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 000132  | 243"           | 1    |
| 17   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 000132  | 251 1/4"       | 1    |
| 18   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 000132  | 251 1/4"       | 1    |
| 19   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 000132  | 259 1/2"       | 1    |
| 20   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 1115921 | 270<br>7/16"   | 1    |
| 21   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      | 415921  | 278<br>1 1/16" | 1    |
| 22   | RET4LXXHGD | Return 180 Deg 4" LR S/XXH BW SA420WPL6         | 566045  |                | 9    |

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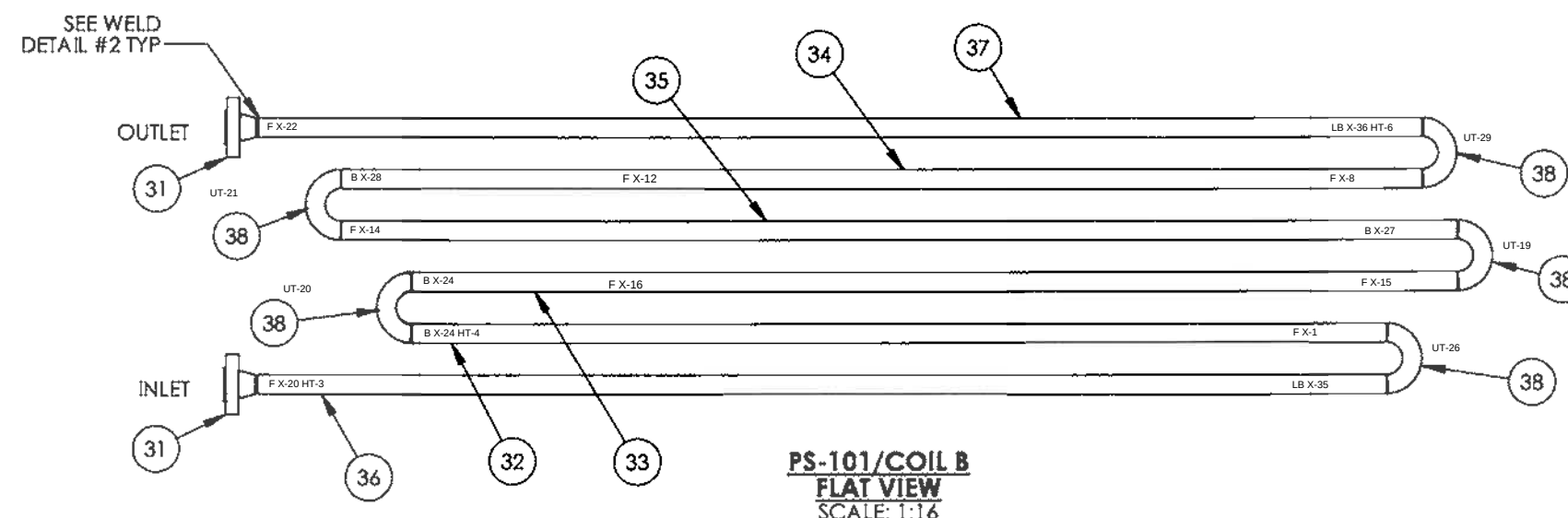
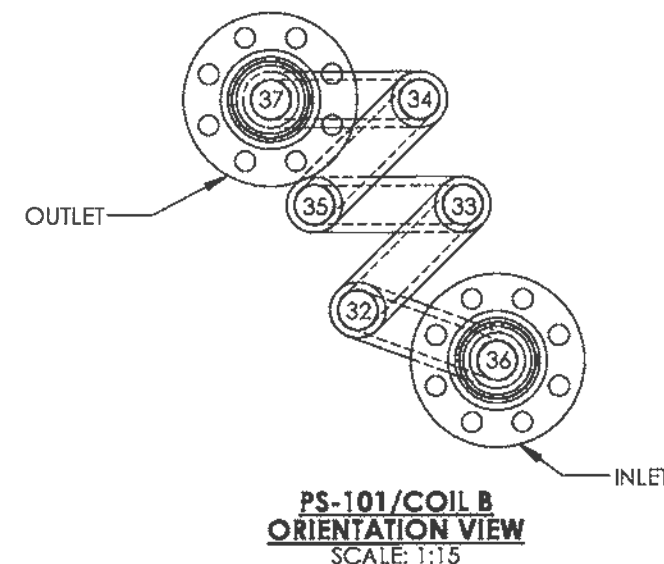
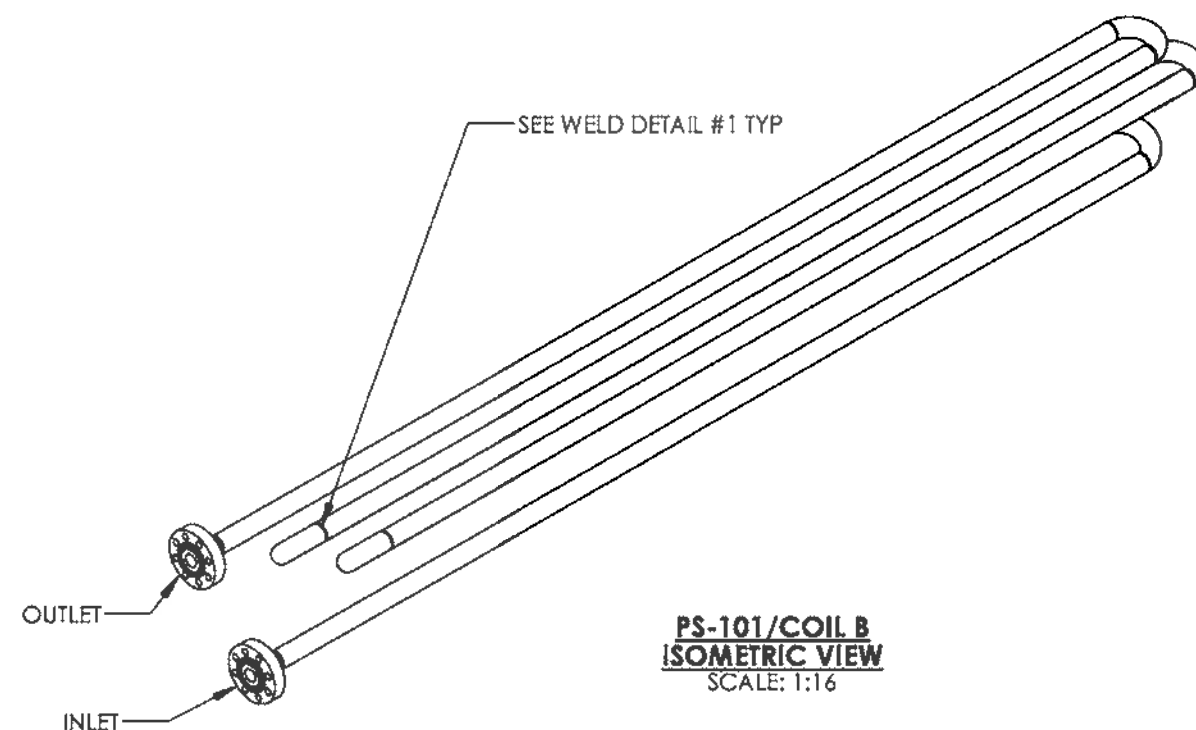
| WELD SEQUENCE |
|---------------|
| 21            |
| 12            |
| 15            |
| 13            |
| 14            |
| 16            |
| 18            |
| 19            |
| 17            |
| 20            |

| PS-100/COIL A DESIGN DATA           |                                      |
|-------------------------------------|--------------------------------------|
| DESIGN AND FABRICATE TO:            | ANSI/ASME B31.3 NFS 2010 EDITION     |
| CLIENT SPECIFICATION:               | ECA-PVF-S-03 REV 0 SPEC FAA          |
| DESIGN PRESSURE:                    | 5171 PSI                             |
| MAX. DESIGN METAL TEMPERATURE:      | 200°F                                |
| MIN. DESIGN METAL TEMPERATURE:      | -20°F                                |
| IMPACT TEST:                        | EXEMPT PER TABLE 323.2.2 COLUMN A    |
| RADIOGRAPHY:                        | 100%                                 |
| OTHER NDE:                          | SEE NOTE 7                           |
| POST WELD HEAT TREATMENT:           | 1150°F ± 25°F FOR 1 HOUR MIN. 1175 F |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                            |
| CORROSION ALLOWANCE:                | 1/16"                                |
| PRE-HEAT:                           | 50°F                                 |
| WEIGHT EMPTY:                       | 6356 LBS                             |
| WEIGHT FULL:                        | 7113 LBS                             |
| CAPACITY:                           | 12.2 CU FT                           |
| SURFACE AREA:                       | 264 SQ FT                            |
| QUALITY CONTROL PROGRAM:            | AQP-1253                             |
| WELDING PROCEDURE REGISTRATION NO.: | 1604.2                               |
| WELD PROCEDURES:                    | NWP-4, NWP-6                         |
| SERVICE:                            | HYDROCARBONS                         |
| CRN NO.:                            | P-9417.213                           |
| DESIGN REGISTRATION DRAWINGS:       | BDD-400A REV1                        |
| REFERENCE CALCULATIONS:             | BDD-400A REV4                        |

|                        |  |             |  |                   |      |    |                 |           |                         |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                           |               |                                                                                            |                                                                                            |  |
|------------------------|--|-------------|--|-------------------|------|----|-----------------|-----------|-------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--|
|                        |  |             |  |                   |      |    | <b>AS BUILT</b> |           | ISSUED FOR CONSTRUCTION |                                                                                      | <div><br/><b>NWP</b><br/>INDUSTRIES INC.<br/>Total oilfield supply.</div> <div>P.O. BOX 6280, INNISFAIL, AB T4G 1S9<br/>PH: (403) 227-4100 FAX: (403) 227-4102</div> <div>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC.<br/>AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.<br/>THIS DRAWING MUST BE RETURNED UPON REQUEST.</div> | ENCANA CORPORATION<br>LINEHEATER PACKAGE<br>3.0 MMBTU/HR<br>c/w 4" 2500# RTJ SPLIT COILS<br>COIL ASSEMBLY |               |                                                                                            |                                                                                            |  |
| 08562-6 BATH ASSEMBLY  |  |             |  |                   |      |    |                 |           | SIGNED: _____           |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                        | DWN: VW                                                                                                   |               | CHK:  | APP:  |  |
| 08562-3 SKID ASSEMBLY  |  |             |  |                   |      |    |                 |           | DATE: _____             |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                        | DATE: OCT 05/12                                                                                           |               | DATE: <b>OCT 29 2012</b>                                                                   | DATE: <b>29 2012</b>                                                                       |  |
| 08562-2B WELDED PIPING |  |             |  |                   |      |    | 0               | OCT 22/12 | VW                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                        | ISSUED FOR CONSTRUCTION                                                                                   | SCALE: 1:40   |                                                                                            | DWG: <b>08562-4</b>                                                                        |  |
| 08562-2A WELDED PIPING |  |             |  |                   |      |    | A               | OCT 05/12 | VW                      |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                        | ISSUED FOR APPROVAL                                                                                       | SHEET: 2 OF 4 |                                                                                            | REV: <b>0</b>                                                                              |  |
| DOCUMENT NO.           |  | DESCRIPTION |  | REV               | DATE | BY | CHK             | APP       | S/N: _____              |                                                                                      | ALL DIMENSIONS IN INCHES                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |               |                                                                                            |                                                                                            |  |
| REFERENCE DRAWINGS     |  |             |  | DRAWING REVISIONS |      |    |                 |           |                         |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                           |               |                                                                                            |                                                                                            |  |



| ITEM | PART #     | DESCRIPTION                                     | MTR # | LENGTH    | QTY. |
|------|------------|-------------------------------------------------|-------|-----------|------|
| 31   | FLA4FXHBF  | FLANGE 4" 2500 ANSI SCH XXH RTJWN SA350-LF2-CL1 |       |           | 2    |
| 32   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |       | 226 1/2"  | 1    |
| 33   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |       | 243"      | 1    |
| 34   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |       | 251 1/4"  | 1    |
| 35   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |       | 259 1/2"  | 1    |
| 36   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |       | 262 3/16" | 1    |
| 37   | PIP4XXHB   | PIPE 4" SCH. XXH SA333-GR6                      |       | 270 7/16" | 1    |
| 38   | RET4LXXHGD | Return 180 Deg 4" LR S/XXH BW SA420WPL6         |       |           | 5    |



| WELD<br>SEQUENCE |
|------------------|
| 37               |
| 34               |
| 35               |
| 33               |
| 32               |
| 36               |

**ORIGINAL**

| PS-101/COIL B DESIGN DATA           |                                      |
|-------------------------------------|--------------------------------------|
| DESIGN AND FABRICATE TO:            | ANSI/ASME B31.3 NFS 2010 EDITION     |
| CLIENT SPECIFICATION:               | ECA-PVF-S-03 REV 0 SPEC FAA          |
| DESIGN PRESSURE:                    | 5171 PSI                             |
| MAX. DESIGN METAL TEMPERATURE:      | 200°F                                |
| MIN. DESIGN METAL TEMPERATURE:      | -20°F                                |
| IMPACT TEST:                        | EXEMPT PER TABLE 323.2.2 COLUMN A    |
| RADIOGRAPHY:                        | 100%                                 |
| OTHER NDE:                          | SEE NOTE 7                           |
| POST WELD HEAT TREATMENT:           | 1150°F ± 25°F FOR 1 HOUR MIN, 1175 F |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                            |
| CORROSION ALLOWANCE:                | 1/16"                                |
| PRE-HEAT:                           | 50°F                                 |
| WEIGHT EMPTY:                       | 3930 LBS                             |
| WEIGHT FULL:                        | 4388 LBS                             |
| CAPACITY:                           | 7.4 CU FT                            |
| SURFACE AREA:                       | 160 SQ FT                            |
| QUALITY CONTROL PROGRAM:            | AQP-1253                             |
| WELDING PROCEDURE REGISTRATION NO.: | 1604.2                               |
| WELD PROCEDURES:                    | NWP-4, NWP-6                         |
| SERVICE:                            | HYDROCARBONS                         |
| CRN NO.:                            | P-9417.213                           |
| DESIGN REGISTRATION DRAWINGS:       | BDD-400A REV1                        |
| REFERENCE CALCULATIONS:             | BDD-400A REV4                        |

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| OD    | NPS 4      | W.T. | XXH                                | LENGTH | —            | TOTAL PIECES (PCS) | —     | TOTAL WEIGHT(TONS) | —      |

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|           |                  |                |           | CHEMICAL COMPOSITION                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
| 1         | 110062           | 000132         | 158       | C                                                 | 0.300 | Si | 0.100 | Mn | 0.280 | P | 0.015 | S | 0.008 | Cr | — | V | — | B | — | Nb | — | Mo | — | W | — | Co | — | Al | — | Fe | — |
|           |                  |                |           | 冲击试验 IMPACT TEST                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | ACV (J)                                           |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 10*10*55 (-45°C)                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 硬度试验 HARDNESS TEST                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | (HRB≤22)                                          |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 水压试验 HYDROSTATIC TEST                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 19.0 MPa, 10s                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 无损探伤检测                                            |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | N.D.E.                                            |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | METALLOGRAPHIC                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 显微组织 MICROSTRUCTURE                               |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 晶粒度 GRAIN SIZE                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | F+P                                               |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | B                                                 |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 外观和尺寸                                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | FLATTENING TEST                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | BENDING TEST                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | EXPAND TEST                                       |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | FLATNESS TEST                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | F+P                                               |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | B                                                 |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | VISUAL & DIMENSION                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | FLATTENING TEST                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | BENDING TEST                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | EXPAND TEST                                       |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | FLATNESS TEST                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 合格                                                |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | F+P                                               |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | B                                                 |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 1. H. HEAT (LADLE) ANALYSIS: P, PRODUCT ANALYSIS. |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 2. 试样尺寸: 10*10*55 (-45°C)                         |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 3. 试验方法: 水压试验                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 4. 试验结果: 合格                                       |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 5. 试验结论: 合格                                       |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 6. 试验日期: 2011-11-15                               |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 7. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                       |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 8. 试验人员: 王金城                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 9. 试验单位: 华友特钢                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 10. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 11. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 12. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 13. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 14. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 15. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 16. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 17. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 18. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 19. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 20. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 21. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 22. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 23. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 24. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 25. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 26. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 27. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 28. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 29. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 30. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 31. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 32. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 33. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 34. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 35. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 36. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 37. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 38. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 39. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 40. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 41. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 42. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 43. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 44. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 45. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 46. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 47. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 48. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 49. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 50. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 51. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 52. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 53. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 54. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 55. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 56. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 57. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 58. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 59. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 60. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 61. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 62. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 63. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 64. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 65. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 66. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 67. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 68. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 69. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 70. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 71. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 72. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 73. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 74. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 75. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 76. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 77. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 78. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 79. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 80. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 81. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 82. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 83. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 84. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 85. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 86. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 87. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 88. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 89. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 90. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 91. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 92. 试验报告: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 93. 试验结论: 合格                                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 94. 试验日期: 2011-11-15                              |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 95. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 96. 试验人员: 王金城                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 97. 试验单位: 华友特钢                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 98. 试验设备: 水压试验机                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 99. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008      |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 100. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 101. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 102. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 103. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 104. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 105. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 106. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 107. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 108. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 109. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 110. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 111. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 112. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 113. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 114. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 115. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 116. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 117. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 118. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 119. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 120. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 121. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 122. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 123. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 124. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 125. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 126. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 127. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 128. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 129. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 130. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 131. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 132. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 133. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 134. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 135. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 136. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 137. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 138. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 139. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 140. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 141. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 142. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 143. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 144. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 145. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 146. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 147. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 148. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 149. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 150. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 151. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 152. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 153. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 154. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 155. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 156. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 157. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 158. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 159. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 160. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 161. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 162. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 163. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 164. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 165. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 166. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 167. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 168. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 169. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 170. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 171. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 172. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 173. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 174. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 175. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 176. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 177. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 178. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 179. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 180. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 181. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 182. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 183. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 184. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 185. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 186. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 187. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 188. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 189. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 190. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 191. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 192. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 193. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 194. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 195. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 196. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 197. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 198. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 199. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 200. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 201. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 202. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 203. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 204. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 205. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 206. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 207. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 208. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 209. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 210. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 211. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 212. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 213. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 214. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 215. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 216. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 217. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 218. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 219. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 220. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 221. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 222. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 223. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 224. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 225. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 226. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 227. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 228. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 229. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 230. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 231. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 232. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 233. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 234. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 235. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 236. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 237. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 238. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 239. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 240. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 241. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 242. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 243. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 244. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 245. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 246. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 247. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 248. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 249. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 250. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 251. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 252. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 253. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 254. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 255. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 256. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 257. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 258. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 259. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 260. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 261. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 262. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 263. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 264. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 265. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 266. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 267. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 268. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 269. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 270. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 271. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 272. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 273. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 274. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 275. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 276. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 277. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 278. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 279. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 280. 试验人员: 王金城                                    |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 281. 试验单位: 华友特钢                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 282. 试验设备: 水压试验机                                  |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 283. 试验标准: ASTM/A533-10 GR.B NACE MR0175-2008     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 284. 试验报告: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 285. 试验结论: 合格                                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 286. 试验日期: 2011-11-15                             |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           | 287. 试验地点: 无锡市滨湖区胡埭工业园西区西拓振湖路                     |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |
|           |                  |                |           |                                                   |       |    |       |    |       |   |       |   |       |    |   |   |   |   |   |    |   |    |   |   |   |    |   |    |   |    |   |

# ESSAR Steel Algoma Inc.

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

CUSTOMER PURCHASE ORDER NUMBER  
15063-BS

ENTR DATE  
2011/10/05

CREATE DATE  
2011/11/20

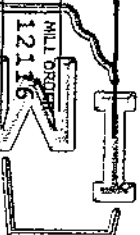
FALL NUMBER  
251758

SHIPPER'S NO.  
-

CARRIER  
NOXL

-380828

MILL ORDER  
12116



ALBERTA INDUSTRIAL METALS LTD  
4821 - 78TH STREET  
RED DEER ALBERTA  
T4P 1N5

ALBERTA INDUSTRIAL METALS LTD  
7660 49TH AVENUE  
CALGARY, ALBERTA  
T4P 4G6

CUSTOMER SPECIFICATION  
HOT ROLLED STEEL SHEET - HSLA - TO CHEMISTRIES OF CSA G40.21 38W - STRL Q - TEMPER ROLLED - RESTRICTED GAUGE  
3/4 10L - TOP SEMI-CRITICAL SURFACE - STANDARD SHAPE

## MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

K. UGHADPAGA

MANAGER METALLURGICAL SERVICES

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705) 945-2624 COLLECT FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT.

## SUPPLEMENTARY INSTRUCTIONS

TEST CERT 1: BRADGABIM.CA TEST CERT 2: PLATE TEST COUPON: *2011/11/21*  
"Conforms with ASME Sec II, Part A, 2010 edition,"  
2000204562 WS  
2011/11/21 19:02

MEETS EN 10204:2004 TYPE 3.1  
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM  
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

CUSTOMER ITEM 00004 OUR ITEM 004 DIMENSIONS .240 MIN X 72 X COIL

| COIL NUMBER | HEAT-MS  | PIECES | NO. WEIGHT | COIL NUMBER | HEAT-MS  | PIECES | NO. WEIGHT |
|-------------|----------|--------|------------|-------------|----------|--------|------------|
| 446011000   | 0054M-03 | 1      | 39480      | 446013000   | 0054M-05 | 1      | 39100      |
| 446015000   | 0054M-54 | 1      | 38750      |             |          |        |            |

TENSILE TESTS: \* SAMPLE \* \* \* \* \* M E C H A N I C A L P R O P E R T I E S \* \* \* \* \*

| HEAT  | GAUGE | COND  | TEST | YIELD | TENSILE | ELONG. |
|-------|-------|-------|------|-------|---------|--------|
| 0054M | 106"  | .2400 | AR   | 64.2  | 77.2    | 26(2") |

| HEAT  | (WT %) | C   | MN  | P    | S    | SI  | CR  | NI  | CU  | MO   | AL   | CB   | V | B |
|-------|--------|-----|-----|------|------|-----|-----|-----|-----|------|------|------|---|---|
| 0054M | +      | .16 | .87 | .010 | .007 | .02 | .02 | .04 | .01 | .032 | .022 | .000 |   |   |

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.

ArcelorMittal Dofasco Inc.  
P.O. Box 2460  
Hamilton, Ontario  
L8N 3J5

TEST REPORT  
RAPPORT D'ESSAI

Attention: S/B Admin Dept.  
Fax: 9 05 204 774 5732  
Date: 05/05/2011

Page 1 of 1

Purchase Order/Bon de Commande  
M51032461-02 JUNE  
Bill of Lading/Connaissance  
750536

Customer/Client  
243000

Sales Order/Bon de Commande  
HS2 306201006

Vendor/Vendeur

Packing Slip/Bordereau de Charge

Vehicle or Carrier/Vehicule ou Transporteur  
TBA/TBA/C

Sold To/Vendu A  
RUSSEL METALS INC.  
P.O. BOX 39  
WINNIPEG, MB.  
R3C 2G3

Ship To/Expédier A  
RUSSEL METALS INC.  
1359 ST. JAMES ST.  
WINNIPEG, MB.  
R3H 0K9

Spec/Norm et Spec.  
DOFASCO G40.21 44W/50W  
STANDARD THICKNESS TOLERANCE  
STANDARD UNEXPOSED SURFACE  
MATERIAL CERTIFICATION REQUIRED  
CODE SPOT 508-14

Material Description/Description du Material  
HOT ROLLED STEEL SHEET  
STRUCTURAL STEEL  
COILS  
MILL EDGE PLAIN DRY

.1740 MIN .1820 X 60 X COIL  
Weight - 56400 LBS  
Test Methods  
ASTM A370, E1019, E415

**051044379**

MECHANICAL PROPERTIES

| HEAT   | SERIAL NUMBER   | TEST UNITS KSI | GAUGE LENGTH 2 INCH |
|--------|-----------------|----------------|---------------------|
| COULEE | NOMBRE DE SERIE | LIFT NUMBER    | YIELD STRENGTH      |
|        |                 | NOMBRE DE      | RESISTANCE A LA     |
|        |                 | FARDEAU        | D'ELASTICITE        |
|        |                 | 4622159        | 71. ✓               |
| 100512 | P21493/00       |                | 78 ✓                |
|        |                 |                | 27.4 ✓              |

"Conforms with ASME  
Sec II, Part A, 2010 edition"  
Checked to SA36  
Sept 26, 2011  
OT

| HEAT   | C     | Mn    | P     | S      | Si    | Cu    | Ni  | Cr  | Sn   | Mo   | Al   | Al   | Cb   | V    | Ti   | Ca   | N     | B     | O |
|--------|-------|-------|-------|--------|-------|-------|-----|-----|------|------|------|------|------|------|------|------|-------|-------|---|
| 100512 | .06 ✓ | .62 ✓ | .01 ✓ | .007 ✓ | .06 ✓ | .16 ✓ | .05 | .08 | .012 | .013 | .049 | .051 | .042 | .003 | .020 | .002 | .0075 | .0002 |   |

We Certify That The Material Described Herein Conforms To The Specification Shown On This Document  
ArcelorMittal Dofasco Inc. as per Diane Skupny-MacBride - CMTL Supervisor  
The Results Relate Only To The Items Tested

This Report Shall Not Be Reproduced Except In Full Without The Expressed Written Approval of The CMTL Supervisor.

This Contract Is Subject To The Terms And Conditions Of Sale Shown On The Order Acknowledgement.  
Ce Contrat est Sujet aux Termes et Conditions de Vente Indiqués Sur l'Accuse de Reception de Commande.

VT.697-0.718

OK

Balance

HENGYANG VALIN STEEL  
TUBE CO., LTD

# MILL CERTIFICATE

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

(ACCORDING TO EN10204 3.1)

|                |                            |               |                    |                    |            |
|----------------|----------------------------|---------------|--------------------|--------------------|------------|
| CUSTOMER       | KELLY PIPE                 |               | CERTIFICATE NO.    | C201139822-1       |            |
| CONTRACT NO.   | NO: 190471                 |               | DATE:              | 2011-12-31         |            |
| PRODUCT        | SEAMLESS CARBON STEEL PIPE |               | DELIVERY CONDITION | N                  |            |
| SPECIFICATION  | SEE SPECIFICATION NOTE     |               | HEAT TREATMENT     |                    |            |
| GRADE          | B/A333-GR.6/X42            |               | DIMENSIONS(mm)     | 4" * 0.674" * 40FT |            |
| TOTAL BUNDLES: | 39                         | TOTAL PIECES: | 190                | TOTAL LENGTH:      | 7604.94 FT |
|                |                            |               |                    | TOTAL WEIGHT:      | 95.113 MT  |

| NO. | LOT No.   | HEAT No. | BUNDLES | PIECES | LENGTH  |        | WEIGHT | TENSILE TEST ASTM A370                                         |               |       |             |          |           |            | FLATTENING TEST |
|-----|-----------|----------|---------|--------|---------|--------|--------|----------------------------------------------------------------|---------------|-------|-------------|----------|-----------|------------|-----------------|
|     |           |          |         |        | FT      | MT     |        | SAMPLE TYPE/ ORIENTATION / SIZE(mm)/GAUGE LENGTH(mm)/SL25.4/50 |               |       |             |          |           |            |                 |
|     |           |          |         |        |         |        |        | TS(Psi)                                                        | YS(Psi)       | Rt0.5 | EL(%)       | R.A. (%) | YS/TS     |            |                 |
|     |           |          |         |        |         |        |        |                                                                |               |       |             |          |           |            |                 |
| 1   | 812100049 | 1115920  | 8       | 38     | 1520.99 | 19.023 |        | 67425/67135 ✓                                                  | 48140/47850 ✓ |       | 44.5/44.0 ✓ |          | 0.71/0.71 | ACCEPTABLE |                 |
| 2   | 812100050 | 1115921  | 6       | 30     | 1200.78 | 15.018 |        | 71340/70515 ✓                                                  | 51620/50750 ✓ |       | 44.5/46.0 ✓ |          | 0.72/0.72 | ACCEPTABLE |                 |
| 3   | 812100051 | 1115925  | 7       | 36     | 1440.94 | 18.021 |        | 68005/68295                                                    | 48865/49300   |       | 45.0/44.0   |          | 0.72/0.72 | ACCEPTABLE |                 |
| 4   | 812200052 | 1115926  | 9       | 42     | 1681.09 | 21.025 |        | 69310/68875 ✓                                                  | 49590/49445 ✓ |       | 44.0/45.0 ✓ |          | 0.72/0.72 | ACCEPTABLE |                 |
| 5   | 812200053 | 1115924  | 9       | 44     | 1761.14 | 22.026 |        | 71485/70905 ✓                                                  | 53070/52490 ✓ |       | 44.5/44.0 ✓ |          | 0.74/0.74 | ACCEPTABLE |                 |

| NO. | IMPACT TEST                                  |         |              |    |         |         |              |    |  |  | NON METALLIC INCLUSION | GRAIN SIZE | HARDNESS TEST |         |
|-----|----------------------------------------------|---------|--------------|----|---------|---------|--------------|----|--|--|------------------------|------------|---------------|---------|
|     | NOTCH TYPE/ORIENTATION/TEMPERATURE/SIZE (mm) |         |              |    |         |         |              |    |  |  |                        |            | NACE MR0175   | HRC <22 |
|     | V8T/45/10                                    |         |              |    |         |         |              |    |  |  |                        |            |               |         |
|     | LE                                           |         |              |    |         |         |              |    |  |  |                        |            |               |         |
|     | AK1 (J)                                      | Av. (J) | % SHEAR AREA | LE | AK2 (J) | Av. (J) | % SHEAR AREA | LE |  |  |                        |            |               |         |
|     |                                              |         |              |    |         |         |              |    |  |  |                        |            |               |         |
|     |                                              |         |              |    |         |         |              |    |  |  |                        |            |               |         |
|     |                                              |         |              |    |         |         |              |    |  |  |                        |            |               |         |
| 1   | 123.0/145.0/132.0                            | 134     | 85/90/88     |    |         |         |              |    |  |  |                        |            | OK ✓          |         |
| 2   | 158.0/136.0/178.0                            | 157     | 85/80/92     |    |         |         |              |    |  |  |                        |            | OK            |         |
| 3   | 150.0/172.0/130.0                            | 151     | 90/92/85     |    |         |         |              |    |  |  |                        |            | OK            |         |
| 4   | 128.0/114.0/156.0                            | 133     | 86/85/88     |    |         |         |              |    |  |  |                        |            | OK ✓          |         |
| 5   | 147.0/159.0/168.0                            | 158     | 85/87/90     |    |         |         |              |    |  |  |                        |            | OK ✓          |         |

NOTES:

W1--THEORETICAL WEIGHT  
W2--ACTUAL WEIGHT  
NR--NORMALIZING ROLLED  
AK1--ABSORB ENERGY FOR THE FIRST SET  
AK2--ABSORB ENERGY FOR THE SECOND SET

Date: 2011-12-31

SAMPLE ORIENTATION: L--LONGITUDINAL T--TRANSVERSE  
SAMPLE TYPE: S--STRIP C--CLUBBED F--FULL-SECTION  
Q&T--QUENCHING AND TEMPERING  
N--NORMALIZING  
A--ANNEALING  
AV--AVERAGE  
LE--SIDE EXPANSION

HE--HOT EXPANDED  
HR--HOT ROLLED  
N&T--NORMALIZING AND TEMPERING

Add: 10 Daitvincun, Hengyang City, Hunan, P. R. China  
P. C. :421001  
Tel and Fax: +86 734 8873749  
E-mail: hsioc@hysteel tube.com

# MILL CERTIFICATE

HENGYANG VALIN STEEL  
TUBE CO., LTD

|                   |  |                            |                       |                    |                    |           |
|-------------------|--|----------------------------|-----------------------|--------------------|--------------------|-----------|
| CUSTOMER          |  | KELLY PIPE                 |                       | CERTIFICATE NO.    | C201139822-1       |           |
| CONTRACT NO.      |  | 2011-12-31                 |                       | DATE:              | 2011-12-31         |           |
| PRODUCT           |  | SEAMLESS CARBON STEEL PIPE |                       | DELIVERY CONDITION | N                  |           |
| SPECIFICATION     |  | SEE SPECIFICATION NOTE     |                       | HEAT TREATMENT     |                    |           |
| GRADE             |  | B/A333-GR.6/X42            |                       | DIMENSIONS(mm)     | 4" * 0.674" * 40FT |           |
| TOTAL BUNDLES: 39 |  | TOTAL PIECES: 190          | TOTAL LENGTH: 7604.94 | FT                 | TOTAL WEIGHT:      | 95.113 MT |

| CHEMICAL COMPOSITION (%) |           |         |      |    |    |     |    |    |   |    |    |    |    |
|--------------------------|-----------|---------|------|----|----|-----|----|----|---|----|----|----|----|
| NO                       | HEAT No.  | LOT No. | Type | C  | Si | Mn  | Cr | Mo | W | Cu | Ni | P  | Al |
|                          |           |         |      |    |    |     |    |    |   |    |    |    |    |
| 1                        | 1115920   |         | P    | 14 | 31 | 10  | 5  | 1  |   | 6  | 2  | 16 | 24 |
|                          | 812100049 |         | P    | 15 | 32 | 108 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 812100049 |         | P    | 14 | 33 | 107 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 1115921   |         | P    | 15 | 33 | 112 | 6  | 3  |   | 6  | 2  | 16 | 23 |
|                          | 812100050 |         | P    | 14 | 31 | 108 | 5  | 1  |   | 4  | 2  | 15 | 27 |
| 2                        | 812100050 |         | P    | 15 | 32 | 107 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 1115925   |         | P    | 15 | 34 | 110 | 5  | 1  |   | 4  | 2  | 16 | 30 |
|                          | 812100051 |         | P    | 14 | 31 | 106 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 812100051 |         | P    | 15 | 31 | 107 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 812100051 |         | P    | 16 | 31 | 109 | 5  | 1  |   | 5  | 2  | 14 | 28 |
| 3                        | 812200052 |         | P    | 15 | 32 | 106 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 812200052 |         | P    | 15 | 32 | 106 | 5  | 1  |   | 4  | 2  | 15 | 27 |
|                          | 1115924   |         | P    | 15 | 31 | 109 | 5  | 1  |   | 5  | 2  | 16 | 31 |
|                          | 812200053 |         | P    | 13 | 33 | 106 | 5  | 1  |   | 4  | 2  | 15 | 28 |
|                          | 812200053 |         | P    | 14 | 32 | 107 | 5  | 1  |   | 4  | 2  | 15 | 28 |

| NON-DESTRUCTIVE TEST           |  |  |  |            |  |  |  |            |  |  |  |  |  |
|--------------------------------|--|--|--|------------|--|--|--|------------|--|--|--|--|--|
| PIPE BODY                      |  |  |  | PIPE END   |  |  |  | BEVELLING  |  |  |  |  |  |
| ET                             |  |  |  | MPI        |  |  |  | ACCEPTABLE |  |  |  |  |  |
| N/A                            |  |  |  | ACCEPTABLE |  |  |  | ACCEPTABLE |  |  |  |  |  |
| ACCEPTABLE                     |  |  |  | ACCEPTABLE |  |  |  | COATING    |  |  |  |  |  |
| RESIDUAL MAGNETISM             |  |  |  | N/A        |  |  |  | ACCEPTABLE |  |  |  |  |  |
| UT THICKNESS MEASUREMENT (50%) |  |  |  | ACCEPTABLE |  |  |  | ACCEPTABLE |  |  |  |  |  |
| HYDROSTATIC TEST               |  |  |  | 3000/6     |  |  |  | ACCEPTABLE |  |  |  |  |  |

|        |                                                                       |                                                                    |                      |         |          |         |         |
|--------|-----------------------------------------------------------------------|--------------------------------------------------------------------|----------------------|---------|----------|---------|---------|
| NOTES: | H-HEAT ANALYSIS                                                       | P-PRODUCT ANALYSIS                                                 | CE-EQUIVALENT CARBON | R-RATIO | R1=Ca /S | R2=A1/N | R3=Mn/C |
|        | CEIW=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15                                    | CEPCM=C+Si/30+(Mn+Cr+Cu)/20+(Ni/80+Mo/15+V/10+5)*B                 |                      |         |          |         |         |
|        | SUM1=C+Cu+Mo+Ni+V                                                     | SUM2=Nb+V                                                          | SUM3=Nb+V+Ti         |         |          |         |         |
|        | L4--ACCEPT LEVEL L4,NOTCH DEPTH IS 12.5% THE SPECIFIED WALL THICKNESS | L2--ACCEPT LEVEL L2,NOTCH DEPTH IS 5% THE SPECIFIED WALL THICKNESS |                      |         |          |         |         |

MN/C = lowest MN = 1.09 = 6.81  
highest C = .16



HENGYANG VALIN STEEL  
TUBE CO., LTD

# MILL CERTIFICATE

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

(ACCORDING TO EN10204 3.1)

|                |                            |               |                    |                        |
|----------------|----------------------------|---------------|--------------------|------------------------|
| CUSTOMER       | KELLY PIPE                 |               | CERTIFICATE NO.    | C201139822-1           |
| CONTRACT NO.   | NO. 190471                 |               | DATE:              | 2011-12-31             |
| PRODUCT        | SEAMLESS CARBON STEEL PIPE |               | DELIVERY CONDITION | N                      |
| SPECIFICATION  | SEE SPECIFICATION NOTE     |               | HEAT TREATMENT     |                        |
| GRADE          | B/A333-GR.6/ X42           |               | DIMENSIONS(mm)     | 4" * 0.674" * 40FT     |
| TOTAL BUNDLES: | 39                         | TOTAL PIECES: | 190                | TOTAL LENGTH: 7604.940 |
|                |                            |               | FT                 | TOTAL WEIGHT: 95.113   |
|                |                            |               |                    | MT                     |

REMARK :

SPECIFICATION NOTE  
ASTM A53B/A106B/A333-6-2010, ASME SA53B/SA106B/SA333-6-2010, API 5LB/X42, PSL-2-2008, NACE MR-0175-2009 (FOR HARDNESS ONLY) (CSA Z245.1 GR.241/290 CAT II -2007)

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

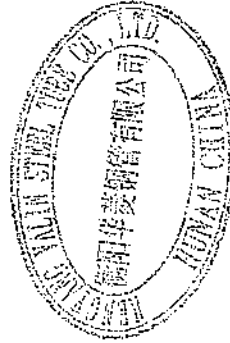
This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark JOINTIME light-green coloured at the bottom of the page is stamped. In case the owner of the certificate would release a copy of it, he must attest its conformity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

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

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

CUSTOMER THIRD PARTY

Quality Manager: 胡双开



Certificate-maker: 唐娅娜

CLIENTE / Customer / Client

**CCTF CORPORATION (EDMONTON)**  
5407 - 53 AVENUE NW  
EDMONTON, AB T8B 3G2  
CANADA

# CERTIFICADO DE INSPECCION

## Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1  
ISO 10474 / 3.1

FECHA:  
Date:

19/10/2012

N.º  
No.

151901

HOJA:  
Page:

1



PRODUCTO  
Article - Produit

FLANGES

SU PEDIDO N.º

Your Order No. 4891690-00  
Votre Cde. N.º

DE

of. - de 28/09/2012

Certified acc. PED 97/23/EC+AD2000-W0  
by TÜV Rheinland  
N.º 01 202 E/Q 02 7443

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

NORMAS APLICABLES

ASME B16.5-09

Requirements - Normes Applicables

MATERIAL CORRESPONDIENTE ASTM/ASME A/SA105N-11 A/SA350LF2CL1-11

Material Correspondent - Qualité

MODO DE FUSION (\*)

Steel Making - Elaboration de l'acier

E = Elec. Y = Origino básico

NACE MR0175/ISO15156-2-09 & MR0103-10

Clause 7.2.1.4, Annex A.2 and SSC Region 3.

CSA-Z245.12-09 GR248 CAT II - SS (WN & BLIND FLANGES ONLY)

MARCA DEL FABRICANTE  
Mark of factory  
Marque du fabricant



Packing List: 96870

DEPARTAMENTO QUALITY ASSURANCE

Section

Département

| PARTIDA<br>Item<br>Poste | CANTIDAD<br>Quantity<br>Quantité | DESCRIPCION<br>Description<br>Description | LOTE | OBSERVACIONES<br>Remarks<br>Observations<br>(*) | COLADA N.<br>Heat No<br>N.°Coulée | RESISTENCIA                        | LONGITUD                     | ALARGAM.                                  | ESTRICCION                  | RESILIENCIA                         | CHARPY V 10x10mm            |    | DUREZA                    |     |     |     |
|--------------------------|----------------------------------|-------------------------------------------|------|-------------------------------------------------|-----------------------------------|------------------------------------|------------------------------|-------------------------------------------|-----------------------------|-------------------------------------|-----------------------------|----|---------------------------|-----|-----|-----|
|                          |                                  |                                           |      |                                                 |                                   | T.Strength<br>Resist Rupt<br>N/mm2 | Y.Strength<br>0.2 %<br>N/mm2 | Elongation<br>Allongement<br>Lo: 4 d<br>% | Red. Area<br>Striction<br>% | Impact test<br>Résilience<br>Joules | MEDIA<br>Average<br>Moyenne | °C | Hardness<br>Dureté<br>HBW |     |     |     |
| 18 7586840               | 7                                | WN 12 150LB STD RF A350LF2                | 1742 | NE                                              | 329V2                             | 513                                | 325                          | 28,40                                     | 58,30                       | 50                                  | 56                          | 52 | 53                        | -50 | 155 | 161 |
| 18 7586840               | 17                               | WN 12 150LB STD RF A350LF2                | 2482 | NE                                              | 526V2                             | 515                                | 318                          | 26,40                                     | 55,30                       | 63                                  | 69                          | 66 | 66                        | -50 | 150 | 152 |
| 29 7581234               | 4                                | WN 4 2500LB XXS RTJ A350LF2               | 1062 | NE                                              | 192V2                             | 533                                | 338                          | 25,00                                     | 47,60                       | 61                                  | 35                          | 38 | 45                        | -50 | 155 | 156 |

RATIO=4.15

RATIO = 4.15

| COLADA N.º<br>Heat No<br>N.º Coudée | COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------------|-----------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                     | C %                                                                   | Si %  | Mn %  | P %   | S %   | Cr %  | Ni %  | Mo %  | Nb %  | V %   | Cu %  | Al %  | Ti %  | N %   | CEq % |
| 192V2                               | 0,200                                                                 | 0,220 | 0,830 | 0,009 | 0,001 | 0,150 | 0,080 | 0,020 | 0,001 | 0,002 | 0,250 | 0,020 | 0,000 | 0,000 | 0,395 |
| 329V2                               | 0,200                                                                 | 0,240 | 0,860 | 0,011 | 0,001 | 0,200 | 0,090 | 0,040 | 0,001 | 0,003 | 0,190 | 0,028 | 0,000 | 0,000 | 0,411 |
| 526V2                               | 0,210                                                                 | 0,195 | 0,840 | 0,012 | 0,002 | 0,059 | 0,083 | 0,025 | 0,006 | 0,005 | 0,260 | 0,025 | 0,000 | 0,000 | 0,391 |

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

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

(\*) OBSERVACIONES:  
Remarks  
Observations

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

2012/11/7 S. Nason  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

ENCANA  
MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: S. Nason

Date: 2012/11/7



2012/8/21 S. Nason  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 :2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.

CERT. NO : 122328

L/C NO :

ORDER NO : 7005475

DATE : 07/10/2012

INVOICE NO : BW01210102123

PAGE : 9

ORIGIN : TAIWAN



**柏緯鐵工股份有限公司**

高雄市仁武區烏林里仁心路 303 號

**BOTH-WELL STEEL FITTINGS CO., LTD.**

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

KAOHSIUNG CITY, TAIWAN R.O.C. (81460)

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

An ISO 9001:2008 Registered Manufacturer



ISO 9001  
BUREAU VERITAS  
Certification  
N° TW110622

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

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

| ITEM | BW<br>HT. CD. | RAW MATERIAL<br>HEAT NO. | DESCRIPTION                | QUANTITY | SPECIFICATION FOR |                    | INSPECTION |      |
|------|---------------|--------------------------|----------------------------|----------|-------------------|--------------------|------------|------|
|      |               |                          |                            |          | MATERIAL          | FITTING            | SURFACE    | DIM. |
| 024  | 3760          | 327004                   | HALF CPLG 1/2" 3000# NPT   | 700 PC   | ASTM A105N -05    | ASME B16.11 - 2009 | GOOD       | GOOD |
| 025  | 3697          | 325198                   | HALF CPLG 3/4" 3000# NPT   | 500 PC   | ASME SA105N -A08  |                    |            |      |
| 026  | 3753          | 326700                   | HALF CPLG 1" 3000# NPT     | 1800 PC  |                   |                    |            |      |
| 027  | 3803          | 328082                   | HALF CPLG 1-1/2" 3000# NPT | 125 PC   |                   |                    |            |      |
| 028  | ✓ 3799        | 328437                   | HALF CPLG 2" 3000# NPT     | 400 PC   |                   |                    |            |      |

| ITEM | BW<br>HT. CD. | CHEMICAL COMPOSITION (%) |       |       |       |       |       |       |       |       |       |        |   |    |    |    |       | MATERIAL SUPPLIER |
|------|---------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---|----|----|----|-------|-------------------|
|      |               | C                        | Si    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo    | V     | Cb(Nb) | N | Al | Ti | Zr | CE    |                   |
| Min  |               | -                        | 0.10  | 0.60  | -     | -     | -     | -     | -     | -     | -     | -      | - | -  | -  | -  | -     | -                 |
| Max  |               | 0.35                     | 0.35  | 1.05  | 0.035 | 0.040 | 0.40  | 0.30  | 0.40  | 0.12  | 0.08  | -      | - | -  | -  | -  | 0.45  |                   |
| 024  | 3760          | 0.190                    | 0.200 | 0.820 | 0.015 | 0.010 | 0.180 | 0.120 | 0.070 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.372 |                   |
| 025  | 3697          | 0.200                    | 0.190 | 0.810 | 0.024 | 0.010 | 0.250 | 0.110 | 0.050 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.381 |                   |
| 026  | 3753          | 0.190                    | 0.200 | 0.840 | 0.016 | 0.005 | 0.140 | 0.130 | 0.060 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.374 |                   |
| 027  | 3803          | 0.190                    | 0.190 | 0.850 | 0.017 | 0.010 | 0.150 | 0.080 | 0.040 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.365 |                   |
| 028  | ✓ 3799        | 0.190                    | 0.200 | 0.840 | 0.013 | 0.012 | 0.100 | 0.070 | 0.050 | 0.010 | 0.002 | 0.001  | - | -  | -  | -  | 0.356 |                   |

| ITEM | BW<br>HT. CD. | MECHANICAL PROPERTIES |                |            |               |                        |                            | HEAT TREATMENT |   |      |            | ADDITIONAL TEST/REMARKS |
|------|---------------|-----------------------|----------------|------------|---------------|------------------------|----------------------------|----------------|---|------|------------|-------------------------|
|      |               | T. S.<br>(KSI)        | Y. S.<br>(KSI) | EL.<br>(%) | R of A<br>(%) | Hardness<br>(HBW)(AVG) | Charpy Impact<br>°F / 0 °C |                |   |      |            |                         |
| Min  |               | 70                    | 36             | 22         | 30            | -                      | MIN./AVG. / ( Joule )      |                |   |      | NORMALIZED |                         |
| Max  |               | -                     | -              | -          | -             | 187                    | 1                          | 2              | 3 | AVG. |            |                         |
| 024  | 3760          | 75.1                  | 49.9           | 34.8       | 65.5          | 145 144                |                            |                |   |      | 860°C A.C. |                         |
| 025  | 3697          | 77.1                  | 48.8           | 35.6       | 63.6          | 143 142                |                            |                |   |      |            |                         |
| 026  | 3753          | 75.6                  | 50.8           | 32.2       | 65.5          | 143 143                |                            |                |   |      |            |                         |
| 027  | 3803          | 73.2                  | 48.7           | 34.0       | 64.5          | 140 142                |                            |                |   |      |            |                         |
| 028  | ✓ 3799        | 74.1                  | 46.7           | 32.6       | 65.2          | 140 141                |                            |                |   |      |            |                         |

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

**C.C. Huang**  
Q.C. MANAGER  
CHEN CHI HUANG

**Y.-Y. Chang**  
INSPECTOR  
YUAN YAO CHANG

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.C.  
REQUIREMENTS

ENCANA Name: S. Nason  
Date: 2012/8/21

Working for UT Reports.

[illegible]



## ULTRASONIC INSPECTION REPORT

|                                      |                                                  |                               |              |             |
|--------------------------------------|--------------------------------------------------|-------------------------------|--------------|-------------|
| DATE:                                | MARCH 23/2012                                    | REPORT #:                     | UFO-120323-3 | PAGE 1 of 3 |
| CLIENT:                              | ENCANA                                           | ECHO JOB #:                   | 4086         |             |
| CONTRACTOR:                          | NWP INDUSTRIES INC                               |                               |              |             |
| LOCATION:                            | INNISFAIL SHOP                                   | PROJECT:                      |              |             |
| ITEMS EXAMINED:                      | 4" RETURN BENDS (MILL TOLERANCE) HT#566045       |                               |              |             |
| PROCEDURE:                           | UT-1                                             | CLIENT JOB # (PO, WO, AFE..): |              |             |
| ACCEPTANCE CRITERIA & SPECIFICATION: | (UW-51) ASME VIII DIV. I APP. 12, ASME V, ART. 4 |                               |              |             |

### METHOD

|                 |                                                 |                                             |                                     |                                      |                              |                              |                                      |  |
|-----------------|-------------------------------------------------|---------------------------------------------|-------------------------------------|--------------------------------------|------------------------------|------------------------------|--------------------------------------|--|
| MODE:           | <input checked="" type="checkbox"/> Zero Degree | <input type="checkbox"/> Shear Wave         | <input type="checkbox"/> Specialty: |                                      |                              |                              |                                      |  |
| EQUIPMENT TYPE: | Panametrics Epoch IV                            | Serial No.:                                 | 81594605                            | Last Calibration:                    | FEB 19/2011                  |                              |                                      |  |
| CABLE LENGTH:   | 70"                                             | COUPLANT:                                   | UT-X                                |                                      |                              |                              |                                      |  |
| CAL BLOCK(S):   | <input type="checkbox"/> 1/2" Step              | <input checked="" type="checkbox"/> 1" Step | <input type="checkbox"/> 3/4" ASME  | <input type="checkbox"/> 1 1/2" ASME | <input type="checkbox"/> DSC | <input type="checkbox"/> IIW | <input type="checkbox"/> TEST PIECE: |  |
| REF RELECTOR:   | Type: Perpendicular                             | Size:                                       |                                     | Depth:                               |                              | Response Ht.:                | 80% FSH                              |  |

|   | ANGLE | WAVE  | FREQ   | SIZE   | MFG.       | SER NO. | RANGE | REF DB | SCAN DB | TL DB |
|---|-------|-------|--------|--------|------------|---------|-------|--------|---------|-------|
| 1 | 0     | LONG  | 5MHZ   | 0.250" | Stressteel | 01YB64  | 25MM  | 58     | 6       | 65    |
| 2 | 45    | SHEAR | 2.5MHZ | 0.380" | Sonatest   | T030719 | 100MM | 39     | 6       | 45    |
| 3 | 60    | SHEAR | 2.5MHZ | 0.380" | Sonatest   | T031803 | 150MM | 37     | 6       | 43    |
| 4 | 70    | SHEAR | 2.5MHZ | 0.380" | Sonatest   | T033008 | 250MM | 43     | 6       | 49    |

SURFACE CONDITION: ☒ Clean Base Metal ☐ As Ground ☐ Machined ☐ Sand Blast ☐ Painted ☐ Other:

### TEST RESULTS

A UT 0 DEGREE THICKNESS WAS PERFORMED ON THE 4" ELBOWS FOR MILL TOLERANCE, AS REQUESTED BY CLIENT.  
FOLLOWING PAGES HAVE READINGS.

|                 |                                                                                                 |                |               |
|-----------------|-------------------------------------------------------------------------------------------------|----------------|---------------|
| Misc Charges    | NAME / CERTIFICATION/SIGNATURE<br>FRANCISCO ORELLANA<br>CGSB / SNT-TC-1A LII UT, MT # 12307<br> | Regular Hours  | VIEW          |
|                 |                                                                                                 | Overtime Hours | FFO-120323-3  |
|                 |                                                                                                 | Shift Premium  |               |
| Client:         |                                                                                                 | Kilometers     |               |
| (name/approval) |                                                                                                 | Assistant      | CONNER SIBLET |

53A Burnt Park Drive | Red Deer, AB | T4P 0J7

Ph: (403) 347-7042 Fax: (403) 347-7052 www.echonde.com



|       | LOW    | AVG    | NOM    | MILL TOLLERANCE |
|-------|--------|--------|--------|-----------------|
| UT-01 | 0.681" | 0.750" | 0.674" | 0.590"          |
| UT-02 | 0.703" | 0.745" | 0.674" | 0.590"          |
| UT-03 | 0.722" | 0.756" | 0.674" | 0.590"          |
| UT-04 | 0.716" | 0.728" | 0.674" | 0.590"          |
| UT-05 | 0.715" | 0.748" | 0.674" | 0.590"          |
| UT-06 | 0.713" | 0.735" | 0.674" | 0.590"          |
| UT-07 | 0.704" | 0.744" | 0.674" | 0.590"          |
| UT-08 | 0.704" | 0.743" | 0.674" | 0.590"          |
| UT-09 | 0.710" | 0.734" | 0.674" | 0.590"          |
| UT-10 | 0.689" | 0.715" | 0.674" | 0.590"          |
| UT-11 | 0.721" | 0.764" | 0.674" | 0.590"          |
| UT-12 | 0.699" | 0.740" | 0.674" | 0.590"          |
| UT-13 | 0.687" | 0.735" | 0.674" | 0.590"          |
| UT-14 | 0.691" | 0.720" | 0.674" | 0.590"          |
| UT-15 | 0.696" | 0.750" | 0.674" | 0.590"          |
| UT-16 | 0.683" | 0.737" | 0.674" | 0.590"          |
| UT-17 | 0.694" | 0.720" | 0.674" | 0.590"          |
| UT-18 | 0.693" | 0.721" | 0.674" | 0.590"          |
| UT-19 | 0.695" | 0.724" | 0.674" | 0.590"          |
| UT-20 | 0.696" | 0.729" | 0.674" | 0.590"          |
| UT-21 | 0.684" | 0.731" | 0.674" | 0.590"          |
| UT-22 | 0.690" | 0.726" | 0.674" | 0.590"          |
| UT-23 | 0.697" | 0.738" | 0.674" | 0.590"          |
| UT-24 | 0.693" | 0.737" | 0.674" | 0.590"          |
| UT-25 | 0.712" | 0.747" | 0.674" | 0.590"          |
| UT-26 | 0.700" | 0.729" | 0.674" | 0.590"          |
| UT-27 | 0.716" | 0.737" | 0.674" | 0.590"          |
| UT-28 | 0.721" | 0.740" | 0.674" | 0.590"          |
| UT-29 | 0.713" | 0.757" | 0.674" | 0.590"          |
| UT-30 | 0.694" | 0.731" | 0.674" | 0.590"          |
| UT-31 | 0.699" | 0.734" | 0.674" | 0.590"          |
| UT-32 | 0.703" | 0.738" | 0.674" | 0.590"          |
| UT-33 | 0.704" | 0.726" | 0.674" | 0.590"          |
| UT-34 | 0.709" | 0.732" | 0.674" | 0.590"          |
| UT-35 | 0.693" | 0.758" | 0.674" | 0.590"          |
| UT-36 | 0.691" | 0.728" | 0.674" | 0.590"          |
| UT-37 | 0.709" | 0.751" | 0.674" | 0.590"          |
| UT-38 | 0.691" | 0.725" | 0.674" | 0.590"          |
| UT-39 | 0.710" | 0.746" | 0.674" | 0.590"          |
| UT-40 | 0.695" | 0.730" | 0.674" | 0.590"          |
| UT-41 | 0.716" | 0.734" | 0.674" | 0.590"          |
| UT-42 | 0.692" | 0.737" | 0.674" | 0.590"          |
| UT-43 | 0.691" | 0.744" | 0.674" | 0.590"          |
| UT-44 | 0.706" | 0.729" | 0.674" | 0.590"          |
| UT-45 | 0.709" | 0.722" | 0.674" | 0.590"          |
| UT-46 | 0.694" | 0.718" | 0.674" | 0.590"          |





|       | LOW    | AVG    | NOM    | MILL TOLLERANCE |
|-------|--------|--------|--------|-----------------|
| UT-47 | 0.691" | 0.716" | 0.674" | 0.590"          |
| UT-48 | 0.694" | 0.728" | 0.674" | 0.590"          |
| UT-49 | 0.684" | 0.734" | 0.674" | 0.590"          |
| UT-50 | 0.683" | 0.715" | 0.674" | 0.590"          |
| UT-51 | 0.689" | 0.723" | 0.674" | 0.590"          |
| UT-52 | 0.710" | 0.738" | 0.674" | 0.590"          |
| UT-53 | 0.683" | 0.752" | 0.674" | 0.590"          |
| UT-54 | 0.695" | 0.732" | 0.674" | 0.590"          |
| UT-55 | 0.700" | 0.738" | 0.674" | 0.590"          |
| UT-56 | 0.704" | 0.735" | 0.674" | 0.590"          |
| UT-57 | 0.710" | 0.736" | 0.674" | 0.590"          |
| UT-58 | 0.686" | 0.742" | 0.674" | 0.590"          |
| UT-59 | 0.685" | 0.721" | 0.674" | 0.590"          |
| UT-60 | 0.715" | 0.744" | 0.674" | 0.590"          |
| UT-61 | 0.710" | 0.748" | 0.674" | 0.590"          |
| UT-62 | 0.720" | 0.757" | 0.674" | 0.590"          |
| UT-63 | 0.694" | 0.721" | 0.674" | 0.590"          |
| UT-64 | 0.684" | 0.721" | 0.674" | 0.590"          |
| UT-65 | 0.710" | 0.735" | 0.674" | 0.590"          |
| UT-66 | 0.688" | 0.723" | 0.674" | 0.590"          |
| UT-67 | 0.694" | 0.726" | 0.674" | 0.590"          |
| UT-68 | 0.690" | 0.732" | 0.674" | 0.590"          |
| UT-69 | 0.680" | 0.755" | 0.674" | 0.590"          |
| UT-70 | 0.713" | 0.729" | 0.674" | 0.590"          |
| UT-71 | 0.721" | 0.747" | 0.674" | 0.590"          |
| UT-72 | 0.704" | 0.731" | 0.674" | 0.590"          |
| UT-73 | 0.690" | 0.725" | 0.674" | 0.590"          |
| UT-74 | 0.713" | 0.735" | 0.674" | 0.590"          |
| UT-75 | 0.687" | 0.722" | 0.674" | 0.590"          |
| UT-76 | 0.681" | 0.726" | 0.674" | 0.590"          |
| UT-77 | 0.704" | 0.735" | 0.674" | 0.590"          |
| UT-78 | 0.689" | 0.712" | 0.674" | 0.590"          |
| UT-79 | 0.691" | 0.724" | 0.674" | 0.590"          |
| UT-80 | 0.703" | 0.757" | 0.674" | 0.590"          |
| UT-81 | 0.687" | 0.721" | 0.674" | 0.590"          |
| UT-82 | 0.665" | 0.702" | 0.674" | 0.590"          |
| UT-83 | 0.693" | 0.728" | 0.674" | 0.590"          |
| UT-84 | 0.698" | 0.742" | 0.674" | 0.590"          |
| UT-85 | 0.653" | 0.739" | 0.674" | 0.590"          |
| UT-86 | 0.684" | 0.729" | 0.674" | 0.590"          |
| UT-87 | 0.706" | 0.725" | 0.674" | 0.590"          |
| UT-88 | 0.706" | 0.732" | 0.674" | 0.590"          |
| UT-89 | 0.684" | 0.741" | 0.674" | 0.590"          |
| UT-90 | 0.320" | 0.336" | 0.337" | 0.295"          |
| UT-91 | 0.307" | 0.340" | 0.337" | 0.295"          |
| UT-92 | 0.314" | 0.334" | 0.337" | 0.295"          |

} 4" XH LR

# SSAB

## Test Certificate

1770 Bill Sharp Boulevard, Muscatine, IA 52761-9412

Form TCI: Revision 1: Date 31 Oct 2000

**Customer:**  
SAMUEL & SON LIMITED  
(A DIVISION OF SAMUEL SALES)  
2368 DIXIE ROAD  
MISSISSAUGA  
ON L4Y1Z7

**Customer P.O. No.:** U01112 & 41-336026  
**Product Description:** CSA G40.21(2004)48W/300W / ASTM A36(08)  
A709(01A)36/ASME SA36(01ED)

**Mill Order No.:** 41-330027-04 **Shipping Manifest:** MTR169567

**Ship Date:** 20 May 12 **Cert No.:** 061326631  
**Cert Date:** 20 May 12 **(Page 1 of 1)**

**Size:** 0.375 X 96.00 X 480.0 (IN)

| Tested Pieces |          |                  |               | Tensiles |           |                 |                  | Charpy Impact Tests         |                   |         |                      |                |      |       |       |                   |          |
|---------------|----------|------------------|---------------|----------|-----------|-----------------|------------------|-----------------------------|-------------------|---------|----------------------|----------------|------|-------|-------|-------------------|----------|
| Heat Id       | Piece Id | Tested Thickness | 1st Loc (KSI) | YS (KSI) | UTS (KSI) | %RA Elong % Tst | Average Hardness | Abs. Energy(FTLB) 1 2 3 Avg | % Shear 1 2 3 Avg | 1st Tmp | 1st 1st Dir Siz (mm) | BDWTT Tmp %Shr |      |       |       |                   |          |
| W2D776        | F50      | 0.373 (DISCRT)   | L 50          | 69       | 44        | T               |                  |                             |                   |         |                      |                |      |       |       |                   |          |
| Heat Id       | C        | Mn               | P             | S        | Si        | Total           | Cu               | Ni                          | Ce                | Mo      | Cr                   | V              | Ti   | B     | N     | Chemical Analysis |          |
| W2D776        | .15      | .85              | .011          | .007     | .03       | .022            | .29              | .15                         | .10               | .04     | .001                 | .007           | .017 | .0001 | .0075 |                   | ORGN USA |

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT  
MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT  
PRODUCTS SHIPPED:  
W2D776 F50 PCS: 5, WGT: 24567

"Conforms with SA 36"  
Sec II, Part A, 2004 Edition  
2011a addendum

(P) Cust Part #:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION

B. H. Wales  
SENIOR METALLURGIST PRODUCT

ORIGINAL 708222.  
CERTIFIED COPY OF  
08/20/12.  
08/20/12.

|                                            |                                                                                  |                                          |
|--------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                          |
| Date of Issue: March 13, 2008              |                                                                                  | QCFOFinalInspectionReleaseCertificateR00 |

### FINAL INSPECTION RELEASE CERTIFICATE

|           |                                                    |               |                    |
|-----------|----------------------------------------------------|---------------|--------------------|
| CUSTOMER: | <b>ENCANA</b>                                      | SALES ORDER#: | <b>NA</b>          |
| PRODUCT:  | <b>Welded Piping for 3.0 mm btu Lineheater Pkg</b> | WO#:          | <b>08562-001-D</b> |
|           |                                                    | DATE:         | <i>Jan 2.13.</i>   |

#### FINAL INSPECTION DOCUMENTATION

|                                                                                                                        |           |           |
|------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                           | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                   |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC. ) |           |           |

|                                         |                         |
|-----------------------------------------|-------------------------|
| Q.C. FILE CLOSURE BY: <i>Kashra Fox</i> | DATE: <i>Jan 3 2013</i> |
|-----------------------------------------|-------------------------|

#### LOOSE COMPONENTS REQUIRED / PREPARED

|                                                  |                                                                     |
|--------------------------------------------------|---------------------------------------------------------------------|
| ITEMS REQUIRED:                                  | NO. OF BOXES OR PKGS. _____                                         |
| <i>Welded Piping for 3.0 mm Lineheater Pkg -</i> |                                                                     |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED        | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

#### PREPARATION FOR SHIPMENT / STORAGE

|                                |                                                                     |
|--------------------------------|---------------------------------------------------------------------|
| PREPARATION NEEDED / COMPLETED |                                                                     |
| <i>Release to next process</i> |                                                                     |
| LOT #                          | <b>08562-001-D</b>                                                  |
| ITEM #                         | <b>Welded Piping</b>                                                |
| INVENTORY TAGS ATTACHED        | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

#### SHIPPING INSTRUCTIONS

|                                               |                                                                      |
|-----------------------------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED                        | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: |                                                                      |
| PHONE:                                        | FAX:                                                                 |
| RELEASED TO INVENTORY:                        |                                                                      |
| RELEASED TO CUSTOMER: <i>[Signature]</i>      | DATE: <i>Jan 2.13</i>                                                |

**NWP Industries Inc.**

**PRESSURE PIPING EXAMINATION CHECKLIST**

DRWG. # 08562-2A REV 0

JOB NUMBER: 08562-001-0

| NO. | FUNCTION                                                                                                                                 | SIGNATURE OR INITIAL AND DATE                |                  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------|
|     |                                                                                                                                          | Q.C. INSPECTOR                               | OWNERS INSPECTOR |
| 1   | DRAWINGS: ABSA registration over 0.5 Cu.M. Approved by Owner. Approved for Construction (signed & dated).                                |                                              |                  |
| 2   | Owner's Inspector notified.                                                                                                              | RMPR NOV 23/12                               |                  |
| 3   | Registered Welding Procedure Specifications, Q.C. Manual and Forms available at site, Job File started.                                  | RMPR NOV 23/12                               |                  |
| 4   | Welders qualified for WPS's and have valid Performance Qualification cards. Welders Log completed. WPS reviewed with Welders.            | HOLD RMPR NOV 23/12                          |                  |
| 5   | Material checked against P.O., drawings, and specifications. Identification confirmed. Colour coding applied.                            | HOLD RMPR DEC 05/12                          |                  |
| 6   | Sample of each Welder's work examined, including root spacing, alignment, cleaning, joint preparation, preheat and electrode control.    | RMPR DEC 13/12                               |                  |
| 7   | Nondestructive Examination completed. Reports and radiographs reviewed, signed by Level II or III, Radiograph I.D. detailed on drawings. | HOLD HT KAN DEC 19/12<br>XRAY RMPR DEC 13/12 |                  |
| 8   | Visual Examination of all completed welds. Welders I.D. stamped and recorded on drawings.                                                | RMPR DEC 13/12                               |                  |
| 9   | Heat Treatment verified and recorded on drawings.                                                                                        | HOLD KAN DEC 19/12                           |                  |
| 10  | Each system checked against specifications and drawings before test.                                                                     | RMPR DEC 13/12                               |                  |
| 11  | All deficiencies recorded and signed off by Q.C.I. and Owner's Inspector before test.                                                    | RMPR DEC 13/12                               |                  |
| 12  | Pressure Test checked. Gauge calibration verified, gauge #'s recorded.                                                                   | HOLD RMPR DEC 20/12                          |                  |
| 13  | System checked after test. Deficiencies recorded and corrected.                                                                          | (4) JAN 2.13                                 |                  |
| 14  | Construction data reports (AB-83) prepared and signed by Q.C.I. and Owner's Inspector.                                                   | SEE ASSEMBLY                                 |                  |
| 15  | Declaration form (AB-81) submitted to ABSA                                                                                               |                                              |                  |
| 16  | As built drawings accepted by Owner.                                                                                                     |                                              |                  |

NOV 20 2012

|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

## N D E Requirements

Client: Encana JO# 08562-001-D  
 Project: Welded Piping – 3.0mm Lineheater Date: 06/12/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define)                            | Other (Specify)                                            |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

☐ Hardness test Max 200 BHN

☐ CSA W47.1/W59

### General Instructions:

Vessel S/N

P1 Material

Welder ID X,F,M

Shell-T=

Pipe-T= 4" XXH 2" XXH

Total Welds start shooting pkg (first # is X-1)

Please use wire type iQ1

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

11 DR 12 Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: R.M. Spence



Date: 06/12/2012



Job / P.O. #: 08562-001-D      IRISNDT #: 256007      Date: 6-Dec-12  
Client: ENCANA C/O NWP  
Location: INNISFAIL Alberta  
Item Inspected: PIPING - 3.0mm LINEHEATER      Material: C.S

IRISNDT E-2004N



|                                                         |                                                                                  |                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                  | N.D.E Requirements |

### N D E Requirements

|                                                  |                         |
|--------------------------------------------------|-------------------------|
| Client: <u>Encana</u>                            | JO# <u>08562-001-D</u>  |
| Project: <u>Welded Piping – 3.0mm Lineheater</u> | Date: <u>07/12/2012</u> |

Piping: ☒      Pressure Vessel: ☐      Tank: ☐      Other: ☐

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | Other(Define)                            | Other (Specify)                                            |
| <input type="checkbox"/> Acoustic Emission    | <input type="checkbox"/> Spot            |                                                            |

|                                                    |                                        |
|----------------------------------------------------|----------------------------------------|
| <input type="checkbox"/> Hardness test Max 200 BHN | <input type="checkbox"/> CSA W47.1/W59 |
|----------------------------------------------------|----------------------------------------|

#### General Instructions:

Vessel S/N

P1 Material  
Welder ID X,M  
Shell-T=  
Pipe-T= 4" XXH, 2" XXH  
Total Welds start shooting pkg (first # is X-13)

Please use wire type iQi  
Please Note locations of all indications on films on reports  
Please include O.F.D-S.O.D S.F.D on reports

#### Special Requirements:

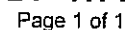
3 Shots

Buttweld Xray to be identified as X-#  
Gap Shots to be identified as GS-#  
Threaded Shots to be identified as XT-#  
Identify on Envelope part of package being shot ie. Coil, Piping, ect.  
Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date  
Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
Encana Spec is Zero Elongated Indications  
Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
HT is a 5 Point Traverse

Prepared By: Karim Bouslama

Date: 07/12/2012



Date: 7-Dec-12

Item Inspected: PIPING -3.0mm LINEHEATER

**Material:** C.S

(Sign)

(281) 476-4444  
(713) 722-7177  
(916) 446-8773

IRISNDT E-2004N

|                                                         |                                             |                    |
|---------------------------------------------------------|---------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg | <b>NWP</b><br>Industries Inc. <sup>TM</sup> | ABSA               |
| Date of Issue: November 13 2012                         |                                             | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                             | N.D.E Requirements |

### N D E Requirements

|                                                  |                         |
|--------------------------------------------------|-------------------------|
| Client: <u>Encana</u>                            | JO# <u>08562-001-D</u>  |
| Project: <u>Welded Piping – 3.0mm Lineheater</u> | Date: <u>10/12/2012</u> |

Piping: ☒      Pressure Vessel: ☐      Tank: ☐      Other: ☐

- |                                               |                                          |                                                            |
|-----------------------------------------------|------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> X-Ray                | <input checked="" type="checkbox"/> 100% | <input type="checkbox"/> ASME Section VIII-UW-51           |
| <input checked="" type="checkbox"/> Gamma Ray | <input type="checkbox"/> Full            | <input type="checkbox"/> ASME Section VIII-UW-52           |
| <input type="checkbox"/> Ultrasonics          | <input type="checkbox"/> 25%             | <input checked="" type="checkbox"/> Customer Specification |
| <input type="checkbox"/> Liquid Penetrant     | <input type="checkbox"/> 10%             | <input checked="" type="checkbox"/> ASME B31.3 NFS         |
| <input type="checkbox"/> Magnetic Particle    | <u>Repair shots</u> Other(Define)        | Other (Specify)                                            |
| <input type="checkbox"/> Accoustic Emission   | <input type="checkbox"/> Spot            |                                                            |

|                                                    |                                        |
|----------------------------------------------------|----------------------------------------|
| <input type="checkbox"/> Hardness test Max 200 BHN | <input type="checkbox"/> CSA W47.1/W59 |
|----------------------------------------------------|----------------------------------------|

#### General Instructions:

Vessel S/N

P1 Material

Welder ID X,M,S

Shell-T=

Pipe-T= 4" XXH, 2" XXH

Total Welds 3 x repair (#'s are X-13R,X-14R,X-15R) & continue shooting pkg (first # is X-16)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

#### Special Requirements:

Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE:      Encana Spec for Welded Piping-acceptance is zero root defects  
              Encana Spec is Zero Elongated Indications  
              Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
              Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
              HT is a 5 Point Traverse

Prepared By: Karim Bouslama

Date: 10/12/2012

IRISNDT F-2004N

|                                                         |                                                                                   |                    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                   | FORM NDE_001       |
| Rev Status: 2.1                                         |                                                                                   | N.D.E Requirements |

### N D E Requirements

Client: Encana JO# 08562-001-D  
 Project: Welded Piping – 3.0mm Lineheater Date: 11/12/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> X-Ray<br><input checked="" type="checkbox"/> Gamma Ray<br><br><input type="checkbox"/> Ultrasonics<br><input type="checkbox"/> Liquid Penetrant<br><input type="checkbox"/> Magnetic Particle<br><input type="checkbox"/> Acoustic Emission | <input checked="" type="checkbox"/> 100%<br><input type="checkbox"/> Full<br><input type="checkbox"/> 25%<br><input type="checkbox"/> 10%<br><u>Repair shot</u> Other(Define)<br><br><input type="checkbox"/> Spot | <input type="checkbox"/> ASME Section VIII-UW-51<br><input type="checkbox"/> ASME Section VIII-UW-52<br><input checked="" type="checkbox"/> Customer Specification<br><input checked="" type="checkbox"/> ASME B31.3 NFS<br>Other (Specify) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

☐ Hardness test Max 200 BHN

☐ CSA W47.1/W59

#### General Instructions:

Vessel S/N

P1 Material

Welder ID X,M

Shell-T=

Pipe-T= 4" XXH

Total Welds 1 x repair shot (X-18R) & continue shooting pkg (first # is X-20)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

#### Special Requirements:

1 Shots + 1 repair

Butt weld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: Karim Bouslama

Date: 11/12/2012



Job / P.O. #: 08562-001-D    IRISNDT #: 256103    Date: 12-Dec-12  
Client: ENCANNA C/O NWP  
Location:        Innisfail, Alberta  
Item Inspected: Piping - 3.0mm Lineheater        Material: CS

Interpretation by:  
JEFF BRUCKSHAW (PED LEVEL 2)

(Print) 

(Signature)

Client Representative:

(Print) \_\_\_\_\_

I am in full  
agreement with  
report contents

(Sign) 

SNT-TC-1A      2

C.G.S.B.      2

C.G.S.B. #      (Level)  
12007

CUSTOMER COPY



|                                                         |                                                                                   |                    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: November 13 2012                         |                                                                                   | FORM_NDE_001       |
| Rev Status: 2.1                                         |                                                                                   | N.D.E Requirements |

Green

## N D E Requirements

Client: Encana JO# 08562-001-D  
 Project: Welded Piping – 3.0mm Lineheater PWHT Date: 18/12/2012

Piping: ☒ Pressure Vessel: ☐ Tank: ☐ Other:

- |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> X-Ray<br><input type="checkbox"/> Gamma Ray<br><br><input type="checkbox"/> Ultrasonics<br><input type="checkbox"/> Liquid Penetrant<br><input type="checkbox"/> Magnetic Particle<br><input type="checkbox"/> Accoustic Emission<br><input checked="" type="checkbox"/> Hardness test Max 200 BHN | <input type="checkbox"/> 100%<br><input type="checkbox"/> Full<br><br><input type="checkbox"/> 25%<br><input checked="" type="checkbox"/> 10%<br>Other(Define)<br><br><input type="checkbox"/> Spot | <input type="checkbox"/> ASME Section VIII-UW-51<br><input type="checkbox"/> ASME Section VIII-UW-52<br><input checked="" type="checkbox"/> Customer Specification<br><input checked="" type="checkbox"/> ASME B31.3 NFS<br>Other (Specify)<br><br><input type="checkbox"/> CSA W47.1/W59 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### General Instructions:

Vessel S/N

P1 Material  
 Welder ID M,X  
 Shell-T=  
 Pipe-T= 4" XXH  
 Total Welds 3 x HT (first # is HT-1)

Please use wire type iQi  
 Please Note locations of all indications on films on reports  
 Please include O.F.D-S.O.D S.F.D on reports

### Special Requirements:

Xx2 Shots  
Mx.1

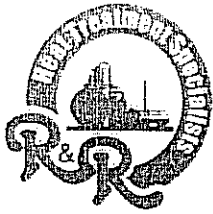
Buttweld Xray to be identified as X-#  
 Gap Shots to be identified as GS-#  
 Threaded Shots to be identified as XT-#  
 Identify on Envelope part of package being shot ie. Coil, Piping, ect.  
 Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date  
 Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: Karim Bouslama

Date: 18/12/2012





## R & R Stress Relieving Service Ltd.

Nisku: 2103 - 6<sup>th</sup> Street, T9E 7X8 Tel: (780) 955-7559 Fax: (780) 955-2903  
Blackfalds: #13 Burbank Industrial Park Tel: (403) 885-2280 Fax: (403) 885-0177  
Toll Free: 1-800-499-HEAT(4328)

# CERTIFICATE OF CONFORMANCE OF RECORDING INSTRUMENTS

CERTIFIED BY: R & R Stress Relieving Service Ltd.  
TEST NUMBER: RR1112  
DATE: November 9, 2012  
DATE DUE: February 9, 2013  
INSTRUMENT MFG: Chino  
MODEL NUMBER: AH-3725 N00  
SERIAL NUMBER: AH-057C171  
RECORDER NUMBER: IR-181

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

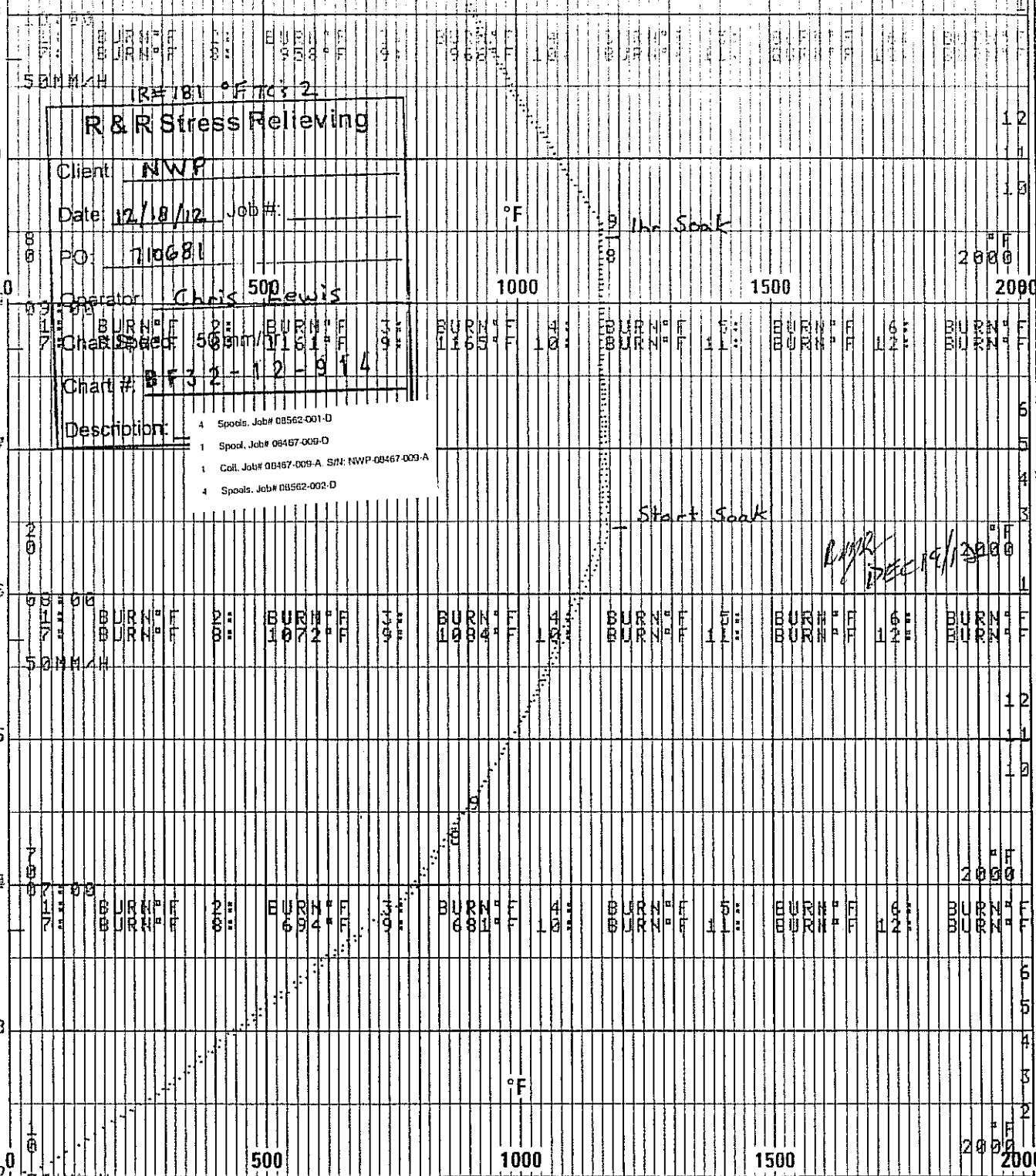
### REFERENCE STANDARDS

DIGI MITE 311600 S/N48430-5522

CERT DATE Oct 22/12

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.

  
Shane Stimson



IR# 181 °F TC: 2

**R & R Stress Relieving**

Client: NWP

Date: 12/18/12 Job #: \_\_\_\_\_

PO: 710681

Operator: Chris Lewis

Chart # BF32-12-914

Description:

- 4 Spools, Job# 08562-001-D
- 1 Spool, Job# 08467-009-D
- 1 Coil, Job# 08467-009-A. S/N: NWP-08467-009-A
- 4 Spools, Job# 08562-002-D

°F

1000 1500 2000

Inc Soak

*RWR*  
*DEC 19, 2012*

°F

500 1000 1500 2000

2012.12.18.06:06



# HEAT TREATMENT REQUIREMENTS

PO# 710681

JOB NO.: 08562-001-D

CUSTOMER: EnCana Corporation

DATE: December 18 2012

COMPONENT DESCRIPTION: Welded Piping for 3.0 mm Line Heater Package

Total Spools: 4

| DWG. NO. AND LINE NO. | DIAMETER | THICKNESS | MATERIAL | LENGTH  | WEIGHT  |
|-----------------------|----------|-----------|----------|---------|---------|
| 08562-4 Rev 0         | 4" NPS   | SCH XXH   | SA-333-6 | Various | Unknown |

TYPE OF HEAT TREATMENT: PRESSURE VESSEL or Process Piping STRESS RELIEVE P1 and Materials

## HEATING

Temperature to be raised from 800°F (427°C) to 1150°F (621°C) at a maximum rate of 400 ° F

( ) ° 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]

## HOLDING

Temperature to be held in range of 1150°F to 1175°F for 60 minutes.

[Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)]

## COOLING

Temperature to be lowered from 1150°F (621°C) to 800°F (427°C) at a maximum rate of 500 ° F

( ) ° 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 the operator's signature & date.
- ☐ Reporting of thermocouple attachment 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, centre 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 (121° 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 (66° C) between the highest and lowest temperature throughout the portion of the vessel being heat 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 Specification 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 <sup>2</sup> = W-Sec.]
- ☐ The method of thermocouple removal shall not damage the heat treated item.

Q.C. Inspector Signature

*ROJ [Signature]*

Date: DEC 19/12

Thermocouple Attachment Method: CAPACITOR DISCHARGE

Location (s) Coil ends

Furnace Heat Number

B F 3 2 - 1 2 - 9 1 4

Furnace Operator Signature

*Chris Lewis*Date: Dec 18<sup>th</sup> /12

Form Prepared by: Kasha Fox

Date: December 13 2012

|                             |                                                                                  |                       |
|-----------------------------|----------------------------------------------------------------------------------|-----------------------|
| NWP Industries Inc.™        |  | Website: www.nwp.ca   |
| PO Box 6280<br>4017-60 Ave. |                                                                                  | Phone: (403) 227-4100 |
| T4G 1S9                     |                                                                                  | Fax: (403) 227-4102   |
|                             |                                                                                  |                       |

## HYDROSTATIC TEST AFFIDAVIT

Customer: Encana Corporation

JO# 08562-001-D

Project: Piping for 3.0 mm Lineheater

Project#

Test Pressure: 7757 PSI, 225 PSI

Hold Time: 60 minutes

Code Requirements: ASME B31.3 NFS 2010 Edition

All Personnel Advised of Test ☒ All Signs & Flagging Posted ☒

Prior to Filling – Fitting/Hoses & Component Meet Required Test Pressure

Sign-Off

Supervisor:           

Tester:           

Date: 20/12/2012

### Product Description:

|                                                                                          |
|------------------------------------------------------------------------------------------|
| 1) PF-4"-I-XXHBD-100, PF-4"-I-XXHBD-101, PF-4"-I-XXHBD-103, PF-4"-I-XXHBD-104 = 7757 PSI |
| 2) FG-1"-C-80A/BD-304, FG-1"-C-80AD-302/303, D-3/4"-C-80A/BD-250 = 225 PSI               |
|                                                                                          |
|                                                                                          |
|                                                                                          |
|                                                                                          |

50% Test Pressure Leak/Systems Check Completed ☒

|                   |
|-------------------|
| 1) 50% = 3879 PSI |
| 2) 50% = 113 PSI  |
|                   |
|                   |
|                   |
|                   |

Equipment Drained & Flushed to Prevent Freezing:

Yes: ☐

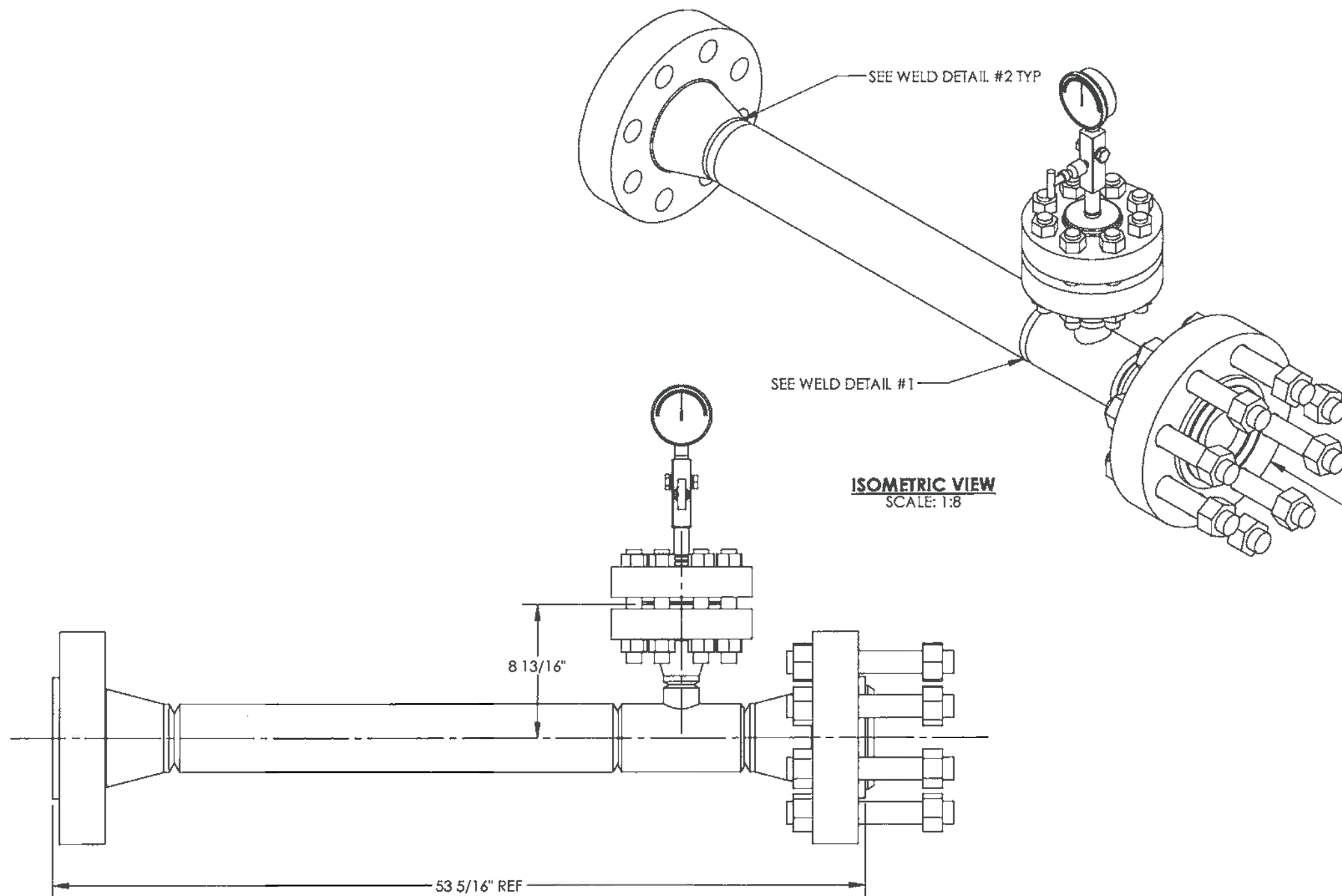
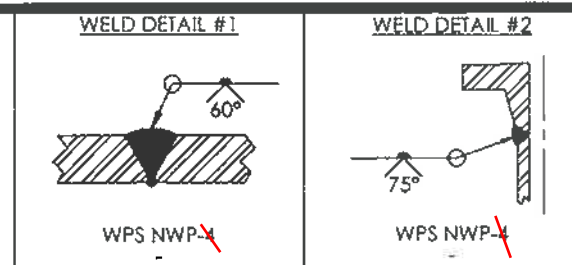
No: ☐

|              |              |
|--------------|--------------|
| Start Time:  | Finish Time: |
| <u>12 PM</u> |              |

| Test Gauge Identification #   | Pressure Range | Calibration Date   |
|-------------------------------|----------------|--------------------|
| NWPG- 20,000- <u>20,000</u>   | 0-20,000 PSI   | <u>11 DEC 2013</u> |
| NWPG- 20,000- <u>20,000-1</u> | 0-20,000 PSI   | <u>31 AUG 2013</u> |
| NWPG- 600- <u>2</u>           | 0-600 PSI      | <u>11 DEC 2013</u> |
| NWPG- 600- <u>3</u>           | 0-600 PSI      | <u>05 DEC 2013</u> |
| NWPG- <u> </u>                | PSI            |                    |
| NWPG- <u> </u>                | PSI            |                    |
| NWPG- <u> </u>                | PSI            |                    |
| NWPG- <u> </u>                | PSI            |                    |

|                                 |                        |
|---------------------------------|------------------------|
| Test By: <u>Maurice Jacques</u> | Date: <u>Dec 20/12</u> |
| Approved By: <u>[Signature]</u> | Date: <u>DEC 20/12</u> |





ISOMETRIC VIEW  
SCALE: 1:8

FRONT VIEW  
SCALE: 1:8

ORIGINAL

- NOTES**
- 1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  - 2. DIMENSIONS INCLUDE  $1/8"$  ROOT GAP.
  - 3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
  - 4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY. SHOP TO ADJUST PIPE LENGTHS AS REQUIRED.
  - 5. HARDNESS TESTING - MAX 200 BNH 10%.

| DESIGN DATA                         |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | PF-4"-i-XXHBD-100                |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200 °F                           |
| MINIMUM DESIGN TEMPERATURE:         | -49 °F                           |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150 °F TO 1175 °F FOR 1HR MIN.  |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

|                    |                                              |                   |          |    |                                                                                      |                                                                                       |                         |          |
|--------------------|----------------------------------------------|-------------------|----------|----|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|----------|
| LH-7224-BARE       | WELDED BATH ASSEMBLY                         |                   |          |    |                                                                                      |                                                                                       |                         | AS BUILT |
| LH-PH-7224-1       | PREHEAT PIPING                               |                   |          |    |                                                                                      |                                                                                       |                         |          |
| LH-LAD-72          | LADDER ASSEMBLY                              |                   |          |    |                                                                                      |                                                                                       |                         |          |
| LH-FIRSTK-24-2     | WELDED FIRETUBE / STACK ASSEMBLY             |                   |          |    |                                                                                      |                                                                                       |                         |          |
| 08562-6            | SKID, SHELL, LADDER, PREHEAT PIPING ASSEMBLY |                   |          |    |                                                                                      |                                                                                       |                         |          |
| 08562-3/08562-4    | SKID ASSEMBLY / COIL ASSEMBLY                |                   |          |    |                                                                                      |                                                                                       |                         |          |
| 08562/08562-1      | GA / P&ID                                    | 0                 | OCT05/12 | VW |  |  | ISSUED FOR CONSTRUCTION |          |
| DOCUMENT NO.       | DESCRIPTION                                  | REV               | DATE     | BY | CHK                                                                                  | APP                                                                                   |                         |          |
| REFERENCE DRAWINGS |                                              | DRAWING REVISIONS |          |    |                                                                                      |                                                                                       |                         |          |

AS BUILT

ISSUED FOR CONSTRUCTION

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

W.O.: 08562-001

S/N: \_\_\_\_\_

ALL DIMENSIONS IN INCHES

**NWP**  
INDUSTRIES INC.  
Total oilfield supply.

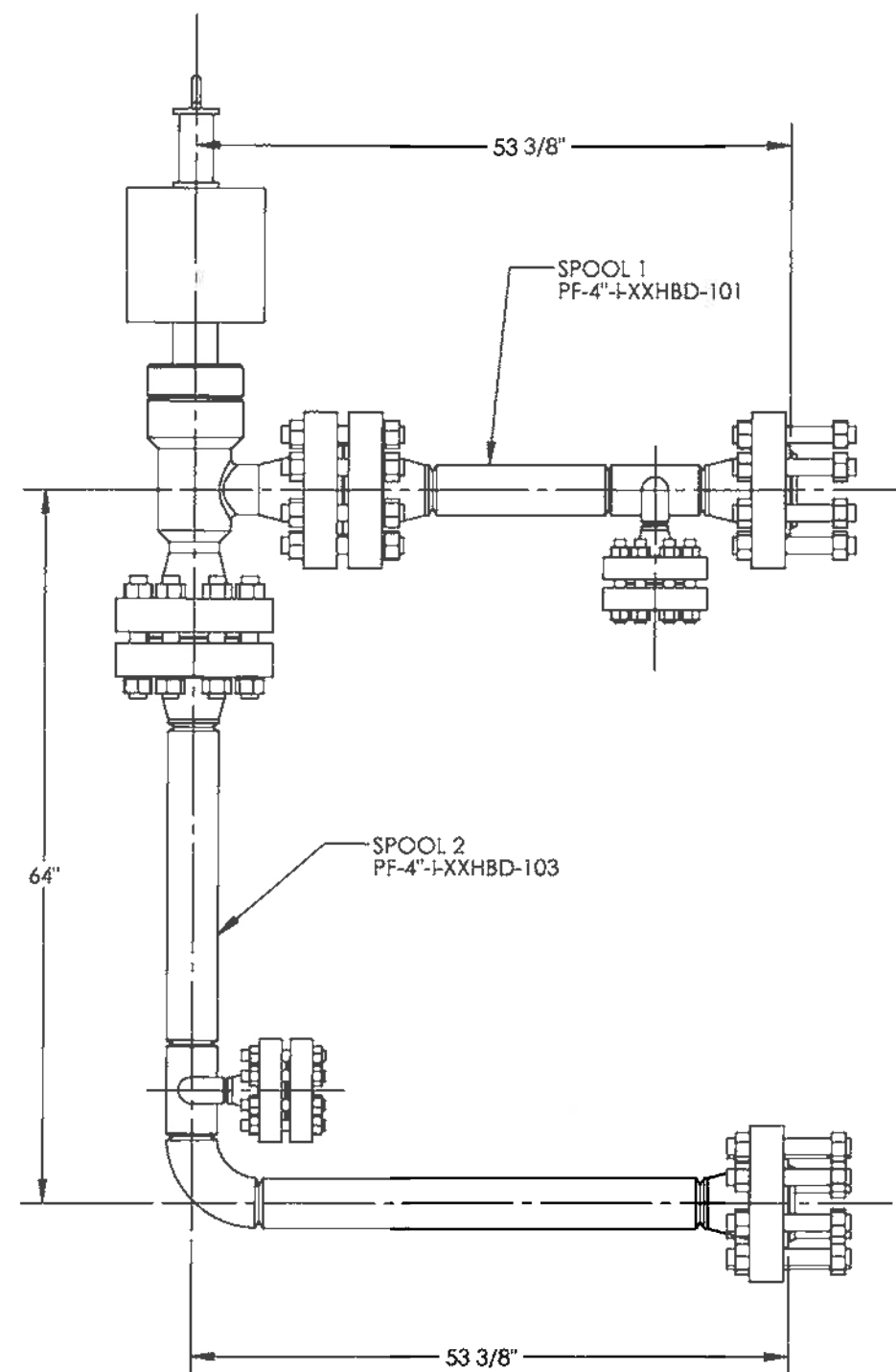
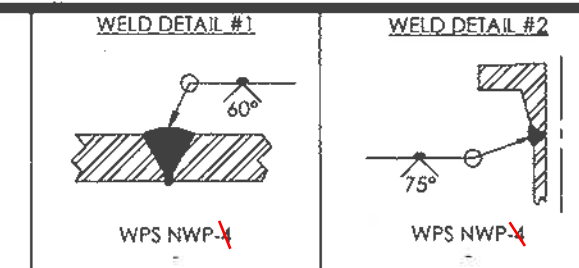
P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

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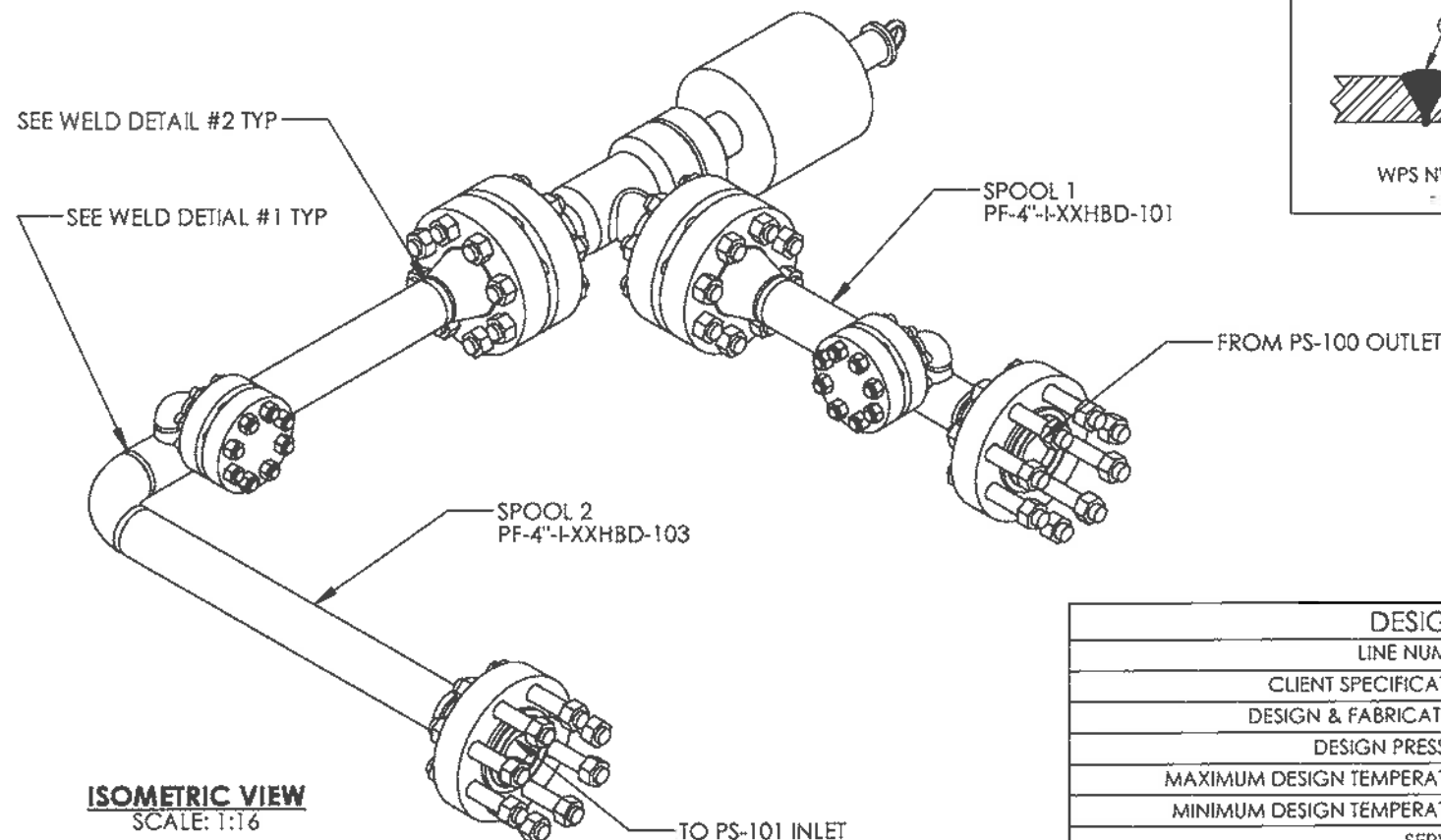
ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
c/w 4"-2500# RTJ SPLIT COILS  
WELDED PIPING

|                 |                         |                         |
|-----------------|-------------------------|-------------------------|
| DWN: VW         | CHK: <i>[Signature]</i> | APP: <i>[Signature]</i> |
| DATE: OCT 05/12 | DATE: NOV 14 2012       | DATE: NOV 14 2012       |
| SCALE: 1:8      | DWG: 08562-2A           | REV: 0                  |
| SHEET: 1 OF 6   |                         |                         |





PLAN VIEW  
SCALE: 1:16



ISOMETRIC VIEW  
SCALE: 1:16

#### NOTES

1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8$ " UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS INCLUDE  $1/8$ " ROOT GAP.
3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY. SHOP TO ADJUST PIPE LENGTHS AS REQUIRED.
5. HARDNESS TESTING - MAX 200 BNH 10%.

| DESIGN DATA                         |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | PF-4"-I-XXHBD-101                |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200°F                            |
| MINIMUM DESIGN TEMPERATURE:         | -49°F                            |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150°F TO 1175°F FOR 1HR MIN.    |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |
| DESIGN DATA                         |                                  |
| LINE NUMBER:                        | PF-4"-I-XXHBD-103                |
| CLIENT SPECIFICATION:               | ENCANA FAB                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 5171 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200°F                            |
| MINIMUM DESIGN TEMPERATURE:         | -49°F                            |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 7757 PSIG                        |
| RADIOGRAPHY:                        | 100%                             |
| OTHER NDE:                          | SEE NOTE 5                       |
| POST WELD HEAT TREATMENT:           | 1150°F TO 1175°F FOR 1HR MIN.    |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

|                    |                                              |     |          |    |     |     |                         |  |  |
|--------------------|----------------------------------------------|-----|----------|----|-----|-----|-------------------------|--|--|
| LH-7224-BARE       | WELDED BATH ASSEMBLY                         |     |          |    |     |     |                         |  |  |
| LH-PH-7224-1       | PREHEAT PIPING                               |     |          |    |     |     |                         |  |  |
| LH-LAD-72          | LADDER ASSEMBLY                              |     |          |    |     |     |                         |  |  |
| LH-FIRSTK-24-2     | WELDED FIRETUBE / STACK ASSEMBLY             |     |          |    |     |     |                         |  |  |
| 08562-6            | SKID, SHELL, LADDER, PREHEAT PIPING ASSEMBLY |     |          |    |     |     |                         |  |  |
| 08562-3/08562-4    | SKID ASSEMBLY / COIL ASSEMBLY                |     |          |    |     |     |                         |  |  |
| 08562/08562-1      | GA / P&ID                                    | 0   | OCT05/12 | VW | D   | APP | ISSUED FOR CONSTRUCTION |  |  |
| DOCUMENT NO.       | DESCRIPTION                                  | REV | DATE     | BY | CHK | APP |                         |  |  |
| REFERENCE DRAWINGS |                                              |     |          |    |     |     | DRAWING REVISIONS       |  |  |

AS BUILT

ISSUED FOR  
CONSTRUCTION

SIGNED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
W.O.: 08562-001  
S/N: \_\_\_\_\_  
ALL DIMENSIONS IN INCHES



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ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU  
C/W 4"-2500# RTJ SPLIT COILS  
WELDED PIPING

DWN: VW CHK: D APP: A  
DATE: OCT 05/12 DATE: NOV 14 2012 DATE: NOV 14 2012  
SCALE: 1:16 DWG: 08562-2A REV: 0  
SHEET: 3 OF 6











"Conforms with ASME  
Sec II Part A 2007 edition  
2009 addenda"

EL92LXX HGD

IN STOCK 4

HEAT # 01329

2" 90° Elbow LR/XXH BW

APR-26-2010 MON 07:48 AM

CE FRANKLIN

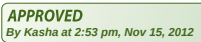
FAX No. 403414130

P. 003

|  <b>erne fittings gmbh</b><br>A-5824 Schöns<br>Hauptstrasse 48<br>Austria/Europe<br>Telefon +43/3424 501-0<br>Telefax +43/5524 501-930<br>Reg. No. 12 100 3434                                                                                                                                                                                                                                                                                                                                 |       | <b>Abnahmeprüfzeugnis</b><br><b>Inspection Certificate</b><br><b>EN 10204 - 3.1</b>                                                                  |       | Zeugnisnummer [certificate no.]<br><b>009341/07-GM</b>                          |       | Rev.<br><b>A</b>                                                                                                                                                                                                                                                                                |       | Datum [date]<br><b>26/02/2007</b>                                                                                 |       |                                                                                                                                                                      |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------|-------|-------|-------|-----|---------|-----|---------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|---------|-------|-------|-------|--|--|--|--|--|--|--|--|--|--|
| Kunde [customer]<br><b>CE Franklin Ltd.</b><br><br><b>10050 - 29A Avenue</b><br><b>CDN-T6N 1A8 Edmonton, Alberta</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       | Ihre Bestellnummer [your order no.]<br><b>1674708-OR-2100</b>                                                                                        |       | Unsere Auftrags.Nr. [our order no.]<br><b>89341-PS-0410</b>                     |       | Ihre Artikelnummer [your item no.]<br><b>01329</b>                                                                                                                                                                                                                                              |       | Schmelze Nr [heat no.]<br><b>01329</b>                                                                            |       |                                                                                                                                                                      |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       | Menge [quantity]<br><b>200</b>                                                                                                                       |       | Artikelbezeichnung [designation]<br><b>elbows</b><br><b>LR-90-S-WPL6-2"-XXS</b> |       | Anforderungen [requirements]<br>ASME B16.9-2001 LR WPL6 ASTM A420A 420M 01 ASME SA 420<br>Sec II Part A NACE MR-01-75, EN 10204/3.1, rust protection.<br>Manufacturers standard, TR-addit. basemat.: Chemical requirements:<br>CAN/CSA Z245.11, Mechanical values: CAN/CSA Z245.11 CaL2 Gr. 241 |       |                                                                                                                   |       |                                                                                                                                                                      |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| Vomaterial [base material]<br><b>11543SV06</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       | Rohrzeugnisnr. [tube work's cert.no.]<br><b>V&amp;M</b>                                                                                              |       | Hersteller [manufacturer]<br><b>ASTM E309</b>                                   |       | Dichtheitsprüfung [leakage test]<br><b>ASTM E309</b>                                                                                                                                                                                                                                            |       |                                                                                                                   |       |                                                                                                                                                                      |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| Analyse [analysis]<br><b>Index</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       | Schmelze Nr. [heat no.]<br><b>01329</b>                                                                                                              |       | Erweichungsart [melting process] Y<br><b>C</b>                                  |       | 1 = Schmelzeanalyse [heat analysis]<br>2 = Produktanalyse [product analysis]                                                                                                                                                                                                                    |       | J-Faktor [J-Factor]: (Si + Mn) * (P + Sn) * 10000<br>CEQ [CEQ]: C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15 |       |                                                                                                                                                                      |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| <table border="1"> <tr> <th>Index</th> <th>C</th> <th>Si</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Cr</th> <th>Mo</th> <th>Ni</th> <th>Cu</th> <th>V</th> <th>Nb</th> <th>Al</th> <th>B</th> <th>Ti</th> <th>N</th> <th>Ceq</th> <th>CEQ</th> <th>J-Fact.</th> </tr> <tr> <td>2</td> <td>0.123</td> <td>0.223</td> <td>1.039</td> <td>0.014</td> <td>0.001</td> <td>0.067</td> <td>0.028</td> <td>0.009</td> <td>0.004</td> <td>&lt;0.001</td> <td>0.003</td> <td>0.023</td> <td>0.00015</td> <td>0.002</td> <td>0.007</td> <td>0.316</td> <td></td> <td></td> </tr> </table> |       | Index                                                                                                                                                | C     | Si                                                                              | Mn    | P                                                                                                                                                                                                                                                                                               | S     | Cr                                                                                                                | Mo    | Ni                                                                                                                                                                   | Cu    | V     | Nb      | Al    | B     | Ti    | N   | Ceq     | CEQ | J-Fact. | 2 | 0.123 | 0.223 | 1.039 | 0.014 | 0.001 | 0.067 | 0.028 | 0.009 | 0.004 | <0.001 | 0.003 | 0.023 | 0.00015 | 0.002 | 0.007 | 0.316 |  |  |  |  |  |  |  |  |  |  |
| Index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | C     | Si                                                                                                                                                   | Mn    | P                                                                               | S     | Cr                                                                                                                                                                                                                                                                                              | Mo    | Ni                                                                                                                | Cu    | V                                                                                                                                                                    | Nb    | Al    | B       | Ti    | N     | Ceq   | CEQ | J-Fact. |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.123 | 0.223                                                                                                                                                | 1.039 | 0.014                                                                           | 0.001 | 0.067                                                                                                                                                                                                                                                                                           | 0.028 | 0.009                                                                                                             | 0.004 | <0.001                                                                                                                                                               | 0.003 | 0.023 | 0.00015 | 0.002 | 0.007 | 0.316 |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| <b>Mech.-technologische Prüfung [mech. technological test]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |                                                                                                                                                      |       |                                                                                 |       |                                                                                                                                                                                                                                                                                                 |       |                                                                                                                   |       |                                                                                                                                                                      |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| Proben Nr. [test no.]<br><b>M0544038/07</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       | Zugversuch [tensile test]<br>Pr-Lage [pos. of sample] Temp. Dehngr. [yield str.] Zugfestigkeit [tensile str.] Rm (N/mm²) Dehnung [elongation] 2" (%) |       |                                                                                 |       | Kerbschlagbiegeversuch [notched bar impact test]<br>Form: ISO V Pr-Lage [pos. of sample] Temp. Querschnitt [cross sec.] Kerbschlagarbeit [impact value] (J)                                                                                                                                     |       |                                                                                                                   |       | Härteprüfung [hardness test]<br><b>139-144 HB</b>                                                                                                                    |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       | <b>120°C 347 192 33.58</b>                                                                                                                           |       |                                                                                 |       | <b>50°C 80 152±165/160</b>                                                                                                                                                                                                                                                                      |       |                                                                                                                   |       | Wärmebehandlung [heat treatment]<br>Normalized temperature 820 °C holding time 30 min cooling in air at 100 °C                                                       |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| Kennzeichnung [marking] <b>EL92</b> Mat./01329/DN/wall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |                                                                                                                                                      |       |                                                                                 |       |                                                                                                                                                                                                                                                                                                 |       |                                                                                                                   |       | Zusatzmarkierung [add. mark.]                                                                                                                                        |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K. Name: <b>Encana</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       |                                                                                                                                                      |       |                                                                                 |       |                                                                                                                                                                                                                                                                                                 |       |                                                                                                                   |       | Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]                                                                               |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
| Bemerkungen [remarks]<br>cold formed<br>Hardness test and stamping acc. to NACE MR-01-75. Stamped with round nosed tools. Hardness test, visual and dimensional test are checked on 10%.                                                                                                                                                                                                                                                                                                                                                                                       |       |                                                                                                                                                      |       |                                                                                 |       |                                                                                                                                                                                                                                                                                                 |       |                                                                                                                   |       | Der Werksachverständige [the Works Inspector]<br><b>26/02/07 Geiger Martin</b>                                                                                       |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |                                                                                                                                                      |       |                                                                                 |       |                                                                                                                                                                                                                                                                                                 |       |                                                                                                                   |       | Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.] |       |       |         |       |       |       |     |         |     |         |   |       |       |       |       |       |       |       |       |       |        |       |       |         |       |       |       |  |  |  |  |  |  |  |  |  |  |

Zertifiziert nach DGR L 87/23/EG Anhang I - Absatz 4.3 durch TÜV Süddeutschland CE 0036; Zertifikat-Nr. DGR.0036-QM-WH-104-01 [Certified acc. to PED 97/23/EC by TÜV Cert CE 0036; certificate no. DGR-0036-QM-WH-104-01, Certified acc. to EN ISO 9001]

17

|                                                                                                                                                                                                                                                                                                                                       |                                  |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------|--------|--------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------|---------|--------|--------|--------|--|--|--|
|  <b>erne fittings gmbh</b><br>A-6824 Schlins<br>Hauptstrasse 48<br>Austria/Europe<br>Telefon +43/5524 501-0<br>Telefax +43/5524 501-930<br> Reg. No.<br>12 100 3054 |                                  | <b>Abnahmeprüfzeugnis</b><br><b>Inspection Certificate</b><br><b>EN 10204 - 3.1</b>   |                            | <b>Artikelbezeichnung [designation]</b><br>tees<br>R-S-WPL6-4"/2"-XXS/XXS ✓               |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
| <b>Kunde [customer]</b><br>CCTF Corporation<br><br>5407-53 Avenue<br>CDN-T6B 3G2 Edmonton, Alberta                                                                                                                                                                                                                                    |                                  | <b>Zeugnis Nr. [cert. no.]</b><br>046233/11-HG                                        | <b>Rev.</b>                | <b>Datum [date]</b><br>28/10/2011                                                         | <b>Anforderungen der Bestellung [requirements of the order]</b><br>ASME B16.9-2007, material:WPL6, TR-basematerial:ASME Sect. II part D table Y-1, TR-fitting:ASTM A 420/A 420M-10, ASME SA-420M-Ed.07, TR-addit fitting:NACE MR0175/ISO15156-2:2003A.2, NACE MR0103-2007 2.1 and 4, M0803-05, certificate:EN 10204/3.1, rust protection:Millstandard, execution:Seamless ✓ |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                       |                                  | <b>Schmelze Nr [heat no.]</b><br>1011318301                                           |                            | <b>Ident Nr. [ident no.]</b>                                                              |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                       |                                  | <b>Unsere Auftrags.Nr./Art.Nr. [our order no./item no.]</b><br>135033TD-0110 / 059549 |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                       |                                  | <b>Ihre Bestell Nr. [your order no.]</b><br>4890518-00 <b>7565300</b>                 |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
| <b>Vormaterial [base material]</b><br>seamless pipe                                                                                                                                                                                                                                                                                   |                                  | <b>Menge [quantity]</b><br>35                                                         |                            | <b>4"x2" Tee</b>                                                                          |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
| <b>Analyse [analysis]</b>                                                                                                                                                                                                                                                                                                             | <b>Schmelze Nr. [heat no.]</b>   | <b>Erschmelzungsart [melting process]</b><br>Y                                        |                            | <b>1 = Schmelzanalyse [heat analysis]</b><br><b>2 = Produktanalyse [product analysis]</b> |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
| <b>Index</b>                                                                                                                                                                                                                                                                                                                          |                                  | C                                                                                     | Si                         | Mn                                                                                        | P                                                                                                                                                                                                                                                                                                                                                                           | S       | Cr                                                                     | Mo     | Ni                       | Cu                                   | V                                                                                                                                                                                                                                                                          | Nb     | Al                                  | B       | Ti     | N      | Sn     |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                     | 1011318301 ✓                     | 0.1652                                                                                | 0.2429                     | 0.9397                                                                                    | 0.0089                                                                                                                                                                                                                                                                                                                                                                      | 0.0029  | 0.0355                                                                 | 0.0066 | 0.0134                   | 0.0129                               | 0.0022                                                                                                                                                                                                                                                                     | 0.0001 | 0.0315                              | 0.0003  | 0.0018 | 0.0068 | 0.0021 |  |  |  |
| 2                                                                                                                                                                                                                                                                                                                                     | 1011318301                       | 0.159                                                                                 | 0.235                      | 0.918                                                                                     | 0.0076                                                                                                                                                                                                                                                                                                                                                                      | 0.00246 | 0.035                                                                  | 0.013  | 0.014                    | 0.011                                | 0.001                                                                                                                                                                                                                                                                      | 0.001  | 0.031                               | 0.00059 | 0.002  | 0.004  | 0.001  |  |  |  |
| <b>Mech.-technologische Prüfung [mech. technological test]</b>                                                                                                                                                                                                                                                                        |                                  |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
| <b>Proben Nr. [test no.]</b>                                                                                                                                                                                                                                                                                                          | <b>Zugversuch [tensile test]</b> |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         | <b>Kerbschlagbiegeversuch [notched bar impact test]</b><br>Form: ISO-V |        |                          |                                      |                                                                                                                                                                                                                                                                            |        | <b>Härteprüfung [hardness test]</b> |         |        |        |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                       | Pr.-Lage [pos. of sample]        | Temp.                                                                                 | Dehng. [yield str.]<br>ReH | Zugfestigkeit [tensile str.]<br>Rp 0.2 / Rm (MPa)                                         | Dehnung [elongation]<br>4D (%)                                                                                                                                                                                                                                                                                                                                              |         | PR-Lage [pos. of sample]                                               | Temp.  | Querschnitt [cross sec.] | Kerbschlagarbeit [impact values] (J) | 158-161 HB ✓                                                                                                                                                                                                                                                               |        |                                     |         |        |        |        |  |  |  |
| 6387_11                                                                                                                                                                                                                                                                                                                               | L                                | +20 °C                                                                                | 326 ✓                      | 475 ✓                                                                                     | 33,5 ✓                                                                                                                                                                                                                                                                                                                                                                      |         |                                                                        | -50 °C | 80                       | 157-154-265                          |                                                                                                                                                                                                                                                                            |        |                                     |         |        |        |        |  |  |  |
| <b>"Conforms With ASME Sec II, Part A, 2010 edition, 2011a addenda"</b><br> <b>Encana</b>                                                                                                                                                          |                                  |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      | <b>Wärmebehandlung [heat treatment]</b><br>normalized<br>temperature 920 °C<br>Holding Time 20 min.<br>Cooling in still air                                                                                                                                                |        |                                     |         |        |        |        |  |  |  |
| <b>Kennzeichnung [marking]</b>   AUSTRIA / WPL6 / 1011318301 / 4" / 2" / XXS/XXS / MT                                                                           |                                  |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      | <b>Zusatzmarkierung [add. mark.]</b>                                                                                                                                                                                                                                       |        |                                     |         |        |        |        |  |  |  |
| <b>Besichtigung und Ausmessung [visual inspection and dimensional check]</b> o.B./o.K.                                                                                                                                                                                                                                                |                                  |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      | <b>Die gelieferten Produkte entsprechen den Anforderungen der Bestellung (einschließlich Herstellung, Probennahme, Testen und Prüfen). [The supplied products comply with the requirements of the order (including manufacturing, sampling, testing and inspections).]</b> |        |                                     |         |        |        |        |  |  |  |
| <b>Bemerkungen [remarks]</b><br>cold formed<br>magnetic particle examination acc. ASTM E709: o.k.                                                                                                                                                                                                                                     |                                  |                                                                                       |                            |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                             |         |                                                                        |        |                          |                                      | <b>Der Werksachverständige [the Works Inspector]</b><br>28/10/11 Grabherr Harald 321<br>Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]               |        |                                     |         |        |        |        |  |  |  |

Zertifiziert nach DGRL 97/23/EG Anhang I - Absatz 4.3 durch TÜV SÜD Industrie Service, Benannte Stelle 0036, Zertifikat Nr. 129/2002/MUC [Certified acc. to PED 97/23/EG Annex I, Paragraph 4.3 by TÜV SÜD Industrie Service, Notified Body 0036, Certificate No. 129/2002/MUC]

Vendor:

Encana

Heat No:

1011318301

Date:

15-Nov-12

|                                     |        |           |          |            |        |        |          |
|-------------------------------------|--------|-----------|----------|------------|--------|--------|----------|
|                                     | C      | Mn        | Cr       | Mo         | Ni     | Cu     | V        |
|                                     | Carbon | Manganese | Chromium | Molybdenum | Nickel | Copper | Vanadium |
| Fill in Product Analysis from MTR's | 0.1652 | 0.9397    | 0.0355   | 0.0066     | 0.0134 | 0.0129 | 0.0022   |

|                              |       |      |        |        |          |        |
|------------------------------|-------|------|--------|--------|----------|--------|
|                              |       |      | Mn     | C      | Standard | Ratio  |
| Do Not Fill in these Numbers | Ratio | Mn/C | 0.9397 | 0.1652 | >3.00    | 5.6883 |

|                              |        |        |        |        |        |        |        |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|
|                              | C      | Mn     | Cr     | Mo     | V      | Ni     | Cu     |
| Do Not Fill in these Numbers | 0.1652 | 0.9397 | 0.0355 | 0.0066 | 0.0022 | 0.0134 | 0.0129 |

|                                                        |          |         |
|--------------------------------------------------------|----------|---------|
| $CE = C + (Mn/6) + ((Cr + Mo + V)/5) + ((Ni + Cu)/15)$ | CE=      | 0.33243 |
| Do Not Fill in these Numbers                           | Standard | <.45    |

CLIENTE / Customer / Client  
**CCTF CORPORATION (EDMONTON)**  
**5407 - 53 AVENUE NW**  
**EDMONTON, AB T6B 3G2**  
**CANADA**

**CERTIFICADO DE INSPECCION**  
**Inspection Certificate - Certificat de Réception**  
 FECHA: 20/06/2012 N.º 149135  
 Date: 20/06/2012 No. 149135

DIN EN 10204 / 3.1  
 ISO 10474 / 3.1



**ULMA**

PRODUCTO **FLANGES**  
 Article - Product  
 Your Order No. **4891318-00**  
 Your Code N.º

DE **24/04/2012**  
 at - de

**NORMAS APLICABLES**  
 Requirements - Normes Applicables  
**ASME B16.5-09**

**MATERIAL CORRESPONDIENTE** **ASA105N-11 II ASA350LF2CL-1-11**  
 Material Correspondent - Qualité

**MODO DE FUSION (\*)** **NACE MR0175/ISO15156-2-09 & MR0103-10**  
 Steel Making - Elaboration de l'acier  
 Clause 7.2.1.4, Annex A.2 and SSC Region 3.  
 E = Elec. Y = Oligoeno básico  
**CSA-Z245.12-09 GR248 CAT II - SS (WN & BLIND FLANGES ONLY)**

DEPARTAMENTO **QUALITY ASSURANCE**  
 Section  
 Département

**MARCA DEL FABRICANTE**  
 Mark of factory  
 Marque du fabricant



B.º Zafra, 3. - Apdo. 14  
 20580 ONATI (Gipuzkoa) SPAIN  
 Tel.: 34 - 943 780352  
 Fax: 34 - 943 781808  
 E-mail: ulma@ulmapibing.com  
**Packing List: 94112**

| PARTIDA<br>Item<br>Poste | CANTIDAD<br>Quantity | DESCRIPCION<br>Description  | LOTE | OBSERVACIONES<br>Remarks<br>Observations<br>(*) | COLADA N.º<br>Heat No<br>N.º Caudée | TENSIL<br>Tensile<br>Tensile<br>Min/m² | LONGITUD<br>Length<br>Longueur<br>m | ESTRUCION<br>Red. Area<br>Section<br>% | RESISTENCIA<br>Impact test<br>Resilience<br>Joules | CHAPY V<br>Welding<br>Media<br>Average<br>mm | TEMPERATURA<br>Temperature<br>Temp.<br>°C | DUREZA<br>Hardness<br>Dureté<br>HBW |
|--------------------------|----------------------|-----------------------------|------|-------------------------------------------------|-------------------------------------|----------------------------------------|-------------------------------------|----------------------------------------|----------------------------------------------------|----------------------------------------------|-------------------------------------------|-------------------------------------|
| 32 7582180               | 24                   | BLIND 8 600LB RF A350LF2    | 1612 | NE                                              | 300V2                               | 508                                    | 313                                 | 32.10                                  | 50                                                 | 40                                           | 51                                        | 150 156                             |
| 34 7586220               | 16                   | WN 4 900LB XS/80 RF A350LF2 | 1322 | NE                                              | 233V2                               | 520                                    | 310                                 | 32.90                                  | 64.90                                              | 37                                           | 43                                        | 155 164                             |
| 62 7581234               | 32                   | WN 4 2500LB XXS RTJ A350LF2 | 942  | NE                                              | 45V2                                | 525                                    | 334                                 | 34.10                                  | 52                                                 | 49                                           | 47                                        | 148 154                             |
| 62 7581234               | 16                   | WN 4 2500LB XS RTJ A350LF2  | 1062 | NE                                              | 173V2                               | 529                                    | 319                                 | 30.10                                  | 55.10                                              | 46                                           | 60                                        | 150 156                             |
| 7581490                  | 24                   | WN 8 600LB XS/80 RF A350LF2 | 1102 | NE                                              | 189V2                               | 526                                    | 321                                 | 29.50                                  | 52.60                                              | 58                                           | 64                                        | 151 156                             |
|                          |                      |                             | 1492 | NE                                              | 230M2                               | 551                                    | 382                                 | 25.00                                  | 48.50                                              | 93                                           | 63                                        | 162 162                             |

**COMPOSICION QUIMICA - STEEL MAKERS LADLE ANALYSIS - ANALYSE CHIMIQUE**

| COLADA N.º<br>Heat No<br>N.º Caudée | C %   | SI %  | Mn %  | P %   | S %   | Cr %  | Ni %  | Mo %  | Nb %  | V %   | Cu %  | Al %  | Ti %  | N %   | CEQ % |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 173V2                               | 0.190 | 0.260 | 0.850 | 0.017 | 0.005 | 0.250 | 0.130 | 0.070 | 0.001 | 0.003 | 0.250 | 0.032 | 0.008 | 0.000 | 0.422 |
| 189V2                               | 0.210 | 0.290 | 0.830 | 0.010 | 0.004 | 0.140 | 0.070 | 0.020 | 0.001 | 0.002 | 0.220 | 0.035 | 0.008 | 0.000 | 0.400 |
| 230M2                               | 0.170 | 0.220 | 1.210 | 0.007 | 0.002 | 0.070 | 0.080 | 0.020 | 0.001 | 0.006 | 0.220 | 0.035 | 0.008 | 0.000 | 0.423 |
| 233V2                               | 0.195 | 0.220 | 1.090 | 0.021 | 0.006 | 0.050 | 0.100 | 0.025 | 0.000 | 0.002 | 0.280 | 0.020 | 0.000 | 0.000 | 0.417 |
| 300V2                               | 0.210 | 0.220 | 0.880 | 0.011 | 0.005 | 0.190 | 0.070 | 0.010 | 0.001 | 0.002 | 0.260 | 0.033 | 0.000 | 0.000 | 0.421 |
| 45V2                                | 0.200 | 0.240 | 0.950 | 0.020 | 0.005 | 0.070 | 0.140 | 0.040 | 0.000 | 0.002 | 0.370 | 0.025 | 0.000 | 0.000 | 0.415 |

- Las dimensiones y la conformidad 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.

**ULMA**  
 ULMA FORJA S. COOP.  
 Dpto. de Garantía de calidad  
 Quality Assurance Dept.  
 EL INSPECTOR  
 Works Inspector - L'inspecteur

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

"Conforms with ASME

Sec II, Part A, 2010 edition,  
 2011a addenda"

empec. por

**ERI-CHEM**  
STEEL CORPORATION  
MTR APPROVED  
Jordan Simpson, TIT

|                                     |                                     |                                                     |
|-------------------------------------|-------------------------------------|-----------------------------------------------------|
| Conforms with ASME                  | "Conforms with ASME                 | TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS |
| Sec II, Part A, 2010 edition        | Sec II, Part A, 2010 edition        |                                                     |
| 无锡华友特钢钢铁有限公司                        | 无锡华友特钢钢铁有限公司                        |                                                     |
| Wuxi Huayou Special Steel Co., Ltd. | Wuxi Huayou Special Steel Co., Ltd. |                                                     |
| Name: LF                            |                                     |                                                     |




 华安特钢  
 HUANYOU SPECIAL STEEL

产品质量证明书  
MILL TEST CERTIFICATE

**WILL TEST CERTIFICATE**

Page 34/34 May 14/11  
无锡市江海西路 888 号  
Tel: (0510)83073086 Fax: (0510)83073086

[illegible]
$$m:n:C = 7.81$$

**APPROVED**  
By Ceri Steen at 11.13 am, Jul 27, 201

## Encana

**“Conforms with ASME  
Sec II Part A, 2010 edition  
2011a addenda”**

**ELICALIA**

**SPECIFICATION  
AS PER P.O.  
REQUIREMENT**

|                                     |        |           |          |            |        |        |          |
|-------------------------------------|--------|-----------|----------|------------|--------|--------|----------|
| HEAT # 21308                        | C      | Mn        | Cr       | Mo         | Ni     | Cu     | V        |
|                                     | Carbon | Manganese | Chromium | Molybdenum | Nickel | Copper | Vanadium |
| Fill in Product Analysis from MTR's | 0.16   | 1.25      | 0        | 0          | 0.003  | 0      | 0        |

|                              |       |      |      |      |          |       |
|------------------------------|-------|------|------|------|----------|-------|
| Do Not Fill in these Numbers | Ratio | Mn/C | Mn   | C    | Standard | Ratio |
|                              |       |      | 1.25 | 0.16 | >3.00    | 1.25  |

|                              |      |      |    |    |   |       |    |
|------------------------------|------|------|----|----|---|-------|----|
| Do Not Fill in these Numbers | C    | Mn   | Cr | Mo | V | Ni    | Cu |
|                              | 0.16 | 1.25 | 0  | 0  | 0 | 0.003 | 0  |

|                                                        |          |      |
|--------------------------------------------------------|----------|------|
| $CE = C + (Mn/6) + ((Cr + Mo + V)/5) + ((Ni + Cu)/15)$ | Standard | < 45 |
| Do Not Fill in these Numbers                           |          |      |





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

# MILL TEST CERTIFICATE

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

Customer: **W.F.F. FITTINGS & FLANGES (CANADA) LTD.**

Order No.: **D000234/S759086172**

Certificate No.: **SE102032**

Date: **06/11/2012**

Page: **1 OF 1**

| PRODUCT                     |         | MATERIAL SPECIFICATIONS                      |          |                          |       |       |       |       |       |       |       | DIMENSIONAL SPECIFICATIONS   |       |       |       |        |       |       |       |  |  |
|-----------------------------|---------|----------------------------------------------|----------|--------------------------|-------|-------|-------|-------|-------|-------|-------|------------------------------|-------|-------|-------|--------|-------|-------|-------|--|--|
| FORGED CARBON STEEL FLANGES |         | ASTM A350 LF2-11 CL.1/ASME SA350 LF2-11 CL.1 |          |                          |       |       |       |       |       |       |       | ASME B16.5-09<br>CSA Z245.12 |       |       |       |        |       |       |       |  |  |
| Item No.                    | CODE NO | DESCRIPTION                                  | QUANTITY | CHEMICAL COMPOSITION (%) |       |       |       |       |       |       |       |                              |       |       |       |        |       |       |       |  |  |
|                             |         |                                              |          | C                        | Si    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo                           | V     | Nb    | N     | CE(*3) |       |       |       |  |  |
|                             |         |                                              |          | Min                      | 0.300 | 0.150 | 0.600 | 0.035 | 0.040 | 0.400 | 0.300 | 0.400                        | 0.120 | 0.080 | 0.020 | 0.005  | 0.001 | 0.007 |       |  |  |
|                             |         |                                              |          | Max                      | 0.300 | 0.300 | 1.350 | 0.015 | 0.008 | 0.006 | 0.020 | 0.010                        | 0.005 | 0.005 | 0.001 | 0.005  | 0.001 | 0.005 |       |  |  |
| 1                           |         | 2500 WNRTJ XXS 2" LF2                        | 100 PCE  |                          | 0.230 | 0.200 | 1.150 | 0.015 | 0.008 | 0.006 | 0.020 | 0.010                        | 0.005 | 0.005 | 0.001 | 0.005  | 0.001 | 0.007 | 0.429 |  |  |
| 2                           |         | 1500 WNRTJ S160 3" LF2                       | 50 PCE   |                          | 0.210 | 0.200 | 1.150 | 0.017 | 0.005 | 0.006 | 0.010 | 0.010                        | 0.001 | 0.005 | 0.001 | 0.005  | 0.001 | 0.005 | 0.406 |  |  |
| 3                           |         | 600 BLRF(2"NPT TAP)3" LF2                    | 30 PCE   |                          | 0.230 | 0.200 | 1.150 | 0.015 | 0.008 | 0.006 | 0.020 | 0.010                        | 0.005 | 0.005 | 0.001 | 0.005  | 0.001 | 0.007 | 0.429 |  |  |
| 4                           |         | 1500 WNRF XXS 3" LF2                         | 10 PCE   |                          | 0.210 | 0.200 | 1.150 | 0.017 | 0.005 | 0.006 | 0.010 | 0.010                        | 0.001 | 0.005 | 0.001 | 0.005  | 0.001 | 0.005 | 0.406 |  |  |

RATIO = 5.0

| Item No. | Heat No. | T.S.*1 (MPA) | Y.S.*1 (MPA) | E.L.*1 (%) | Hardness (HB) | R.A.*1 (%) | Impact Test Temp: -46°C |      |      | Material Supplier | HEAT TREATMENT(*2)<br><input checked="" type="checkbox"/> N                                                                                                                                                                                                                                  |
|----------|----------|--------------|--------------|------------|---------------|------------|-------------------------|------|------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |          |              |              |            |               |            | 1                       | 2    | 3    |                   |                                                                                                                                                                                                                                                                                              |
|          |          | Min          | 485.0        | 250.0      | 22.0          |            |                         |      |      |                   |                                                                                                                                                                                                                                                                                              |
|          |          | Max          | 655.0        | -          | -             | 197        |                         |      |      |                   |                                                                                                                                                                                                                                                                                              |
| 1        | 4510829  |              | 541.3        | 395.2      | 33.2          | 155/153    | 68.6                    | 86.0 | 54.0 | 70.0              | REMARKS<br>890°CX3HRS<br>CONFORMS WITH NACE MR0103-10 AND NACE MR0175/ISO15155.2-09<br>CONFORMS WITH Z245.12 CAT II GR.248 SOUR SERVICE-09(FOR USE AS WELDING NECK AND BLIND FLANGES ONLY)<br>TEST SPECIMEN SIZE: 10X10<br>TEST SPECIMEN ORIENTATION: TRANSVERSE<br>IMPACT TEST TEMP.: -46°C |
| 2        | 4554034  |              | 520.0        | 362.0      | 34.0          | 153/151    | 69.5                    | 72.0 | 39.0 | 45.0              |                                                                                                                                                                                                                                                                                              |
| 3        | 4510829  |              | 541.3        | 395.2      | 33.2          | 155/153    | 68.6                    | 86.0 | 54.0 | 70.0              |                                                                                                                                                                                                                                                                                              |
| 4        | 4554034  |              | 520.0        | 362.0      | 34.0          | 153/151    | 69.5                    | 72.0 | 39.0 | 45.0              |                                                                                                                                                                                                                                                                                              |

\*1: T.S. = Tensile Strength, Y.S.=Yield Strength, E.L.=Elongation, R.A.=Reduction of Area.  
 \*2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S.T=Solution Treated, S.R=Stress Relieved, A.C=Air Cooled, F.C=Furnace Cooled, W.C=Water Cooled, O.C=Oil Cooled.  
 \*3: C.E. Value = C + (Mn /8) + (Cr + Mo +V) / 5 + (Ni + Cu) / 15

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

Manager of Quality Assurance Dept



"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/11/19 S. Nason

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: S. Nason

Date: 2012/11/19

Order#: 213684 Seq: 1 PO#: 708226 Heat#: bn511 Mill: TK Corporation VA Desc: recertified to a234-wpb  
Part#: WF 4 XXS 90 PB Part Desc: Weld Fittings 4 (114.3mm O.D.) DOUBLE EXTRA HEAVY LR 90 DEG ELBOW A/SA234-WPB

EL94LXXHBL  
8 in stock  
heat # BNS11

OTK Corporation

# INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

1489-1, SONG JUNG-DONG,  
GANGSEO-GU BUSAN, KOREA  
Tel : 82-51-831-8550  
Fax : 82-51-831-8986

|                                                                                                           |                                                                                        |                              |                                 |               |                |            |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------|---------------------------------|---------------|----------------|------------|
| Customer                                                                                                  | Comco Pipe & Supply                                                                    |                              | Certificate No.                 | 20110801034   | Date           | 2011/09/06 |
| P.O. No.                                                                                                  | E1-2321                                                                                |                              | Project Name                    |               |                |            |
| Job No.                                                                                                   |                                                                                        |                              | POR/Req'n No                    |               |                |            |
| Specification for Material                                                                                | ASTM/ASME A/SA420 WPL6(07 Ed.&09 Add.)<br>NACE MR0175/ISO 15156-2 AND NACE MR0103-2007 |                              | Starting Material               | SEAMLESS PIPE |                |            |
| Specification for Inspection                                                                              | ASME B16.9-2007                                                                        |                              | Dimension and Visual Inspection | GOOD          |                |            |
| Heat Code No [HCN]                                                                                        | No.                                                                                    | Descriptions                 |                                 | Q'ty (Pcs)    | Heat Treatment |            |
| ✓ BN511                                                                                                   | 0183                                                                                   | 90° ELBOW LONG XX-S ✓ B.W 4" |                                 | 20            | N: 910°C       |            |
| <p>2012/7/18 S. Nasou</p> <p>"Conforms with ASME<br/>Sec II, Part A, 2010 edition,<br/>2011a addenda"</p> |                                                                                        |                              |                                 |               |                |            |

## CHEMICAL COMPOSITION (%)

| Heat Code No [HCN] | Spec. | C    | SI   | Mn   | P     | S     | NI   | Cr   | Mo   | Cu   | V     | Cb    | Ti    | B      | C.E   | Raw Heat No/Raw Maker |
|--------------------|-------|------|------|------|-------|-------|------|------|------|------|-------|-------|-------|--------|-------|-----------------------|
|                    | Max.  | 0.23 | 0.40 | 1.35 | 0.035 | 0.010 | 0.40 | 0.30 | 0.12 | 0.40 | 0.080 | 0.020 | -     | -      | 0.42  |                       |
|                    | Min.  | -    | 0.15 | 0.50 | -     | -     | -    | -    | -    | -    | -     | -     | -     | -      | -     |                       |
| ✓ BN511            | L     | 0.13 | 0.23 | 0.87 | 0.010 | 0.004 | 0.03 | 0.05 | 0.01 | 0.07 | 0.008 | 0.012 | 0.000 | 0.0002 | 0.295 | 507983 / TPCO         |
|                    | P     | 0.10 | 0.22 | 0.85 | 0.009 | 0.002 | 0.01 | 0.04 | 0.02 | 0.06 | 0.008 | 0.011 | 0.001 | 0.0001 | 0.260 |                       |
|                    |       | ✓    | ✓    | ✓    | ✓     | ✓     | ✓    | ✓    | ✓    | ✓    | ✓     | ✓     | ✓     | ✓      | ✓     |                       |

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS

New Spec

## MECHANICAL PROPERTIES

Name: ENCANA

| Heat Code No<br>[HCN] | Spec | Y.S  | T.S  | E.L<br>(%) |  | Hardness Test |           |             | * Impact Test(J) |       |       | Date: <u>Nov 14 2012</u> |  |
|-----------------------|------|------|------|------------|--|---------------|-----------|-------------|------------------|-------|-------|--------------------------|--|
|                       |      | Ksi  |      |            |  | HB            | Temp.(°C) | Size(2mm-v) |                  |       |       |                          |  |
|                       | Max. |      |      |            |  |               |           |             |                  |       |       |                          |  |
|                       | Min. |      |      |            |  |               |           |             |                  |       |       |                          |  |
|                       |      | -    | 85   | -          |  | 237           |           | -46         |                  |       |       |                          |  |
|                       |      | 95   | 60   | 30         |  | -             |           | Act.        |                  | Ave.  |       |                          |  |
| ✓ BN511               | P    | 42.6 | 65.7 | 33.9       |  | ✓ 148         | 151       | 154         | 194.5            | 214.3 | 215.6 | 208.1                    |  |
|                       |      | ✓    | ✓    | ✓          |  |               | ✓         |             |                  | ✓     |       |                          |  |

RATIO = 8.5

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

Remark : \* CSA Z245.11-09 Gr241 CAT II Sour Service  
\* Mn/C Min.: 3.00  
-BN511 : 6.69  
\* FORMING METHOD  
-BN511 : HOT FORMING

\* Impact Specimen Size & Spec. Value  
Size Min. Ave.  
BN511 10X10X55mm 13.0 17.6

Legend:  
HB: Brinell  
ST: Solution Treatment  
SR: Stress Relieving  
N: Normalized  
T: Tempered  
A: Annealed  
Q: Quenched  
(G): Hot-Dip Galvanized Coating  
Y.S: 0.2% Offset Method  
AC: Air Cool  
CC: Oil Cool  
WQ: Water Quenched  
WC: Water Cool  
L: Ladle  
P: Product

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS

Reviewed by :

ENCANA

Witnessed by :

Approved by :

S. A. Lee

Director of Quality Assurance Dep't

Name: S. Nasou

Date: 2012/7/18

P.O.# 705955 Item# 2  
Heat Number: BU112  
Trans Am Piping Products Ltd. - Rev'd By: SB  
Shipment/Seq #: S 11 - 1952 82

4" XXH LR 90 BW ELBOW  
A420-WPL6

EL94LXXHGD  
2 in stock  
Heat # BU112

EDTK Corporation

# INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

1499-1, SOHO JUNG-DONG,  
GANGSEONG-GU BUSAN, KOREA  
Tel : 82-51-831-8550  
Fax : 82-51-831-8886

|                                                                                                 |                                                                                |                            |                                 |                |      |            |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------|---------------------------------|----------------|------|------------|
| Customer                                                                                        | Trans Am Piping Products Ltd.                                                  |                            | Certificate No.                 | 20111103716    | Date | 2011/11/16 |
| P.O. No.                                                                                        | CI-11-408                                                                      |                            | Project Name                    |                |      |            |
| Job No.                                                                                         |                                                                                |                            | POR/Req'n No.                   |                |      |            |
| Specification for Material                                                                      | ASTM/ASME A/SA420.WPL6(2010Ed)<br>NACE MR0175/ISO 15156-2 AND NACE MR0103-10 ✓ |                            | Starting Material               | SEAMLESS PIPE  |      |            |
| Specification for Inspection                                                                    | ASME B16.9-2007                                                                |                            | Dimension and Visual Inspection | GOOD           |      |            |
| Heat Code No [HCN]                                                                              | No.                                                                            | Descriptions               | Q'ty (Pcs)                      | Heat Treatment |      |            |
| BU112                                                                                           | 0062                                                                           | 90° ELBOW LONG XX-S 16W 4" |                                 | N: 910°C       |      |            |
| <p>"Conforms with ASME<br/>Sec II, Part A, 2010 edition<br/>2011a addenda"</p> <p>Nov 12/12</p> |                                                                                |                            |                                 |                |      |            |

## CHEMICAL COMPOSITION (%)

| Heat Code No [HCN] | Spec | C    | Si   | Mn   | P     | S     | Ni   | Cr   | Mo   | Cu   | V     | Co    | C.E   | Raw Heat No |
|--------------------|------|------|------|------|-------|-------|------|------|------|------|-------|-------|-------|-------------|
|                    | Max. | 0.30 | 0.35 | 1.35 | 0.035 | 0.040 | 0.40 | 0.30 | 0.12 | 0.40 | 0.080 | 0.020 | 0.43  |             |
|                    | Min. | -    | 0.15 | 0.50 | -     | -     | -    | -    | -    | -    | -     | -     | -     |             |
| BU112              | L    | 0.16 | 0.24 | 0.03 | 0.011 | 0.008 | 0.05 | 0.06 | 0.01 | 0.09 | 0.007 | 0.013 | 0.340 | 514318      |
|                    |      | ✓    | ✓    | ✓    | ✓     | ✓     | ✓    | ✓    | ✓    | ✓    | ✓     | ✓     | ✓     |             |

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS

Name: Coil  
Date: Mar 12/12

Muic = 581

## MECHANICAL PROPERTIES

| Heat Code No [HCN] | Spec | Y.S.<br>(ksi) | T.S.<br>(ksi) | EL.<br>(%) | Hardness, Temp.<br>HB | Impact Test (J)<br>Temp. (°C) | Size (mm-v)    |
|--------------------|------|---------------|---------------|------------|-----------------------|-------------------------------|----------------|
|                    | Max. | -             | 65            | -          | 197                   | -46                           |                |
|                    | Min. | 35            | 60            | 30         |                       | Acl.                          | Ava.           |
| BU112              | P    | 48.5          | 73.5          | 32.5       | 144                   | 62.1                          | 70.2 65.7 66.0 |
|                    |      | ✓             | ✓             | ✓          | ✓                     |                               |                |

MATERIAL CONFORMS TO CUSTOMER SPECIFICATIONS AS PER P.O. REQUIREMENTS

Name: EnCana  
Date: Nov 14 2012

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

Remark : •CSA Z245.11 Gr. 241 Cat II Sour Service  
•CRN No.  
QA9067.2, QA9067.24, QA9067.27, QA9067.20,  
QA9067.28, QA9067.25, QA9067.29, QA9067.26,  
QA9067.2T, QA9067.2Y, QA9067.2N

• Impact Specimen Size & Spec. Value  
BU112 Size 10x10x55mm Min. 18.0

Legend:  
HB: Brinell  
ST: Solution Treatment  
SR: Stress Relieving  
N: Normalized  
T: Tempered  
A: Annealed  
Q: Quenched  
G: Hot-Dip Galvanized Coating  
Y.S: 0.2% Offset Method  
AC: Air Cool  
OC: Oil Cool  
WQ: Water Quenched  
WC: Water Cool  
L: Ladle  
P: Product

Reviewed by :

Witnessed by :

Approved by :

Director of Quality Assurance Dept

|                                            |                                                                                   |                                               |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                               |
| Date of Issue: March 13, 2008              |                                                                                   | QCFO Final Inspection Release Certificate R00 |

## FINAL INSPECTION RELEASE CERTIFICATE

|                                                                                             |                         |
|---------------------------------------------------------------------------------------------|-------------------------|
| CUSTOMER: <b>ENCANA</b>                                                                     | SALES ORDER#: <b>NA</b> |
| PRODUCT: <b>Shell, Pre-heat, Expansion Tank, Firetube &amp; Stack for 3.0 mm Lineheater</b> | WO#: <b>08562-001-C</b> |
|                                                                                             | DATE: <b>Jan 17.13</b>  |

### FINAL INSPECTION DOCUMENTATION

|                                                                                                                        |           |           |
|------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                           | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                   |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC. ) |           |           |

|                                        |                          |
|----------------------------------------|--------------------------|
| Q.C. FILE CLOSURE BY: <i>Kasho Fox</i> | DATE: <b>Jan 17 2013</b> |
|----------------------------------------|--------------------------|

### LOOSE COMPONENTS REQUIRED / PREPARED

|                                                                                                                                                                         |                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| ITEMS REQUIRED:                                                                                                                                                         | NO. OF BOXES OR PKGS. _____ |
| <i>Shell Assembly for 3.0 mm lineheater</i><br>ADDITIONAL HARDWARE OR FASTENERS REQUIRED YES <input checked="" type="checkbox"/> NO <input checked="" type="checkbox"/> |                             |

### PREPARATION FOR SHIPMENT / STORAGE

|                                |                    |
|--------------------------------|--------------------|
| PREPARATION NEEDED / COMPLETED |                    |
| <i>Release to next process</i> |                    |
| LOT #                          | <b>08562-001-C</b> |
| ITEM #                         | <b>Bath</b>        |

|                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| INVENTORY TAGS ATTACHED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
|-------------------------|---------------------------------------------------------------------|

### SHIPPING INSTRUCTIONS

|                                                     |                                                                      |
|-----------------------------------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED                              | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: _____ |                                                                      |
| PHONE:                                              | FAX:                                                                 |

|                                          |                        |
|------------------------------------------|------------------------|
| RELEASED TO INVENTORY:                   | DATE:                  |
| RELEASED TO CUSTOMER: <i>[Signature]</i> | DATE: <b>Jan 17.13</b> |

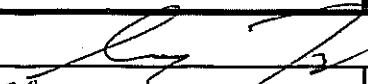
RE-ISSUED JAN 16 2013

## PRESSURE PIPING EXAMINATION CHECKLIST

DRWG # LH-PH-7224-1 Rev 3 of 08562-6 Rev 0 (F10) JOB NUMBER: 08562-001-C

| NO. | FUNCTION                                                                                                                                      | SIGNATURE OR INITIAL AND DATE |                  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------|
|     |                                                                                                                                               | Q.C. INSPECTOR                | OWNERS INSPECTOR |
| 1   | DRAWINGS: ABSA registration over 0.5 Cu.M. Approved by Owner. Approved for Construction (signed & dated).                                     |                               |                  |
| 2   | Owner's Inspector notified.                                                                                                                   | RMK NOV 19/12                 |                  |
| 3   | Registered Welding Procedure Specifications, Q.C. Manual and Forms available at site, Job File started.                                       | RMK NOV 19/12                 |                  |
| 4   | Welders qualified for WPS's and have valid Performance Qualification cards. Welders Log completed. WPS reviewed with Welders. Hold            | RMK NOV 26/12                 |                  |
| 5   | Material checked against P.O., drawings, and specifications. Identification confirmed. Colour coding applied. Hold                            | RMK NOV 26/12                 |                  |
| 6   | Sample of each Welder's work examined, including root spacing, alignment, cleaning, joint preparation, preheat and electrode control.         | RMK NOV 28/12                 |                  |
| 7   | Nondestructive Examination completed. Reports and radiographs reviewed, signed by Level II or III, Radiograph I.D. detailed on drawings. Hold | RMK NOV 29/12                 |                  |
| 8   | Visual Examination of all completed welds. Welders I.D. stamped and recorded on drawings.                                                     | RMK NOV 29/12                 |                  |
| 9   | Heat Treatment verified and recorded on drawings. NA                                                                                          |                               |                  |
| 10  | Each system checked against specifications and drawings before test.                                                                          | RMK NOV 29/12                 |                  |
| 11  | All deficiencies recorded and signed off by Q.C.I. and Owner's Inspector before test.                                                         | RMK NOV 29/12                 |                  |
| 12  | Pressure Test checked. Gauge calibration verified, gauge #'s recorded. Hold                                                                   | RMK DEC 14/12                 |                  |
| 13  | System checked after test. Deficiencies recorded and corrected.                                                                               |                               |                  |
| 14  | Construction data reports (AB-83) prepared and signed by Q.C.I. and Owner's Inspector.                                                        |                               |                  |
| 15  | Declaration form (AB-81) submitted to ABSA                                                                                                    |                               |                  |
| 16  | As built drawings accepted by Owner.                                                                                                          |                               |                  |

JAN 16 2013

|                                                                                                                   |                                                                                                                    |                                                                                                     |                                                                                   |               |                     |           |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|---------------------|-----------|
| Issuing Authority: Marvin J. (Ty) DeBelser / Dale Karg<br><br>Date of Issue: November 30, 2007<br>Rev Status: 1.0 | <br><b>NWP</b><br>INDUSTRIES INC. | Manufacturing<br><br>FORM-LHTS-001<br>Line Heater Travel Sheet<br>(Shell, Skid & Firetube Assembly) |                                                                                   |               |                     |           |
| By:                              |                                                                                                                    | Date: NOV 14 2012                                                                                   |                                                                                   |               |                     |           |
| W.O. # 00562-001-C                                                                                                |                                                                                                                    | Description: FIRETUBE & STACK for 3.0 mm LH PKG.                                                    |                                                                                   |               |                     |           |
| Drawing # LH-FIRSTK-24-2 REV 1                                                                                    |                                                                                                                    |                                                                                                     |                                                                                   |               |                     |           |
|                                                                                                                   | Req.                                                                                                               | Hold                                                                                                | Employee Initial                                                                  | Date Complete | QC Initial          | Date      |
| Work Instructions/Drawings Issued                                                                                 | ✓                                                                                                                  |                                                                                                     |  |               | (C)                 | Nov 16/12 |
| Work Instructions/Drawings Reviewed                                                                               | ✓                                                                                                                  | ✓                                                                                                   |  |               | (C)                 | Nov 16/12 |
| Material & Parts Released                                                                                         | ✓                                                                                                                  | ✓                                                                                                   |  |               | (C)                 | Jan 17    |
| Welding Personnel Assigned                                                                                        | ✓                                                                                                                  | ✓                                                                                                   |  |               | (C)                 | Jan 17    |
| Visual Dimension Inspection - Firetube (Stack) <sup>LR Dec 6/12</sup>                                             | ✓                                                                                                                  |                                                                                                     |                                                                                   |               | LR (Stack) Dec 6/12 | Dec 6/12  |
| Visual Dimension Inspection - Skid                                                                                | NA                                                                                                                 |                                                                                                     |                                                                                   |               |                     |           |
| Visual Dimension Inspection - Expansion Tank                                                                      | NA                                                                                                                 |                                                                                                     |                                                                                   |               |                     |           |
| Visual Dimension Inspection - Preheat Line                                                                        | NA                                                                                                                 |                                                                                                     |                                                                                   |               |                     |           |
| Visual Dimension Inspection - Shell Assy.                                                                         | NA                                                                                                                 |                                                                                                     |                                                                                   |               |                     |           |
| Pneumatic Test - Firetube                                                                                         | ✓                                                                                                                  | ✓                                                                                                   |                                                                                   |               | RMS                 | DEC 14/12 |
| Hydro Test - Preheat Line                                                                                         | NA                                                                                                                 |                                                                                                     |                                                                                   |               |                     |           |
| Pneumatic Test - Shell Assy.                                                                                      | NA                                                                                                                 |                                                                                                     |                                                                                   |               |                     |           |
| Installation of All Welded Components Complete                                                                    | ✓                                                                                                                  |                                                                                                     |                                                                                   |               | RMS                 | DEC 20/12 |
| Final Inspection Release                                                                                          | ✓                                                                                                                  |                                                                                                     |                                                                                   |               | RMS                 | DEC 20/12 |
|                                                                                                                   |                                                                                                                    |                                                                                                     |                                                                                   |               |                     |           |
| Accepted By Customer: _____ Date: _____                                                                           |                                                                                                                    |                                                                                                     |                                                                                   |               |                     |           |



|                                                        |                                                                                   |                                                               |
|--------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser / Dale Karg |  | Manufacturing                                                 |
| Date of Issue: November 30, 2007                       |                                                                                   | FORM-LHTS-001                                                 |
| Rev Status: 1.0                                        |                                                                                   | Line Heater Travel Sheet<br>(Shell, Skid & Firetube Assembly) |

By:  Date: NOV 14 2012

W.O. # 08562-001-C Description: SHELL & EXPANSION TANK for 3.0' mm LH PKG.

Drawing # LH-7224-BARE REV 3

|                                                                    | Req. | Hold | Employee Initial | Date Complete | QC Initial | Date      |
|--------------------------------------------------------------------|------|------|------------------|---------------|------------|-----------|
| Work Instructions/Drawings Issued                                  | ✓    |      | MA               |               | (C)        | Nov 16/12 |
| Work Instructions/Drawings Reviewed <small>NOTE on Page 4.</small> | ✓    | ✓    | Btl MA           | Nov 28        | (C)        | Nov 16/12 |
| Material & Parts Released                                          | ✓    | ✓    | MA               |               | (C)        | Jan 17    |
| Welding Personnel Assigned                                         | ✓    | ✓    | Btl MA           | Nov 28        | (C)        | Jan 17    |
| Visual Dimension Inspection - Firetube/Stack                       | NA   |      |                  |               |            |           |
| Visual Dimension Inspection - Skid                                 | NA   |      |                  |               |            |           |
| Visual Dimension Inspection - Expansion Tank                       | ✓    |      |                  |               | LR         | Dec 11/12 |
| Visual Dimension Inspection - Preheat Line <small>INSTALL</small>  | ✓    | ✓    |                  |               | LR         | Dec 6/12  |
| Visual Dimension Inspection - Shell Assy.                          | ✓    |      |                  |               | LR         | Dec 5/12  |
| Pneumatic Test - Firetube                                          | NA   |      |                  |               |            |           |
| Hydro Test - Preheat Line                                          | ✓    | ✓    |                  |               | RMP        | DEC 14/12 |
| Pneumatic Test - Shell Assy.                                       | ✓    | ✓    |                  |               | RMP        | DEC 20/12 |
| Installation of All Welded Components Complete                     | ✓    |      |                  |               | RMP        | DEC 20/12 |
| Final Inspection Release                                           | ✓    |      |                  |               | RMP        | DEC 20/12 |
|                                                                    |      |      |                  |               |            |           |
|                                                                    |      |      |                  |               |            |           |

Accepted By Customer: \_\_\_\_\_ Date: \_\_\_\_\_

|                                                         |                                                                                   |                    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA               |
| Date of Issue: March 30 2012                            |                                                                                   | FORM_NDE_001       |
| Rev Status: 2.0                                         |                                                                                   | N.D.E Requirements |

### N.D.E Requirements

Client: Encana

JO# 08562-001-C

Project: Preheat Line – 3.0 mm Lineheater

Date: 28/11/2012

Piping: ☒

Pressure Vessel: ☐

Tank: ☐

Other:

- ☐ X-Ray  
☒ Gamma Ray  
☐ Ultrasonics  
☐ Liquid Penetrant  
☒ Magnetic Particle  
☐ Accoustic Emission  
☐ Hardness test Max 200 BHN

- ☐ 100%  
☐ Full  
☐ 25%  
☒ 10%  
☐ Other(Define)  
☐ Spot

- ☐ ASME Section VIII-UW-51  
☐ ASME Section VIII-UW-52  
☐ Customer Specification  
☒ ASME B31.3 NFS  
☐ Other (Specify)  
☒ Customer Spec  
☐ CSA W47.1/W59

General Instructions:

Vessel S/N

P1 Material

Welder ID S

Shell-T=

Pipe-T= 1" Sch 160

Total Welds 1 x Gap Shot (GS-1) & 1 X MPI (MT-1)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

Special Requirements:

Shots

Buttweld Xray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

**NOTE:** Encana Spec for Welded Piping-acceptance is zero UC and Zero IP  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

Prepared By: B.M. Spence



Date: 28/11/2012

Exposure Device #: D6306 Source #: 88662B  
Cobalt 60 ☐ IR 192 ☒ X-Ray ☐ EFSS: .154  
Film Brand: AGFA #Film/cassette: 1  
Code: ASME B31.3 NFS & Encana Spec.

**Job / P.O. #:** 08562-001-C    **IRISNDT #:** 255874    **Date:** 28-Nov-12  
**Client:** ENCANA C/O NWP  
**Location:** Innisfail, Alberta  
**Item Inspected:** Preheat Line - 3mm Lineheater    **Material:** CS

[illegible]

Number of Radiation Barrier Warning Signs Erected: 2

Number of Radiation Barrier Warning Signs Returned: 2

**Work Location Legend:** [1] Inside Fab. Shop [2] Yard/Lay-down Area [3] Piping/Modular Fab. Area [4] N/A (Other)

IRIS Procedure:  
Single Wall Exposure: RT 1, 2, 2A, 6, 7  
Double Wall Exposure: RT 3, 3A, 4, 5, 8

S.O.D. = Source-to-object distance (D)  
O.F.D. = Distance from source side of object to film (d)

AB - Arc Burns  
BT - Burn Through  
CK - Crack  
EP - Excessive Penetration  
P - Porosity

EUC - External Undercut  
IUC - Internal Undercut  
HB - Hollow Bead  
IP - Incomplete Penetration  
S - Slag

- IC - Internal Concavity
- LF - Lack of Fusion
- LC - Low Cover
- MA - Misalignment

|        |                   |             |                   |
|--------|-------------------|-------------|-------------------|
| Unit#: | <u>334</u>        | Kilometers: | <u>N/A</u>        |
| In:    | <u>2200</u>       | Out:        | <u>2300</u>       |
|        |                   | Hrs:        | <u>1.0</u>        |
| In:    | <u>          </u> | Out:        | <u>          </u> |
|        |                   | Hrs:        | <u>          </u> |

Personnel:  
J. BRUCKSHAW  
J. SMITH  
Michael V

[illegible]

Interpretation by:  
JEFF BRUCKSHAW (PED LEVEL 2)

{Print}

(Signature)

**Client Representative:**

I am in full  
agreement with  
report contents

{Sign}

|            |          |
|------------|----------|
| SNT-TC-1A  | <u>2</u> |
| C.G.S.B.   | <u>2</u> |
|            | (Level)  |
| C.G.S.B. # | 12007    |

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IRISNDT E-2004N

Procedures: MT 2V  
Code: CSA W47.1/W59

Job / P.O. #: 08562-001-C

IRISNDT #: 255874

Date: 28-Nov-12

Client: ENCANA

Location: Alberta

Item Inspected: Piping 1'160 socket weld

Surface Condition: Painted ☐ Sandblasted ☐ Machined ☐ As Cast ☒ As Forged ☐ Weldment ☒ Other ☐

Material: cs

Thickness: 1'160

Heat Treatment: na

Magnetizing Equipment: Yoke ☒ Coil ☐ Prod ☐

IRISNDT #: 40155

Bench: Headshot ☐ Central Conductor ☐ Coil ☐

Mfg: contour probe

Calibration Date: 24-Oct-12

Blacklight: ☐  
☐

IRISNDT #:

Verification per ASME V Art 7 T.777.2

Mfg:

Calibration Date: -Jan-11

Whitelight:

Battery Powered Min. 3V  
110V Power Min. 60W Bulb

☒ }  
☐ }

Held within 30 cm (12in) of the inspection surface  
provides minimum 1000 Lx (100fc)

Method of Magnetization: AC ☒ DC ☐ Continuous ☒ Residual ☐

Magnetic Particles:

Dry ☐ Wet ☒

Red ☐ Grey ☐ Black ☒ Fluorescent ☐

Batch #: 1206

Mfg: ardrex

Type: 8031

Background: ☒

Batch #: 1243

Mfg: ardrex

Type: 8901w

Scope: Black on white MPI was performed on a 1" 160 socket weld.

Item inspected:

MT-1 1"160 socket weld Welder ID: "S"

RESULTS: Acceptable to code

Inspection Limitation(s):

Unit#: 334

Kilometers: \_\_\_\_\_

In: 0300 Out: 0330 Hrs: .5

In: \_\_\_\_\_ Out: \_\_\_\_\_ Hrs: \_\_\_\_\_

Personnel:

Joseph Smith, Jeff bruckshaw, Michael V

Consumables:  
Min consum

Interpretation by:  
Joseph Smith

SNT-TC-1A

II

C.G.S.B.

II

C.G.S.B. #

(Level)  
13231

(Print)

(Signature)

Client Representative:

(Print)

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agreement with  
report contents

(Sign)

|                                                         |                                                                                  |              |
|---------------------------------------------------------|----------------------------------------------------------------------------------|--------------|
| Issuing Authority: Marvin J. (Ty)<br>DeBelser/Dale Karg |  | ABSA         |
| Date of Issue: November 13 2012                         |                                                                                  | FORM_NDE_001 |
| Rev Status: 2.1                                         |                                                                                  | Requirements |

### NDE Requirements

Client: Encana

JO# 08562-001-C

Project: 3.0 mm btu. Lineheater

Date: 07/12/2012

Piping: ☐ Pressure Vessel: ☐ Tank: ☐ Other: Shell Assembly

☐ X-Ray

☐ 100%

☐ ASME Section VIII-UW-51

☐ Gamma Ray

☐ Full

☐ ASME Section VIII-UW-52

☐ Ultrasonics

☐ 25%

☒ Customer Specification

☐ Liquid Penetrant

☐ 10%

☐ ASME B31.3 NFS

☒ Magnetic Particle

Patch on lineheater shell Other(Define)

Other (Specify)

☐ Acoustic Emission

☐ Spot

☐ Hardness test Max 200 BHN

☒ CSA W47.1/W59

#### General Instructions:

Vessel S/N

P1 Material

Welder ID John Kidd

Shell-T= .25"

Pipe-T=

Total Welds 1 x MPI on both sides of shell (1st # is MT-1)

Please use wire type iQi

Please Note locations of all indications on films on reports

Please include O.F.D-S.O.D S.F.D on reports

#### Special Requirements:

Shots

Buttweld X-ray to be identified as X-#

Gap Shots to be identified as GS-#

Threaded Shots to be identified as XT-#

Identify on Envelope part of package being shot ie. Coil, Piping, ect.

Flashes must contain: Customer, JO#, Spool Identification, Xray number, Clock tape, Welder's ID Symbol, Date

Mark all indicated repairs on the project

NOTE: Encana Spec for Welded Piping-acceptance is zero root defects  
 Encana Spec is Zero Elongated Indications  
 Encana Spec for Socket Welds-acceptance is minimum 1/16" gap  
 Encana Spec for Threaded Piping- acceptance is 7 threads engaged  
 HT is a 5 Point Traverse

*ENCANA SPEC IS ZERO UC*

Prepared By: Lance Raven

Date: 07/12/2012



# MAGNETIC PARTICLE INSPECTION REPORT

**CG24 - MT28**

Page 1 of 1

Procedures: MT 2V

Code: CUSTOMER SPEC

Job / P.O. #: 08562-001-C

IRISNDT #: 256007

Date: 07-Dec-12

Client: ENCANA

Location: Alberta

Item Inspected: Vessel 3.0mm btu. Lineheater

Surface Condition: Painted ☐ Sandblasted ☐ Machined ☐ As Cast ☐ As Forged ☒ Weldment ☒ Other ☐

Material: CS

Thickness: .25"

Heat Treatment: NA

Magnetizing Equipment: Yoke ☒ Coil ☐ Prod ☐ Bench: Headshot ☐ Central Conductor ☐ Coil ☐

IRISNDT #: 40155

Mfg: Contour probe

Calibration Date: 25-Oct-12

Blacklight: ☐

IRISNDT #:

Mfg:

Calibration Date: --11

☐

Verification per ASME V Art 7 T.777.2

Whitelight:

Battery Powered Min. 3V

110V Power Min. 60W Bulb

☒☐Held within 30 cm (12in) of the inspection surface  
provides minimum 1000 Lx (100fc)Method of Magnetization: AC ☒ DC ☐ Continuous ☒ Residual ☐Magnetic Particles: Dry ☐ Wet ☒Red ☐ Grey ☐ Black ☒ Fluorescent ☐

Batch #: 1222

Mfg: Magnaflux

Type: 8031

Background: ☒

Batch #: 1151

Mfg: Ardrex

Type: 8901w

SCOPE: Black on white MPI was performed on one area, internally and externally on the shell.

MT-1 External Area WELDER ID: John Kidd

MT-2 Internal Area WELDER ID: John Kidd

Inspection Results: No indications were found during inspection.

Inspection Limitation(s): n/a

Unit#: 226

Kilometers:

In: 0630

Out: 0700

Hrs: .5

In: \_\_\_\_\_

Out: \_\_\_\_\_

Hrs: \_\_\_\_\_

Personnel:

Joseph Smith, Brady Smith / Michael V

Consumables:  
Min consum

Interpretation by:

Joseph Smith

SNT-TC-1A

II

(Print)

C.G.S.B.

II

C.G.S.B. #

13231

(Signature)

Client Representative:

(Print)

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Matrix, Houston, TX  
Tulsa, OK(281) 476-4444  
(713) 722-7177  
(918) 446-8773

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IRISNDT E-2003F



|                             |                                                                                  |                       |
|-----------------------------|----------------------------------------------------------------------------------|-----------------------|
| NWP Industries Inc™         |  | Website: www.nwp.ca   |
| PO Box 6280<br>4017-60 Ave. |                                                                                  | Phone: (403) 227-4100 |
| T4G 1S9                     |                                                                                  | Fax: (403) 227-4102   |

## PNEUMATIC TEST AFFIDAVIT

Customer: Encana Corporation

Project: Shell Assembly

Test Pressure: 24 oz

Code Requirements: CSA W47.1 and W59. API 12F

Product Description:

JO# 08562-001-C

Project#

Hold Time: AS REQUIRED

Date: 17/12/2012

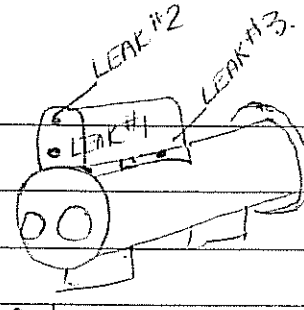
Tank Serial # 08562-001

DWG# LH-7224-BARE

REV# 3

Test-

#1. All Welded and Bolted Connections

|         |                            |                                                                                    |
|---------|----------------------------|------------------------------------------------------------------------------------|
| 3 LEAKS | #1. ON EXP TANK - Endplate |  |
|         | #2. on Exp Tank End plate  |                                                                                    |
|         | #3 on Exp Tank Bottom side |                                                                                    |

OF weld attachment  
tank to Endplate

Repairs

|                                                   |                                              |
|---------------------------------------------------|----------------------------------------------|
| Ground to sound metal by: <u>Landon Stockdale</u> | Repair preparation. QC witness by: <u>OK</u> |
| Reweld using E7018. QC: <u>OK</u>                 | Repaired by: <u>Y. H. H. H.</u>              |
| Procedure approved by QC: <u>OK</u>               | Completed repair checked by QC: <u>OK</u>    |

Additional Comments

|                                             |
|---------------------------------------------|
| Re Tested and all leaks repaired. <u>OK</u> |
|                                             |
|                                             |

|                  |                  |                      |
|------------------|------------------|----------------------|
| PSV Used:        | Range:           | Calibration Due:     |
| <u>006460-42</u> | <u>0 - 28 oz</u> | <u>Jan. 13. 2013</u> |

| Test #                                     | Test By:  | QC        | Date             | Test Gauge ID.         | Range          | Calibration Due:                  |
|--------------------------------------------|-----------|-----------|------------------|------------------------|----------------|-----------------------------------|
| <u>1</u>                                   | <u>OK</u> | <u>OK</u> | <u>Dec 18/12</u> | <u>NWPG-1179-119</u>   | <u>0-5 PSI</u> | <u>Jan. 11/13 + June 19. 2013</u> |
| Test(s) Approved By: <u>Prof. S. H. H.</u> |           |           |                  | Date: <u>DEC 20/12</u> |                |                                   |

|                     |                                                                                  |                       |
|---------------------|----------------------------------------------------------------------------------|-----------------------|
| NWP Industries Inc™ |  | Website: www.nwp.ca   |
| PO Box 6280         |                                                                                  | Phone: (403) 227-4100 |
| 4017-60 Ave.        |                                                                                  |                       |
| T4G 1S9             |                                                                                  | Fax: (403) 227-4102   |

## HYDROSTATIC TEST AFFIDAVIT

Customer: Encana Corporation JO# 08562-001-C  
 Project: Preheat Lines for 3.0 mm Lineheater Project#  
 Test Pressure: 2160 PSI Hold Time: 60 minutes  
 Code Requirements: ASME B31.3 NFS 2010 Edition

All Personnel Advised of Test ☐ All Signs & Flagging Posted ☐  
 Prior to Filling – Fitting/Hoses & Component Meet Required Test Pressure  
 Sign-Off Supervisor:            Tester:            Date: 14/12/2012

### Product Description:

|                                |
|--------------------------------|
| FG-1"-C-160A/BE-301 = 2160 PSI |
|                                |
|                                |
|                                |
|                                |
|                                |

50% Test Pressure Leak/Systems Check Completed ☐

|                           |
|---------------------------|
| 50% = 1080 PSI <i>RMP</i> |
|                           |
|                           |
|                           |
|                           |

Equipment Drained & Flushed to Prevent Freezing: Yes: ☐ No: ☐

|             |              |
|-------------|--------------|
| Start Time: | Finish Time: |
| 9 AM        | 10:15 AM     |

| Test Gauge Identification # | Pressure Range | Calibration Date |
|-----------------------------|----------------|------------------|
| NWPG- 5000 <i>-10</i>       | 0-5000 PSI     | 02 NOV 2013      |
| NWPG- 5000 <i>-10</i>       | 0-5000 PSI     | 19 JUL 2013      |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |
| NWPG-                       | PSI            |                  |

|                                |                        |
|--------------------------------|------------------------|
| Test By: <i>Mark Jorgensen</i> | Date: <i>DEC 14/12</i> |
| Approved By: <i>RMP</i>        | Date: <i>DEC 14/12</i> |

|                             |                                                                                  |                       |
|-----------------------------|----------------------------------------------------------------------------------|-----------------------|
| NWP Industries Inc™         |  | Website: www.nwp.ca   |
| PO Box 6280<br>4017-60 Ave. |                                                                                  | Phone: (403) 227-4100 |
| T4G 1S9                     |                                                                                  | Fax: (403) 227-4102   |

## PNEUMATIC TEST AFFIDAVIT

Customer: Encana Corporation

JO# 08562-001-C

Project: Fire Tube

Project#

Test Pressure: 24 oz

Hold Time: AS REQUIRED

Code Requirements: CSA W47.1 and W59

Date: 11/12/2012

Product Description:

13/12/2012.

Tank Serial # 08562-001

DWG# LH-FIRSTK-24-2

REV# 1

Test-

#1.All Welded Connections

|                  |
|------------------|
| <u>NO LEAKS.</u> |
|                  |
|                  |

### Repairs

|                           |                                    |
|---------------------------|------------------------------------|
| Ground to sound metal by: | Repair preparation. QC witness by: |
| Reweld using E7018. QC:   | Repaired by:                       |
| Procedure approved by QC: | Completed repair checked by QC:    |

### Additional Comments

|  |
|--|
|  |
|  |
|  |

|                   |                   |                       |
|-------------------|-------------------|-----------------------|
| PSV Used:         | Range:            | Calibration Due:      |
| <u>006460-42.</u> | <u>0 - 28 oz.</u> | <u>Jan. 12. 2013.</u> |

| Test #               | Test By:                                                                            | Q.C.                                                                                | Date             | Test Gauge ID.              | Range          | Calibration Due:               |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------|-----------------------------|----------------|--------------------------------|
| <u>1</u>             |  |  | <u>12/13/12.</u> | <u>NWPG- 117/123</u>        | <u>0-5 PSI</u> | <u>Jan 11/13 at Jan 09/13.</u> |
| Test(s) Approved By: |                                                                                     |                                                                                     |                  | Date: <u>Dec. 13. 2012.</u> |                |                                |

|                             |                                |                       |
|-----------------------------|--------------------------------|-----------------------|
| NWP Industries Inc.™        | <b>NWP</b><br>Industries Inc.™ | Website: www.nwp.ca   |
| PO Box 6280<br>4017-60 Ave. |                                | Phone: (403) 227-4100 |
| T4G 1S9                     |                                | Fax: (403) 227-4102   |

## PNEUMATIC TEST AFFIDAVIT

Customer: Encana Corporation

Project: Shell Assembly

Test Pressure: 24 oz

Code Requirements: CSA W47.1 and W59. API 12F

Product Description:

JO# 08562-001-C

Project#

Hold Time: AS REQUIRED

Date: 17/12/2012

Tank Serial # 08562-001

DWG# LH-7224-BARE

REV# 3

Test-

#1.All Welded and Bolted Connections

|                          |
|--------------------------|
| 1 Leak on expansion tank |
|                          |
|                          |

### Repairs

|                           |                                    |
|---------------------------|------------------------------------|
| Ground to sound metal by: | Repair preparation. QC witness by: |
| Reweld using E7018. QC:   | Repaired by: <u>London</u>         |
| Procedure approved by QC: | Completed repair checked by QC:    |

### Additional Comments

|  |
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|  |
|  |
|  |

|                               |                            |                                         |
|-------------------------------|----------------------------|-----------------------------------------|
| PSV Used:<br><u>006460-42</u> | Range:<br><u>0 - 28 oz</u> | Calibration Due:<br><u>Jan. 02/2012</u> |
|-------------------------------|----------------------------|-----------------------------------------|

| Test #               | Test By:  | QC        | Date             | Test Gauge ID.         | Range          | Calibration Due:              |
|----------------------|-----------|-----------|------------------|------------------------|----------------|-------------------------------|
| 1                    | <u>RR</u> | <u>ST</u> | <u>Dec 20/12</u> | <u>NWPG-125-126</u>    | <u>0-5 PSI</u> | <u>7/11/13</u> <u>7/11/13</u> |
| Test(s) Approved By: |           |           |                  | Date: <u>Dec 20/12</u> |                |                               |

|                             |                                                                                  |                                                     |
|-----------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------|
| NWP Industries Inc.™        |  | Website: <a href="http://www.nwp.ca">www.nwp.ca</a> |
| PO Box 6280<br>4017-60 Ave. |                                                                                  | Phone: (403) 227-4100                               |
| T4G 1S9                     |                                                                                  | Fax: (403) 227-4102                                 |

## PNEUMATIC TEST AFFIDAVIT

Customer: Encana Corporation

JO# 08562-001-C

Project: Fire Tube

Project#

Test Pressure: 24 oz

Hold Time: AS REQUIRED

Code Requirements: CSA W47.1 and W59

Date: 14/12/2012

Product Description:

Tank Serial # 08562-001

DWG# LH-FIRSTK-24-2

REV# 1

Test-

#1.All Welded Connections

|  |
|--|
|  |
|  |
|  |

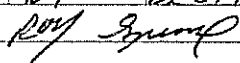
### Repairs

|                           |                                    |
|---------------------------|------------------------------------|
| Ground to sound metal by: | Repair preparation. QC witness by: |
| Reweld using E7018. QC:   | Repaired by:                       |
| Procedure approved by QC: | Completed repair checked by QC:    |

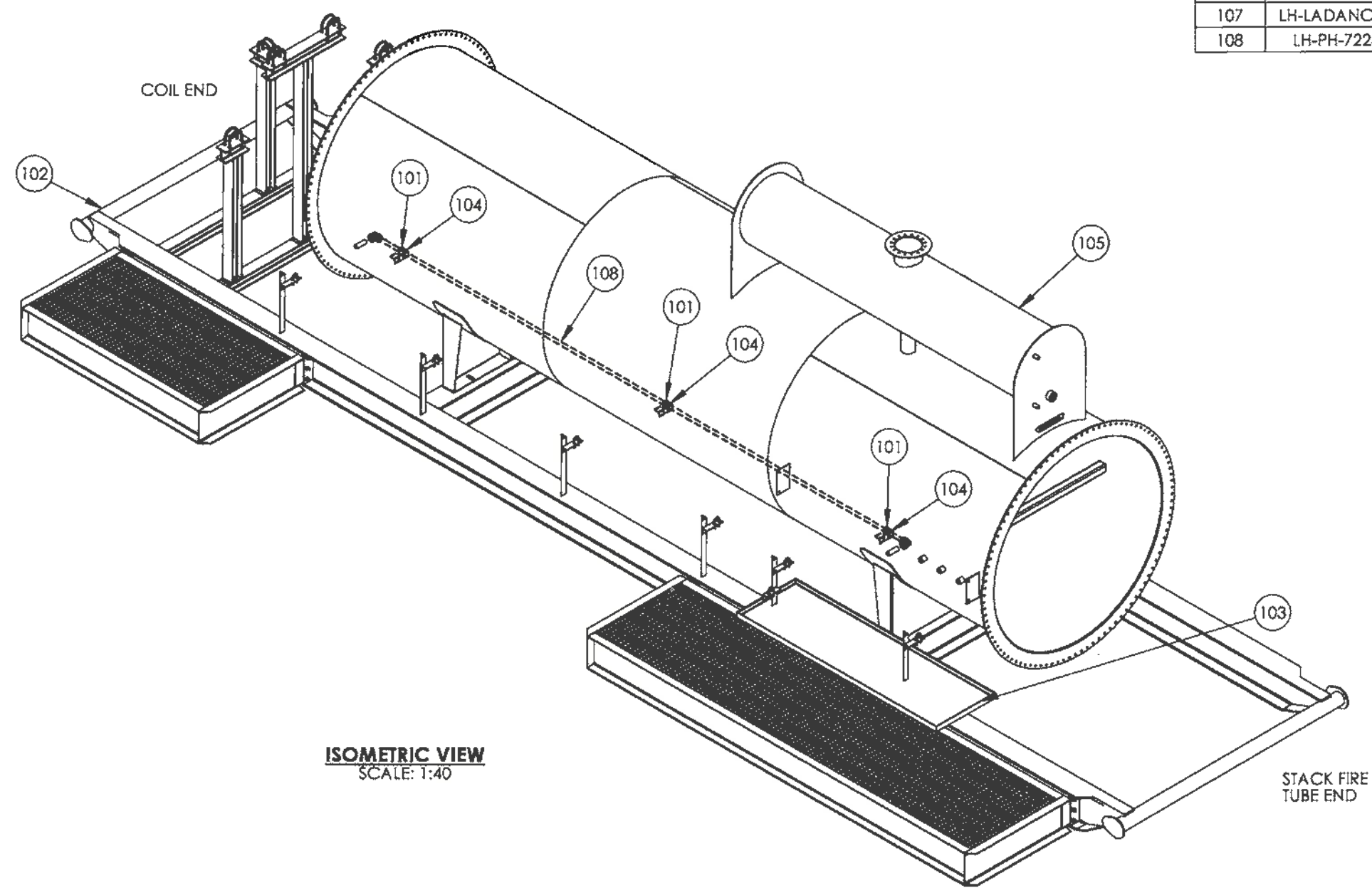
### Additional Comments

|  |
|--|
|  |
|  |
|  |

|                  |                   |                  |
|------------------|-------------------|------------------|
| PSV Used:        | Range:            | Calibration Due: |
| <u>006460-42</u> | <u>0 - 28 oz.</u> |                  |

| Test #                                                                                                          | Test By:                                                                            | Q.C.       | Date             | Test Gauge ID.         | Range   | Calibration Due: |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|------------------|------------------------|---------|------------------|
| 1                                                                                                               |  | <u>DPH</u> | <u>DEC 14.12</u> | NWPG- <u>117 123</u>   | 0-5 PSI |                  |
| Test(s) Approved By: <u></u> |                                                                                     |            |                  | Date: <u>DEC 14.12</u> |         |                  |

| ITEM | PART #       | DESCRIPTION                       | MTR # | LENGTH | QTY. |
|------|--------------|-----------------------------------|-------|--------|------|
| 101  | 034878       | U-BOLT, 1" c/w 4 NUTS             |       |        | 3    |
| 102  | -            | SEE DRAWING 08352-3               |       |        | 1    |
| 103  | -            | SEE ENCLOSURE SUPPORT DETAIL      |       |        | 1    |
| 104  | ANGC22A      | ANGLE IRON 2"x2"x1/4" SA-36/44W   |       | 6"     | 3    |
| 105  | LH-7224-BARE | LH BATH 72" OD x 24' LG BARE      |       |        | 1    |
| 106  | LH-LAD-72    | LINEHEATER LADDER FOR 72" OD BATH |       |        | 1    |
| 107  | LH-LADANCHOR | LINEHEATER LADDER ANCHOR          |       |        | 2    |
| 108  | LH-PH-7224-1 | PRE-HEAT WELDED PIPE              |       |        | 1    |

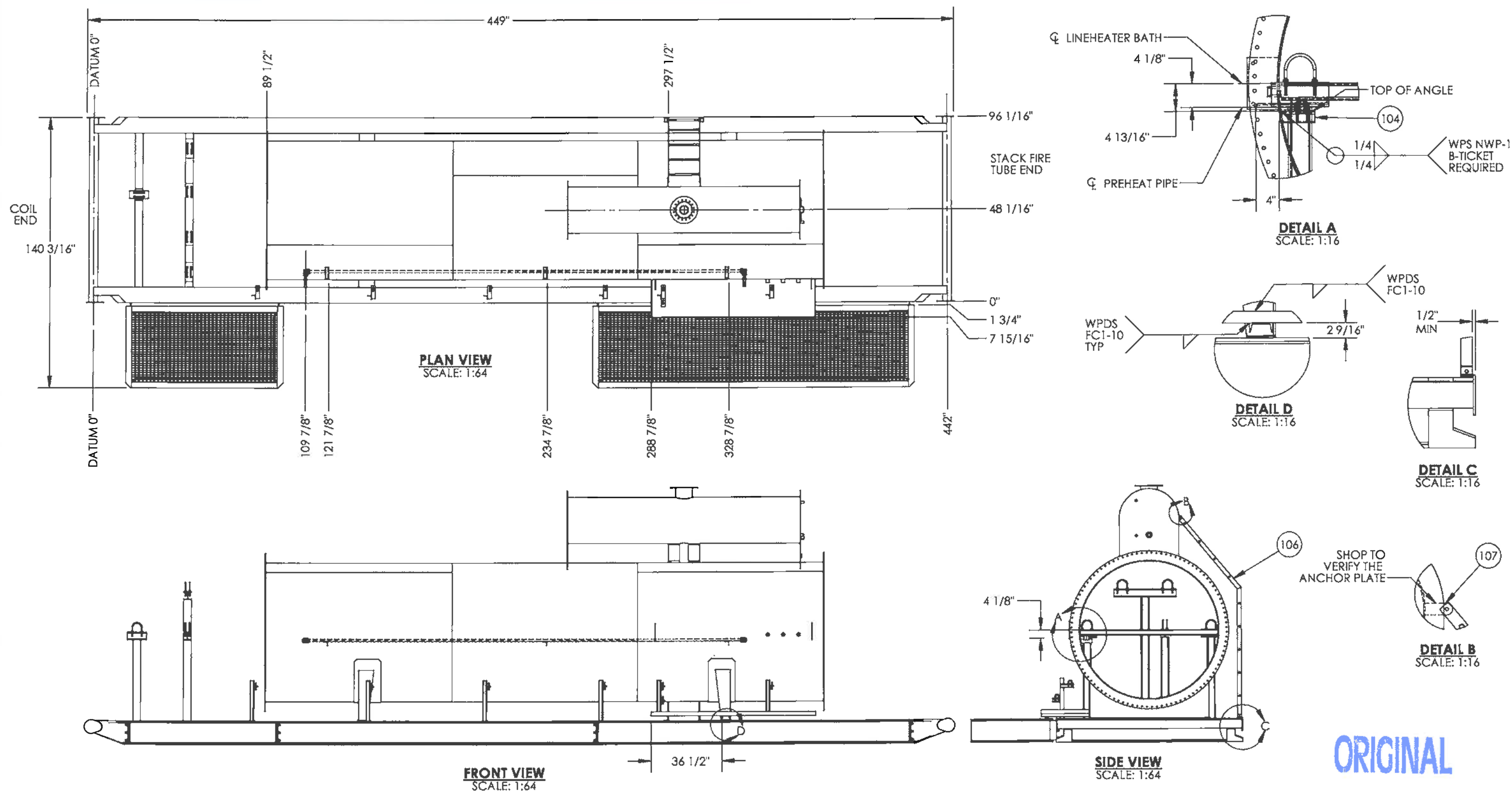


ORIGINAL

- NOTES**
- 1. FABRICATION TO W47.1 AND W59.
  - 2. RADIUS ALL SHARP EDGES.
  - 3. ALL WELDS TO BE 1/4" CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.
  - 4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED. WPDS FC1-15, FC1-10
  - 5. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
  - 6. APPROX. WEIGHT: 13370 LBS

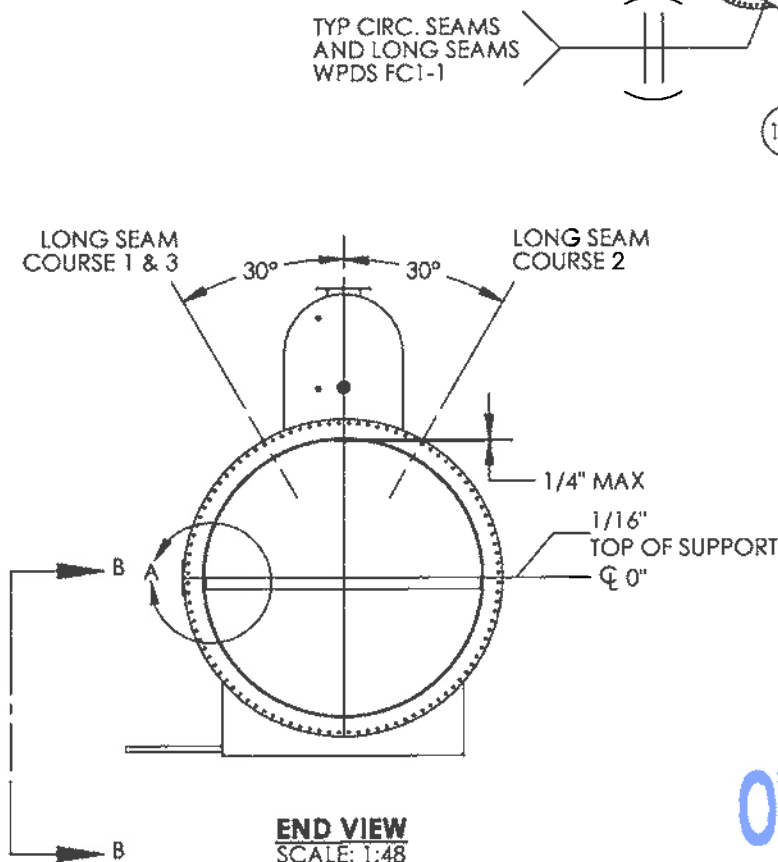
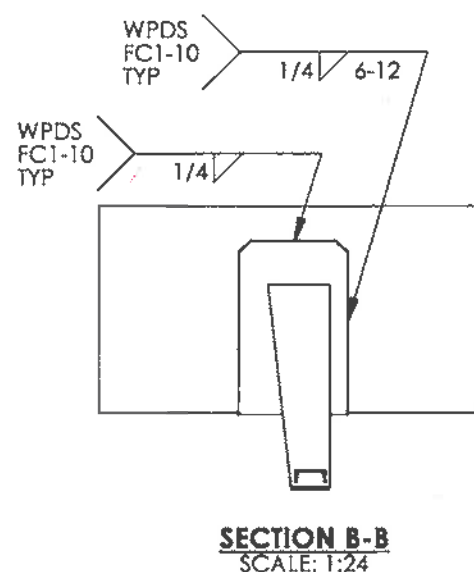
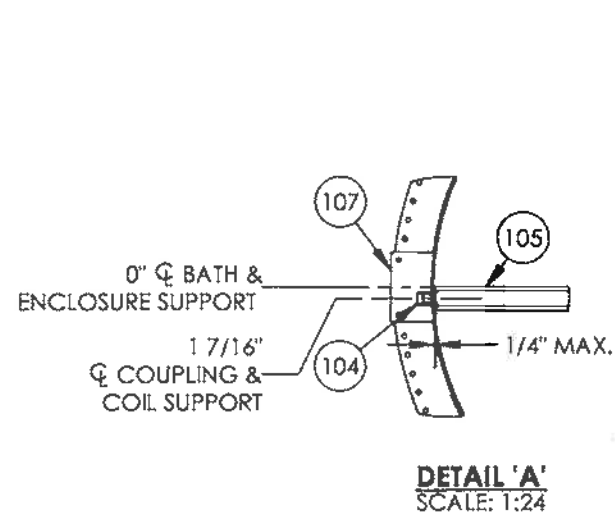
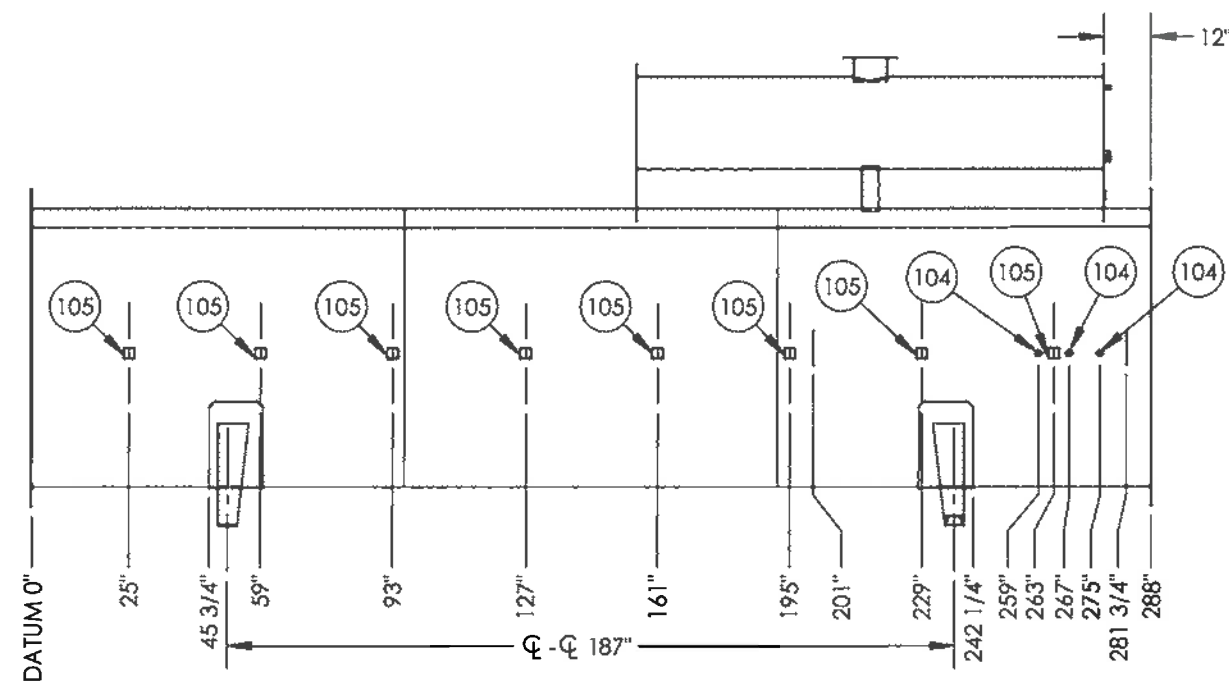
|                    |                                    |                   |           |    |                                                                                      |                                                                                       |                         |                 |                                |                          |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                        |                                                                                            |  |
|--------------------|------------------------------------|-------------------|-----------|----|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|-----------------|--------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--|
|                    |                                    |                   |           |    |                                                                                      |                                                                                       | <b>AS BUILT</b>         |                 | <b>ISSUED FOR CONSTRUCTION</b> |                          | <br><b>NWP</b><br>INDUSTRIES INC.<br>Total oilfield supply.<br>P.O. BOX 6280, INNISFAIL, AB T4G 1S9<br>PH: (403) 227-4100 FAX: (403) 227-4102<br>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC.<br>AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.<br>THIS DRAWING MUST BE RETURNED UPON REQUEST. | ENCANA CORPORATION<br>LINEHEATER PACKAGE<br>3.0 MMBTU<br>c/w 4"-2500# RTJ SPLIT COILS<br>BATH ASSEMBLY |                                                                                            |  |
| 08562-3            | LINEHEATER SKID ASSEMBLY           |                   |           |    |                                                                                      |                                                                                       |                         | SIGNED: _____   |                                | DWN: VW                  |                                                                                                                                                                                                                                                                                                                                                                                       | CHK:              | APP:  |  |
| LH-FIRSTK-24-2     | LINEHEATER FIRETUBE/STACK ASSEMBLY |                   |           |    |                                                                                      |                                                                                       |                         | DATE: _____     |                                | DATE: OCT 05/12          |                                                                                                                                                                                                                                                                                                                                                                                       | DATE: NOV 14 2012                                                                                      | DATE: NOV 14 2012                                                                          |  |
| LH-LAD-72          | LINEHEATER SKID LADDER ASSEMBLY    | 0                 | OCT 31/12 | VW |  |  | ISSUED FOR CONSTRUCTION | W.O.: 08562-001 |                                | SCALE: 1:40              |                                                                                                                                                                                                                                                                                                                                                                                       | DWG: 08562-6                                                                                           | REV: 0                                                                                     |  |
| LH-PH-7224-1       | LINEHEATER PREHEAT PIPING          | A                 | OCT 23/12 | VW |                                                                                      |                                                                                       | ISSUED FOR APPROVAL     | S/N: _____      |                                | SHEET: 1 OF 3            |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                        |                                                                                            |  |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE      | BY | CHK                                                                                  | APP                                                                                   |                         |                 |                                | ALL DIMENSIONS IN INCHES |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                        |                                                                                            |  |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |           |    |                                                                                      |                                                                                       |                         |                 |                                |                          |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                        |                                                                                            |  |



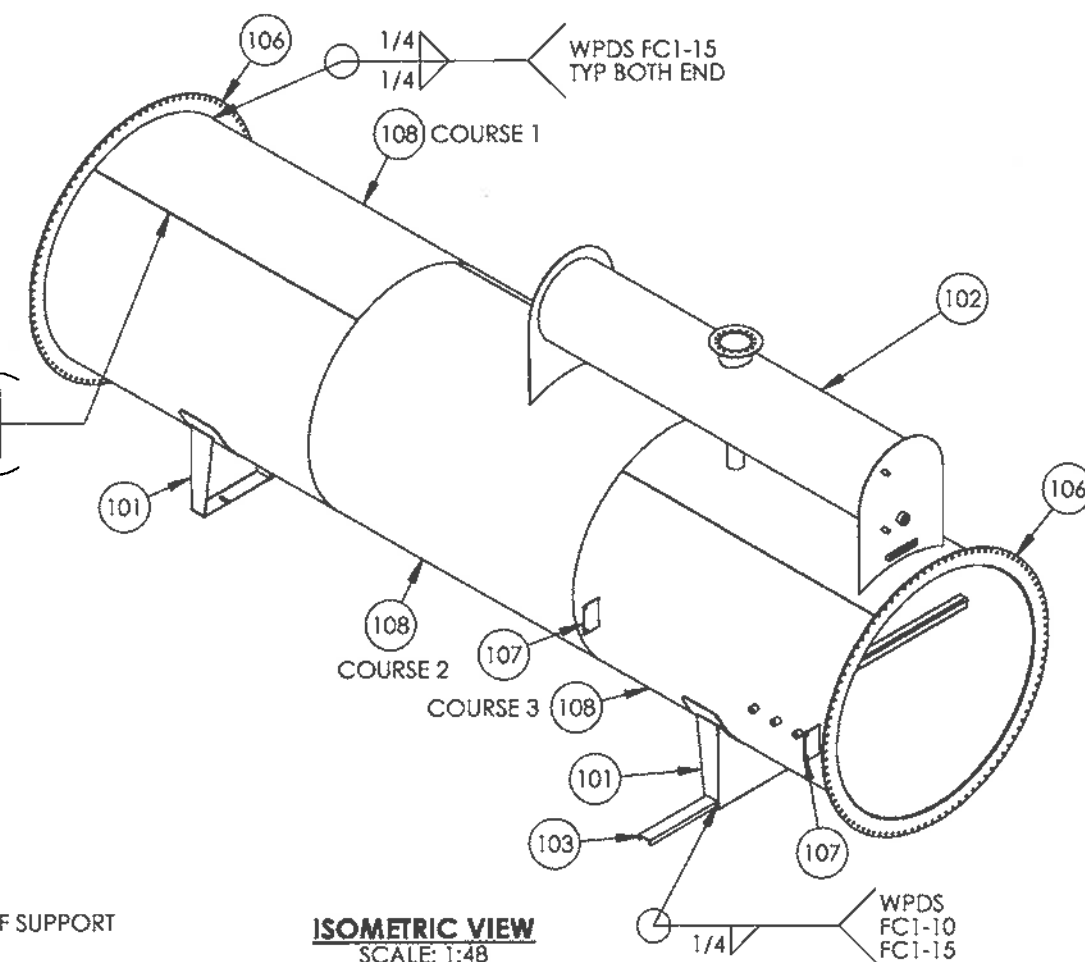


|                                                                |  |  |  |  |  |  |                 |  |                         |  |                                                                                                                                                  |                                                                                                                                                                                                  |  |  |  |  |
|----------------------------------------------------------------|--|--|--|--|--|--|-----------------|--|-------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|                                                                |  |  |  |  |  |  | <b>AS BUILT</b> |  | ISSUED FOR CONSTRUCTION |  | <br><b>NWP</b><br>INDUSTRIES INC.<br>Total oilfield supply. | ENCANA CORPORATION<br>LINEHEATER PACKAGE<br>3.0 MMBTU<br>c/w 4"-2500# RTJ SPLIT COILS<br>BATH ASSEMBLY                                                                                           |  |  |  |  |
|                                                                |  |  |  |  |  |  |                 |  | SIGNED: _____           |  |                                                                                                                                                  | DWN: VW    CHK:  APP:  |  |  |  |  |
|                                                                |  |  |  |  |  |  |                 |  | DATE: _____             |  |                                                                                                                                                  | DATE: OCT 05/12    DATE: <b>NOV 14 2012</b> DATE: <b>NOV 14 2012</b>                                                                                                                             |  |  |  |  |
|                                                                |  |  |  |  |  |  |                 |  | w.o.: <b>08562-001</b>  |  |                                                                                                                                                  | SCALE: 1:48    DWG: <b>08562-6</b> REV: <b>0</b>                                                                                                                                                 |  |  |  |  |
|                                                                |  |  |  |  |  |  |                 |  | S/N: _____              |  | THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC.<br>AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.<br>THIS DRAWING MUST BE RETURNED UPON REQUEST.  |                                                                                                                                                                                                  |  |  |  |  |
| DOCUMENT NO.    DESCRIPTION    REV    DATE    BY    CHK    APP |  |  |  |  |  |  |                 |  |                         |  |                                                                                                                                                  |                                                                                                                                                                                                  |  |  |  |  |
| REFERENCE DRAWINGS                                             |  |  |  |  |  |  |                 |  | DRAWING REVISIONS       |  |                                                                                                                                                  |                                                                                                                                                                                                  |  |  |  |  |





| ITEM | PART #          | DESCRIPTION                                      | MTR #     | LENGTH  | QTY. |
|------|-----------------|--------------------------------------------------|-----------|---------|------|
| 101  | -               | SEE SADDLE DETAIL                                |           |         | 2    |
| 102  | -               | SEE EXPANSION TANK DETAIL                        |           |         | 1    |
| 103  | CHA45R          | CHANNEL 4" @ 5.4# 300W 65A / 88F                 | W196557E  | 24 3/4" | 1    |
| 104  | COFIGYEE        | Coupling 1" 3M SA105N                            | A172      |         | 3    |
| 105  | HSSC3A          | SQUARE TUBE 1/4" x 3" x 3" 350W/ASTM A500        | N6M / MB5 | 71 1/2" | 8    |
| 106  | LH-FLA-72.375   | LH BATH FLANGE FOR 72" OD 3/8" THK RDP           |           |         | 2    |
| 107  | LH-PLATE-ENCL72 | LH ENCLOSURE SUPPORT TAB TO FIT 72" OD BATH      | W2D776    |         | 2    |
| 108  | LH-SHELL-728.25 | LH BATH SHELL 72" OD x 8' LG x 1/4" THK SA36/44W | NW6525    |         | 3    |



- NOTES**
1. DESIGN AND FABRICATE TO CSA W47.1 AND W59.
  2. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  3. DEBURR AND RADIUS ALL SHARP EDGES.
  4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED. WPDS-FC1-15, FC1-10.
  5. ALL WELDS TO BE 1/4" CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.
  6. BOLT HOLES TO STRADDLE COMMON CENTERLINE.
  7. APPROXIMATE WEIGHT: 6400 LBS.

ORIGINAL

|                    |                                    |                   |            |     |     |                                               |                         |
|--------------------|------------------------------------|-------------------|------------|-----|-----|-----------------------------------------------|-------------------------|
|                    |                                    |                   |            |     |     | <b>AS BUILT</b>                               |                         |
|                    |                                    |                   |            |     |     |                                               |                         |
|                    |                                    |                   |            |     |     |                                               |                         |
| LH-FIRSTK-24-2     | LINEHEATER FIRETUBE/STACK ASSEMBLY | 3                 | 2012.10.30 | VW  | DF  | REVISED AS PER RFDC #01219 ADDED REF. DWGS    |                         |
| LH-PH-7224-1       | LINEHEATER PREHEAT PIPING          | 2                 | 2011.07.14 | DJ  | GH  | REVISED AS PER RFDC #00535, ADDED WELD SYMBOL |                         |
| LH-LAD-72          | LINEHEATER SKID LADDER ASSEMBLY    | 1                 | 2011.05.30 | JHK | GH  | REVISED AS PER RFDC #00483                    |                         |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE       | BY  | CHK | APP                                           | ISSUED FOR CONSTRUCTION |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |            |     |     |                                               |                         |

ISSUED FOR CONSTRUCTION

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

W.O.: 08562-001

S.O.: \_\_\_\_\_

ALL DIMENSIONS IN INCHES



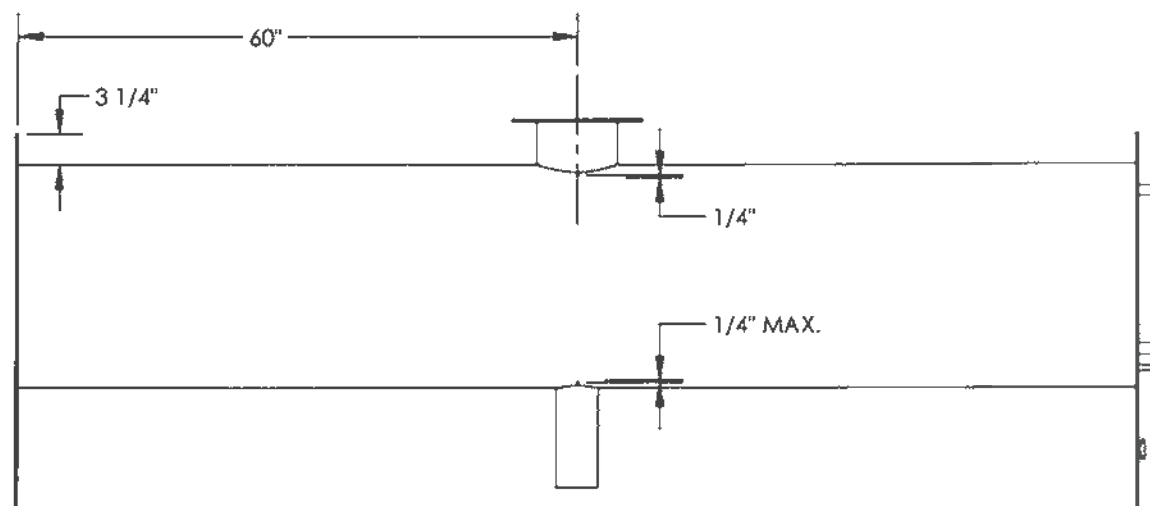
P.O. BOX 6280, INNISFAIR, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC.  
AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.  
THIS DRAWING MUST BE RETURNED UPON REQUEST.

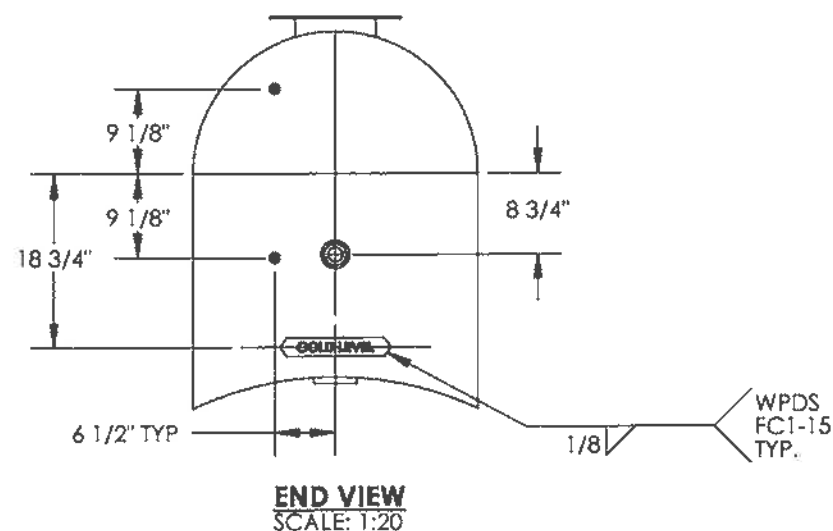
NWP INDUSTRIES INC  
LINEHEATER BATH  
72" OD x 24' LONG

ASSEMBLY DRAWING

|                  |                   |                  |
|------------------|-------------------|------------------|
| DWN: JHK         | CHK: GH           | APP: DF          |
| DATE: 2011.04.20 | DATE: 2011.05.13  | DATE: 2011.05.13 |
| SCALE: 1:48      | DWG: LH-7224-BARE |                  |
| SHEET: 1 OF 4    | REV: 3            |                  |

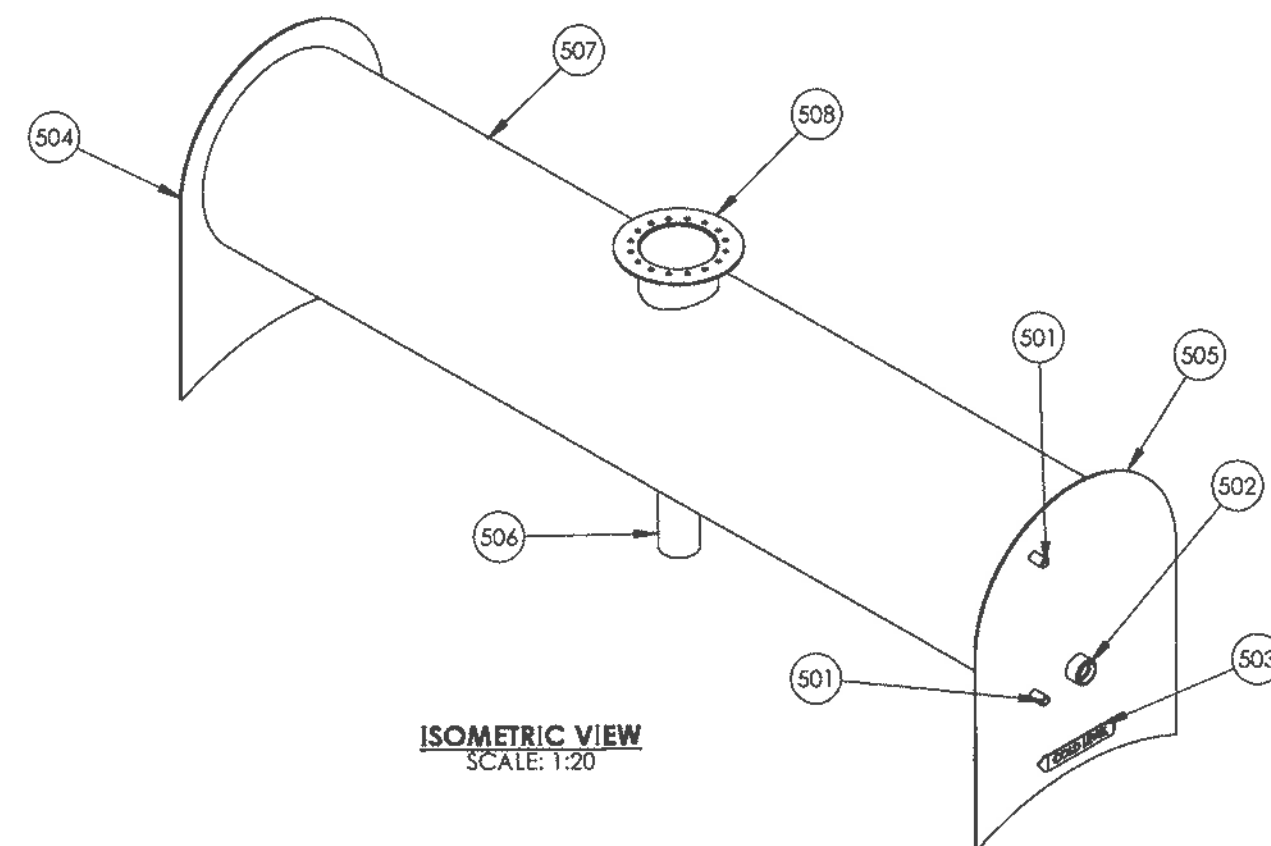


**FRONT VIEW**  
SCALE: 1:20



**END VIEW**  
SCALE: 1:20

| ITEM | PART #          | DESCRIPTION                                             | MTR #  | LENGTH  | QTY. |
|------|-----------------|---------------------------------------------------------|--------|---------|------|
| 501  | COF.5GYEE       | Coupling 1/2" 3M THRD SA105N                            |        |         | 2    |
| 502  | COH2GYEE        | Coupling Half 2" 3M THRD SA105N                         |        |         | 1    |
| 503  | COLDLEVEL-1     | LH COLD LEVEL INDICATOR                                 |        |         | 1    |
| 504  | EXP-END2472     | EXP. TANK END PLATE TO FIT 24" OD TANK x 72" OD BATH    | 000132 |         | 1    |
| 505  | EXP-END2472-LGD | EXP. TANK LG END PLATE TO FIT 24" OD TANK x 72" OD BATH | 000132 |         | 1    |
| 506  | PIP440A         | PIPE 4" SCH STD/40 SA106B                               | 000132 | 11 1/2" | 1    |
| 507  | PIP2410E        | PIPE 24" SCH 10 SA53 ERW                                | 000132 | 120"    | 1    |
| 508  | THIEFBASE-1     | THIEF HATCH BASE ASSEMBLY 8 5/8" OD                     | 000132 |         | 1    |



**ISOMETRIC VIEW**  
SCALE: 1:20

# **NOTES**

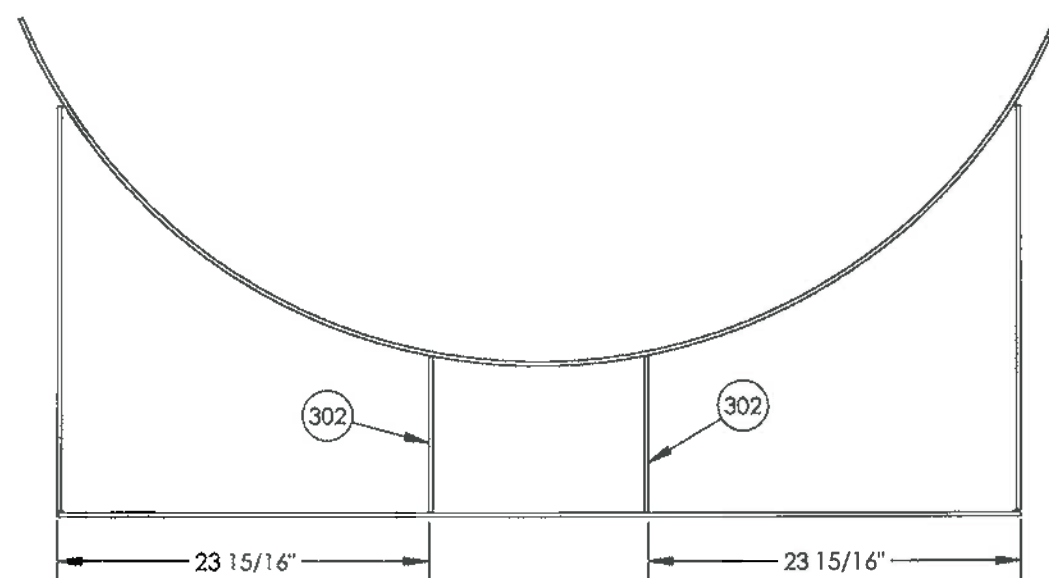
1. DESIGN AND FABRICATE TO CSA W47.1 AND W59.
2. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
3. DEBURR AND RADIUS ALL SHARP EDGES.
4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED. WPDS-FC1-15, FC1-10.
5. ALL WELDS TO BE 1/4" CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.
6. BOLT HOLES TO STRADDLE COMMON CENTERLINE.

**ORIGINAL**

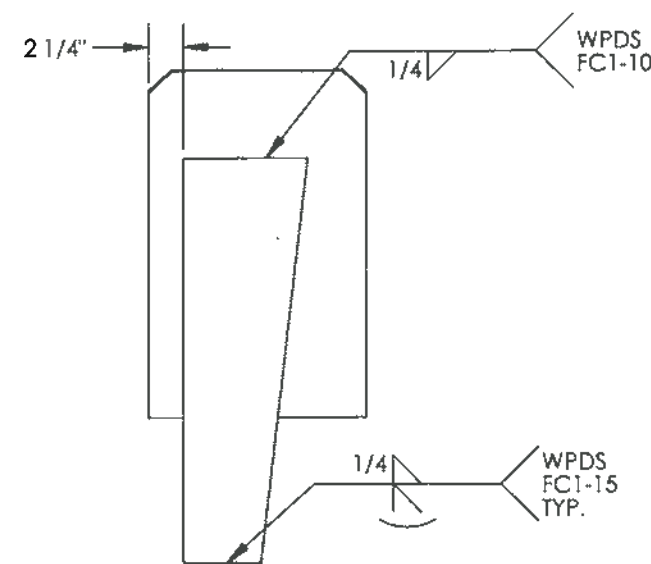
|  |  |  |  |  |  |  |                 |  |  |                                |  |  |                                                            |  |  |
|--|--|--|--|--|--|--|-----------------|--|--|--------------------------------|--|--|------------------------------------------------------------|--|--|
|  |  |  |  |  |  |  | <b>AS BUILT</b> |  |  | <b>ISSUED FOR CONSTRUCTION</b> |  |  | NWP INDUSTRIES INC<br>LINEHEATER BATH<br>72" OD x 24' LONG |  |  |
|  |  |  |  |  |  |  |                 |  |  | SIGNED: _____                  |  |  | ASSEMBLY DRAWING                                           |  |  |
|  |  |  |  |  |  |  |                 |  |  | DATE: _____                    |  |  | DWN: JHK                                                   |  |  |
|  |  |  |  |  |  |  |                 |  |  | W.O.: 08562-001                |  |  | DATE: 2011.04.20                                           |  |  |
|  |  |  |  |  |  |  |                 |  |  | S.O.: _____                    |  |  | DATE: 2011.05.13                                           |  |  |
|  |  |  |  |  |  |  |                 |  |  | ALL DIMENSIONS IN INCHES       |  |  | SCALE: 1:20                                                |  |  |
|  |  |  |  |  |  |  |                 |  |  |                                |  |  | SHEET: 2 OF 4                                              |  |  |
|  |  |  |  |  |  |  |                 |  |  |                                |  |  | DWG: LH-7224-BARE                                          |  |  |
|  |  |  |  |  |  |  |                 |  |  |                                |  |  | REV: 3                                                     |  |  |



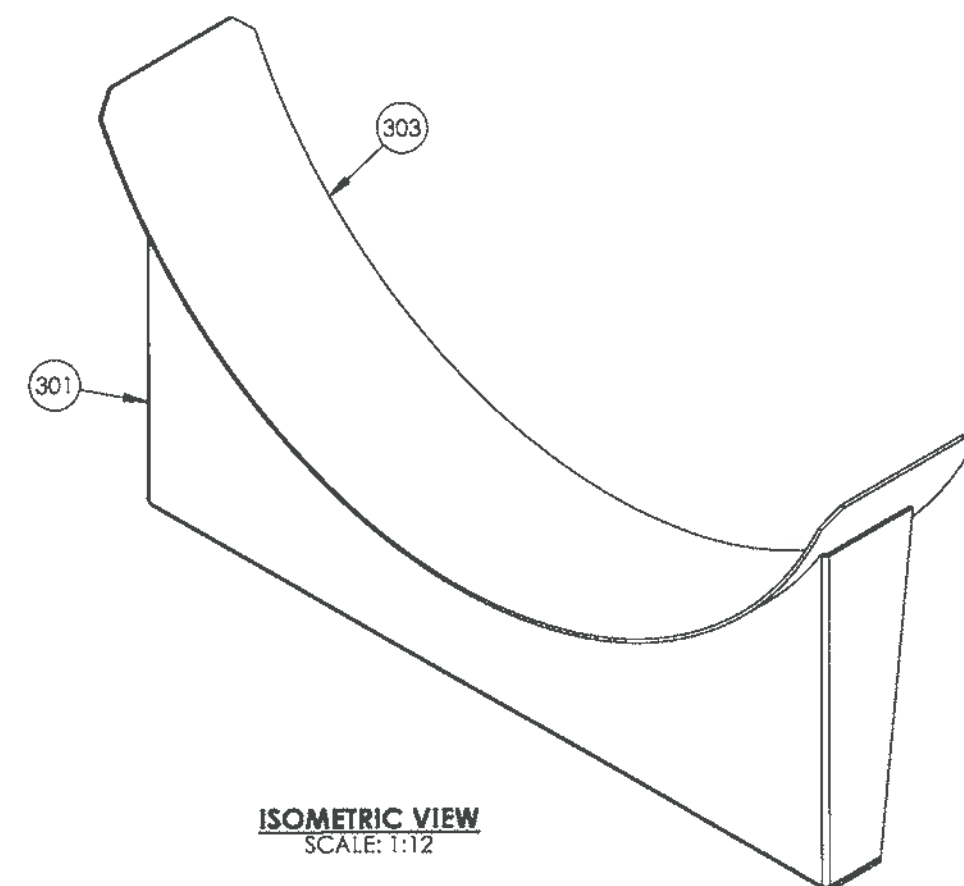
| ITEM | PART #          | DESCRIPTION                     | MTR # | LENGTH | QTY. |
|------|-----------------|---------------------------------|-------|--------|------|
| 301  | LHSAD72-PLATE   | LH SADDLE PLATE FOR 72" OD      |       |        | 1    |
| 302  | LHSAD72-SUPPORT | LH SADDLE SUPPORT FOR 72" OD    |       |        | 2    |
| 303  | LHSAD72-WEAR    | LH SADDLE WEAR PLATE FOR 72" OD |       |        | 1    |



**BACK VIEW**  
SCALE: 1:12



**END VIEW**  
SCALE: 1:12



**ISOMETRIC VIEW**  
SCALE: 1:12

# NOTES

1. DESIGN AND FABRICATE TO CSA W47.1 AND W59.
2. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
3. DEBURR AND RADIUS ALL SHARP EDGES.
4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED. WPDS-FC1-15, FC1-10.
5. ALL WELDS TO BE  $1/4"$  CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.

**ORIGINAL**

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ORIGINAL

1. DESIGN AND FABRICATE TO CSA W47.1 AND W59.
2. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
3. DEBURR AND RADIUS ALL SHARP EDGES.
4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED. WPDS-FC1-15, FC1-10.
5. ALL WELDS TO BE  $1/4"$  CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.
6. 24 oz. PNEUMATIC TEST REQUIRED.
7. PIPE LENGTH TO BE VERIFIED PRIOR TO PLACEMENT OF FIRETUBE IN BATH.
8. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.

| ITEM | PART #            | DESCRIPTION                                                                                        | MTR #     | LENGTH   | QTY. |
|------|-------------------|----------------------------------------------------------------------------------------------------|-----------|----------|------|
| 1    | BOL.52.5BAA       | BOLT 1/2" x 2 1/2" LG GR. 2 HEX HEAD                                                               |           |          | 2    |
| 2    | BOL.52BAA         | BOLT 1/2" x 2" LG GR. 2 HEX HEAD                                                                   |           |          | 36   |
| 3    | BRACKET-NAME-1A   | TANK/VESSEL NAME PLATE BRACKET SA36/44W                                                            | RDP       |          | 1    |
| 4    | COH2GYEE          | Coupling Half 2" 3M THRD SA105N                                                                    | 65A / 88F |          | 1    |
| 5    | COR4YSTDEH        | COUPLING 4" STD THRD RECESSED STEEL                                                                | W196557E  |          | 1    |
| 6    | LH-DPLATE-FIR7224 | LINEHEATER FIRETUBE END PLATE 3/8" THK FOR 72" BATH x 24" FIRETUBE w/<br>INSPECTION HOLE AND DRAIN | A172      |          | 1    |
| 7    | LH-FLA-24.25      | LH FIRETUBE/STACK FLANGE FOR 24" OD 1/4" THK                                                       | N6M / MB5 |          | 1    |
| 8    | LH-FLA-24.75      | LH FIRETUBE/STACK FLANGE 24" OD 3/4" THK                                                           |           |          | 2    |
| 9    | LH-IBAR1-FIR7224  | LH INSPECTION BAR 1/4" THK FOR 72" BATH x 24" FIRETUBE                                             |           |          | 1    |
| 10   | LH-IBAR2-FIR7224  | LH INSPECTION BRACE 3/8" THK FOR 72" BATH x 24" FIRETUBE                                           |           |          | 2    |
| 11   | LH-IGASKET-72     | LH INSPECTION GASKET FOR 72" OD BATH                                                               |           |          | 1    |
| 12   | LH-IPLATE-FIR7224 | LH INSPECTION PLATE 1/4" THK FOR 72" OD BATH x 24" FIRETUBE                                        |           |          | 1    |
| 13   | LL-D63A           | LIFT LUG 3/8" x 6 5/8" x 3 3/8" SA36/44W                                                           |           |          | 1    |
| 14   | NIP26Y80EA        | Nipple 2" X 6" S/80 SA106B                                                                         |           |          | 1    |
| 15   | NUT.5YBAA         | NUT 1/2" GR. 2 HEX PLATED                                                                          |           |          | 38   |
| 16   | PIP1210E          | PIPE 24" SCH 10 SA53                                                                               |           | 29"      | 1    |
| 17   | PIP2410E          | PIPE 24" SCH 10 SA53                                                                               |           | 213"     | 1    |
| 18   | PIP2410E          | PIPE 24" SCH 10 SA53                                                                               |           | 640 3/4" | 1    |
| 19   | PIP280A           | PIPE 2" SCH XH/80 SA106B                                                                           |           | 5 1/8"   | 1    |
| 20   | SLIDER-2          | TANK SLIDER BLOCK ASSEMBLY                                                                         |           |          | 1    |

|                    |             |     |            |                   |     |     |                                              | <b>AS BUILT</b> |
|--------------------|-------------|-----|------------|-------------------|-----|-----|----------------------------------------------|-----------------|
|                    |             | 1   | 2012.10.30 | VW                |     |     | RFDC #01217 CHANGES TO WELD SYMBOL AS MARKUP |                 |
|                    |             | 0   | 2011.04.21 | DJ                | GH  | DF  | ISSUED FOR CONSTRUCTION                      |                 |
| DOCUMENT NO.       | DESCRIPTION | REV | DATE       | BY                | CHK | APP |                                              |                 |
| REFERENCE DRAWINGS |             |     |            | DRAWING REVISIONS |     |     |                                              |                 |

ISSUED FOR  
CONSTRUCTION

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

W.O.: 08562-001

S.O.:

ALL DIMENSIONS IN INCHES



P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

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NWP INDUSTRIES INC  
LINEHEATER FIRETUBE/STACK  
24" OD  
STANDARD  
ASSEMBLY DRAWING

|         |         |         |
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| DWN: DJ | CHK: GH | APP: DF |
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| DATE: 2011.04.21 | DATE: 2011.05.13 | DATE: 2011.05.13 |
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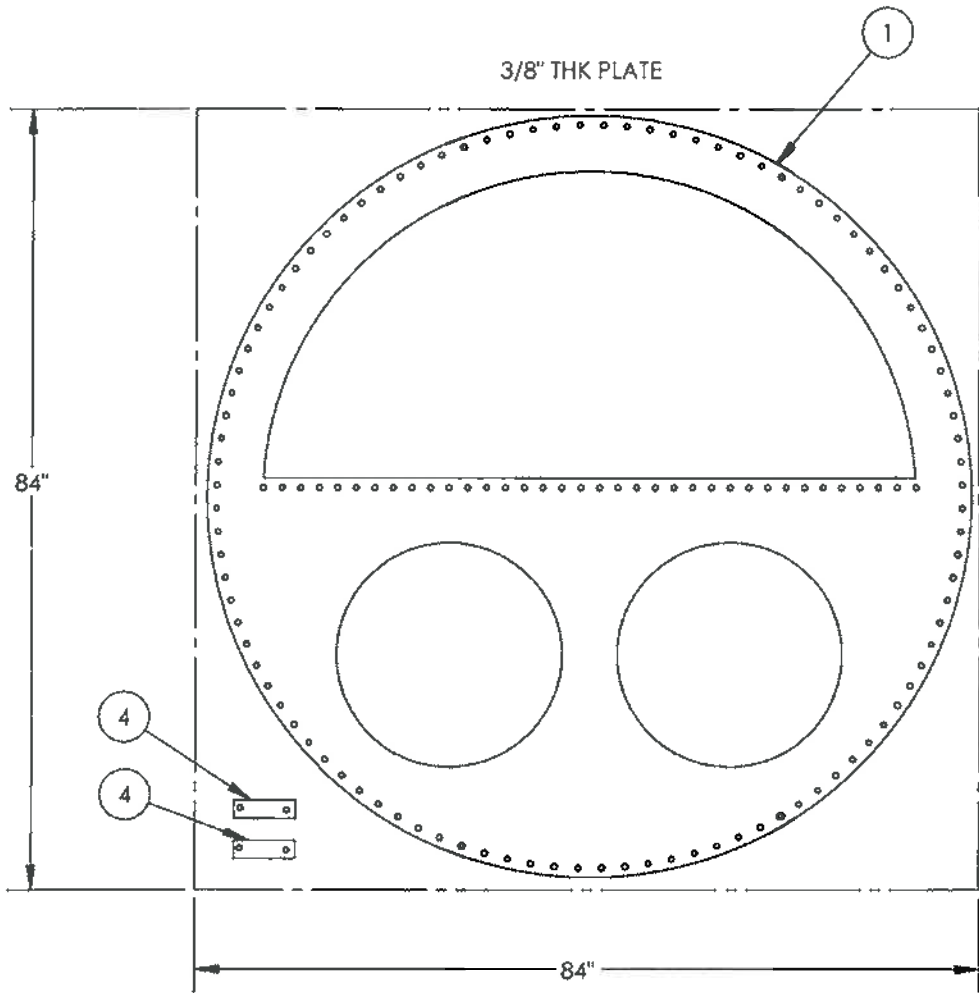
SCALE: 1:64

SHEET: 1 OF 2

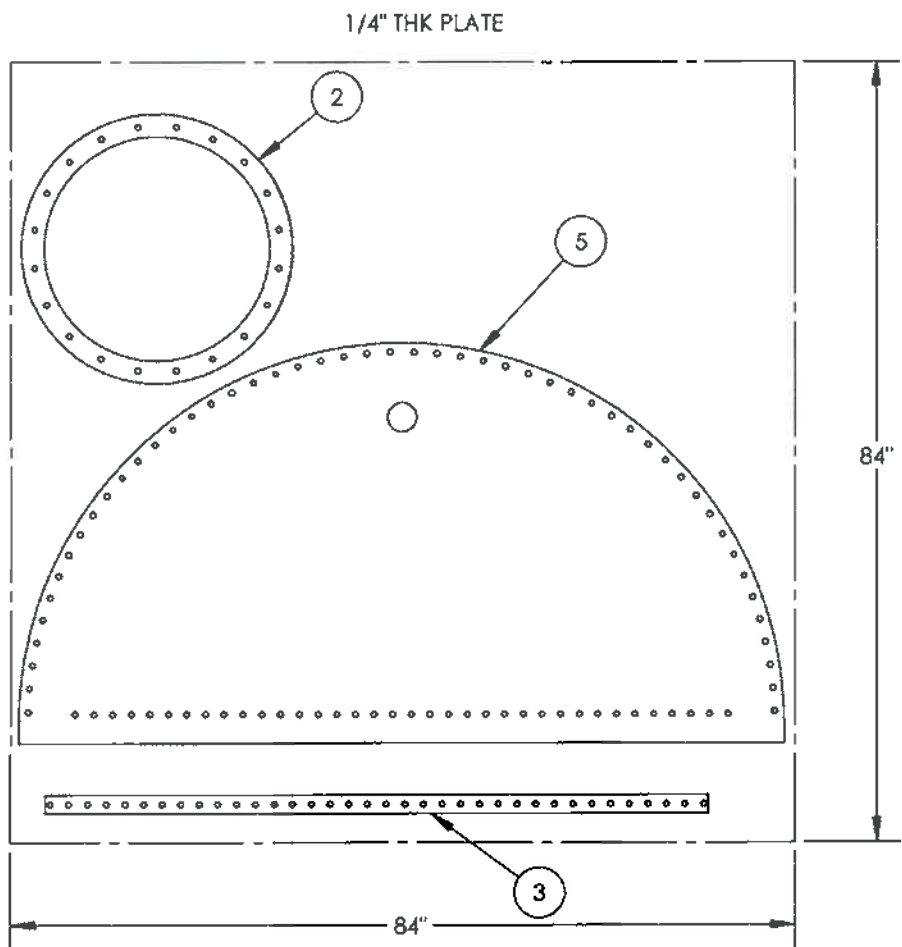
DWG: LH-FIRSTK-24-2

REV: 1

| ITEM | PART #            | DESCRIPTION                                                                                     | MTR # | LENGTH | QTY. |
|------|-------------------|-------------------------------------------------------------------------------------------------|-------|--------|------|
| 1    | LH-DPLATE-FIR7224 | LINEHEATER FIRETUBE END PLATE 3/8" THK FOR 72" BATH x 24" FIRETUBE w/ INSPECTION HOLE AND DRAIN |       |        | 1    |
| 2    | LH-FLA-24.25      | LH FIRETUBE/STACK FLANGE FOR 24" OD 1/4" THK                                                    |       |        | 1    |
| 3    | LH-IBAR1-FIR7224  | LH INSPECTION BAR 1/4" THK FOR 72" BATH x 24" FIRETUBE                                          |       |        | 1    |
| 4    | LH-IBAR2-FIR7224  | LH INSPECTION BRACE 3/8" THK FOR 72" BATH x 24" FIRETUBE                                        |       |        | 2    |
| 5    | LH-IPLATE-FIR7224 | LH INSPECTION PLATE FOR 72" BATH x 24" FIRETUBE                                                 |       |        | 1    |



CNC LAYOUT - QTY OF PARTS  
SCALE: 1:20



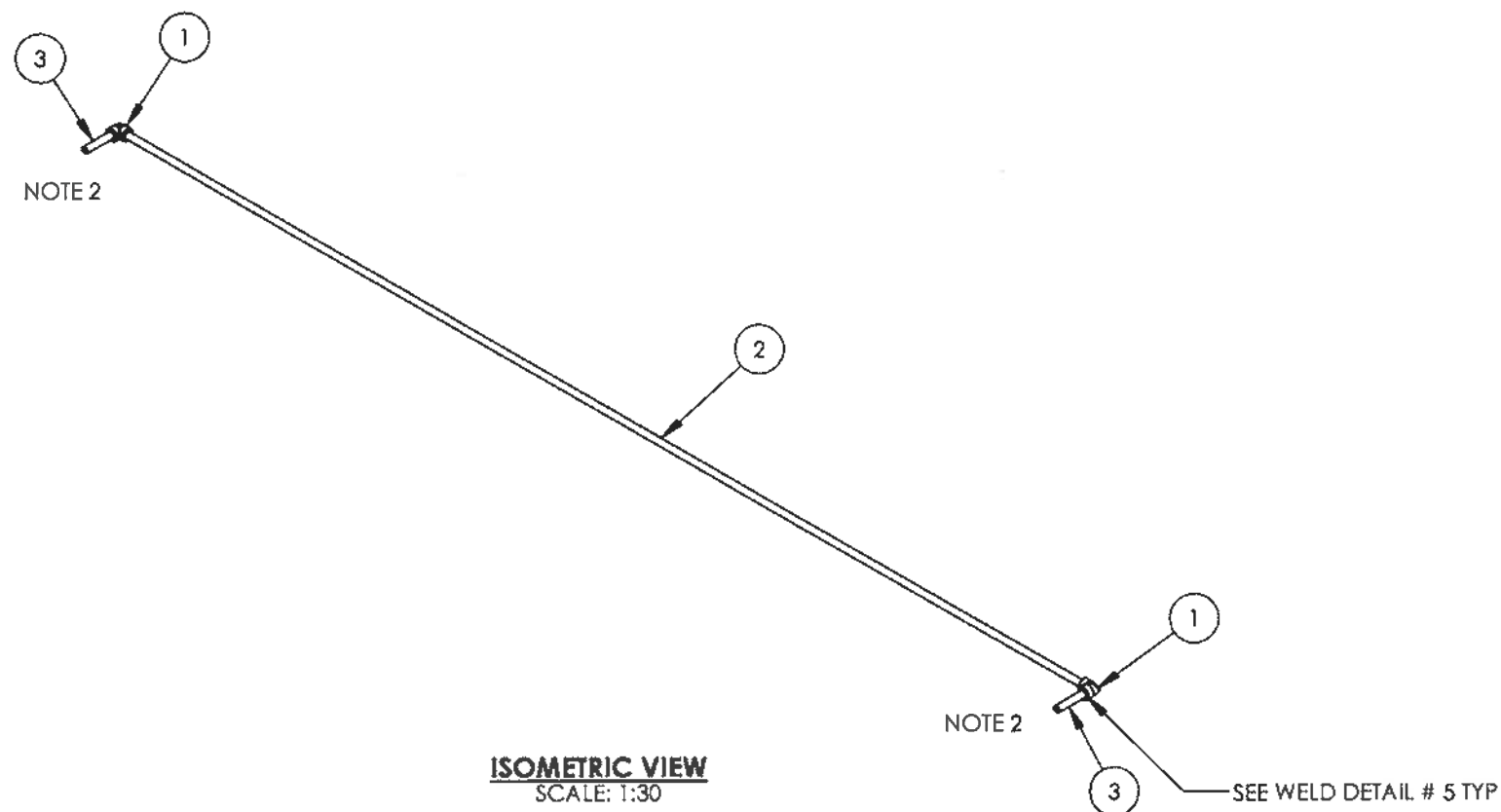
CNC LAYOUT - QTY OF PARTS  
SCALE: 1:20

- NOTES**
1. HEAT NUMBER TO BE CLEARLY MARKED ON EACH PIECE WITH PAINT PEN AS A MINIMUM.
  2. ALL DOCUMENTATION MUST ACCOMPANY SHIPMENT OF PARTS IF PART IS OUTSOURCED.
  3. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  4. DEBURR AND RADIUS ALL SHARP EDGES.

ORIGINAL

|                    |             |     |      |    |     |                 |                   |                                                                                           |                          |                                                                                                                                                                                                                                                                                                                      |                               |                                                                                                                           |  |  |
|--------------------|-------------|-----|------|----|-----|-----------------|-------------------|-------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|--|--|
|                    |             |     |      |    |     | <b>AS BUILT</b> |                   | ISSUED FOR CONSTRUCTION<br>SIGNED: _____<br>DATE: _____<br>W.O.: 08562-001<br>S.O.: _____ |                          | <br>P.O. BOX 6280, INNISFAIL, AB T4G 1S9<br>PH: (403) 227-4100 FAX: (403) 227-4102<br>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST. |                               | NWP INDUSTRIES INC<br>LINEHEATER FIRETUBE/STACK<br>24" OD<br>STANDARD<br>ASSEMBLY DRAWING                                 |  |  |
|                    |             |     |      |    |     |                 |                   |                                                                                           |                          |                                                                                                                                                                                                                                                                                                                      |                               | DWN: DJ    CHK: GH    APP: DF<br>DATE: 2011.04.21    DATE: 2011.05.13    DATE: 2011.05.13<br>SCALE: 1:20<br>SHEET: 2 OF 2 |  |  |
| DOCUMENT NO.       | DESCRIPTION | REV | DATE | BY | CHK | APP             | DRAWING REVISIONS |                                                                                           | ALL DIMENSIONS IN INCHES |                                                                                                                                                                                                                                                                                                                      | DWG: LH-FIRSTK-24-2    REV: 1 |                                                                                                                           |  |  |
| REFERENCE DRAWINGS |             |     |      |    |     |                 |                   |                                                                                           |                          |                                                                                                                                                                                                                                                                                                                      |                               |                                                                                                                           |  |  |

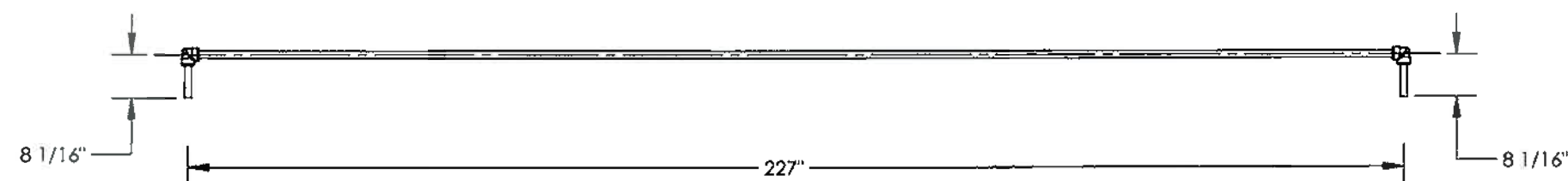
| ITEM | PART #   | DESCRIPTION                  | MTR #     | LENGTH   | QTY. |
|------|----------|------------------------------|-----------|----------|------|
| 1    | EL91HYFE | Elbow 90 Deg 1" 6M SW SA105N | RDP       |          | 2    |
| 2    | PIP1160A | PIPE 1" SCH 160 SA106B       | 65A / 88F | 225 1/4" | 1    |
| 3    | PIP1160B | PIPE 1" SCH 160 SA333-6      | W196557E  | 7"       | 2    |



#### NOTES

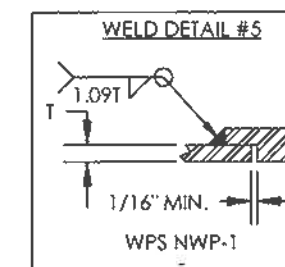
1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
2. SHOP TO THEAD END OF PIPE PRIOR TO WELDING.
3. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY.
4. REVIEW CLIENT SPECIFICATIONS PRIOR TO ISSUE FOR CONSTRUCTION

**ISOMETRIC VIEW**  
SCALE: 1:30



**PLAN VIEW**  
SCALE: 1:30

**ORIGINAL**



#### DESIGN DATA

|                                     |                                  |
|-------------------------------------|----------------------------------|
| LINE NUMBER:                        | FG-1"-C-160A/BE-301              |
| CLIENT SPECIFICATION:               | SEE NOTE 4                       |
| DESIGN & FABRICATE TO:              | ANSI/ASME B31.3 NFS 2010 EDITION |
| DESIGN PRESSURE:                    | 1440 PSIG                        |
| MAXIMUM DESIGN TEMPERATURE:         | 200 °F                           |
| MINIMUM DESIGN TEMPERATURE:         | -20 °F                           |
| SERVICE:                            | HYDROCARBONS                     |
| HYDROSTATIC TEST PRESSURE:          | 2160 PSIG                        |
| RADIOGRAPHY:                        | 10% OF SW FOR GAP                |
| OTHER NDE:                          | 10% MPI ON SW                    |
| POST WELD HEAT TREATMENT:           | NONE                             |
| CORROSION ALLOWANCE:                | 1/16"                            |
| Q.C. PROGRAM NO.:                   | AQP-1253                         |
| WELDING PROCEDURE REGISTRATION NO.: | WP-1604.2                        |

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ALL DIMENSIONS IN INCHES



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PH: (403) 227-4100 FAX: (403) 227-4102

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| DATE: 2011.05.06 | DATE: 2011.05.27        | DATE: 2011.05.30        |
| SCALE: 1:30      | DWG: LH-PH-7224-1       | REV: 3                  |
| SHEET: 1 OF 1    |                         |                         |



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| Issuing Authority: Marvin J. (Ty) DeBelser                                                                            |                                           |  | Quality Control                               |           |
| Date of Issue: March 13, 2008                                                                                         |                                           |                                                                                  | QCFO Final Inspection Release Certificate R00 |           |
| <b>FINAL INSPECTION RELEASE CERTIFICATE</b>                                                                           |                                           |                                                                                  |                                               |           |
| CUSTOMER:                                                                                                             | NWP Stock                                 |                                                                                  | SALES ORDER#:                                 | N/A       |
| PRODUCT:                                                                                                              | Lift Lug Universal 6-5/8" x 3-3/8" x 3/8" |                                                                                  | WO#:                                          | 08182     |
| QTY 216                                                                                                               |                                           |                                                                                  | DATE:                                         | OCT 13/11 |
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| <b>LOOSE COMPONENTS REQUIRED / PREPARED</b>                                                                           |                                           |                                                                                  |                                               |           |
| ITEMS REQUIRED:                                                                                                       |                                           | NO. OF BOXES OR PKGS. _____                                                      |                                               |           |
| <i>QTY 216 - 6 5/8" x 3 3/8" x 3/8" LIFT LUG</i>                                                                      |                                           |                                                                                  |                                               |           |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED                                                                             |                                           | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO              |                                               |           |
| <b>PREPARATION FOR SHIPMENT / STORAGE</b>                                                                             |                                           |                                                                                  |                                               |           |
| PREPARATION NEEDED / COMPLETED                                                                                        |                                           |                                                                                  |                                               |           |
| <i>RELEASE TO NEXT PROCESS</i>                                                                                        |                                           |                                                                                  |                                               |           |
| LOT #                                                                                                                 | 08182                                     |                                                                                  |                                               |           |
| PART #                                                                                                                | LIFT LUG-1                                |                                                                                  |                                               |           |
| INVENTORY TAGS ATTACHED                                                                                               |                                           | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>              |                                               |           |
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| CUSTOMER P.O. REVIEWED                                                                                                |                                           | YES <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/>  |                                               |           |
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| RELEASED TO INVENTORY: <i>Roy Sprad</i>                                                                               |                                           |                                                                                  | DATE: <i>OCT 13/11</i>                        |           |
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**MILL TEST REPORTS**

M. MCLEAN  
MAGGIE METALLHIST

M. MCLELLAN

2000161282 PF

2010/10/14 16:50

2010/10/14 16:50

**RETAILGOMA.COM**

AFRICAN MATRIARCHS

WEIGHT NO. 3  
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PAGE 2 OF 11 EDIT

THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT IN THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM

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.



|                                                                                                                        |                          |                                                                                                    |                                        |
|------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>ESSAR Steel Algoma Inc.</b>                                                                                         |                          | <b>105 West Street, Sault Ste. Marie, Ontario Canada P6A 7B4</b>                                   |                                        |
| CUSTOMER ORDER NUMBER<br>M64032179                                                                                     | ENTRY DATE<br>2010/08/23 | SUP. DATE<br>2010/10/01                                                                            | TOTAL NUMBER OF SUPPLIES NO.<br>198050 |
| SHIP TO CUSTOMER NAME AND ADDRESS<br>RUSSEL METALS INC.<br>5724 40TH STREET SE,<br>CALGARY ALBERTA<br>T2C 2A1          |                          | SHIP TO CUSTOMER NAME AND ADDRESS<br>RUSSEL METALS INC<br>5724 - 40TH STREET SE<br>CALGARY ALBERTA |                                        |
| CUSTOMER SPECIFICATION<br>HR MULTIPLE CERTIFIED PLATE - BSIA - CSA G40.21 44W/ASTM A36 (04) (08) -<br>PLATNESS 1/2 A-6 |                          |                                                                                                    |                                        |
| SUBSIDIARY INSTRUCTIONS                                                                                                |                          |                                                                                                    |                                        |
| TEST CERT 1: CAROLYN SEEBERS 403-279-3269 TEST CERT 2: PLATE T                                                         |                          |                                                                                                    |                                        |
| EST COUPON:                                                                                                            |                          |                                                                                                    |                                        |
| OTHER TEST REPORTS REQUIRED                                                                                            |                          |                                                                                                    |                                        |
| CERT USE                                                                                                               | RESALE P/N 41218         | 2000161282 DE<br>2010/10/14 16:50                                                                  |                                        |
| BEAT (WT %)                                                                                                            | C 16.15                  | MN 1.15                                                                                            | P 0.014                                |
|                                                                                                                        | S 0.007                  | SI 0.21                                                                                            | CR 0.03                                |
|                                                                                                                        | NI 0.02                  | CU 0.05                                                                                            | MO 0.01                                |
|                                                                                                                        | AL 0.026                 | CB 0.002                                                                                           | V 0.037                                |
|                                                                                                                        |                          | B                                                                                                  | DO 0.37                                |

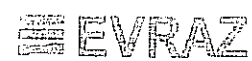
**MILL TEST REPORTS**  
ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RELEASED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

**M. MCLEARN**  
MANAGING METALLURGIST  
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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 OUTLAP THE STEEL FOR ANY SPECIFICATION OTHER THAN THE ONE INDICATED AND CAN NOT BE REIED UPON FOR ANY PURPOSE (INCLUDING DESIGN OR CALCULATIONS) AS REPRESENTING THE ACTUAL STRENGTH OF SUCH STEEL.

ATTN: MTR DEPT NWP



EVRAZ INC. NA

2250 130th Street, Surrey, BC, V3W 6J9

# Test Certificate

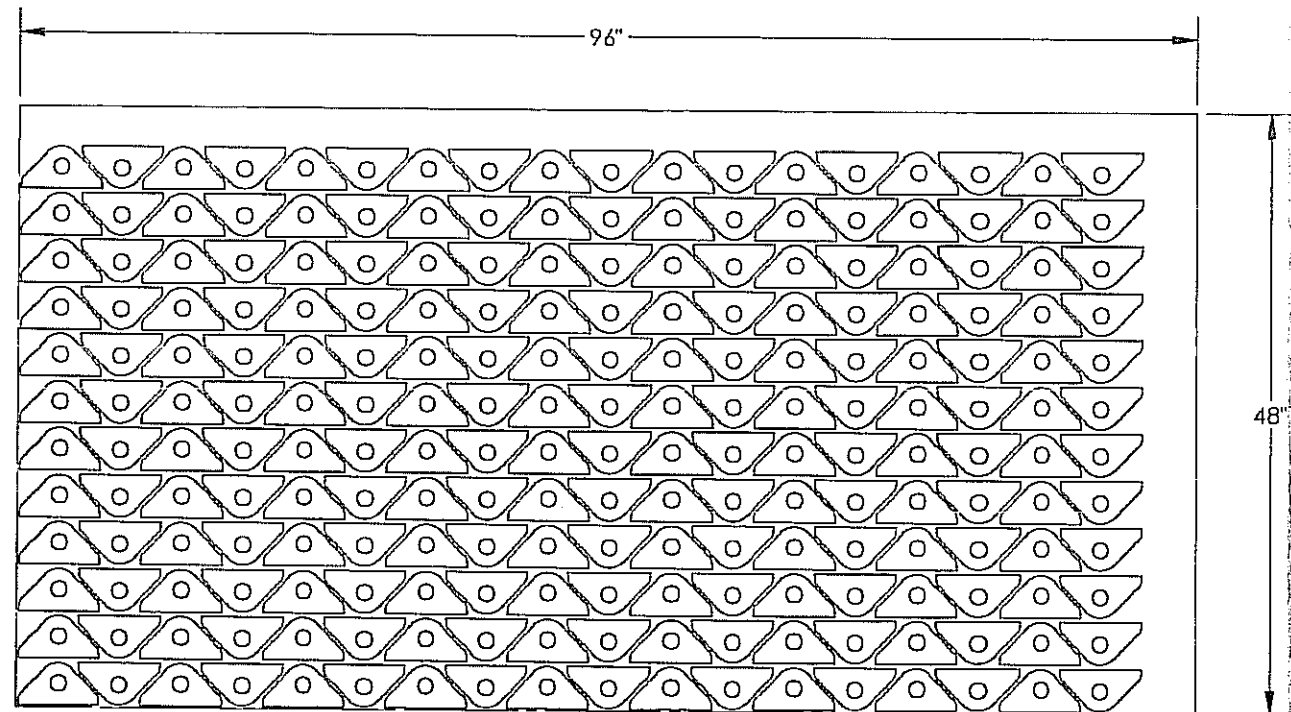
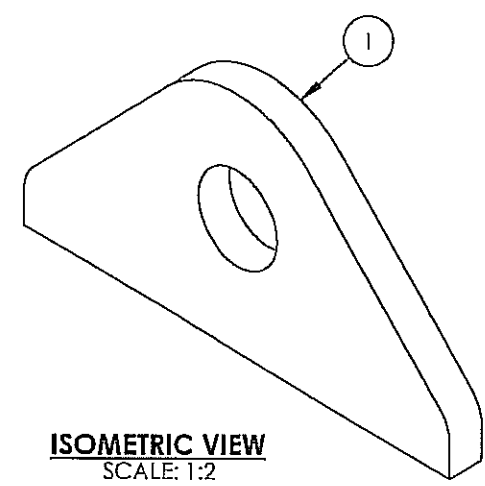
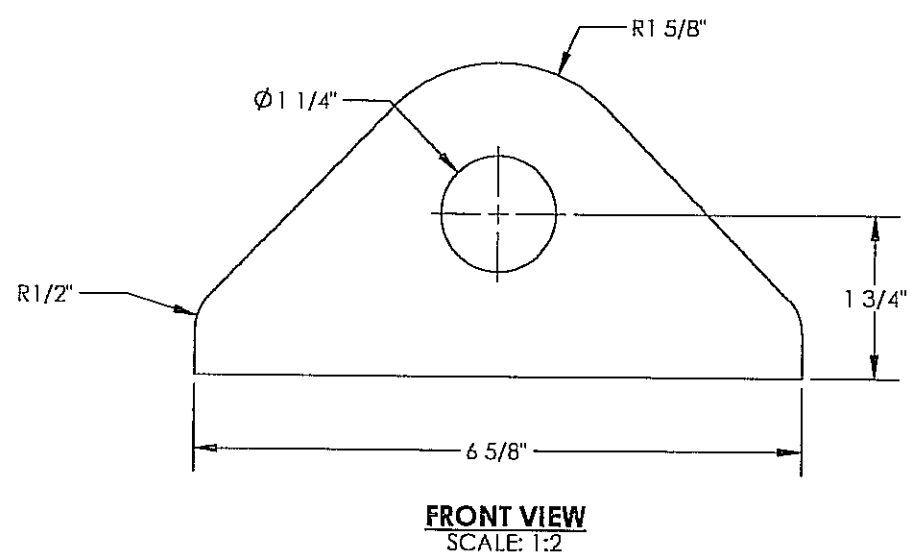
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| Product Description: CSA G40.21(2004)44W / ASTM A36(05)<br>A705(04)36/ASME SA36(04R3)          |      | Ship Date: 02 Feb 11         |    | Cert No: 011230966           |     | (Page 1 of 1)               |         |    |         |                    |    |    |     |    |         |    |      |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  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| Size: 0.275 x 96.00 x 208.0 (IN)                                                               |      |                              |    |                              |     |                             |         |    |         |                    |    |    |     |    |         |    |      |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  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| Test Results                                                                                   |      |                              |    |                              |     |                             |         |    |         |                    |    |    |     |    |         |    |      |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  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Energy(FIELD) | TS | YS | UTS | RA | Long TS | TS | DOFT |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |    |  |  |  |  |  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| C                                                                                              |      |                              |    |                              |     |                             |         | Mn |         |                    |    |    |     |    |         | P  |      |  |  |  |  |  |  | S |  |  |  |  |  |  |  | Cu |  |  |  |  |  |  |  | Ni |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  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|  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  | W |  |  |  |  |  |  |  | Mo |  |  |  |  |  |  |  | Co |  |  |  |  |  |  |  | Fe |  |  |  |  |  |  |  | Cr |  |  |  |  |  |  |  | Mg |  |  |  |  |  |  |  | Ca |  |  |  |  |  |  |  | Sr |  |  |  |  |  |  |  | Ba |  |  |  |  |  |  |  | Pb |  |  |  |  |  |  |  | Sn |  |  |  |  |  |  |  | Zn |  |  |  |  |  |  |  | Al |  |  |  |  |  |  |  | Si |  |  |  |  |  |  |  | Nb |  |  |  |  |  |  |  | Ti |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  | Zr |  |  |  |  |  |  |  | Hf |  |  |  |  |  |  |  | Ta |  |  |  |  |  |  |  |

| ITEM | PART #    | DESCRIPTION                     | MTR # | LENGTH | QTY. |
|------|-----------|---------------------------------|-------|--------|------|
| 1    | PLAC4896A | PLATE 3/8" x 48" x 96" SA36/44W |       |        | 1    |



ISSUED FOR CONSTRUCTION

ORIGINAL

- NOTES**
1. HEAT NUMBER TO BE CLEARLY MARKED ON EACH PIECE WITH PAINT PEN AS A MINIMUM.
  2. ALL DOCUMENTATION MUST ACCOMPANY SHIPMENT OF PARTS IF PART IS OUTSOURCED.
  3. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  4. DEBURR AND RADIUS ALL SHARP EDGES.

|                    |  |  |  |  |  |                                                                                                 |  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                         |  |  |
|--------------------|--|--|--|--|--|-------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|
|                    |  |  |  |  |  | ISSUED FOR CONSTRUCTION                                                                         |  |  <p><b>NWP INDUSTRIES INC.</b><br/>Total oilfield supply.<br/>P.O. BOX 6280, INNISFAIL, AB T4G 1S9<br/>PH: (403) 227-4100 FAX: (403) 227-4102</p> <p>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST.</p> | NWP INDUSTRIES INC<br>LIFT LUG<br>6 5/8" x 3 3/8" x 3/8" THK<br>FORMED PART DRAWING                                                     |  |  |
|                    |  |  |  |  |  | SIGNED: _____                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                         | DWN: JHK    CHK: <i>[Signature]</i> APP: <i>[Signature]</i><br>DATE: <u>SEP 19 2011</u> DATE: <u>SEP 14/11</u> DATE: <u>APR-14-2011</u> |  |  |
|                    |  |  |  |  |  | DATE: <u>SEP 19 2011</u>                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                         | SCALE: 1:2<br>SHEET: 1 OF 1                                                                                                             |  |  |
|                    |  |  |  |  |  | W.O.: <u>08182</u>                                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                         | DWG: LL-D63A    REV: 0                                                                                                                  |  |  |
|                    |  |  |  |  |  | S.O.: _____                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                         |  |  |
|                    |  |  |  |  |  | ALL DIMENSIONS IN INCHES                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                         |  |  |
|                    |  |  |  |  |  | ISSUED FOR CONSTRUCTION                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                         |  |  |
|                    |  |  |  |  |  | 0    2011.03.18    JHK <i>[Signature]</i> <i>[Signature]</i><br>REV    DATE    BY    CHK    APP |  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                         |  |  |
| REFERENCE DRAWINGS |  |  |  |  |  | DRAWING REVISIONS                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                         |  |  |

|                                            |                                                                                  |                                          |
|--------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                          |
| Date of Issue: March 13, 2008              |                                                                                  | QCFOFinalInspectionReleaseCertificateR00 |

## FINAL INSPECTION RELEASE CERTIFICATE

|                                          |                          |
|------------------------------------------|--------------------------|
| CUSTOMER: <b>NWP Stock</b>               | SALES ORDER#: <b>N/A</b> |
| PRODUCT: <b>LH Cold Level Indicators</b> | WO#: <b>08201</b>        |
| <b>QTY 69</b>                            | DATE: <b>Oct 26.11</b>   |

### FINAL INSPECTION DOCUMENTATION

|                                                                                                                       |           |           |
|-----------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                          | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                  |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC.) |           |           |

|                                             |                          |
|---------------------------------------------|--------------------------|
| Q.C. FILE CLOSURE BY: <b>Kasha Fox</b>      | DATE: <b>Oct 27 2011</b> |
| <b>LOOSE COMPONENTS REQUIRED / PREPARED</b> |                          |

|                                           |                                                                     |
|-------------------------------------------|---------------------------------------------------------------------|
| ITEMS REQUIRED:                           | NO. OF BOXES OR PKGS. _____                                         |
| <b>75 Cold Level Indicators.</b>          |                                                                     |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |

### PREPARATION FOR SHIPMENT / STORAGE

|                                |
|--------------------------------|
| PREPARATION NEEDED / COMPLETED |
| <b>Release to next process</b> |

|                                                                                             |
|---------------------------------------------------------------------------------------------|
| LOT# <b>08201</b>                                                                           |
| PART # <b>COLDLEVEL-1</b>                                                                   |
| INVENTORY TAGS ATTACHED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

### SHIPPING INSTRUCTIONS

|                                                                                             |
|---------------------------------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: _____                                         |
| PHONE: _____ FAX: _____                                                                     |

|                                          |                        |
|------------------------------------------|------------------------|
| RELEASED TO INVENTORY <b>[Signature]</b> | DATE: <b>Oct 26.11</b> |
| RELEASED TO CUSTOMER:                    | DATE:                  |

**NWP Industries**  
**Job Order Paperwork**



SHOP  
Oct 7-11

**Order: 08201**

**Item:** COLDLEVEL-1

**Description:** LH Cold level Indicator

**Ordered:** 69.00

**Qty To Mfg:** 69.00

**Entered:** 10/05/11

**Delv Req:** 10/12/11

**Customer:** STOCK

**Name:** STOCK

**Customer PO:**

**Contact:**

**Parent Order:** 08201

**Drawing:** 100603

| OPER | S | WORK CENTER | QTY | SETUP | RUN | START/END | DESCRIPTION | U/M | QTY |
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|

|    |  |     |       |      |      |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|
| 10 |  | CNC | 69.00 | 0.00 | 6.90 |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|

Plasma/Shear/Brk

OPER:

WC:

Structural Welding As Per CSA W47.1 and W59

Employee Identification: CAHUS HARKONEN

MTR 10 Gauge HT# 46215

Fabrication: CNC

Date: OCT 19/2011

Quality: B. H. Lins

Date: \_\_\_\_\_

75cut  
GJP

PLAH4896A

Plate 10 Gauge 48" x 96" SA36/44W

Each

0.9936



OCT 31 2011  
OCT 10 2011

Q



ESSAR Steel Algora Ltd  
 12201-03  
 5200 W. 10th St. S. Suite 200  
 Winnipeg, Manitoba R4R 1A6  
 Canada  
 Tel: (204) 781-1111  
 Fax: (204) 781-1112  
 E-mail: sales@essarsteel.com  
 Website: www.essarsteel.com

**SUPERSTRAY INSTRUCTIONS**

TEST CERT 1: BRAD STEIN 403-343-1311 TEST CERT 2: N/A  
 COUPON: N/A

**CHEMICAL ANALYSIS REPORT REQUIRED**

CUSTOMER: RESALE

MEETS EN 10204 3.1

CUSTOMER ITEM 00084 OUR ITEM 003 DIMENSIONS 127 MIN X 48 X COIL

| COIL NUMBER | HEAT     | NO. PIECES | WEIGHT | COIL NUMBER | HEAT     | NO. PIECES | WEIGHT |
|-------------|----------|------------|--------|-------------|----------|------------|--------|
| 62414136    | 46208 56 | 1          | 38830  | 62414138    | 46213-51 | 1          | 38780  |
| BEAT (WT %) | C        | SI         | SI     | SI          | SI       | SI         | SI     |
|             | 04       | 04         | 04     | 04          | 04       | 04         | 04     |
|             | 001      | 007        | 007    | 007         | 007      | 007        | 007    |
|             | 001      | 0032       | 0032   | 0032        | 0032     | 0032       | 0032   |
|             | 004      | 017        | 017    | 017         | 017      | 017        | 017    |
|             | 0039     | 0039       | 0039   | 0039        | 0039     | 0039       | 0039   |

2000108409 RS  
 2009/06/26 11:43

J. JOENSTON  
 HARBOR NEUTRALIZER

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGORA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECIPIER, PLEASE CALL (204) 781-2624 FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT.

ALL INFORMATION CONTAINED HEREIN IS THE PROPERTY OF ESSAR STEEL ALGORA INC. AND IS NOT TO BE DISCLOSED TO ANY OTHER PARTY WITHOUT THE WRITTEN PERMISSION OF ESSAR STEEL ALGORA INC.

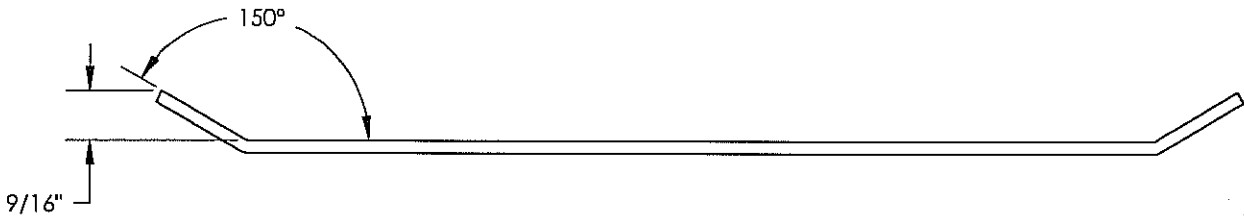
Oct 18, 2011

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 REQUIRING DESIGN OR CALCULATIONS AS REPRESENTING THE ACTUAL STRENGTH OF SUCH STEEL.

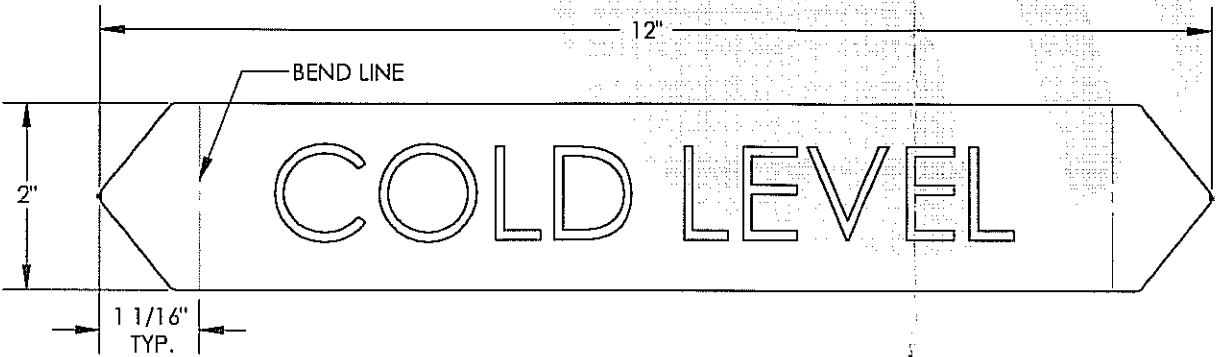
TO Compare to  
 #1004101



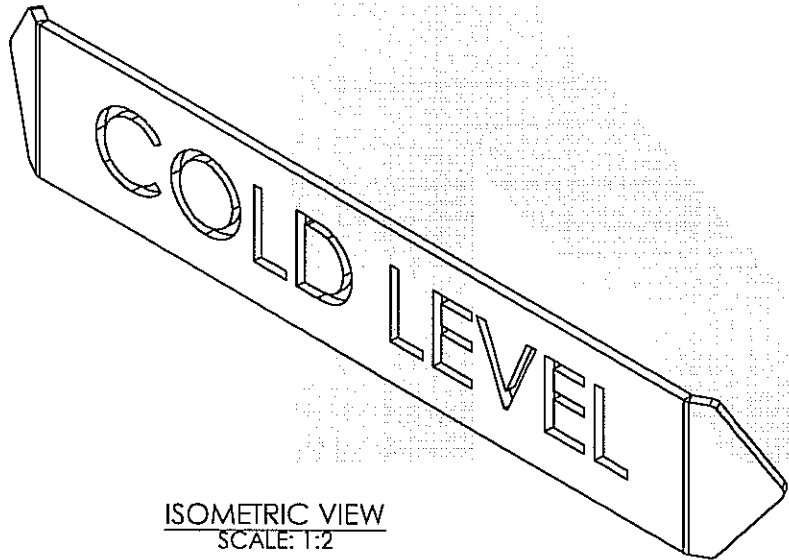
| ITEM | MATERIAL  | PART # | DESCRIPTION              | MTR # | LENGTH | QTY. |
|------|-----------|--------|--------------------------|-------|--------|------|
| 1    | SA-36/44W | 308863 | PLATE 10 GA. x 48" x 96" |       | 0.0144 | 1    |



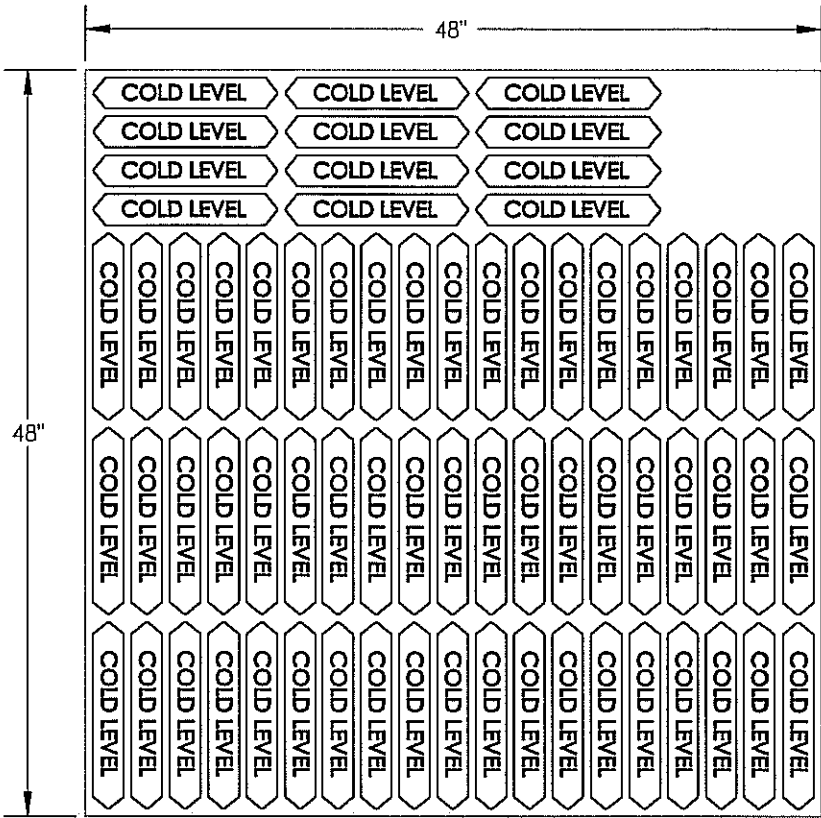
TOP VIEW  
SCALE: 1:2



FLAT VIEW  
SCALE: 1:2



ISOMETRIC VIEW  
SCALE: 1:2



CNC PLAN VIEW  
SCALE: 1:12

ISSUED FOR CONSTRUCTION

- NOTES
1. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  2. DEBURR AND RADIUS ALL SHARP EDGES.

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Order#: 162083 Seq: 1 PO#: 100279 Mill: Yangzhou Lontrin Steel Tube Co., Ltd VA Desc:  
Part#: BL 3 3 A53 RFRBL NU R30R03S

红字为江苏扬州市开发区兴港路1号  
No1 Xingang Rd developing area along the river  
Jiangsu City Jiangsu province, China  
Tel: 86-514-4643011 Fax: 0514-4643033

# YANGZHOU LONTRIN STEEL TUBE CO., LTD. INSPECTION CERTIFICATE (EN10204-3.1)

ISO REGISTRATION NO: 44 100 072544

COMCO'S PO#: PO#E1-2265

CONTRACT NO: TC8248

CERTIFICATE NUMBER: 05112A-04REVISED

CUSTOMER: MARUBENI-ITOCHU TUBULARS CANADA LTD. (COMCO PIPE &amp; SUPPLY COMPANY)

PRODUCT: SEAMLESS CARBON STEEL PIPE

SPEC: ASTM/A53 (A53 106 GR.B, (2010) AND API 5L (44th Edition) PSL-1 GILB &amp; NACE MR0175/ISO 15156 (2005) (NACE MR 0175/ISO 15156 (2005) HARDNESS ONLY)

## PACKING IN BUNDLES

27781 KG

1881 PIECES

18 BUNDLES

| NO.                                                                                                                             | HEAT NO.  | LOT NO.        | STEEL GRADE           | SIZE (MM)       | PCS                      | WEIGHT Kg       | CHEMICAL COMPOSITION (Ladle Analysis) % |              |            |              |              |              |              |              |              |              |                 |       |                     | SURFACE QUALITY |                       |                       |      | DIMENSION TOLERANCE |  |
|---------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|-----------------------|-----------------|--------------------------|-----------------|-----------------------------------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------|---------------------|-----------------|-----------------------|-----------------------|------|---------------------|--|
|                                                                                                                                 |           |                |                       |                 |                          |                 | C                                       | Si           | Mn         | P            | S            | Cr           | Ni           | Cu           | Mo           | V            | Ti              | Al    | CE                  | MM              | IN                    | OUT                   | O.D. | W.T.                |  |
| 1                                                                                                                               | 107A-65   | IC261          | GR.B                  | 3/4" XSXSRL     | 400                      | 4799            | 0.17                                    | 0.41         | 1.27       | 0.012        | 0.004        | 0.04         | 0.02         | 0.02         | 0.003        | 0.007        | 0.004           | 0.002 | 0.39                | 7.47            | 3. Fully killed steel | 3. Fully killed steel |      |                     |  |
| 2                                                                                                                               | 107A-65   | IC262          | GR.B                  | 3/4" XSXSRL     | 400                      | 4841            | 0.17                                    | 0.41         | 1.27       | 0.012        | 0.004        | 0.04         | 0.02         | 0.02         | 0.003        | 0.007        | 0.004           | 0.002 | 0.39                | 7.47            |                       |                       |      |                     |  |
| 3                                                                                                                               | 107A-65   | IC263          | GR.B                  | 3/4" XSXSRL     | 108                      | 1305            | 0.17                                    | 0.41         | 1.27       | 0.012        | 0.004        | 0.04         | 0.02         | 0.02         | 0.003        | 0.007        | 0.004           | 0.002 | 0.39                | 7.47            |                       |                       |      |                     |  |
| 4                                                                                                                               | 106A-82   | IB266          | GR.B                  | 1" STDXSRL      | 354                      | 8470            | 0.15                                    | 0.43         | 1.27       | 0.018        | 0.005        | 0.04         | 0.02         | 0.02         | 0.001        | 0.005        | 0.003           | 0.002 | 0.37                | 8.60            |                       |                       |      |                     |  |
| 5                                                                                                                               | 106A-82   | IB216          | GR.B                  | 1" STDXSRL      | 364                      | 4920            | 0.15                                    | 0.42         | 1.29       | 0.021        | 0.005        | 0.03         | 0.01         | 0.02         | 0.001        | 0.005        | 0.003           | 0.002 | 0.37                | 8.60            |                       |                       |      |                     |  |
| 6                                                                                                                               | 106A-82   | IB217          | GR.B                  | 1" STDXSRL      | 255                      | 3446            | 0.15                                    | 0.42         | 1.29       | 0.021        | 0.005        | 0.03         | 0.01         | 0.02         | 0.001        | 0.005        | 0.003           | 0.002 | 0.37                | 8.60            |                       |                       |      |                     |  |
|                                                                                                                                 |           |                | MECHANICAL PROPERTIES |                 | TECHNOLOGICAL PROPERTIES |                 | NONDESTRUCTIVE TEST                     |              |            |              |              |              |              |              |              |              | SURFACE QUALITY |       | DIMENSION TOLERANCE |                 |                       |                       |      |                     |  |
| NO.                                                                                                                             | ReL (MPa) | YIELD STRENGTH | TENSILE STRENGTH      | ELONGATION A%   | HARDNESS HRB             | FLATTENING TEST | FLARING TEST                            | BENDING      | H.T. (>5s) | ET           | UT           | IN           | OUT          | O.D.         | W.T.         |              |                 |       |                     |                 |                       |                       |      |                     |  |
|                                                                                                                                 |           |                |                       |                 |                          |                 |                                         |              |            |              |              |              |              |              |              |              |                 |       |                     |                 |                       |                       |      |                     |  |
| 1                                                                                                                               | 360/340   | 500/495        | 42/42.5               | 74.5/74.5/75    | —                        | —               | —                                       | Satisfactory | 2500psi    | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory    |       |                     |                 |                       |                       |      |                     |  |
| 2                                                                                                                               | 360/3650  | 505/510        | 41/41                 | 75.5/75/75.5    | —                        | —               | —                                       | Satisfactory | 2500psi    | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory    |       |                     |                 |                       |                       |      |                     |  |
| 3                                                                                                                               | 345/355   | 500/500        | 41.5/42               | 75/74.5/74.5    | —                        | —               | —                                       | Satisfactory | 2500psi    | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory    |       |                     |                 |                       |                       |      |                     |  |
| 4                                                                                                                               | 355/370   | 520/540        | 42/41.5               | 78/79/78.5/78.5 | —                        | —               | —                                       | Satisfactory | 2500psi    | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory    |       |                     |                 |                       |                       |      |                     |  |
| 5                                                                                                                               | 355/360   | 490/505        | 46/48                 | 79/80.5/79.5    | —                        | —               | —                                       | Satisfactory | 2500psi    | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory    |       |                     |                 |                       |                       |      |                     |  |
| 6                                                                                                                               | 360/370   | 500/505        | 46/47                 | 78.5/79.5/79    | —                        | —               | —                                       | Satisfactory | 2500psi    | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory | Satisfactory    |       |                     |                 |                       |                       |      |                     |  |
| REMARKS: 1. Heat Treatment: Normalizing 900-930°C for at least 30min; 2. Manufacture Process: Cold-drawn; 3. Fully killed steel |           |                |                       |                 |                          |                 |                                         |              |            |              |              |              |              |              |              |              |                 |       |                     |                 |                       |                       |      |                     |  |

REMARKS: 1. Heat Treatment: Normalizing 900-930°C for at least 30min; 2. Manufacture Process: Cold drawn; 3. Fully killed steel

MANAGING REPRESENTATIVE: Xiao Dong Yuan

STAMPER:

DATE: August 4, 2011

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Nov. 28. 2011

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Contract No: 211002003  
 Name of Customer: R AND R TRADING CO. LTD.  
 Description: Seamless Steel Line Pipe

HONGYANG VALIN STEEL TUBE CO. LTD

MILL CERTIFICATE

Date: JUL 08, 2011

Add: 10 Dailienan, Hongyang City, Hunan, China  
 Tel and Fax: +86 734 8873739 8872942  
 P.C. 421001

SPEC: API 5L B 44TH EDITION/ASTM A53B-10/ASTM A106 B-10/ASME SA 106B-10/SA 53B-10/NACE MR0175-2003

CERTIFICATE NO: 2010-01-0169

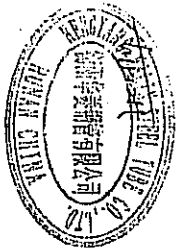
| NO.                                                                                                       | BATCH NO.                      | HEAT NO.                   | STEEL GRADE        | SIZE          | BUNDLES | PIECES                 | FEET    | THEORETICAL WEIGHT (MT) | ACTUAL WEIGHT(MT)         |              |           |      |        |       |       |      |
|-----------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------|--------------------|---------------|---------|------------------------|---------|-------------------------|---------------------------|--------------|-----------|------|--------|-------|-------|------|
| 20.1                                                                                                      | 916401219                      | 112813                     | B                  | 4"X0.375"X1FT | 12      | 39                     | 4514.43 | 2211.11                 |                           |              |           |      |        |       |       |      |
| 20.2                                                                                                      | 916401217                      | 112813                     | B                  | 4"X0.375"X1FT | 2       | 11.9                   | 4.011   |                         |                           |              |           |      |        |       |       |      |
| 21                                                                                                        | 916402409                      | 112813                     | B                  | 4"X0.375"X1FT | 3       | 16                     | 640.41  | 3.136                   |                           |              |           |      |        |       |       |      |
| 22                                                                                                        | 916402409                      | 112813                     | B                  | 4"X0.375"X1FT | 26      | 178                    | 3722.49 | 28.429                  |                           |              |           |      |        |       |       |      |
| 29                                                                                                        | 81300231                       | 112312                     | B                  | 6"X0.432"X1FT | 1       | 4                      | 81.99   | 1.09                    |                           |              |           |      |        |       |       |      |
| TOTAL:                                                                                                    |                                |                            |                    |               | 44      | 432                    | 9795.22 | 35.777                  |                           |              |           |      |        |       |       |      |
| NO.                                                                                                       | DELIVERY CONDITION             | NONDESTRUCTIVE TEST        |                    |               |         | CHEMICAL COMPOSITION % |         |                         |                           |              |           |      |        |       |       |      |
|                                                                                                           |                                | ET                         | EMAT               | C             | SI      | Mn                     | P       | S                       | CU                        | NI           | CR        | MO   | V      | TI    | Nb    | CE   |
| 20.1                                                                                                      | HOT-ROLLED                     | OK                         | N/A                | 0.20          | 0.21    | 0.40                   | 0.016   | 0.005                   | 0.04                      | 0.02         | 0.03      | 0.01 | 0.0022 | 0.001 | 0.001 | 0.20 |
|                                                                                                           |                                |                            |                    | 0.20          | 0.19    | 0.40                   | 0.014   | 0.005                   | 0.05                      | 0.02         | 0.04      | 0.01 | 0.0025 | 0.002 | 0.001 | 0.28 |
| 20.2                                                                                                      | HOT-ROLLED                     | OK                         | N/A                | 0.20          | 0.21    | 0.51                   | 0.014   | 0.004                   | 0.05                      | 0.02         | 0.05      | 0.01 | 0.0032 | 0.001 | 0.001 | 0.30 |
|                                                                                                           |                                |                            |                    | 0.20          | 0.20    | 0.52                   | 0.015   | 0.004                   | 0.05                      | 0.02         | 0.05      | 0.01 | 0.0032 | 0.001 | 0.001 | 0.30 |
| 21                                                                                                        | HOT-ROLLED                     | OK                         | N/A                | 0.20          | 0.21    | 0.40                   | 0.015   | 0.005                   | 0.04                      | 0.02         | 0.05      | 0.02 | 0.0035 | 0.002 | 0.001 | 0.28 |
|                                                                                                           |                                |                            |                    | 0.20          | 0.21    | 0.51                   | 0.013   | 0.004                   | 0.05                      | 0.02         | 0.05      | 0.01 | 0.0032 | 0.001 | 0.001 | 0.30 |
| 22                                                                                                        | HOT-ROLLED                     | OK                         | N/A                | 0.19          | 0.21    | 0.42                   | 0.012   | 0.003                   | 0.04                      | 0.02         | 0.04      | 0.01 | 0.0028 | 0.002 | 0.001 | 0.31 |
|                                                                                                           |                                |                            |                    | 0.19          | 0.22    | 0.43                   | 0.011   | 0.003                   | 0.05                      | 0.03         | 0.05      | 0.01 | 0.0028 | 0.003 | 0.001 | 0.27 |
| 29                                                                                                        | HOT-ROLLED                     | N/A                        | OK                 | 0.20          | 0.21    | 0.38                   | 0.011   | 0.002                   | 0.05                      | 0.02         | 0.05      | 0.01 | 0.0019 | 0.005 | 0.001 | 0.28 |
|                                                                                                           |                                |                            |                    | 0.21          | 0.27    | 0.52                   | 0.016   | 0.002                   | 0.06                      | 0.03         | 0.04      | 0.03 | 0.0022 | 0.002 | 0.002 | 0.33 |
|                                                                                                           |                                |                            |                    | 0.22          | 0.27    | 0.52                   | 0.016   | 0.002                   | 0.06                      | 0.03         | 0.04      | 0.03 | 0.0022 | 0.002 | 0.002 | 0.33 |
|                                                                                                           |                                |                            |                    | 0.20          | 0.26    | 0.58                   | 0.015   | 0.004                   | 0.07                      | 0.03         | 0.06      | 0.01 | 0.0032 | 0.002 | 0.001 | 0.32 |
| NO                                                                                                        | TENSILE STRENGTH<br>σb (PSI)   | YIELD STRENGTH<br>σs (PSI) | ELONGATION<br>δ(%) | IMPACT TEST   |         |                        |         | HARDNESS                | HYDROSTATIC<br>TEST (PSI) | FLATTEN TEST | BEND TEST |      |        |       |       |      |
|                                                                                                           | Temp Dir(mm) AK(V) Orientation |                            |                    |               |         |                        |         |                         |                           |              |           |      |        |       |       |      |
| 20.1                                                                                                      | 69600                          | 44600                      | 38                 | N/A           | N/A     | N/A                    | N/A     | OK                      | 2250                      | OK           | N/A       |      |        |       |       |      |
| 20.2                                                                                                      | 69600                          | 44850                      | 38.5               | N/A           | N/A     | N/A                    | N/A     | OK                      | 2250                      | OK           | N/A       |      |        |       |       |      |
| 21                                                                                                        | 68150                          | 44950                      | 38                 | N/A           | N/A     | N/A                    | N/A     | OK                      | 2250                      | OK           | N/A       |      |        |       |       |      |
| 22                                                                                                        | 68150                          | 42050                      | 40.5               | N/A           | N/A     | N/A                    | N/A     | OK                      | 2000                      | OK           | N/A       |      |        |       |       |      |
| 29                                                                                                        | 71775                          | 47850                      | 38.5               | N/A           | N/A     | N/A                    | N/A     | OK                      | 2000                      | OK           | N/A       |      |        |       |       |      |
| REMARKS: 1. We hereby certify that this certificate of analysis is issued and stored by the manufacturer. |                                |                            |                    |               |         |                        |         |                         |                           |              |           |      |        |       |       |      |

REMARKS: 1. We hereby certify that this certificate of quality is issued and signed by the manufacturer.  
 2. We hereby certify that the properties described herein meet the requirement of the above spec.  
 3. We hereby certify that this certificate is issued accordance with EN 10204, 3.1B AND NACE MR-0175  
 4. TYPE-P-Product analysis L-Ladle analysis.

QUALITY MANAGER

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"

ORIGINAL



this pipe  
 came from  
 yunnan  
 1st grade  
 Fe # 105010





VT.227-229



HULUDAO CITY STEEL PIPE  
INDUSTRIAL CO.,LTD

# MILL TEST CERTIFICATES

Add: Cishan Village, Longgang District, Huludao City.  
Liaoning Province, China Post code: 125003  
Tel: 86 429-2058666 Fax: 86 429-2058333

Contract No.:HK-GG1207072-C

Certificate No.:201209078

Date of Issue: SEP.19,2012

Standard: ASTM A53 Gr.B/API 5L GRB

Description:ERW STEEL PIPE

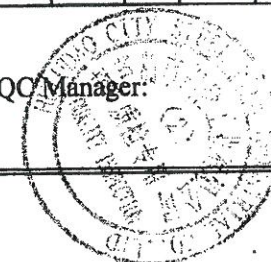
Shipping Mark:N/M

Shipping Mark:N/M

| NPS | Dimension |        |        | Type | Quantity   |      |     | Heat Number | Chemical Composition |      |      |       |       |       |       |       |       |       |       |       |          | Mechanical Properties |           |               |             |     | Hydro Test 5/10sec psi | NDT | Seam Heat Treated | Appearance and Dimension |
|-----|-----------|--------|--------|------|------------|------|-----|-------------|----------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----------------------|-----------|---------------|-------------|-----|------------------------|-----|-------------------|--------------------------|
|     | OD        | Wall   | Length |      | Weight ton | pkgs | Pcs |             | C %                  | Si % | Mn % | P %   | S %   | Cu %  | Cr %  | Ni %  | Mo %  | V %   | Ti %  | Nb %  | Y.S. psi | T.S. psi              | El. 2in % | Weld T.S. psi | Flatten ing |     |                        |     |                   |                          |
| 18  | 18.000"   | 0.375" | 40'    | BPE  | 96.059     | 75   | 75  | 12JD2772    | 0.14                 | 0.10 | 0.18 | 0.007 | 0.009 | 0.014 | 0.045 | 0.018 | 0.001 | 0.004 | 0.001 | 0.006 | 47560    | 61335                 | 45        | 66845         | OK          | 890 | OK                     | OK  | OK                |                          |
| 18  | 18.000"   | 0.375" | 20'    | BPE  | 48.030     | 75   | 75  | 12KD2769    | 0.12                 | 0.09 | 0.20 | 0.007 | 0.008 | 0.009 | 0.052 | 0.022 | 0.001 | 0.008 | 0.003 | 0.005 | 47125    | 61625                 | 40        | 67570         | OK          | 890 | OK                     | OK  | OK                |                          |
| 18  | 18.000"   | 0.250" | 40'    | BPE  | 47.320     | 55   | 55  | 12200897    | 0.16                 | 0.21 | 0.35 | 0.022 | 0.009 | 0.020 | 0.024 | 0.011 | 0.001 | 0.005 | 0.005 | 0.007 | 40745    | 64235                 | 44        | 68440         | OK          | 590 | OK                     | OK  | OK                |                          |
| 20  | 20.000"   | 0.250" | 40'    | BPE  | 52.675     | 55   | 55  | 12302487    | 0.13                 | 0.20 | 0.35 | 0.017 | 0.007 | 0.013 | 0.027 | 0.010 | 0.001 | 0.006 | 0.003 | 0.008 | 45095    | 64525                 | 44        | 69890         | OK          | 530 | OK                     | OK  | OK                |                          |
| 20  | 20.000"   | 0.375" | 40'    | BPE  | 107.007    | 75   | 75  | 12302488    | 0.15                 | 0.19 | 0.36 | 0.014 | 0.009 | 0.015 | 0.023 | 0.009 | 0.001 | 0.001 | 0.005 | 0.007 | 45095    | 64670                 | 41        | 68585         | OK          | 800 | OK                     | OK  | OK                |                          |
| 20  | 20.000"   | 0.375" | 20'    | BPE  | 53.504     | 75   | 75  | 12102680    | 0.14                 | 0.18 | 0.36 | 0.018 | 0.009 | 0.015 | 0.026 | 0.008 | 0.001 | 0.004 | 0.003 | 0.007 | 41325    | 64235                 | 45        | 69455         | OK          | 800 | OK                     | OK  | OK                |                          |
| 24  | 24.000"   | 0.250" | 40'    | BPE  | 63.385     | 55   | 55  | 12302300    | 0.14                 | 0.19 | 0.34 | 0.024 | 0.012 | 0.016 | 0.031 | 0.010 | 0.002 | 0.002 | 0.003 | 0.006 | 42340    | 63655                 | 42        | 66555         | OK          | 440 | OK                     | OK  | OK                |                          |
| 24  | 24.000"   | 0.375" | 40'    | BPE  | 128.904    | 75   | 75  | 12303296    | 0.13                 | 0.20 | 0.34 | 0.016 | 0.012 | 0.011 | 0.020 | 0.009 | 0.002 | 0.001 | 0.005 | 0.007 | 44225    | 61770                 | 44        | 69890         | OK          | 670 | OK                     | OK  | OK                |                          |
| 24  | 24.000"   | 0.375" | 20'    | BPE  | 64.452     | 75   | 75  | 12303296    | 0.13                 | 0.20 | 0.34 | 0.016 | 0.012 | 0.011 | 0.020 | 0.009 | 0.002 | 0.001 | 0.005 | 0.007 | 44225    | 61770                 | 44        | 69890         | OK          | 670 | OK                     | OK  | OK                |                          |

We hereby certify that the material described has been manufactured,inspected and tested in accordance with above standard & specification,and satisfied with the requirements.

QC Manager:



"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/11/28 J. Nason

ENCANA  
MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: J. Nason

Date: 2012/11/28



# ESSAR Steel Algonoma Inc.

CUSTOMER PURCHASE ORDER NUMBER

15302-BS

ENTRY DATE

2011/12/19

CREATED DATE

2012/02/03

TALLY NUMBER

262166

SHIPPER'S NO.

-

CARRIER

AOK

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

-34379

MILL ORDER

15438

CHARGE TO CUSTOMER NAME AND ADDRESS

ALBERTA INDUSTRIAL METALS LTD  
4821 - 78TH STREET  
RED DEER ALBERTA  
T4P 1N5

SHIP TO CUSTOMER NAME AND ADDRESS

ALBERTA INDUSTRIAL METALS LTD  
7660 49TH AVENUE  
CALGARY, ALBERTA  
T4P 4G6

## MILL TEST REPORTS

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

K. UGHADPAGA

MANAGER METALLURGICAL SERVICES

### SUPPLEMENTARY INSTRUCTIONS

TEST CERT 1: BRAD@ABIM.CA TEST CERT 2: PLATE TEST COUPON:

TEST REPORTS REQUIRED

2000212791 DS

CUST VETTED RESALE

2012/02/03 14:27

MEETS EN 10204:2004 TYPE 3.1

CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM  
ISO QUALITY AND ENVIRONMENTAL  
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

CUSTOMER ITEM 00009 OUR ITEM 009 DIMENSIONS .178 MIN X 60 X COIL

COIL NUMBER  
60411047

HEAT-MS PIECES  
2807M-07 1

COIL NUMBER

HEAT-MS PIECES

NO. WEIGHT

### TENSILE TESTS:

HEAT 2807M \* SAMPLE \* \* \* TEST \* \* YIELD TENSILE \* ELONG  
SRCE GAUGE COND METH DIR KSI KSI  
DSPC .1790 AR .2 T 60.0 73.2 29(2")

LAB  
ALG

HEAT (WT %)

C TI MN P S SI CR NI CU MO AL

AS ZR PB SB

.18 V.89 V.008 V.008 V.02 V.02 .04 .00 .026

CB V B

2807M +

.017 <.008

"Conforms with ASME

Sec II, Part A, 2010 edition,

2011a addenda"

### \*\*WARNING\*\*

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.



2012/8/21 S. Nason  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 :2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.

CERT. NO : 122328

L/C NO :

ORDER NO : 7005475

DATE : 07/10/2012

INVOICE NO : BW01210102123

PAGE : 9

ORIGIN : TAIWAN



**柏緯鐵工股份有限公司**

高雄市仁武區烏林里仁心路 303 號

**BOTH-WELL STEEL FITTINGS CO., LTD.**

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

KAOSIUNG CITY, TAIWAN R.O.C. (81460)

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

An ISO 9001:2008 Registered Manufacturer



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

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

| ITEM | BW<br>HT. CD. | RAW MATERIAL<br>HEAT NO. | DESCRIPTION                | QUANTITY | SPECIFICATION FOR |                    | INSPECTION |      |
|------|---------------|--------------------------|----------------------------|----------|-------------------|--------------------|------------|------|
|      |               |                          |                            |          | MATERIAL          | FITTING            | SURFACE    | DIM. |
| 024  | 3760          | 327004                   | HALF CPLG 1/2" 3000# NPT   | 700 PC   | ASTM A105N -05    | ASME B16.11 - 2009 | GOOD       | GOOD |
| 025  | 3697          | 325198                   | HALF CPLG 3/4" 3000# NPT   | 500 PC   | ASME SA105N -A08  |                    |            |      |
| 026  | 3753          | 326700                   | HALF CPLG 1" 3000# NPT     | 1800 PC  |                   |                    |            |      |
| 027  | 3803          | 328082                   | HALF CPLG 1-1/2" 3000# NPT | 125 PC   |                   |                    |            |      |
| 028  | 3799          | 328437                   | HALF CPLG 2" 3000# NPT     | 400 PC   |                   |                    |            |      |

| ITEM | BW<br>HT. CD. | CHEMICAL COMPOSITION (%) |       |       |       |       |       |       |       |       |       |        |   |    |    |    |       | MATERIAL SUPPLIER |
|------|---------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---|----|----|----|-------|-------------------|
|      |               | C                        | Si    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo    | V     | Cb(Nb) | N | Al | Ti | Zr | CE    |                   |
| Min  |               | -                        | 0.10  | 0.60  | -     | -     | -     | -     | -     | -     | -     | -      | - | -  | -  | -  | -     |                   |
| Max  |               | 0.35                     | 0.35  | 1.05  | 0.035 | 0.040 | 0.40  | 0.30  | 0.40  | 0.12  | 0.08  | -      | - | -  | -  | -  | 0.45  |                   |
| 024  | 3760          | 0.190                    | 0.200 | 0.820 | 0.015 | 0.010 | 0.180 | 0.120 | 0.070 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.372 |                   |
| 025  | 3697          | 0.200                    | 0.190 | 0.810 | 0.024 | 0.010 | 0.250 | 0.110 | 0.050 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.381 |                   |
| 026  | 3753          | 0.190                    | 0.200 | 0.840 | 0.016 | 0.005 | 0.140 | 0.130 | 0.060 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.374 |                   |
| 027  | 3803          | 0.190                    | 0.190 | 0.850 | 0.017 | 0.010 | 0.150 | 0.080 | 0.040 | 0.020 | 0.002 | 0.001  | - | -  | -  | -  | 0.365 |                   |
| 028  | ✓ 3799        | 0.190                    | 0.200 | 0.840 | 0.013 | 0.012 | 0.100 | 0.070 | 0.050 | 0.010 | 0.002 | 0.001  | - | -  | -  | -  | 0.356 |                   |

| ITEM                            | BW<br>HT. CD. | MECHANICAL PROPERTIES |                |            |               |                        |                            | HEAT TREATMENT |            | ADDITIONAL TEST/REMARKS                                                                                              |            |
|---------------------------------|---------------|-----------------------|----------------|------------|---------------|------------------------|----------------------------|----------------|------------|----------------------------------------------------------------------------------------------------------------------|------------|
|                                 |               | T. S.<br>(KSI)        | Y. S.<br>(KSI) | EL.<br>(%) | R of A<br>(%) | Hardness<br>(HBW)(AVG) | Charpy Impact<br>°F / 0 °C |                | NORMALIZED | CONFORMS TO NACE MR0175-09 /MR0103-10<br>STEEL MAKING PROCESS : ELECTRIC FURNACE<br>CONFORMS TO NACE ISO15156-3 2009 |            |
|                                 |               | 70                    | 36             | 22         | 30            | -                      | MIN./AVG. / (Joule)        |                |            |                                                                                                                      |            |
| Min                             |               | -                     | -              | -          | -             | 187                    | 1                          | 2              | 3          | AVG.                                                                                                                 |            |
| 024                             | 3760          | 75.1                  | 49.9           | 34.8       | 65.5          | 145 144                |                            |                |            |                                                                                                                      | 860°C A.C. |
| 025                             | 3697          | 77.1                  | 48.8           | 35.6       | 63.6          | 143 142                |                            |                |            |                                                                                                                      |            |
| 026                             | 3753          | 75.6                  | 50.8           | 32.2       | 65.5          | 143 143                |                            |                |            |                                                                                                                      |            |
| 027                             | 3803          | 73.2                  | 48.7           | 34.0       | 64.5          | 140 142                |                            |                |            |                                                                                                                      |            |
| 028                             | 3799          | 74.1                  | 46.7           | 32.6       | 65.2          | 140 141                |                            |                |            |                                                                                                                      |            |
| ENCANA Name: J. Na Date: 2012/8 |               |                       |                |            |               |                        |                            |                |            |                                                                                                                      |            |

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

*C.C. Huang*  
Q.C. MANAGER  
CHEN CHI HUANG

*Y.Y. Chang*  
INSPECTOR  
YUAN YAO CHANG

2012/9/21 S. Reason  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Encana

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 :2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.  
CERT. NO : 122328 L/C NO :  
ORDER NO : 7005475 DATE : 07/10/2012  
INVOICE NO : BW01210102123 PAGE : 8 ORIGIN : TAIWAN



**柏緯鐵工股份有限公司**  
高雄市仁武區為林里仁心路 303 號  
**BOTH-WELL STEEL FITTINGS CO., LTD.**  
NO.303, JEN-HSIN ROAD JEN-WU DISTRICT  
KAOHSIUNG CITY, TAIWAN R.O.C. (81460)  
TEL: 886-7-371-0497, 371-1536, 372-0260  
web site: http://www.bothwell.com.tw e-mail: bothwell@www.bothwell.com.tw or box@bothwell.com.tw

An ISO 9001:2008 Registered Manufacturer



| ITEM                                                                                                                    | BW<br>HT.CD. | RAW MATERIAL<br>HEAT NO. | DESCRIPTION                | QUANTITY   | SPECIFICATION FOR |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       | INSPECTION                     |                   |   |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|----------------------------|------------|-------------------|------------------------|---------------------------|---------|-------|-------|------------|----------------|---|------------------------------------------------------------------------------------------------------------------------------------------------|----|------|-------|--------------------------------|-------------------|---|--|--|--|
|                                                                                                                         |              |                          |                            |            | MATERIAL          |                        |                           | FITTING |       |       |            |                |   |                                                                                                                                                |    |      |       | SURFACE                        | DIM.              |   |  |  |  |
| 019                                                                                                                     | 3732         | 326709                   | FULL CPLG 3/4" 3000# NPT   | 1000 PC    | ASTM A105N -05    | ASME B16.11 - 2009     |                           |         |       |       |            |                |   |                                                                                                                                                |    | GOOD | GOOD  |                                |                   |   |  |  |  |
| 020                                                                                                                     | 3836         | 325865                   | FULL CPLG 1" 3000# NPT     | 9000 PC    | ASME SA105N -A08  |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 021                                                                                                                     | 3769         | 327049                   | FULL CPLG 1-1/4" 3000# NPT | 195 PC     |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 022                                                                                                                     | 3547         | 321652                   | HALF CPLG 1/4" 3000# NPT   | 3000 PC    |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 023                                                                                                                     | 2714         | 393712                   | HALF CPLG 3/8" 3000# NPT   | 200 PC     |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| ITEM                                                                                                                    | BW<br>HT.CD. | CHEMICAL COMPOSITION (%) |                            |            |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                | MATERIAL SUPPLIER |   |  |  |  |
|                                                                                                                         |              | C                        | Si                         | Mn         | P                 | S                      | Cu                        | Cr      | Ni    | Mo    | V          | Cb(Nb)         | N | Al                                                                                                                                             | Ti | Zr   | CE    |                                |                   |   |  |  |  |
|                                                                                                                         |              | Min                      | 0.35                       | 0.10       | 0.60              | -                      | -                         | -       | -     | -     | -          | -              | - | -                                                                                                                                              | -  | -    | -     | -                              |                   | - |  |  |  |
| Max                                                                                                                     | 0.35         | 0.35                     | 1.05                       | 0.035      | 0.040             | 0.40                   | 0.30                      | 0.40    | 0.12  | 0.08  | -          | -              | - | -                                                                                                                                              | -  | -    | 0.43  |                                |                   |   |  |  |  |
| 019                                                                                                                     | 3732         | 0.200                    | 0.190                      | 0.840      | 0.021             | 0.010                  | 0.160                     | 0.060   | 0.040 | 0.010 | 0.002      | 0.000          | - | -                                                                                                                                              | -  | -    | 0.368 |                                |                   |   |  |  |  |
| 020                                                                                                                     | 3836         | 0.200                    | 0.200                      | 0.820      | 0.015             | 0.009                  | 0.180                     | 0.080   | 0.050 | 0.010 | 0.002      | 0.001          | - | -                                                                                                                                              | -  | -    | 0.370 |                                |                   |   |  |  |  |
| 021                                                                                                                     | 3769         | 0.200                    | 0.210                      | 0.830      | 0.014             | 0.009                  | 0.100                     | 0.100   | 0.070 | 0.020 | 0.002      | 0.001          | - | -                                                                                                                                              | -  | -    | 0.374 |                                |                   |   |  |  |  |
| 022                                                                                                                     | 3547         | 0.200                    | 0.210                      | 0.850      | 0.018             | 0.013                  | 0.130                     | 0.060   | 0.070 | 0.020 | 0.002      | 0.002          | - | -                                                                                                                                              | -  | -    | 0.371 |                                |                   |   |  |  |  |
| 023                                                                                                                     | 2714         | 0.200                    | 0.190                      | 0.850      | 0.013             | 0.013                  | 0.140                     | 0.080   | 0.050 | 0.010 | 0.002      | 0.001          | - | -                                                                                                                                              | -  | -    | 0.373 |                                |                   |   |  |  |  |
| ITEM                                                                                                                    | BW<br>HT.CD. | MECHANICAL PROPERTIES    |                            |            |                   |                        |                           |         |       |       |            | HEAT TREATMENT |   | ADDITIONAL TEST/REMARKS<br>CONFORMS TO NACE MR0175-09 MR0103-10<br>STEEL MAKING PROCESS : ELECTRIC FURNACE<br>CONFORMS TO NACE ISO15156-3 2009 |    |      |       |                                |                   |   |  |  |  |
|                                                                                                                         |              | T. S.<br>(KSI)           | Y. S.<br>(KSI)             | EL.<br>(%) | R of A<br>(%)     | Hardness<br>(HBW)(AVG) | Charpy Impact<br>F / 0 °C |         |       |       | NORMALIZED |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
|                                                                                                                         |              | Min                      | 70                         | 36         | 22                | 30                     | -                         |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
|                                                                                                                         |              | Max                      | -                          | -          | -                 | -                      | 187                       |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 019                                                                                                                     | 3732         | 74.6                     | 48.6                       | 34.2       | 66.4              | 144                    | 143                       |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 020                                                                                                                     | 3836         | 77.0                     | 49.0                       | 28.0       | 64.0              | 143                    | 143                       |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 021                                                                                                                     | 3769         | 76.0                     | 49.5                       | 35.8       | 65.5              | 145                    | 144                       |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 022                                                                                                                     | 3547         | 75.5                     | 51.3                       | 33.6       | 64.5              | 144                    | 143                       |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| 023                                                                                                                     | 2714         | 76.9                     | 59.8                       | 28.8       | 65.1              | 141                    | 143                       |         |       |       |            |                |   |                                                                                                                                                |    |      |       |                                |                   |   |  |  |  |
| WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT. |              |                          |                            |            |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       | C.C. Huang                     |                   |   |  |  |  |
|                                                                                                                         |              |                          |                            |            |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       | Y.-Y. Chang                    |                   |   |  |  |  |
|                                                                                                                         |              |                          |                            |            |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       | Q.C. MANAGER<br>CHEN CHI HUANG |                   |   |  |  |  |
|                                                                                                                         |              |                          |                            |            |                   |                        |                           |         |       |       |            |                |   |                                                                                                                                                |    |      |       | INSPECTOR<br>YUAN YAO CHANG    |                   |   |  |  |  |

# CERTIFIED MILL TEST REPORT



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**CUSTOMER:** MRC CANADA ULC

**DATE** 10/17/2012

**CUSTOMER**

**BONNEY ORDER NO.** B000129776

**ORDER NO.:** S759181342

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

*2012/10/31 J. Nason*  
**"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"**

| ITEM           | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                                  |
|----------------|----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2<br>18C10090  | 53       | 58884   | 3 2M A105N 45EL T<br>SA/A105N<br>Al 0.019 C 0.207 Co 0.000 Cr 0.050 Cu 0.040 Mn 1.060 Mo 0.007 N 0.003<br>Nb 0.012 Ni 0.020 P 0.007 S 0.018 Si 0.200 V 0.004<br>CE(Long Formula) = 0.40<br>T/S(Psi) 73,520 Y/S(Psi) 48,833 EL(%) 36.20 RA(%) 57.13<br>Brinell 135 BHN 135 BHN   |
| 2<br>18C10090  | 55       | 58884   | 3 2M A105N 45EL T<br>SA/A105N<br>Al 0.019 C 0.207 Co 0.000 Cr 0.050 Cu 0.040 Mn 1.060 Mo 0.007 N 0.003<br>Nb 0.012 Ni 0.020 P 0.007 S 0.018 Si 0.200 V 0.004<br>CE(Long Formula) = 0.40<br>T/S(Psi) 73,520 Y/S(Psi) 48,833 EL(%) 36.20 RA(%) 57.13<br>Brinell 135 BHN 135 BHN   |
| 10<br>18C10294 | 32       | 58778   | 2 2M A105N CROS T<br>SA/A105N<br>Al 0.025 C 0.214 Co 0.003 Cr 0.030 Cu 0.080 Mn 1.040 Mo 0.007 N 0.003<br>Nb 0.016 Ni 0.030 P 0.006 S 0.019 Si 0.200 V 0.004<br>CE(Long Formula) = 0.40<br>T/S(Psi) 74,985 Y/S(Psi) 48,143 EL(%) 34.55 RA(%) 63.76<br>Brinell 130 BHN 132 BHN   |
| 14<br>18C10708 | 163      | 6081    | 1/2 3M A105N COUP T<br>SA/A105N<br>Al 0.022 C 0.220 Co 0.002 Cr 0.030 Cu 0.050 Mn 1.050 Mo 0.000 N 0.003<br>Nb 0.013 Ni 0.020 P 0.006 S 0.020 Si 0.210 V 0.003<br>CE(Long Formula) = 0.41<br>T/S(Psi) 75,035 Y/S(Psi) 50,971 EL(%) 34.35 RA(%) 66.11<br>Brinell 132 BHN 130 BHN |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

CMTR: REV2

Kylee Ruiz  
QUALITY PROCESS MANAGER

# CERTIFIED MILL TEST REPORT



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CUSTOMER: MRC CANADA ULC

DATE 10/17/2012

CUSTOMER

BONNEY ORDER NO. B000129776

ORDER NO.: S759181342

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

*2012/10/31 S.R.*  
"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.  
CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
4. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
5. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
6. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
7. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
8. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
9. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
10. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
11. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
12. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Kylee Ruiz*

Kylee Ruiz

QUALITY PROCESS MANAGER

CMTR: REV2

### Form 13: Revisione del "Coa-Geo"

Page 1 of 1

### Charity Impact Tests

| Heat<br>ID | Piece<br>ID | Piece<br>Dimensions | Tst<br>Loc | YS<br>dN/m <sup>2</sup> | UTS<br>dN/m <sup>2</sup> | Elong<br>% | Tst<br>Dir | Average<br>Hardness | Abs. Energy/FtLb |   |   | % Shear |   |   | Tst<br>Temp | Tst<br>Dir | Tst<br>Stg | BOWT<br>Temp | q-Shot |
|------------|-------------|---------------------|------------|-------------------------|--------------------------|------------|------------|---------------------|------------------|---|---|---------|---|---|-------------|------------|------------|--------------|--------|
|            |             |                     |            |                         |                          |            |            |                     | 1                | 2 | 3 | Ave     | 1 | 2 |             |            |            |              |        |
| 0251039    | H4FE1053    | 0.188 X .601 (0.11) | 1          | 58000                   | 71000                    | 28         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
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| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
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| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
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| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
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| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
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| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   | 70000                    | 29         | T          |                     |                  |   |   |         |   |   |             |            |            |              |        |
| 0251039    | H4FE2315    | 0.188 X .601 (0.11) | 1          | 58000                   |                          |            |            |                     |                  |   |   |         |   |   |             |            |            |              |        |

1.  $\frac{1}{2}$

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The concentration of the *Agrobacterium* suspension was 10<sup>6</sup> cells/ml (a), 10<sup>7</sup> cells/ml (b), 10<sup>8</sup> cells/ml (c), 10<sup>9</sup> cells/ml (d), 10<sup>10</sup> cells/ml (e), and 10<sup>11</sup> cells/ml (f). The concentration of the *Agrobacterium* suspension was 10<sup>6</sup> cells/ml (a), 10<sup>7</sup> cells/ml (b), 10<sup>8</sup> cells/ml (c), 10<sup>9</sup> cells/ml (d), 10<sup>10</sup> cells/ml (e), and 10<sup>11</sup> cells/ml (f).

*[Handwritten signature]*

**Özgür Balzlihan**

$$\frac{d^2 \mathbf{r}}{dt^2} = -\frac{GM}{r^3} \mathbf{r},$$



**Customer Name**

NWP INDUSTRIES INC.

**Customer PO#**

710192

**Shipper No**

449829

**Heat Number**

808820

Atlas Tube (U.S.) Inc.  
13101 Eckles Road  
Plymouth, Michigan, USA  
48170  
Tel: 313-454-5600  
Fax: 313-454-1474



Ref.B/L: 80489399  
Date: 06.25.2012  
Customer: 1917

**MATERIAL TEST REPORT****Sold to**

Varsteel Nisku Ltd.  
602 - 13th Avenue  
NISKU AB T9E 7P6  
CANADA

**Shipped to**

VARSTEEL VIA CN C/O EDC  
(RAIL)  
602 - 13TH AVENUE  
NISKU AB J4G 1E6  
CANADA

Material: 3.0x3.0x250x40"0"0(6x3).-CSA-D

Material No: 0300302504000-DCSA

Made in: USA

Melted in: Canada

Sales order: 719943

Purchase Order: NI-951062

| Heat No | C     | Mn    | P     | S     | Si    | Al    | Cu    | Cb    | Mo    | Ni    | Cr    | V     | Ti    | B     | N     |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 808820  | 0.180 | 0.800 | 0.011 | 0.007 | 0.013 | 0.041 | 0.029 | 0.006 | 0.004 | 0.015 | 0.044 | 0.002 | 0.000 | 0.000 | 0.000 |

| Bundle No  | PCs | Yield      | Tensile    | Eln.2in | Certification             | CE: 0.33 |
|------------|-----|------------|------------|---------|---------------------------|----------|
| M300622526 | 18  | 063647 Psi | 074398 Psi | 24.0 %  | CSA G40.21-04 50W CLASS C |          |

Material Note:  
Sales Or.Note:

Material: 3.0x3.0x250x40"0"0(6x3).-CSA-D

Material No: 0300302504000-DCSA

Made in: USA

Melted in: Canada

Sales order: 719943

Purchase Order: NI-951062

| Heat No | C     | Mn    | P     | S     | Si    | Al    | Cu    | Cb    | Mo    | Ni    | Cr    | V     | Ti    | B     | N     |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 808820  | 0.180 | 0.800 | 0.011 | 0.007 | 0.013 | 0.041 | 0.029 | 0.006 | 0.004 | 0.015 | 0.044 | 0.002 | 0.000 | 0.000 | 0.000 |

| Bundle No  | PCs | Yield      | Tensile    | Eln.2in | Certification             | CE: 0.33 |
|------------|-----|------------|------------|---------|---------------------------|----------|
| M300622527 | 18  | 063647 Psi | 074398 Psi | 24.0 %  | CSA G40.21-04 50W CLASS C |          |

Material Note:  
Sales Or.Note:

Material: 4.0x3.0x188x48"0"0(5x3).-CSA

Material No: 0400301884800-CSA

Made in: Canada

Melted in: Canada

Sales order: 719943

Purchase Order: NI-951062

| Heat No | C     | Mn    | P     | S     | Si    | Al    | Cu    | Cb    | Mo    | Ni    | Cr    | V     | Ti    | B     | N     |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 809401  | 0.180 | 0.800 | 0.010 | 0.005 | 0.014 | 0.045 | 0.017 | 0.002 | 0.003 | 0.007 | 0.028 | 0.002 | 0.000 | 0.000 | 0.000 |

| Bundle No  | PCs | Yield      | Tensile    | Eln.2in | Certification             | CE: 0.32 |
|------------|-----|------------|------------|---------|---------------------------|----------|
| M101144615 | 15  | 057280 Psi | 066930 Psi | 31.0 %  | CSA G40.21-04 50W CLASS C |          |

Material Note:  
Sales Or.Note:

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

2012/11/19 S. Nason

Authorized by Quality Assurance:

The results reported on this report represent the actual attributes of the material furnished and indicate full compliance with all applicable specification and contract requirements.

D1.1 method.





Attu, Treva,



Manufacturing Plant  
305 Simms  
Longview, TX 75604  
Phone (903) 759-4417  
Fax (903) 759-1782  
www.anvilintl.com

## CERTIFICATE OF COMPLIANCE

### *Forged Steel Fittings, Seamless Nipples and Catawissa Hammer Unions*

Anvil International, Inc., located in Longview, Texas, manufactures forged steel fittings, seamless nipples and oilfield hammer unions. We have maintained an ISO certified management system since 1992 and will continue this practice well into the future.

Our forged steel forgings are manufactured in accordance with ASTM A105. The forgings are marked A105/SA105 to signify compliance with the ASTM specification and the ASME Boiler Code material designation, which is SA105. Seamless pipe is manufactured in accordance with ASTM A106 Grade B. Forging and seamless pipe material conforms to NACE MRO175. The Catawissa Oilfield Hammer Union forgings and castings comply with the following material specifications, *depending on the product ordered*:

- ASTM A536 Grade 65-45-12 Ductile Iron
- ASTM A395 Grade 60-40-18 Ductile Iron
- ASTM A29 Carbon Steel Grades 1018, 1020, 1022, 1030, 1040
- ASTM A29 Alloy Steel Grade 4130
- ASTM A105 Forged Carbon Steel
- NACE MRO175 for Sour Gas Service

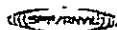
Anvil forged steel fittings are manufactured in accordance with ASME B16.11, the seamless nipples are manufactured in accordance with ASTM A733 and the Catawissa hammer unions are manufactured in compliance with in-house engineering specifications. The Catawissa union coupling threads conform to ASME B1.5 and B1.8. NPT threaded connections are manufactured in accordance with ANSI/ASME B1.20.1, except on "close" nipples where L4 and V are shorter, due to fewer imperfect threads.

Material traceability is available on Anvil forged steel fittings, seamless nipples and Catawissa hammer unions. Personnel in the Quality Assurance Department at Anvil International, Inc., Longview, Texas, validate and prepare the Material Test Reports and Certificates Of Compliance. The Compliance Manager reports directly to the General Manager and is independent of the manufacturing department, which ensures full compliance to EN 10204 3.1 b (DIN50040 3.1.b).

Look for products bearing the Anvil trademark, when you expect a quality product.

BUILDING CONNECTIONS THAT LAST

ANVIL BRANDS:



100' d TV101  
PIN# 870884

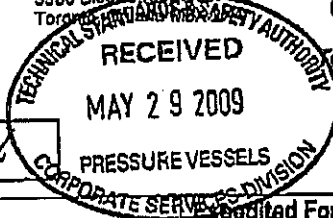
TREVOR

4" Coupling  
Std Shredded



Technical  
Standards and  
Safety Authority  
www.tssa.org

14<sup>th</sup> Floor - Centre Tower  
3300 Bloor Street West  
Toronto, Ontario M8X 3B2



# Design Registration Application for a Canadian Registration Number (CRN)

Technical Standards and Safety Authority Act  
Boilers and Pressure Vessels Regulation

TSSA BPV File No.: 09-02254

Date of Application: May 28, 2009

Deposited Form Attached ☒

Please indicate the type of Design:

Conventional ☐

Nuclear ☐

Boiler or Pressure Vessel ☐

Piping System ☐

Fitting ☒

Welding or Brazing Procedure ☐

Used Vessel ☐

Other \_\_\_\_\_

Existing CRN OA09923.2 (if applicable)

## Section A - Submitter

Company Name: Anvil International, LTD  
Address: 20 Thurber Blvd  
City/Town: Smithfield Province/State: Rhode Island  
Postal/Zip Code: 02917 Country: USA  
Telephone: 401-349-5878 Ext. 24  
Fax: 401-349-5894  
Contact Name: Henry Sonderegger  
E-Mail Address: Hsonderegger@anvilintl.com  
Job Reference:  
Drawing/ Rev#: Forged and Wrought Steel fittings  
see Canvil/Anvil Catalog-10.02 and Attachment A dated May 9,  
2009 for a detail listing of fittings.

## Section B - Invoicee

Same as A ☒ or C ☐ or D ☐

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/Town: \_\_\_\_\_ Province/State: \_\_\_\_\_  
Postal/Zip Code: \_\_\_\_\_ Country: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Contact Name: \_\_\_\_\_  
E-Mail Address: \_\_\_\_\_  
Purchase Order#: AN-00348  
Customer #: \_\_\_\_\_

## Section C - Facility - Same as A ☐ B ☐ or D ☐

Location of Installation Address (For Piping, Alteration or Used Vessels)  
Location Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/Town: \_\_\_\_\_ Province/State: \_\_\_\_\_  
Postal/Zip Code: \_\_\_\_\_  
Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Contact Name: \_\_\_\_\_

## Section D - Manufacturer Information Same as A ☐ B ☐ or C ☐

Company Name: Canvil/Anvil International Canada /Anvil Int'l LTD  
Address: 390 Second Avenue  
City/Town: Simcoe Province/State: Ontario  
Postal/Zip Code: N3Y 4K9 Country: Canada  
Telephone: 519-426-4551  
Fax: 519-426-5509  
Contact Name: Kathryn Bannister

Return Mail Address: A ☒ B ☐ C ☐ D ☐

Return via Mail: ☐ via Courier collect: ☒ - Courier Name: UPS Acct # 6F874E

(Must indicate courier name & your courier acct # for return via courier option)

## Other Information:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Reviewing Engineer:

\_\_\_\_\_  
Registered Date: \_\_\_\_\_

CRN Issued: 0A09423-25

Cancelled \_\_\_\_\_

Rejected \_\_\_\_\_

PV 09556 (11/05)

SSAB

## Test Certificate

Form TCI: Revision 1: Date 31 Oct 2000

St. Paul, MN 55144-0303

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |                                                                                                                                  |            |                                     |           |                              |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------|-----------|------------------------------|-----------------|---------|------------------|----------------------------|-------------------|----------|---------|--------------|-----------------|--------|-----|----------|-----------|--------|-----|-----------|------------|--------|-----|----------|------------|--|--|--|--|
| Customer:<br>RYERSON CANADA<br>161 THE WEST MALL<br><br>ETOBICOKE<br>ON M9C4V8                                                                                                                                                                                                                                                                                                                                                                                                                          |          | Customer P.O. No.: 722410 & 41-339478                                                                                            |            | Mill Order No.: 41-339479-03        |           | Shipping Manifest : PR082861 |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Product Description: CSA G40.21(2004)-44W/300W / ASTM A36(08)<br>A709(01A)36/ASME SA36(01ED)                                                                                                                                                                                                                                                                                                                                                                                                            |          | Ship Date: 30 Aug 12<br>Cert Date: 30 Aug 12                                                                                     |            | Cert No: 041145934<br>(Page 1 of 1) |           |                              |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Size: 0.750 X 60.00 X 120.0 (IN)                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                                                                                                                                  |            |                                     |           |                              |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Tested Pieces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |                                                                                                                                  | Tensiles   |                                     |           | Charpy Impact Tests          |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Heat Id                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Piece Id | Tested Thickness                                                                                                                 | Tst Loc    | YS (KSI)                            | UTS (KSI) | %RA                          | Elong % 2in 8in | Tst Dir | Average Hardness | Abs. Energy(FIT) 1 2 3 Avg | % Shear 1 2 3 Avg | Tst Temp | Tst Dir | Tst Siz (mm) | BDWTF Temp %Shr |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| B2G844                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | B09      | 0.750 (DISCRT)                                                                                                                   | L          | 49                                  | 72        |                              | 33              | T       |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| B2G844                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | B10      | 0.751 (DISCRT)                                                                                                                   | L          | 51                                  | 73        |                              | 31              | T       |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Chemical Analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |                                                                                                                                  |            |                                     |           |                              |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Heat Id                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | C        | Mn                                                                                                                               | P          | S                                   | Si        | Tot Al                       | Cu              | Ni      | Cr               | Mo                         | Ch                | V        | Ti      | B            | N               | ORGN   |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| B2G844                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | .19      | .89                                                                                                                              | .015       | .001                                | .19       | .023                         | .29             | .16     | .12              | .04                        | .001              | .005     | .019    | .0003        | .0064           | USA    |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| <p>MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT</p> <p>MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL</p> <p>PRODUCTS SHIPPED:</p> <table> <tr> <td>B2G844</td> <td>B09</td> <td>PCES: 6,</td> <td>WGT: 9189</td> <td>B2G844</td> <td>B11</td> <td>PCES: 24,</td> <td>WGT: 36756</td> </tr> <tr> <td>B2G844</td> <td>B10</td> <td>PCES: 8,</td> <td>WGT: 12252</td> <td colspan="4"></td> </tr> </table> |          |                                                                                                                                  |            |                                     |           |                              |                 |         |                  |                            |                   |          |         |              |                 | B2G844 | B09 | PCES: 6, | WGT: 9189 | B2G844 | B11 | PCES: 24, | WGT: 36756 | B2G844 | B10 | PCES: 8, | WGT: 12252 |  |  |  |  |
| B2G844                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | B09      | PCES: 6,                                                                                                                         | WGT: 9189  | B2G844                              | B11       | PCES: 24,                    | WGT: 36756      |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| B2G844                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | B10      | PCES: 8,                                                                                                                         | WGT: 12252 |                                     |           |                              |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |
| Cust Part #: 0817-8548                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION |            |                                     |           | Chad Falteysck<br>CHECKED BY |                 |         |                  |                            |                   |          |         |              |                 |        |     |          |           |        |     |           |            |        |     |          |            |  |  |  |  |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

9 Nov 15 10  
[Signature]

|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                |                                                                                                                   |                                                      |                           |                   |                          |           |             |            |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------|-------------------|--------------------------|-----------|-------------|------------|-----------|
|  <b>I.M.L. - INDUSTRIA MECCANICA LIGURE S.P.A.</b><br>Via Giancarlo Farina, 25 - 16030 Casarza Ligure - GE - ITALY<br>Tel. +39 0185 467661 - Fax +39 0185 466510 - E-mail quality.ima@farinagroup.com<br><b>MATERIAL TEST DEPARTMENT</b> |                                                                                                                                                                | <b>COMPANY WITH QUALITY</b><br><b>SYSTEM ISO 9001: 2008 CERTIFIED</b><br><b>BY RINA</b><br><b>CERT. N°23/91/S</b> |                                                      |                           |                   |                          |           |             |            |           |
| <b>INSPECTION CERTIFICATE EN 10204:2004 / 3.1</b>                                                                                                                                                                                                                                                                         |                                                                                                                                                                | <b>Nr</b> 22821                                                                                                   | <b>Dated</b> 06.03.2012                              |                           |                   |                          |           |             |            |           |
| <b>TRANS AM PIPING PRODUCTS LTD.</b><br>9335 Endeavor Drive S.E.<br>Calgary, Alberta T3S 0A1                                                                                                                                                                                                                              |                                                                                                                                                                | <b>Purchase Order Nr</b> 3898<br><b>Item Nr</b> 141<br><b>Packing List Nr</b> 263<br><b>Invoice Nr</b> 237        |                                                      |                           |                   |                          |           |             |            |           |
| <b>Heat Code</b><br>E7L                                                                                                                                                                                                                                                                                                   | <b>Heat Nr</b><br>33032                                                                                                                                        | <b>Quantity</b><br>230,00                                                                                         | <b>Description</b><br>FITTING 90 ELB. SW 6M 1" A105N |                           |                   |                          |           |             |            |           |
| <div style="border: 2px solid blue; border-radius: 15px; padding: 5px; float: right; color: blue; font-weight: bold;"> mn:c=<br/>6.11 </div>                                                                                                                                                                              |                                                                                                                                                                |                                                                                                                   |                                                      |                           |                   |                          |           |             |            |           |
| <b>Element</b>                                                                                                                                                                                                                                                                                                            | <b>C</b>                                                                                                                                                       | <b>Si</b>                                                                                                         | <b>Mn</b>                                            | <b>S</b>                  | <b>P</b>          | <b>Cr</b>                | <b>Ni</b> | <b>Mo</b>   | <b>Ti</b>  | <b>Cu</b> |
| ASTM A105 (LADLE)                                                                                                                                                                                                                                                                                                         | 0,180                                                                                                                                                          | 0,200                                                                                                             | 1,100                                                | 0,008                     | 0,010             | 0,100                    | 0,050     | 0,010       | 0,019      | 0,120     |
| <b>Element</b>                                                                                                                                                                                                                                                                                                            | <b>V</b>                                                                                                                                                       | <b>Nb</b>                                                                                                         | <b>N</b>                                             | <b>AL</b>                 |                   |                          |           | <b>C.E.</b> | <b>PRE</b> |           |
| ASTM A105 (LADLE)                                                                                                                                                                                                                                                                                                         | 0,002                                                                                                                                                          | 0,001                                                                                                             | --                                                   | 0,029                     |                   |                          |           | 0,397       | --         |           |
| <b>Test specimen</b>                                                                                                                                                                                                                                                                                                      | <b>Shape</b>                                                                                                                                                   | <b>Tensile</b>                                                                                                    | <b>Yield Point &gt;0,2%</b>                          | <b>Yield Point &gt;1%</b> | <b>Elongation</b> | <b>Reduction of area</b> |           |             |            |           |
| Sect. mm2    Lenght mm                                                                                                                                                                                                                                                                                                    | 1=O - 2=□                                                                                                                                                      | N/mm2                                                                                                             | N/mm2                                                | N/mm2                     | %                 | %                        |           |             |            |           |
| 122,65    50,00                                                                                                                                                                                                                                                                                                           | 1                                                                                                                                                              | 509,0                                                                                                             | 355,0                                                | --                        | 33,4              | 56,0                     |           |             |            |           |
| <b>HARDNESS</b>                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                | <b>IMPACT TEST</b>                                                                                                |                                                      |                           |                   |                          |           |             |            |           |
| <b>HBW</b>                                                                                                                                                                                                                                                                                                                | <b>TYPE</b>                                                                                                                                                    | <b>Test specimen</b>                                                                                              | <b>°C</b>                                            | <b>1-Joule</b>            | <b>2-Joule</b>    | <b>3-Joule</b>           |           |             |            |           |
| 161,0 - 166,0                                                                                                                                                                                                                                                                                                             | KV                                                                                                                                                             | 10x10mm                                                                                                           | -10                                                  | 58                        | 60                | 60                       |           |             |            |           |
| <b>Heat treatment</b>                                                                                                                                                                                                                                                                                                     | Normalized at 880°-920°C / Air Cool                                                                                                                            |                                                                                                                   |                                                      |                           |                   | <b>ELECTRIC FURNACE</b>  |           |             |            |           |
| <b>Dimension in accordance</b>                                                                                                                                                                                                                                                                                            | ASME B16.11 Ed.2009 - NACE MR 0175 ISO 15156 Ed.2009 - MSS SP25 Ed.2008 - NACE MR 0103 Ed. 2010 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS |                                                                                                                   |                                                      |                           |                   |                          |           |             |            |           |
| <b>Material in accordance</b>                                                                                                                                                                                                                                                                                             | ASME SA ASTM A105-11                                                                                                                                           |                                                                                                                   |                                                      |                           |                   |                          |           |             |            |           |
| <b>Visual &amp; Dimensional</b>                                                                                                                                                                                                                                                                                           | SATISFACTORY                                                                                                                                                   |                                                                                                                   | <b>Origin</b>                                        | EUROPE                    |                   | <b>Our Ref.</b>          | 101373    |             |            |           |

Notes ---

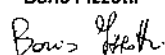
MATERIAL MEETS CUSTOMER SPECIFICATIONS

By colleent at 1:51:03 PM, 17/05/2012

ENCANA

"CONFORMS TO ASME 2011A ADDENDA"

By colleent at 1:51:19 PM, 17/05/2012

|                                                                                                                                       |                             |                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALITY CONTROL DEPT.</b><br>Boris Fizzotti<br> | <b>INSPECTION AUTHORITY</b> | <b>MANUFACTURER'S SYMBOL</b><br>IML or  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|

2012/8/27 S. Nason  
"Conforms with ASME  
12510032  
Sec II, Part A, 2010 edition,  
2011a addenda"

VT.216-.220

Doesnt meet Encana  
Ratio for welded  
piping mn:c= 2.7

BRI-CHEM  
STEEL CORPORATION  
MTR APPROVED

May 17 2012

无锡市华友特钢有限公司  
Wuxi Huayou Special Steel Co., Ltd.



# 产品质量证明书

WILL TEST CERTIFICATE

(EN10204 3.1)

Page 3 / 3

无锡市滨湖区胡埭工业园西区西拓振湖路  
Tel: (0510)85580556 Fax: (0510)85580556

|            |                                                                                            |      |         |        |                 |                    |                    |                  |         |                     |       |
|------------|--------------------------------------------------------------------------------------------|------|---------|--------|-----------------|--------------------|--------------------|------------------|---------|---------------------|-------|
| 订货单位       | BRI-CHEM STEEL CORPORATION                                                                 |      |         |        | 证书号             | 12044423           | 制造方法               | 冷拔               |         |                     |       |
| CUSTOMER   |                                                                                            |      |         |        | CERTIFICATE NO. |                    | MAKING METHOD      | COLD-DRAWN       |         |                     |       |
| 收货单位       | BRI-CHEM STEEL CORPORATION                                                                 |      |         |        | 信用证号            | —                  | 交货状态               | 正火               |         |                     |       |
| PURCHASER  |                                                                                            |      |         |        | L/C NO.         |                    | DELIVERY CONDITION | NORMALIZED       |         |                     |       |
| 产品名称       | 无缝钢管                                                                                       |      |         |        | 合同号             | 100688             | 热处理工艺              | 880℃×20MIN,空冷    |         |                     |       |
| PRODUCT    | SEAMLESS STEEL PIPES                                                                       |      |         |        | CONTRACT NO.    |                    | HEAT TREATMENT     | AIR COOLING      |         |                     |       |
| 标准/钢级      | API 5L-B(2007) PSL1/ASTM/A5A106-06 B/CSA Z245.1 GR.290 CAPI 1 NACE MR0175-2009 REGION 3 SS |      |         |        |                 |                    | 出货日期               | 2012-3-27        |         |                     |       |
| SPEC/GRADE |                                                                                            |      |         |        |                 |                    | DATE OF ISSUE      |                  |         |                     |       |
| 外径         | 60.3 MM                                                                                    | 壁厚   | 5.54 MM | 长度     | 6.1 M           | 总支数                | 2032               | 总米数              | 12395.2 | 总重量 (吨)             | 92.71 |
| O.D        | NPS 2                                                                                      | W.T. | XH      | LENGTH |                 | TOTAL PIECES (PCS) |                    | TOTAL METERS (M) |         | TOTAL WEIGHT (TONS) |       |

| 序号<br>NO.          | 生产批号<br>WORK NO.                                                                                                                                                                                        | 炉号<br>HEAT NO. | 支数<br>PCS | 化 学 成 份 %            |             |                          |       |              |       |                |       |             |       |                  |        |              |                                      |              |               | 非金属夹杂物 (级)                   |                          |     |     |  |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|----------------------|-------------|--------------------------|-------|--------------|-------|----------------|-------|-------------|-------|------------------|--------|--------------|--------------------------------------|--------------|---------------|------------------------------|--------------------------|-----|-----|--|
|                    |                                                                                                                                                                                                         |                |           | CHEMICAL COMPOSITION |             |                          |       |              |       |                |       |             |       |                  |        |              |                                      |              |               | Non-Metallic Inclusions (GR) |                          |     |     |  |
|                    |                                                                                                                                                                                                         |                |           | *1                   | C           | Si                       | Mn    | P            | S     | Cu             | Ni    | Cr          | Mo    | V                | B      | Nb           | Ti                                   | Mn/C         | CE(CSA)       | A                            | B                        | C   | D   |  |
|                    |                                                                                                                                                                                                         |                |           | Max                  | 0.260       | 0.500                    | 1.060 | 0.030        | 0.030 | 0.400          | 0.400 | 0.400       | 0.150 | 0.080            | 0.001  | 0.110        | 0.110                                |              | 0.40          |                              |                          |     |     |  |
| Min                |                                                                                                                                                                                                         | 0.100          | 0.290     |                      |             |                          |       |              |       |                |       |             |       |                  | 2.5    |              |                                      |              |               |                              |                          |     |     |  |
| 1                  | 120414                                                                                                                                                                                                  | H01540         | 2032      | H                    | 0.200       | 0.260                    | 0.546 | 0.008        | 0.008 | 0.058          | 0.010 | 0.014       | 0.003 | 0.004            | 0.0002 | 0.002        | 0.001                                | 2.7          | 0.30          | 0.5                          | 0.5                      | 0.5 | 0.5 |  |
| 同上<br>序号<br>NO.    | 拉伸试验 TENSILE TEST                                                                                                                                                                                       |                |           |                      |             | 冲击试验 IMPACT TEST         |       |              |       | 硬度试验           |       |             |       | 水压试验             |        |              |                                      | 无损探伤检测       |               | 金相试验                         |                          |     |     |  |
|                    | 标距 GAUGE LENGTH (50.8mm)                                                                                                                                                                                |                |           |                      |             | AKV (J)                  |       |              |       | HARDNESS TEST  |       |             |       | HYDROSTATIC TEST |        |              |                                      | N.D.E.       |               | METALLOGRAPHIC               |                          |     |     |  |
|                    | *2                                                                                                                                                                                                      | 抗拉强度           | 屈服强度      | 伸长率                  | 屈强比         | 试验温度 TEMPERATURE OF TEST |       |              |       | (HRC≤22)       |       |             |       | (HB≤234)         |        |              |                                      | 涡流探伤<br>E.T. | 超声波探伤<br>U.T. | 显微组织<br>MICROSTRUC-<br>TURE  | 晶粒度<br>(级)<br>GRAIN SIZE |     |     |  |
|                    | *3                                                                                                                                                                                                      | T.S.           | Y.S.      | E.L.                 | Y/T         | 10×10×55 (20℃)           |       |              |       |                |       |             |       |                  |        |              |                                      |              |               |                              |                          |     |     |  |
|                    | Max                                                                                                                                                                                                     | MPa            | *4 MPa    | %                    |             | 0.93                     | 1     | 2            | 3     | AVG            |       |             |       |                  |        |              |                                      |              |               |                              |                          |     |     |  |
| Min                | 415                                                                                                                                                                                                     | 280            | 22        |                      |             |                          |       |              |       |                |       |             |       |                  |        |              |                                      |              |               |                              |                          |     |     |  |
| 1                  | L                                                                                                                                                                                                       | 475 / 485      | 320 / 325 | 30 / 31              | 0.67 / 0.67 | -                        | -     | -            | -     | HB 120/127/135 |       |             |       | 20.7 MPa, 10s    |        | 合格<br>GOOD   | 合格<br>GOOD                           | F+P          | 6             |                              |                          |     |     |  |
| 外观和尺寸              |                                                                                                                                                                                                         | 合格             |           | 压扁试验                 |             | 0                        |       | 弯曲试验         |       | 合格             |       | 扩口试验        |       | —                |        | 卷边试验         |                                      | —            |               |                              |                          |     |     |  |
| VISUAL & DIMENSION |                                                                                                                                                                                                         | GOOD           |           | FLATTENING TEST      |             | 0                        |       | BENDING TEST |       | GOOD           |       | EXPAND TEST |       | —                |        | FLARING TEST |                                      | —            |               |                              |                          |     |     |  |
| 注 释<br>NOTES       | *1. H, HEAT (LADLE) ANALYSIS; P, PRODUCT ANALYSIS.                                                                                                                                                      |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              | *2. 试样尺寸 SIZE: 弧形试样 STRIP T×19.05mm. |              |               |                              |                          |     |     |  |
|                    | *3. 试验方向 ORIENTATION: L=纵向 LONGITUDINAL.                                                                                                                                                                |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              | *4. SY=0.2% OFFSET.                  |              |               |                              |                          |     |     |  |
|                    | WE HEREBY CONFIRM THAT OUR PRODUCTS ARE MADE WITH MATERIALS WHICH ARE FREE FROM RADIATION CONTAMINATION                                                                                                 |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              |                                      |              |               |                              |                          |     |     |  |
| 会 验 者<br>SURVEYOR  | 兹证明本表所列产品, 均依标准规定制造、取样、试验和检验, 并符合标准及合同要求。                                                                                                                                                               |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              | 检验员                                  |              |               |                              | 王                        |     | 李计珍 |  |
|                    | WE HEREBY CERTIFY THAT THE MATERIALS DESCRIBED HEREIN HAVE BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE CUSTOMER'S SPECIFICATION(S), AND THAT THEY SATISFY THE REQUIREMENTS. |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              | INSPECTOR                            |              |               |                              |                          |     |     |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              |                                      |              |               |                              |                          |     |     |  |
|                    |                                                                                                                                                                                                         |                |           |                      |             |                          |       |              |       |                |       |             |       |                  |        |              |                                      |              |               | STAMP OF MILL INSPECTOR      |                          |     |     |  |





**Phoenix \* Capitol \* Camco**  
**Cap Products**

*Commanding a Higher Standard™*

**Certified Mill Test Report**

7/27/2012

**Customer**

MRC MIDFIELD  
MIDFIELD SUPPLY ULC  
1600, 101-6TH AVENUE SW  
CALGARY, AB T2P 3P4

**P.O.** S 759 172963

**Heat No** 31894

**Heat Code** HIS

**Phoenix Order #** 871780

**Material** ASTM A106-2011 / ASME SA106-2010 Edition

**Part Number**

15112012

**Description**

2 X 6" XHSML BK STL NIPL

**Chemical Properties**

| C ✓    | Mn ✓   | P ✓    | S ✓    | Si ✓   | Cu ✓   | Cr ✓   | Ni ✓   | C Eq. Long |    |
|--------|--------|--------|--------|--------|--------|--------|--------|------------|----|
| 0.2000 | 0.4300 | 0.0040 | 0.0090 | 0.2200 | 0.0500 | 0.0500 | 0.0200 | 0.2870     |    |
| Mo ✓   | V ✓    | Co     | Al     | Cb     | N      | Pb     | Sn     | Ta         | Ti |
| 0.0030 | 0.0005 |        |        |        |        |        |        |            |    |

**Additional Chemical Properties**

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

| Cr + Cu + Ni |
|--------------|
| 0.1200       |

**Mechanical Properties**

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. | R of A | HBW | HBW2 |
|---------------|-------------|-------------------|--------|-----|------|
| 74,000 ✓      | 56,000 ✓    | 33.0% ✓           |        |     |      |

**Charpy Minimum Impact - ft/lbs**

| Test 1 | Test 2 | Test 3 | Average |
|--------|--------|--------|---------|
| N/A    | N/A    | N/A    | N/A     |

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"  
OCT 2 9 2012

\* Hydro test passed. at 2500 psi.

\* Bend test passed.

This material meets the requirements of the governing specifications We certify that the above material has been inspected and tested in accordance with the methods prescribed in the governing specification and the results of such inspections and test conform with applicable requirements.

We further certify this material was inspected with independent inspectors conforming to the requirements of EN10204 Section 3.1B.

**Comments:**

Meets Hardness Requirments of NACE MRO175/ISO 15156 latest editions. Meets ASME SA 106 Grade B Requirements. No weld repair was performed on these products. This material was not exposed to Mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our posession

**CapProducts. Ltd.**

25 Winnipeg St

Vanastra, ON N0M 1L0



ORIGINAL

## MILL TEST CERTIFICATE

DONGKUK STEEL

Order No. : J121500048  
 PO No. : LPP201201014  
 Commodity : STEEL PLATE  
 Specification : ASTM A36/CSA G40.21 300W

Supplier : DONGKUK INTERNATIONAL, INC.  
 Customer : SALZGITTER MANNESMANN INTERNAT

Certificate No.  
 Date of Issue

: PP2-2-120220-018-002  
 : Feb. 20, 2012

| Dimension<br>Unit<br>inch: ", mm: Space                        | Product No                                                                                                                      | Quantity | Weight<br>kg    | Heat No  | Position | Tensile Test      |     |    | Division | Chemical Composition |    |     |    |   |    |    |    |    |    |   |     |      |  | Remarks |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|----------|----------|-------------------|-----|----|----------|----------------------|----|-----|----|---|----|----|----|----|----|---|-----|------|--|---------|
|                                                                |                                                                                                                                 |          |                 |          |          | YP                | TS  | EL |          | C                    | Si | Mn  | P  | S | Cr | Ni | Cu | Mo | Nb | V | Ceq |      |  |         |
|                                                                |                                                                                                                                 |          |                 |          |          | N/mm <sup>2</sup> | %   |    |          | 2                    | 2  | 2   | 3  | 3 | 3  | 2  | 2  | 3  | 3  | 3 | 3   |      |  |         |
| 9.52*2438*6096<br>.375*X96*X240"<br>Specimen No : PPO6116408-a | 7629427-01,02,03,04,05<br>7629430-01,02,03,04,05,06<br>Sub Total (30)                                                           | 11       | 1,111<br>12,221 | K1845532 | T 1      | 322               | 495 | 25 | L        | 15                   | 24 | 117 | 13 | 6 | 20 | 1  | 1  | 1  | 1  | 2 | 351 | 22WE |  |         |
| 9.52*2438*6096<br>.375*X96*X240"<br>Specimen No : PPO6121607-a | 7629429-05,06<br>7629441-02,03,04,05,06<br>Sub Total (30)                                                                       | 7        | 1,111<br>7,777  | K1845545 | T 1      | 322               | 487 | 25 | L        | 15                   | 24 | 116 | 16 | 7 | 20 | 1  | 1  | 1  | 1  | 2 | 349 | 22WE |  |         |
| 9.52*2438*6096<br>.375*X96*X240"<br>Specimen No : PPO6116011-a | 7629425-01,02,03,04,05<br>7629428-01,02,03,04,05,06<br>7629432-01,02,03,04,05,06<br>7629434-01,02,03,04,05,06<br>Sub Total (30) | 23       | 1,111<br>25,553 | K2822284 | T 1      | 358               | 504 | 25 | L        | 16                   | 26 | 118 | 17 | 7 | 20 | 1  | 1  | 1  | 1  | 3 | 363 | 22WE |  |         |

Conforms with A  
Sec II, Part A, 2010  
2011a addenda  
2012/12/3 d. nelson

\* Tensile Test Direction-Transverse  
\* Ceq = C+Mn/6+(Ni+Cu)/15+(Cr+Mo+V)/5  
\* Supply Condition - As Rolled  
\* Chemical Composition Unit(%) : 2-x100, 3-x1000, 4-x10000

We hereby certify that the material has been made by Basic oxygen process (Fully killed steel, Fine grain practice) and satisfactorily tested in accordance with above specification requirements called for by the above order. \* Inspection documents : According to EN 10204 Type 3.1.

When using the ordered product for other uses, rather than the above specification use, product damage and safety accidents may be caused.

\* Specimen No. : a-Tension  
\* Position : T-Top, M-Middle, B-Bottom  
\* Division : L-Ladle Analysis, P-Product Analysis  
\* Sub(Sub Size, Real Value, mm) : Blank-Full Size, 1-7.5\*10, 2-5.0\*10  
\* GL(Gauge Length, mm) : 1-200, 2-100, 3-80, 4-70, 5-50, 6-5.65\*4, 7-5c, 8-4d, 9-8d  
\* T(S),Al : Total(Soluble) Al \*Tr : Trace  
\* NRL Result : G-No Break, B-Break  
\* TTP(Through Thickness Position) : 1-Surface, 2-1/4T, 3-1/2T

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"  
 2012/12/3 S. H. An

\* Tensile Test Direction-Transverse  
 \* Ceq = C+Mn/6+(Ni+Cu)/15+(Cr+Mo+V)/5  
 \* Supply Condition - As Rolled  
 \* Chemical Composition Unit(%): 2-x100, 3-x1000, 4-x10000

We hereby certify that the material has been made by Basic oxygen process (Fully killed steel, Fine grain practice) and satisfactorily tested in accordance with above specification requirements called for by the above order. \* Inspection documents : According to EN 10204 Type 3.1.

\* Specimen No. : a-Tension  
 \* Position : T-Top, M-Middle, B-Bottom  
 \* Division : L-Ladle Analysis, P-Product Analysis  
 \* Sub(Sub Size, Real Value, mm) : Blank-Full Size, 1-7.5\*10, 2-5.0\*10  
 \* GL (Gauge Length, mm) : 1-200, 2-100, 3-80, 4-70, 5-50, 6-5.65√A, 7-5d, 8-4d, 9-8d  
 \* T(S), Al : Total(Soluble) Al \*Tr : Trace  
 \* NRL Result : G-No Break, B-Break  
 \* TTP(Through Thickness Position) : 1-Surface, 2-1/4T, 3-1/2T

When using the ordered product for other uses, rather than the above specification use, product damage and safety accidents may be caused.

Surveyor to

Surveyor to

Surveyor to

Surveyor to

Chief of Customer Support Team

Pohang Works, 880 Songdong-ri, Daesong-myeon, Nam-gu, Pohang-si, Gyeongsangbuk-do, 790-841, Korea

Page : 2/11



Heat Number

K2822284

Shipper No

449660

Customer PO#

710154

Customer Name

NWP INDUSTRIES INC.



EVRAZ INC. NA

8250 130th Street, Surrey, BC, V3W 8J9

## Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

|                                                                                                                    |                                                                                                    |                                     |                                                            |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------|
| <b>Customer:</b><br><b>VARSTEEL LTD.</b><br><b>330-220 4TH STREET</b><br><br><b>LETHBRIDGE</b><br><b>AB T1J4J7</b> | <b>Customer P.O. No.:</b> RD-938608                                                                | <b>Mill Order No.:</b> 41-240671-03 | <b>Shipping Manifest :</b> ST046657                        |
|                                                                                                                    | <b>Product Description:</b> CSA G40.21(2004)44W/300W / ASTM A36(05)<br>A709(01A)36/ASME SA36(01ED) |                                     | <b>Ship Date:</b> 31 May 11<br><b>Cert Date:</b> 31 May 11 |
|                                                                                                                    | <b>Size:</b> 0.250 X 96.00 X 288.0 (IN)                                                            |                                     | <b>Cert No:</b> 011125727<br>(Page 1 of 1)                 |

| Tested Pieces |             |                     |            | Tensiles    |              |     |                    |            | Charpy Impact Tests |                                |  |  |  |                      |  |  |  |            |            | BDWTT<br>Tmp %Shr |  |
|---------------|-------------|---------------------|------------|-------------|--------------|-----|--------------------|------------|---------------------|--------------------------------|--|--|--|----------------------|--|--|--|------------|------------|-------------------|--|
| Heat<br>Id    | Piece<br>Id | Piece<br>Dimensions | Tst<br>Loc | YS<br>(PSI) | UTS<br>(PSI) | %RA | Elong %<br>2in 8in | Tst<br>Dir | Average<br>Hardness | Abs. Energy(FTLB)<br>1 2 3 Avg |  |  |  | % Shear<br>1 2 3 Avg |  |  |  | Tst<br>Tmp | Tst<br>Dir |                   |  |
| NW0915        | A22         | 0.250 X 96.00 (CUT) | L          | 56000       | 74000        |     | 28                 | T          |                     |                                |  |  |  |                      |  |  |  |            |            |                   |  |
|               |             |                     | C          | 56000       | 73000        |     | 26                 | T          |                     |                                |  |  |  |                      |  |  |  |            |            |                   |  |
| NW0916        | A20         | 0.250 X 96.00 (CUT) | L          | 57000       | 74000        |     | 27                 | T          |                     |                                |  |  |  |                      |  |  |  |            |            |                   |  |
|               |             |                     | C          | 58000       | 72000        |     | 27                 | T          |                     |                                |  |  |  |                      |  |  |  |            |            |                   |  |

| Heat Id | C   | Mn  | P    | S    | Si  | Tot Al | Cu  | Ni  | Cr  | Mo  | Ch   | V    | Ti   | B     | N     | ORGN |
|---------|-----|-----|------|------|-----|--------|-----|-----|-----|-----|------|------|------|-------|-------|------|
| NW0915  | .14 | .85 | .012 | .006 | .21 | .033   | .02 | .05 | .02 | .00 | .005 | .011 | .002 | .0000 | .0037 | CAN  |
| NW0916  | .14 | .85 | .011 | .008 | .25 | .044   | .02 | .05 | .02 | .00 | .005 | .008 | .002 | .0000 | .0038 | CAN  |

MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL  
 \* NW0915 A22 PCES: 25, WGT: 49006

\* NW0916

A20

PCES: 5, WGT: 9801

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"

2012/8/22 S. Nelson

ENCANA  
 MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS

Name: S. Nelson

Date: 2012/8/22

(C)

Cust Part # :

WE HEREBY CERTIFY THAT THIS MATERIAL  
 WAS TESTED IN ACCORDANCE WITH THE  
 APPROPRIATE SPECIFICATION

Greg Balsdon

CHECKED BY

Customer Name  
NWP INDUSTRIES INC.Customer PO#  
708727Shipper No  
418748Heat Number  
NW0915



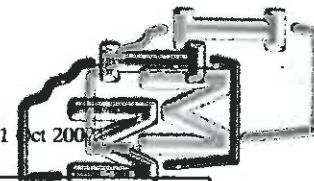
EVRAZ INC. NA

8250 130th Street, Surrey, BC, V3W 8J9

## Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

| Customer:<br>VARSTEEL LTD.<br>330-220 4TH STREET                                                  |          |                     | Customer P.O. No.: RD-946501                                                                |          |           | Mill Order No.: 41-243783-01 |                    |         | Shipping Manifest: ST049342                                                                            |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
|---------------------------------------------------------------------------------------------------|----------|---------------------|---------------------------------------------------------------------------------------------|----------|-----------|------------------------------|--------------------|---------|--------------------------------------------------------------------------------------------------------|--------------------|------|-------------------------------------|------|---------|-------|------|--|---------|----------------------------|--------------|----------------|
| LETHBRIDGE<br>AB T1J4J7                                                                           |          |                     | Product Description: CSA G40.21(2004)44W/300W / ASTM A36(05)<br>A709(01A)36/ASME SA36(01ED) |          |           |                              |                    |         | Ship Date: 15 Feb 12<br>Cert Date: 15 Feb 12                                                           |                    |      | Cert No: 011135689<br>(Page 1 of 1) |      |         |       |      |  |         |                            |              |                |
|                                                                                                   |          |                     | Size: 0.250 X 96.00 X 288.0 (IN)                                                            |          |           |                              |                    |         |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| Tested Pieces                                                                                     |          |                     | Tensiles                                                                                    |          |           |                              |                    |         | Charpy Impact Tests                                                                                    |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| Heat Id                                                                                           | Piece Id | Piece Dimensions    | Tst Loc                                                                                     | YS (PSI) | UTS (PSI) | %RA                          | Elong %<br>2in 8in | Tst Dir | Average Hardness                                                                                       | Abs. Energy (FTLB) |      |                                     |      | % Shear |       |      |  | Tst Tmp | Tst Dir                    | Tst Siz (mm) | BDWTT Tmp %Shr |
| NW3636                                                                                            | A84076A  | 0.250 X 96.00 (CUT) | L                                                                                           | 54000    | 73000     |                              | 29                 | T       |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| NW3676                                                                                            | A84078A  | 0.250 X 96.00 (CUT) | C                                                                                           | 51000    | 73000     |                              | 29                 | T       |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
|                                                                                                   |          |                     | E                                                                                           | 60000    | 75000     |                              | 24                 | T       |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
|                                                                                                   |          |                     | C                                                                                           | 53000    | 73000     |                              | 28                 | T       |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| Chemical Analysis                                                                                 |          |                     |                                                                                             |          |           |                              |                    |         |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| Heat Id                                                                                           | C        | Mn                  | P                                                                                           | S        | Si        | Tot Al                       | Cu                 | Ni      | Cr                                                                                                     | Mo                 | Co   | V                                   | Ti   | B       | N     | ORGN |  |         |                            |              |                |
| NW3636                                                                                            | .15      | .89                 | .009                                                                                        | .005     | .26       | .052                         | .01                | .06     | .02                                                                                                    | .00                | .005 | .003                                | .003 | .0000   | .0071 | CAN  |  |         |                            |              |                |
| NW3676                                                                                            | .15      | .88                 | .008                                                                                        | .009     | .26       | .045                         | .01                | .05     | .02                                                                                                    | .00                | .005 | .002                                | .002 | .0000   | .0049 | CAN  |  |         |                            |              |                |
| MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL                                            |          |                     |                                                                                             |          |           |                              |                    |         |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| * NW3676      A84078A      PCES: 1, WGT: 1960      * NW3636      A84076A      PCES: 7, WGT: 13721 |          |                     |                                                                                             |          |           |                              |                    |         |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| <p>"Conforms with ASME<br/>Sec II, Part A, 2010 edition,<br/>2011a addenda"<br/>OCT 2 6 2012</p>  |          |                     |                                                                                             |          |           |                              |                    |         |                                                                                                        |                    |      |                                     |      |         |       |      |  |         |                            |              |                |
| Cust Part # :                                                                                     |          |                     |                                                                                             |          |           |                              |                    |         | WE HEREBY CERTIFY THAT THIS MATERIAL<br>WAS TESTED IN ACCORDANCE WITH THE<br>APPROPRIATE SPECIFICATION |                    |      |                                     |      |         |       |      |  |         | Greg Balsdon<br>CHECKED BY |              |                |



|                                                                                                                               |                                                                                                    |                                     |                                                            |
|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------|
| <b>Customer:</b><br>ALBERTA INDUSTRIAL METALS,<br>A DIVISION OF RUSSEL METALS IN<br>4821-78TH STREET<br>RED DEER<br>AB T4P1N5 | <b>Customer P.O. No.:</b> 16311-BS                                                                 | <b>Mill Order No.:</b> 41-246597-06 | <b>Shipping Manifest :</b> ST051119A                       |
|                                                                                                                               | <b>Product Description:</b> CSA G40.21(2004)44W/300W / ASTM A36(05)<br>A709(01A)36/ASME SA36(01ED) |                                     | <b>Ship Date:</b> 07 Sep 12<br><b>Cert Date:</b> 07 Sep 12 |
|                                                                                                                               | <b>Size:</b> 0.375 X 96.00 X 288.0 (IN)                                                            |                                     | <b>Cert No:</b> 011142460<br>(Page 1 of 1)                 |

| Tested Pieces |          |                     |         | Tensiles |           |     |           |       |         | Charpy Impact Tests |                   |   |   |     |         |   |   |     |         |         |              |           |      |
|---------------|----------|---------------------|---------|----------|-----------|-----|-----------|-------|---------|---------------------|-------------------|---|---|-----|---------|---|---|-----|---------|---------|--------------|-----------|------|
| Heat Id       | Piece Id | Piece Dimensions    | Tst Loc | YS (PSI) | UTS (PSI) | %RA | Elong 2in | % 8in | Tst Dir | Average Hardness    | Abs. Energy(FTLB) |   |   |     | % Shear |   |   |     | Tst Tmp | Tst Dir | Tst Siz (mm) | BDWTT Tmp | %Shr |
|               |          |                     |         |          |           |     |           |       |         |                     | 1                 | 2 | 3 | Avg | 1       | 2 | 3 | Avg |         |         |              |           |      |
| NW5965        | A89198A  | 0.375 X 96.00 (CUT) | L       | 56000    | 73000     |     | 28        |       | T       |                     |                   |   |   |     |         |   |   |     |         |         |              |           |      |
|               |          |                     | C       | 52000    | 72000     |     | 31        |       | T       |                     |                   |   |   |     |         |   |   |     |         |         |              |           |      |
| NW5983        | A89197A  | 0.375 X 96.00 (CUT) | L       | 56000    | 72000     |     | 29        |       | T       |                     |                   |   |   |     |         |   |   |     |         |         |              |           |      |
|               |          |                     | C       | 50000    | 69000     |     | 36        |       | T       |                     |                   |   |   |     |         |   |   |     |         |         |              |           |      |
| NW5997        | A89199A  | 0.375 X 96.00 (CUT) | L       | 55000    | 73000     |     | 28        |       | T       |                     |                   |   |   |     |         |   |   |     |         |         |              |           |      |
|               |          |                     | C       | 56000    | 74000     |     | 26        |       | T       |                     |                   |   |   |     |         |   |   |     |         |         |              |           |      |

| Heat Id | Chemical Analysis |     |      |      |     |        |     |     |     |     |      |      |      |       |       |  | ORGN |
|---------|-------------------|-----|------|------|-----|--------|-----|-----|-----|-----|------|------|------|-------|-------|--|------|
|         | C                 | Mn  | P    | S    | Si  | Tot Al | Cu  | Ni  | Cr  | Mo  | Co   | V    | Ti   | B     | N     |  |      |
| NW5965  | .13               | .87 | .015 | .008 | .26 | .054   | .01 | .05 | .02 | .00 | .005 | .009 | .002 | .0000 | .0047 |  | CAN  |
| NW5983  | .14               | .86 | .008 | .008 | .24 | .045   | .01 | .05 | .02 | .00 | .005 | .004 | .002 | .0000 | .0057 |  | CAN  |
| NW5997  | .14               | .87 | .011 | .005 | .25 | .037   | .01 | .05 | .04 | .00 | .005 | .017 | .003 | .0000 | .0053 |  | CAN  |

MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL

\* NW5965      A89198A      PCES: 1, WGT: 2940

\* NW5997      A89199A      PCES: 2, WGT: 5881

\* NW5983

A89197A

PCES: 2, WGT: 5881

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011a addenda"

Sept. 19.12  
 [Signature]

|                   |                                                                                                        |                            |
|-------------------|--------------------------------------------------------------------------------------------------------|----------------------------|
| (U) Cust Part # : | WE HEREBY CERTIFY THAT THIS MATERIAL<br>WAS TESTED IN ACCORDANCE WITH THE<br>APPROPRIATE SPECIFICATION | Greg Balsdon<br>CHECKED BY |
|-------------------|--------------------------------------------------------------------------------------------------------|----------------------------|



EVRAZ INC. NA

Evraz Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

## REPORT OF CHEMICAL/PHYSICAL TESTS

|                    |              |      |
|--------------------|--------------|------|
| CERTIFICATE NO.    | DATE         | PAGE |
| 1264794            | Oct 18, 2012 | 1    |
| MILL ORDER NO.     | DATE         |      |
| 258436             |              |      |
| CUSTOMER ORDER NO. |              |      |
| 31536              |              |      |
| JOB/REQ. NO.       |              |      |
| SHIPPING NO.       | DATE         |      |
| 1264794            | 10/18/2012   |      |
| CARRIER            |              |      |
| UNION PACIFIC      |              |      |
| CAR/TRUCK NO.      |              |      |
| TPFX811255F        |              |      |

ISO 9001  
REGISTERED

U.S. PLATE PRODUCERS

SOLD TO

FAB-U-TECH INDUSTRIES, INC.  
1204 - 8TH STREET  
NISKU, AB T9E 7M1  
CANADA

FAB-U-TECH INDUSTRIES, INC.  
1204 - 8TH STREET  
NISKU, AB T9E 7M1  
CANADA

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS  
CARBON STRUCTURAL QUALITY PLATE ASTM A36-08/ASME SA36 2007/08 ADD. CSA  
G40.21-04 44W (300W).

## PHYSICAL PROPERTIES

| ITEM NO. | DESCRIPTION                                                                                                    | HEAT NO. | SLAB | YIELD<br>PSI X 100 | TENSILE<br>PSI X 100 | % ELONG<br>8" 2" | % RA | HARDNESS<br>BHN    | BEND<br>TEST | IMPACTS                        |
|----------|----------------------------------------------------------------------------------------------------------------|----------|------|--------------------|----------------------|------------------|------|--------------------|--------------|--------------------------------|
| 1        | 0.2500 X 96.000ME X 240.000<br>SCHEDULE B: 7208.52.00.00.<br><br>9 PCS 14706 LBS<br><br>9 PCS 14706 LBS TOTALS | NW6525 ✓ |      | ✓ 570<br>535       | ✓ 735<br>735         | ✓ 31<br>23       |      | (OUTER)<br>(INNER) |              | 72" OD x 8'<br>L.H. Bath Shell |

## CHEMICAL ANALYSIS

| HEAT NO.                                                                                                         | C   | Mn  | P    | S    | Si  | Cu  | Ni  | V    | Co   | Al   | Cr  | Mo  | Ti | B | N | Ca | CE | REMARKS |
|------------------------------------------------------------------------------------------------------------------|-----|-----|------|------|-----|-----|-----|------|------|------|-----|-----|----|---|---|----|----|---------|
| NW6525                                                                                                           | .16 | .85 | .012 | .007 | .20 | .01 | .05 | .008 | .005 | .039 | .02 | .00 |    |   |   |    |    |         |
| HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (^) WERE ROLLED IN THE USA. |     |     |      |      |     |     |     |      |      |      |     |     |    |   |   |    |    |         |
| ..... END OF REPORT .....                                                                                        |     |     |      |      |     |     |     |      |      |      |     |     |    |   |   |    |    |         |

I certify the above to be correct as contained in the records of EVRAZ INC. NA By

QUALITY COORDINATOR

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

NOV 2 6 2012

MATERIAL CONFORMS  
TO CUSTOMER  
SPECIFICATIONS  
AS PER P.O.  
REQUIREMENTS

Name: Encana 08562

Date: NOV 2 6 2012

1/4 ms,al  
9 @ 8' x 20'  
18 # NW6525

Nov 8/12

**SOLD K-ROD STEEL**  
**TO: #330, 230-4 ST SO.**  
**LETHBRIDGE AB T1J 4J7**  
**CANADA**

**NUCOR**  
**NUCOR STEEL SEATTLE, INC.**

**CERTIFIED MILL TEST REPORT**

Page: 5

**SHIP VARSTEEL CO LTD**  
**K-ROD STEEL**  
**TO: 309 CHILCOTT RD**  
**KAMLOOPS BC V2H 1H3**  
**CANADA**

Ship from:  
 Nucor Steel Seattle, Inc.  
 2424 SW Andover  
 SEATTLE, WA 98106-1100  
 206-933-2222

Date: 14-May-2012  
 B.L. Number: 433427  
 Load Number: 266247

Material Safety Data Sheets are available at [www.nucorbar.com](http://www.nucorbar.com) or by contacting your inside sales representative.

NBS-408 JANUARY 1, 2012

| LOT # | HEAT # | DESCRIPTION | PHYSICAL TESTS  |                   |                  |      | CHEMICAL TESTS |         |          |         |        |          |          |     |  |  |
|-------|--------|-------------|-----------------|-------------------|------------------|------|----------------|---------|----------|---------|--------|----------|----------|-----|--|--|
|       |        |             | YIELD<br>P.S.I. | TENSILE<br>P.S.I. | ELONG<br>% IN 8" | BEND | WT%<br>DEF     | C<br>IN | Mn<br>CT | P<br>Mo | S<br>V | Si<br>Cb | Cu<br>Sn | C.E |  |  |

PO# 225  
 SE1210259501  
 SE12102595

KA-948681  
 Nucor Steel - Seattle Inc  
 4x5.4# Channel  
 20' 0" A36/44W  
 CSA G40.21-04 44W/ASTM A36/A36M-08

53,446 ✓  
 368MPa ✓  
 52,748 ✓  
 364MPa ✓

76,276 ✓  
 526MPa ✓  
 76,270 ✓  
 526MPa ✓

31.3% ✓  
 30.5% ✓

ASTM A709/A709M-11 GR 36 [250]  
 ASME SA36-2007 EDITION-2011 ADDE  
 NDA  
 ASTM A36/A36M-08, A709/709M-11 G  
 R36, ASME SA36-10 Ed 11 Ad.

"Conforms with ASME  
 Sec II, Part A, 2010 edition,  
 2011 addenda"

*Eric de m. To*

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements:  
 1. Yield point was not performed on this material.  
 2. Material was manufactured in the United States.  
 3. Material, Rods, or Alpha source materials in any form have not been used in the production of this material.

QUALITY  
 ASSURANCE



|                                            |                                                                                  |                                          |
|--------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                          |
| Date of Issue: March 13, 2008              |                                                                                  | QCFOFinalInspectionReleaseCertificateR00 |

## FINAL INSPECTION RELEASE CERTIFICATE

|           |                                       |                                                   |
|-----------|---------------------------------------|---------------------------------------------------|
| CUSTOMER: | <b>ENCANA</b>                         |                                                   |
| PRODUCT:  | <b>Skid for 3.0 mm Lineheater Pkg</b> | WO#: <b>08562-001-B</b><br>DATE: <b>Jan 16/13</b> |

### FINAL INSPECTION DOCUMENTATION

|                                                                                                                       |                  |                          |
|-----------------------------------------------------------------------------------------------------------------------|------------------|--------------------------|
| REVIEWED BY:                                                                                                          | ACCEPTED:        | REJECTED:                |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                  |                  |                          |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC.) |                  |                          |
| Q.C. FILE CLOSURE BY:                                                                                                 | <i>Kasho Fox</i> | DATE: <b>Jan 17 2013</b> |

### LOOSE COMPONENTS REQUIRED / PREPARED

|                                           |                                                                     |
|-------------------------------------------|---------------------------------------------------------------------|
| ITEMS REQUIRED:                           | NO. OF BOXES OR PKGS. _____                                         |
| <i>Skid for 3.0 mm lineheater package</i> |                                                                     |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

### PREPARATION FOR SHIPMENT / STORAGE

|                                                                                                                                                        |                    |                    |        |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------|-------------|
| PREPARATION NEEDED / COMPLETED                                                                                                                         |                    |                    |        |             |
| <i>Release to next process.</i>                                                                                                                        |                    |                    |        |             |
| <table border="1" style="width: 100%;"> <tr> <td>LOT #</td> <td><b>08562-001-B</b></td> </tr> <tr> <td>ITEM #</td> <td><b>Skid</b></td> </tr> </table> | LOT #              | <b>08562-001-B</b> | ITEM # | <b>Skid</b> |
| LOT #                                                                                                                                                  | <b>08562-001-B</b> |                    |        |             |
| ITEM #                                                                                                                                                 | <b>Skid</b>        |                    |        |             |

|                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| INVENTORY TAGS ATTACHED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
|-------------------------|---------------------------------------------------------------------|

### SHIPPING INSTRUCTIONS

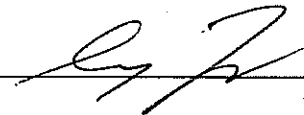
|                                                     |                                                                      |
|-----------------------------------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED                              | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: _____ |                                                                      |
| PHONE:                                              | FAX:                                                                 |

|                        |                 |                      |
|------------------------|-----------------|----------------------|
| RELEASED TO INVENTORY: | <i>Ken Rhee</i> | DATE: <b>1/16/13</b> |
| RELEASED TO CUSTOMER:  |                 | DATE:                |

# NWP INDUSTRIES INCORPORATED

## SKID TRAVEL SHEET

APPROVED

BY: 

DATE:

NOV 13 2012

WO #: 08562-001-B DESCRIPTION: Skid for 3.0 mm Lineheater Pkg

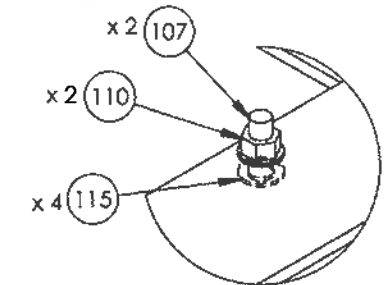
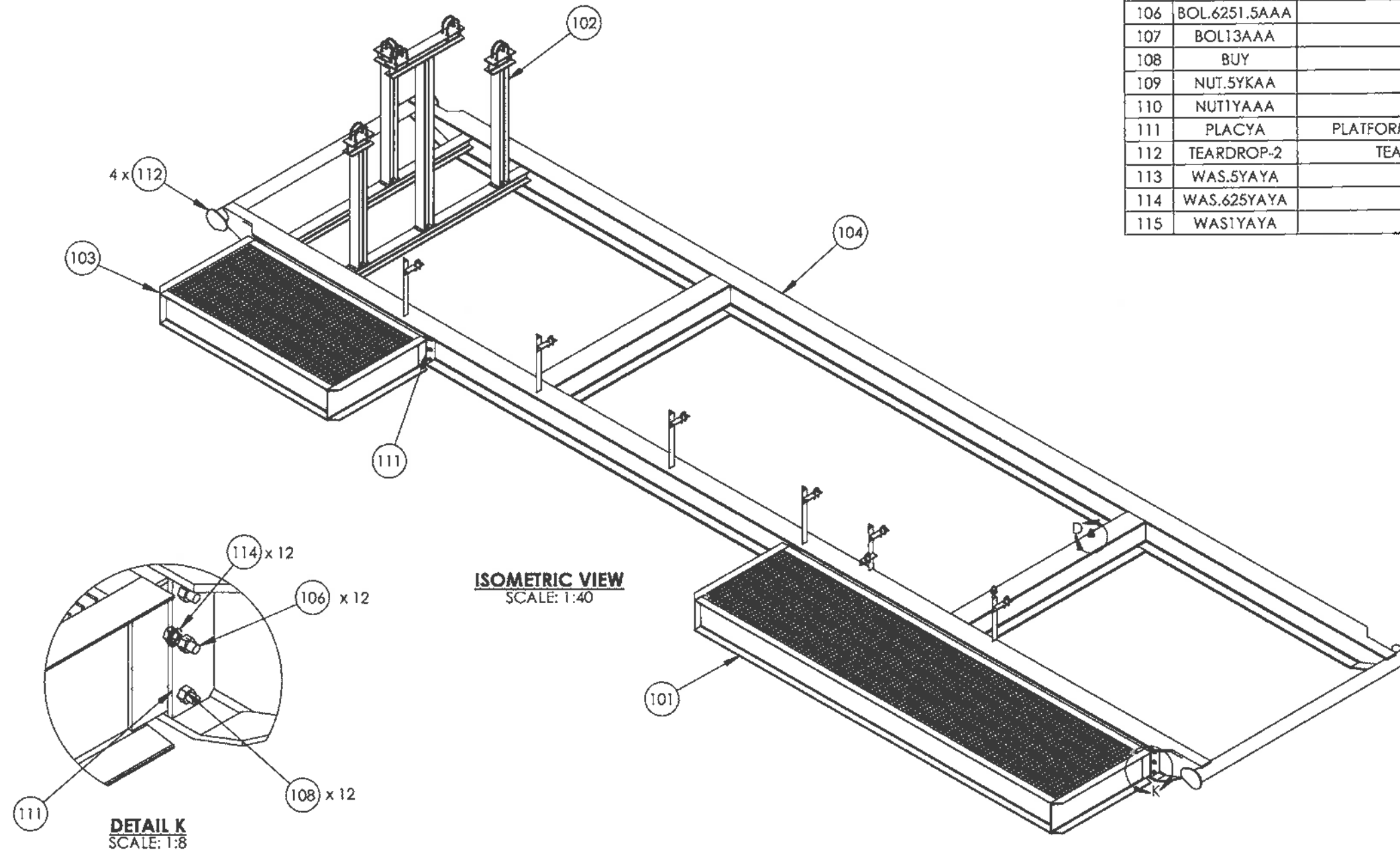
DRAWING #: 08562-3 REV 0

|                                                                                                               | REQ. | HOLD | EMPLOYEE<br>INT. | DATE<br>COMPLETE | QC INIT.                                                                              | DATE      |
|---------------------------------------------------------------------------------------------------------------|------|------|------------------|------------------|---------------------------------------------------------------------------------------|-----------|
| WORK INSTRUCTIONS/DRAWINGS ISSUED                                                                             | ✓    |      |                  |                  |    | NOV 14/12 |
| WORK INSTRUCTIONS/DRAWINGS REVIEWED                                                                           | ✓    | ✓    |                  |                  |    | NOV 14/12 |
| MATERIAL & PARTS RELEASED                                                                                     | ✓    | ✓    |                  |                  |    | Jan 16    |
| WELDING PERSONNEL ASSIGNED                                                                                    | ✓    | ✓    |                  |                  |    | Jan 16    |
| VISUAL CHECKS ON WELDS                                                                                        | ✓    | ✓    |                  |                  | LR                                                                                    | Dec 4/12  |
| NDE REQUIREMENTS                                                                                              | N/A  |      |                  |                  |                                                                                       |           |
|  DIMENSIONAL CHECK (FINAL) | ✓    | ✓    |                  |                  | LR                                                                                    | Dec 4/12  |
| SURFACE PREP./SANDBLAST ETC. & P.O. RECEIVED                                                                  | N/A  |      |                  |                  |                                                                                       |           |
| PRIMER PAINT                                                                                                  | N/A  |      |                  |                  |                                                                                       |           |
| FINAL PAINT & P.O. RECEIVED                                                                                   | N/A  |      |                  |                  |                                                                                       |           |
| QC INSPECTION & FINAL RELEASE                                                                                 | ✓    | ✓    |                  |                  |  | Jan 16    |
|                                                                                                               |      |      |                  |                  |                                                                                       |           |
|                                                                                                               |      |      |                  |                  |                                                                                       |           |
|                                                                                                               |      |      |                  |                  |                                                                                       |           |

ACCEPTED BY CUSTOMER \_\_\_\_\_

DATE \_\_\_\_\_

| ITEM | PART #        | DESCRIPTION                                              | MTR # | LENGTH | QTY. |
|------|---------------|----------------------------------------------------------|-------|--------|------|
| 101  | -             | SEE ENCLOSURE PLATFORM DETAIL                            |       |        | 1    |
| 102  | -             | SEE PIPE SUPPORT CUT LIST                                |       |        | 1    |
| 103  | -             | SEE PIPING PLATFORM DETAIL                               |       |        | 1    |
| 104  | -             | SEE SKID BASE CUT LIST                                   |       |        | 1    |
| 105  | BOL.51.5BAA   | BOLT 1/2" x 1 1/2" LG GR. 2 HEX HEAD                     |       |        | 8    |
| 106  | BOL.6251.5AAA | BOLT 5/8" x 2" GR. 8 HEX HEAD                            |       |        | 12   |
| 107  | BOL13AAA      | BOLT 1" x 3" LG GR. 8 HEX HEAD                           |       |        | 2    |
| 108  | BUY           | NUT 5/8" GR. 8 HEX PLATED                                |       |        | 12   |
| 109  | NUT.5YKAA     | NUT 1/2" GR. 5 HEX PLATED                                |       |        | 8    |
| 110  | NUT1YAAA      | NUT 1" GR. 8 HEX PLATED                                  |       |        | 2    |
| 111  | PLACYA        | PLATFORM SKID LUG PLATE 3/8" x 10 7/8" x 3 3/4" SA36/44W |       |        | 4    |
| 112  | TEARDROP-2    | TEAR DROP FOR ROLL ENDS 3/8" THK SA36/44W                |       |        | 4    |
| 113  | WAS.5YAYA     | FLAT WASHER 1/2" GR. 8 PLATED                            |       |        | 16   |
| 114  | WAS.625YAYA   | FLAT WASHER 5/8" GR. 8 PLATED                            |       |        | 12   |
| 115  | WAS1YAYA      | FLAT WASHER 1" GR. 8 PLATED                              |       |        | 4    |



**DETAIL Y**  
SCALE: 1:8

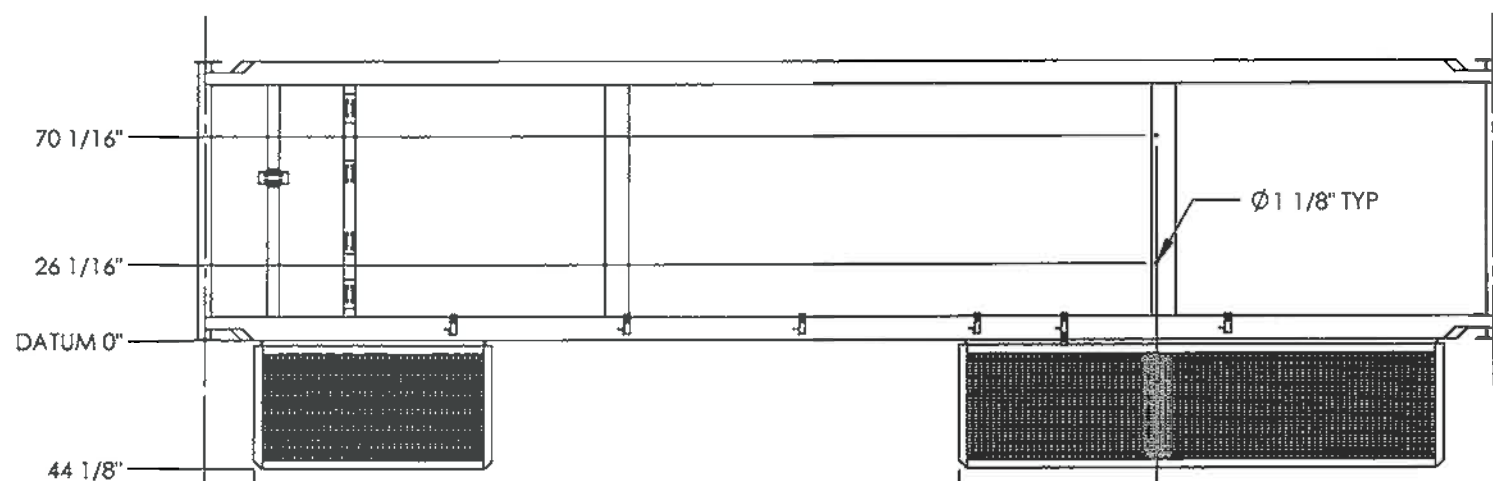
ORIGINAL

## NOTES

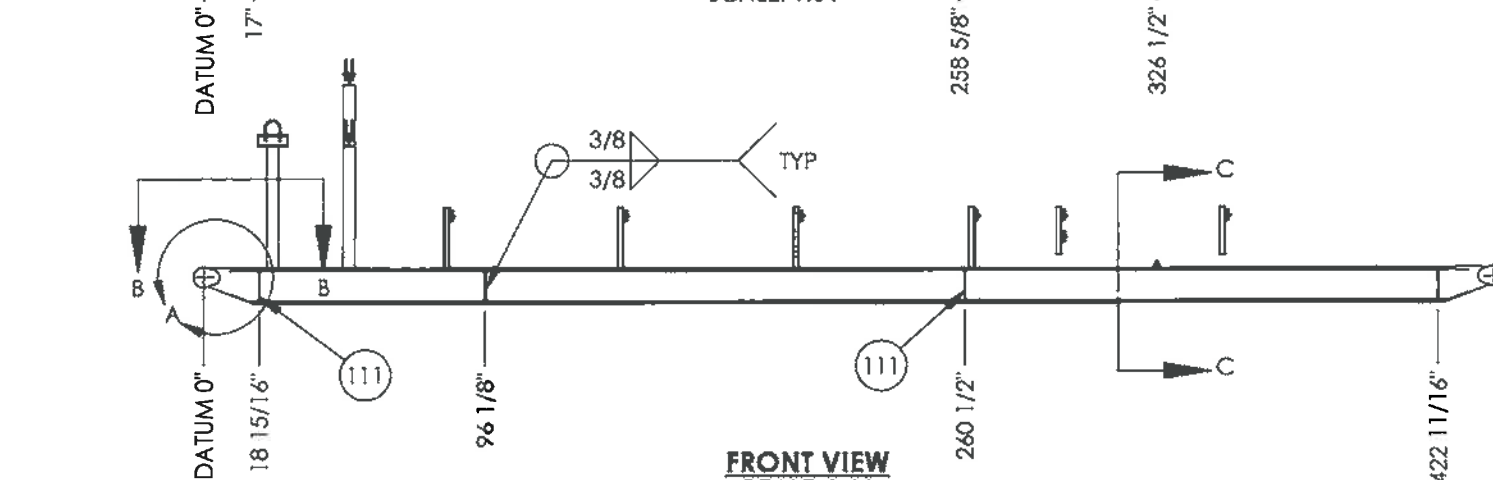
1. FABRICATE TO CSA W47.1 AND W59.
2. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
3. DEBURR AND RADIUS ALL SHARP EDGES.
4. WELD PROCESS TO BE MCAW UNLESS OTHERWISE NOTED.  
WPDS-FC1-15, FC1-10.
5. ALL WELDS TO BE  $1/4"$  CONTINUOUS FILLET WELDS UNLESS OTHERWISE NOTED.

APPROX. WEIGHT: 7500 LBS

[illegible]

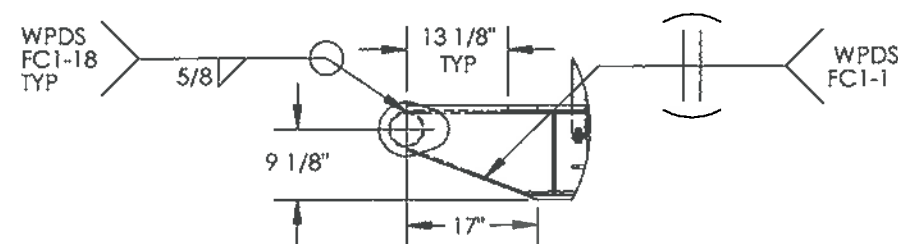


PLAN VIEW  
SCALE: 1:64

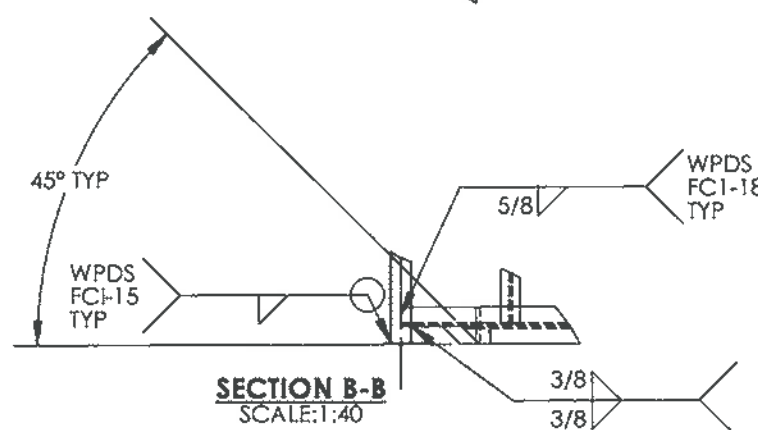


FRONT VIEW  
SCALE: 1:64

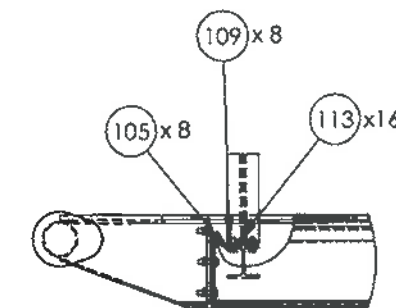
SOME ITEMS HIDDEN FOR CLARITY



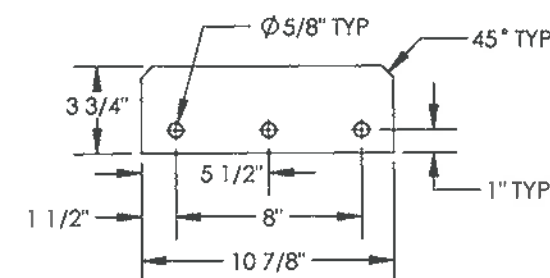
DETAIL A  
SCALE: 1:24



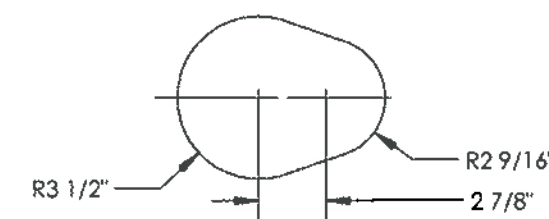
SECTION B-B  
SCALE: 1:40



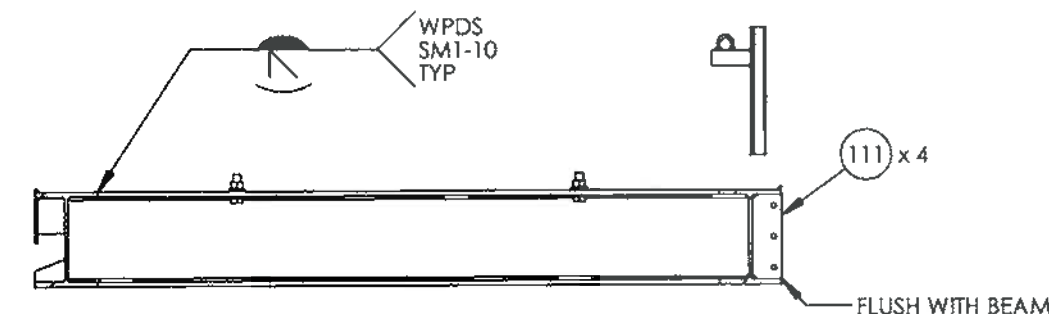
BROKEN SECTION A  
SCALE: 1:24



PLATFORM SKID LUG  
3/8" THK  
SCALE: 1:8



ROLL END TEAR DROP  
3/8" THK  
SCALE: 1:8

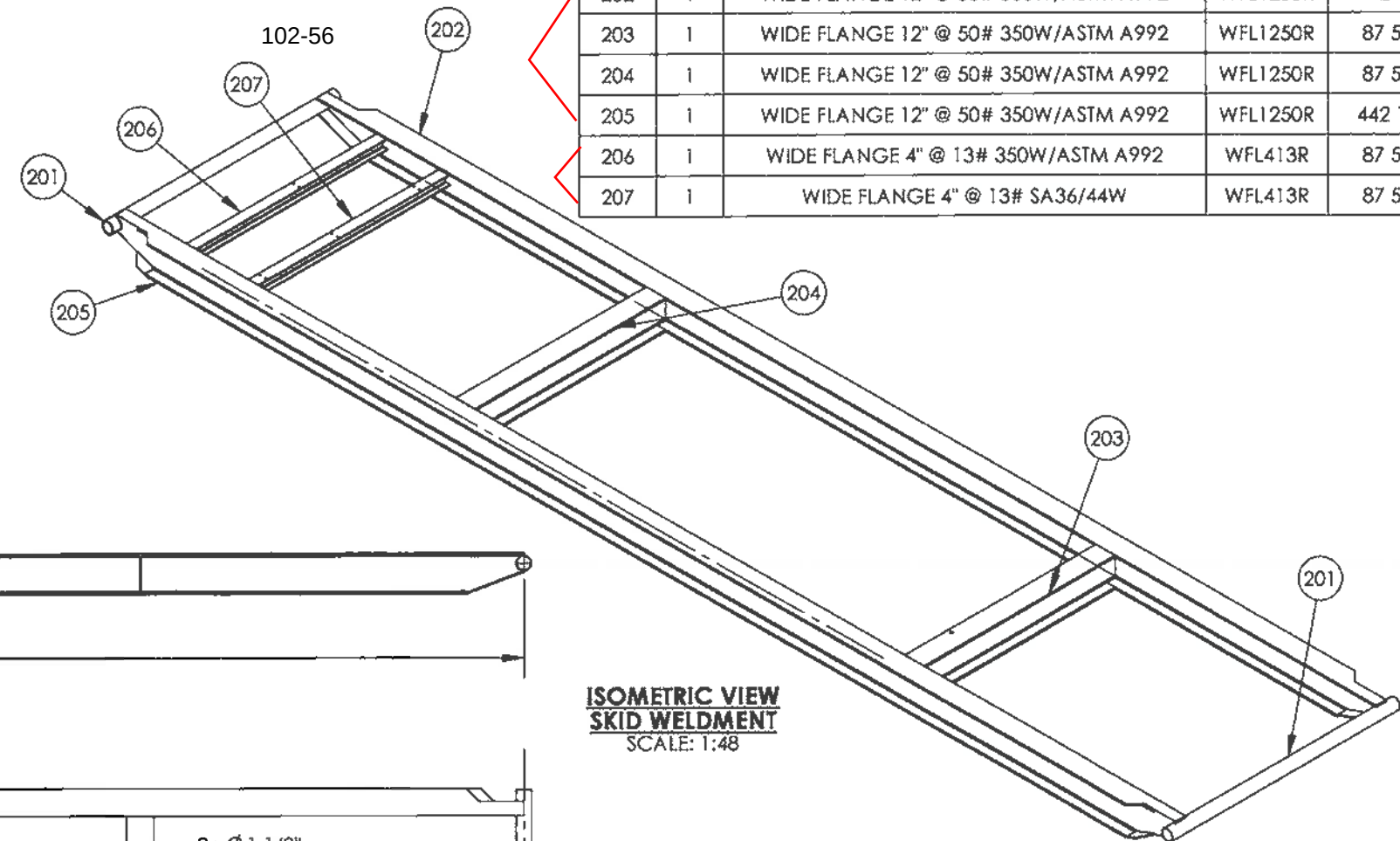


SECTION C-C  
SCALE: 1:40

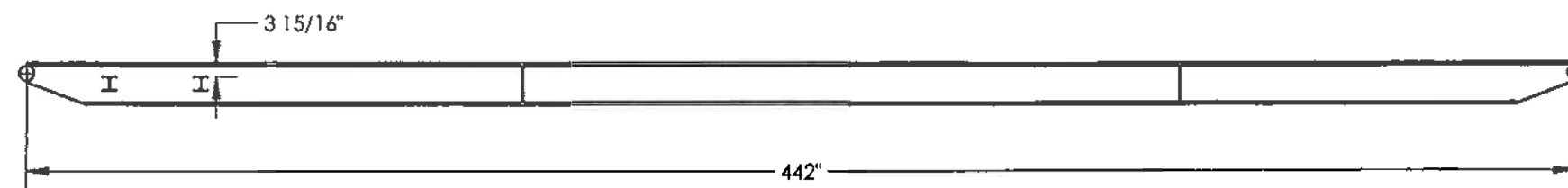
ORIGINAL

|                    |                                    |     |           |    |     |                   |  |                         |                          |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |                   |                   |
|--------------------|------------------------------------|-----|-----------|----|-----|-------------------|--|-------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------|-------------------|
|                    |                                    |     |           |    |     | <b>AS BUILT</b>   |  | ISSUED FOR CONSTRUCTION |                          |  <p>NWP INDUSTRIES INC.<br/>Total oilfield supply.<br/>P.O. BOX 6280, INNISFAIL, AB T4G 1S9<br/>PH: (403) 227-4100 FAX: (403) 227-4102<br/>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST.</p> | ENCANA CORPORATION<br>LINEHEATER PACKAGE<br>3.0 MMBTU/HR<br>c/w 4" 2500# RTJ SPLIT COILS<br>SKID ASSEMBLY |                   |                   |
| LH-FIRSTK-24-2     | LINEHEATER FIRETUBE/STACK ASSEMBLY |     |           |    |     |                   |  | SIGNED: _____           |                          |                                                                                                                                                                                                                                                                                                                                                                               | DWN: VW                                                                                                   | CHK: _____        | APP: _____        |
| LH-LAD-72          | LINEHEATER SKID LADDER ASSEMBLY    |     |           |    |     |                   |  | DATE: _____             |                          |                                                                                                                                                                                                                                                                                                                                                                               | DATE: OCT 01/12                                                                                           | DATE: NOV 02 2012 | DATE: NOV 02 2012 |
| LH-PH-7224-1       | LINEHEATER PREHEAT PIPING          | 0   | OCT 31/12 | VW |     |                   |  | W.O.: 08562-001         |                          |                                                                                                                                                                                                                                                                                                                                                                               | SCALE: 1:64                                                                                               | DWG: 08562-3      | REV: 0            |
| 08562-6            | LINEHEATER PACKAGE BATH ASSEMBLY   | A   | OCT 01/12 | VW |     |                   |  | S/N: _____              |                          |                                                                                                                                                                                                                                                                                                                                                                               | SHEET: 2 OF 7                                                                                             |                   |                   |
| DOCUMENT NO.       | DESCRIPTION                        | REV | DATE      | BY | CHK | APP               |  |                         |                          |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |                   |                   |
| REFERENCE DRAWINGS |                                    |     |           |    |     | DRAWING REVISIONS |  |                         | ALL DIMENSIONS IN INCHES |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |                   |                   |

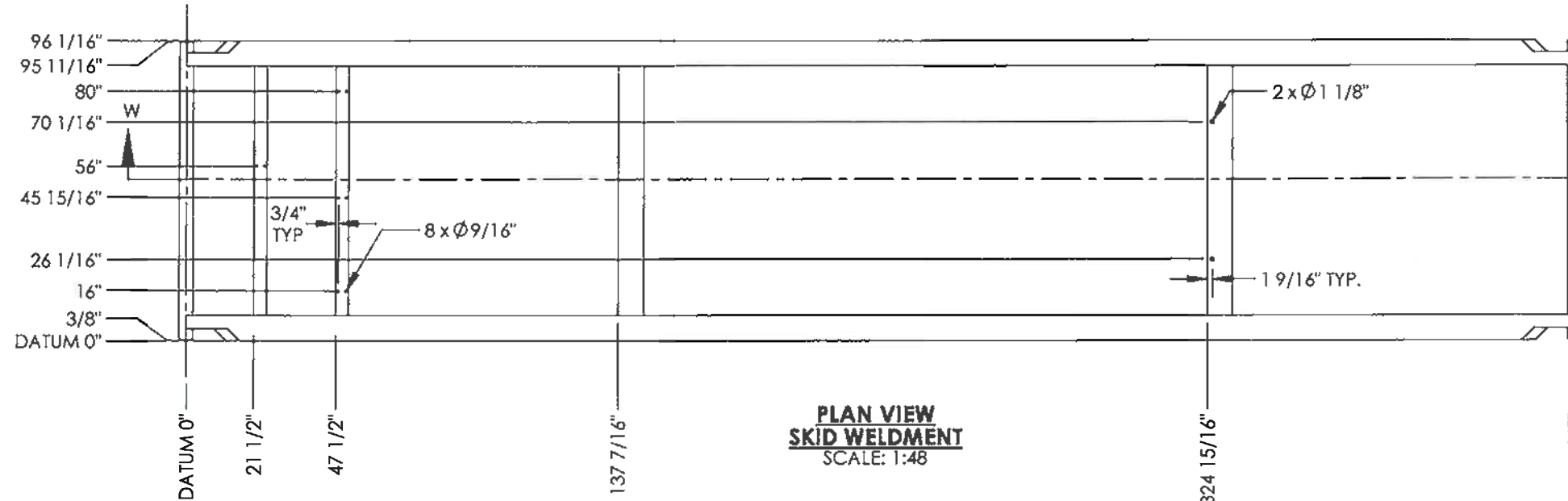
| ITEM | QTY. | DESCRIPTION                          | PART #   | LENGTH   |
|------|------|--------------------------------------|----------|----------|
| 201  | 2    | PIPE 4" SCH XH/80 SA106B             | PIP480A  | 95 5/16" |
| 202  | 1    | WIDE FLANGE 12" @ 50# 350W/ASTM A992 | WFL1250R | 442 1/8" |
| 203  | 1    | WIDE FLANGE 12" @ 50# 350W/ASTM A992 | WFL1250R | 87 5/8"  |
| 204  | 1    | WIDE FLANGE 12" @ 50# 350W/ASTM A992 | WFL1250R | 87 5/8"  |
| 205  | 1    | WIDE FLANGE 12" @ 50# 350W/ASTM A992 | WFL1250R | 442 1/8" |
| 206  | 1    | WIDE FLANGE 4" @ 13# 350W/ASTM A992  | WFL413R  | 87 5/8"  |
| 207  | 1    | WIDE FLANGE 4" @ 13# SA36/44W        | WFL413R  | 87 5/8"  |



**ISOMETRIC VIEW  
SKID WELDMENT**  
SCALE: 1:48



**SECTION W-W**  
SCALE: 1:48



**PLAN VIEW  
SKID WELDMENT**  
SCALE: 1:48

**ORIGINAL**

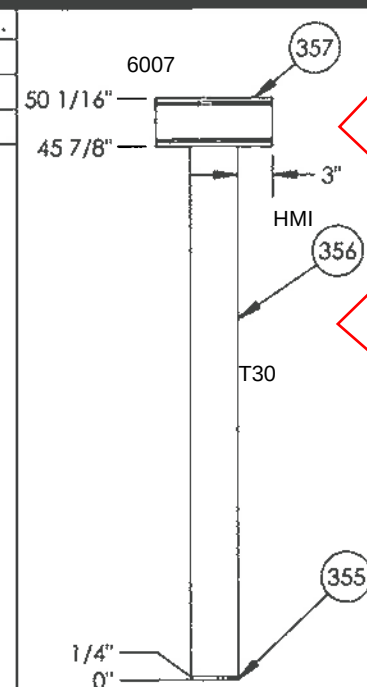
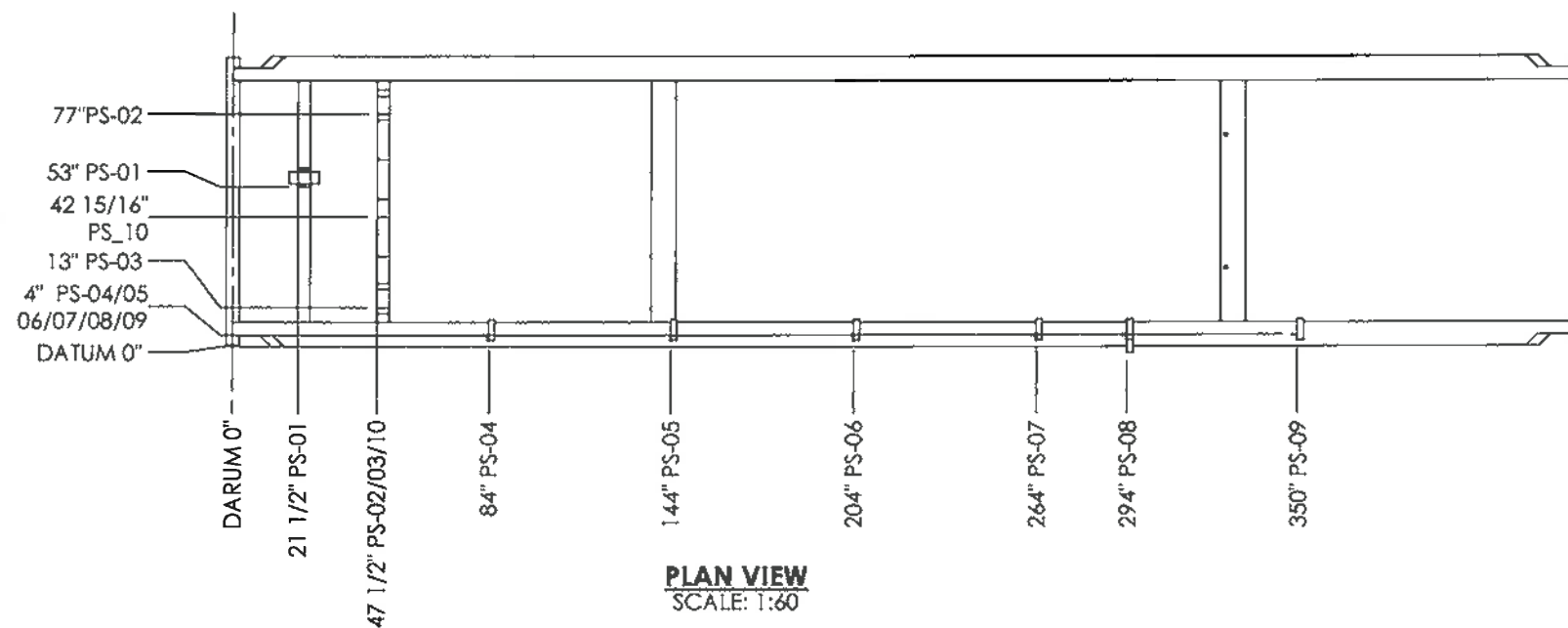
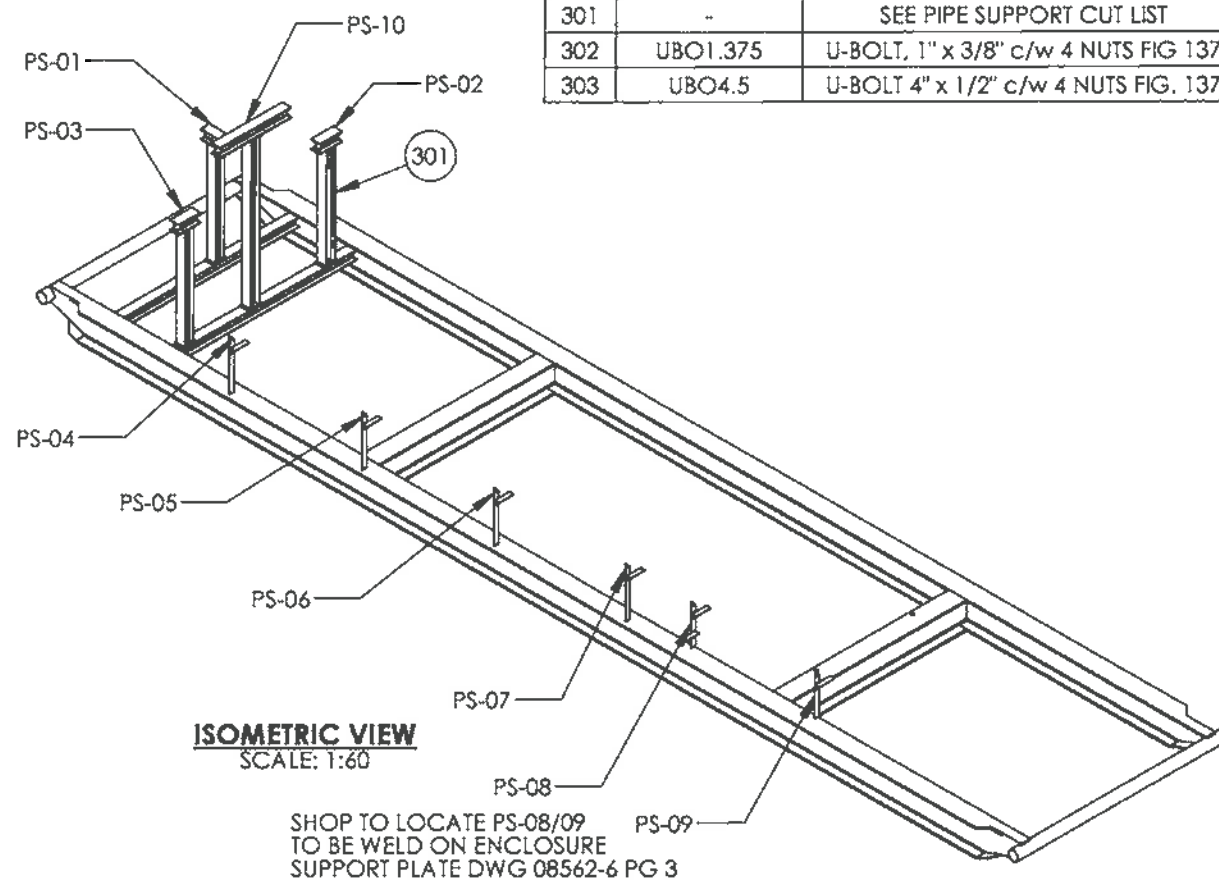
**NOTES**

1. SHOP TO VERIFY ALL I-BEAM CUT LENGTHS PRIOR TO SECTIONING BEAMS. 3 1/2" REQUIRED TO ADD LONG BEAM PRIOR TO CUT ITEM 202 & 205.
2. SHOP TO VERIFY ALL PIPING SUPPORT CUT LENGTH

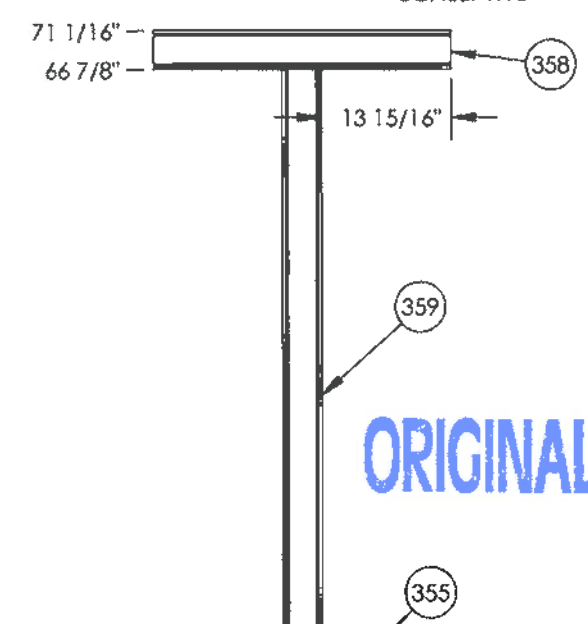
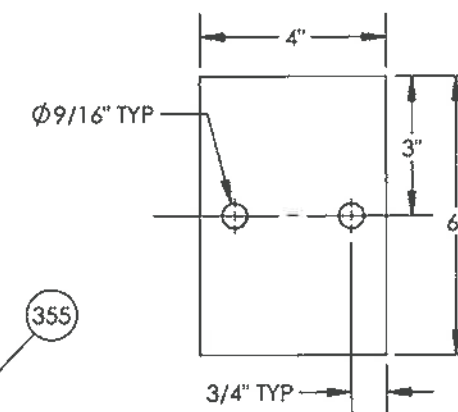
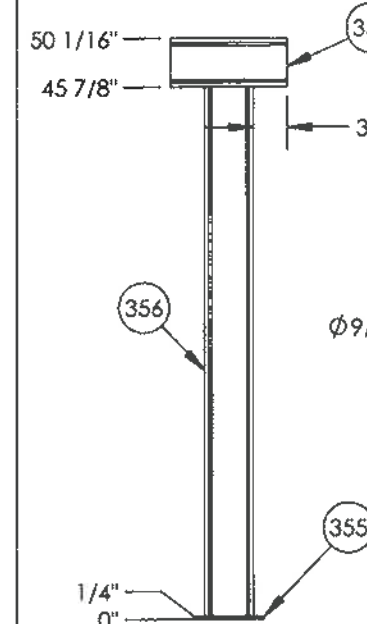
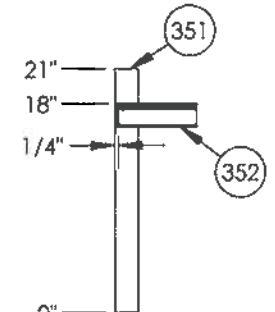
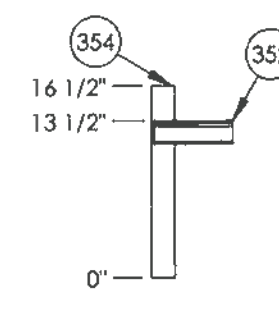
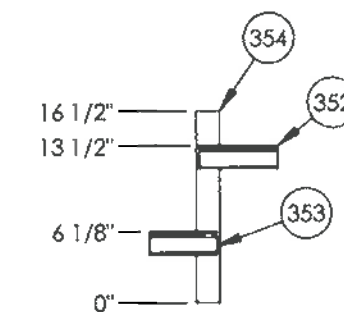
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| ITEM | PART #   | DESCRIPTION                          | MTR # | LENGTH | QTY. |
|------|----------|--------------------------------------|-------|--------|------|
| 301  | -        | SEE PIPE SUPPORT CUT LIST            |       |        | 1    |
| 302  | UBO1.375 | U-BOLT, 1" x 3/8" c/w 4 NUTS FIG 137 |       |        | 7    |
| 303  | UBO4.5   | U-BOLT 4" x 1/2" c/w 4 NUTS FIG. 137 |       |        | 10   |



| ITEM | QTY. | DESCRIPTION                         | PART #  | LENGTH  |
|------|------|-------------------------------------|---------|---------|
| 351  | 4    | ANGLE IRON 1/4" x 2" x 2" 300W      | ANGC22A | 21"     |
| 352  | 6    | ANGLE IRON 1/4" x 2" x 2" 300W      | ANGC22A | 6 3/4"  |
| 353  | 1    | ANGLE IRON 1/4" x 2" x 2" 300W      | ANGC22A | 5 3/4"  |
| 354  | 2    | ANGLE IRON 1/4" x 2" x 2" 300W      | ANGC22A | 16 1/2" |
| 355  | 4    | PLATE 1/4" x 4" x 6" SA 36/44W      |         | 0.0052  |
| 356  | 3    | WIDE FLANGE 4" @ 13# 350W/ASTM A992 | WFL413R | 45 5/8" |
| 357  | 3    | WIDE FLANGE 4" @ 13# 350W/ASTM A992 | WFL413R | 10"     |
| 358  | 1    | WIDE FLANGE 4" @ 13# SA36/44W       | WFL413R | 32"     |
| 359  | 1    | WIDE FLANGE 4" @ 13# SA36/44W       | WFL413R | 66 5/8" |



ORIGINAL

|                    |                                    |                   |           |    |                         |
|--------------------|------------------------------------|-------------------|-----------|----|-------------------------|
| AS BUILT           |                                    |                   |           |    |                         |
| LH-FIRSTK-24-2     | LINEHEATER FIRETUBE/STACK ASSEMBLY |                   |           |    |                         |
| LH-LAD-72          | LINEHEATER SKID LADDER ASSEMBLY    |                   |           |    |                         |
| LH-PH-7224-1       | LINEHEATER PREHEAT PIPING          | 0                 | OCT 31/12 | VW | ISSUED FOR CONSTRUCTION |
| 08562-6            | LINEHEATER PACKAGE BATH ASSEMBLY   | A                 | OCT 01/12 | VW | ISSUED FOR APPROVAL     |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE      | BY | CHK APP                 |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |           |    |                         |

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SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

W.O.: 08562-001

S/N: \_\_\_\_\_

ALL DIMENSIONS IN INCHES

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INDUSTRIES INC.  
Total oilfield supply.

P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

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ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU/HR  
c/w 4" 2500# RTJ SPLIT COILS  
SKID ASSEMBLY

DWN: VW CHK: APP: *[Signature]*

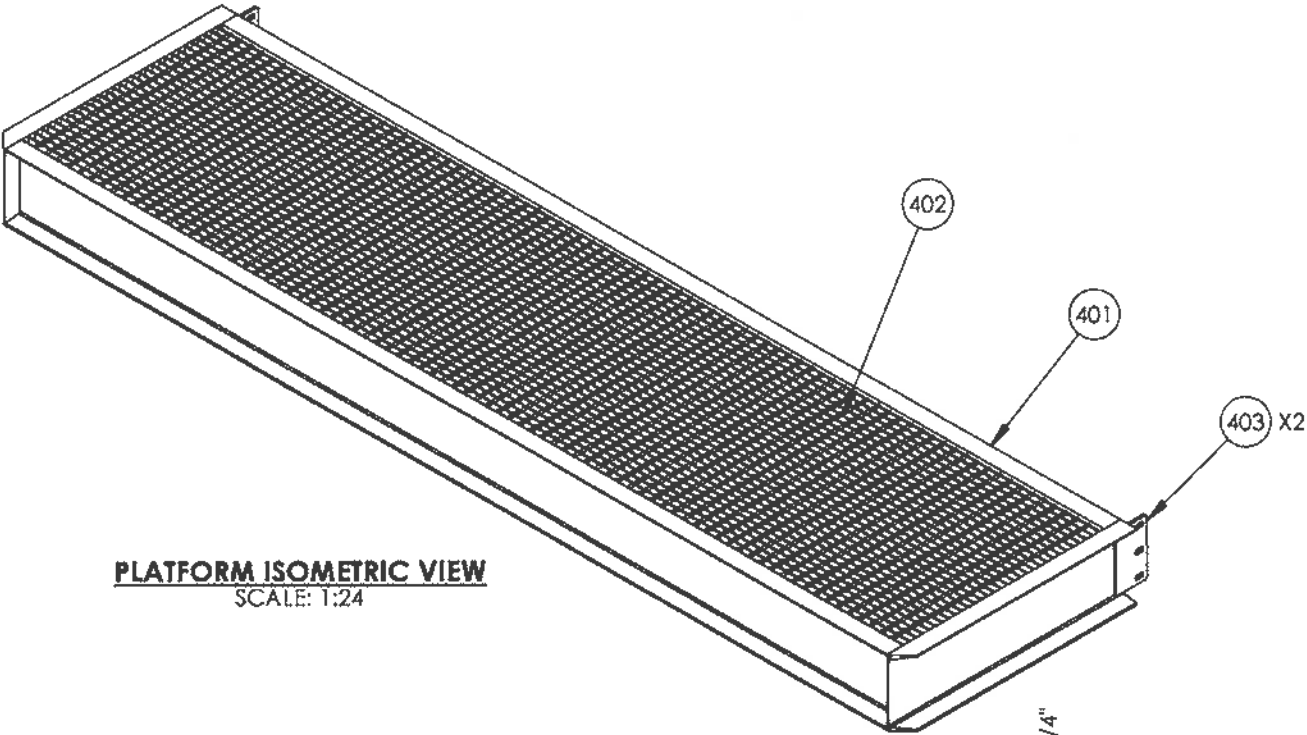
DATE: OCT 01/12 DATE: NOV 02 2012 DATE: NOV 02 2012

SCALE: 1:60 DWG: 08562-3 REV: 0

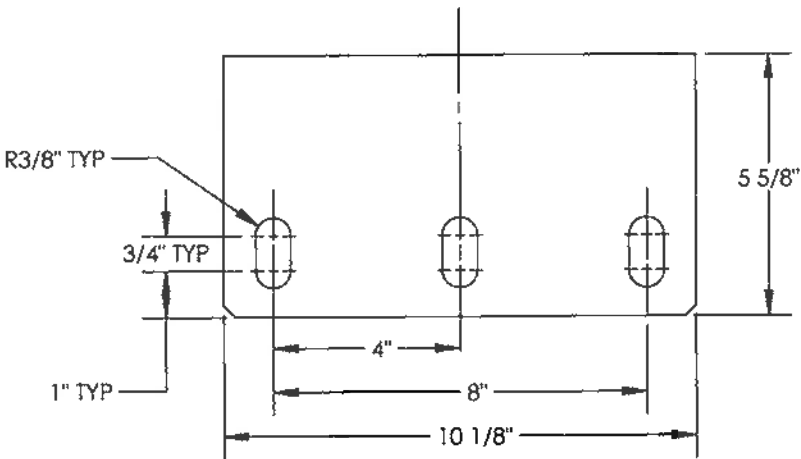
SHEET: 4 OF 7



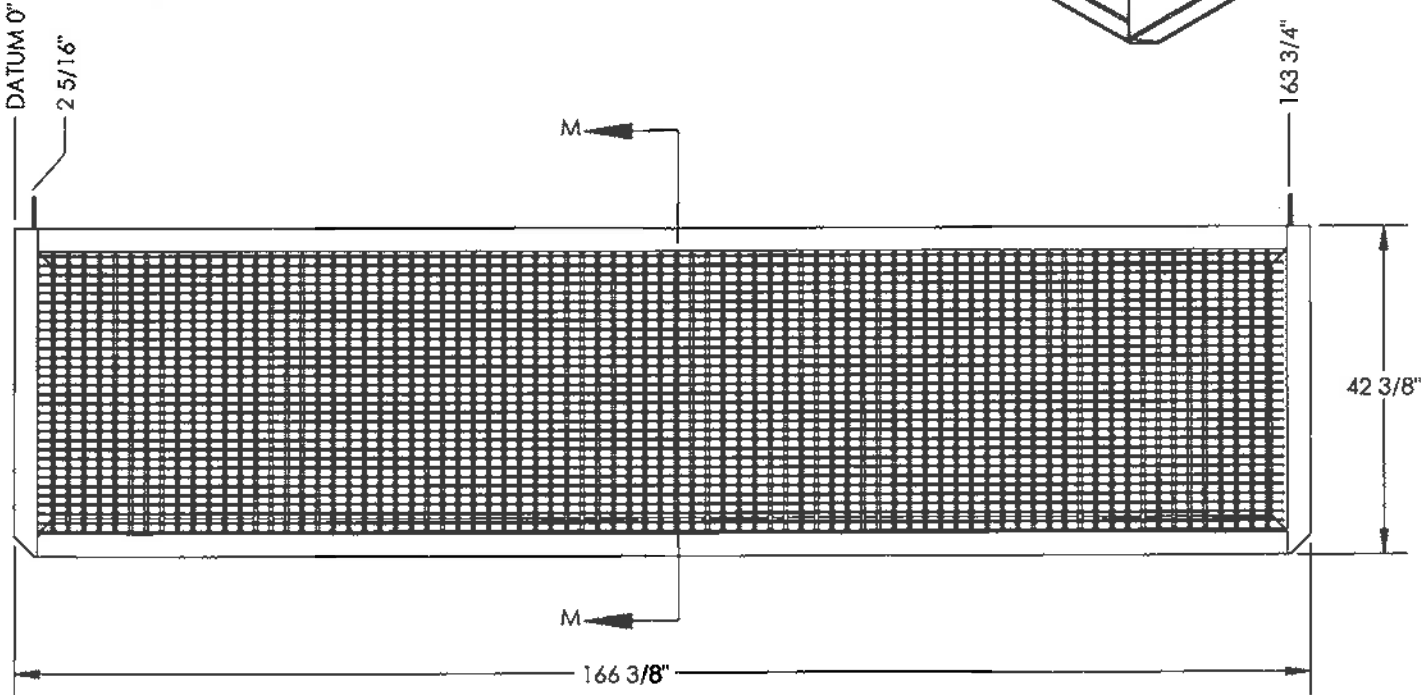
| ITEM | PART # | DESCRIPTION                                             | MTR # | LENGTH | QTY. |
|------|--------|---------------------------------------------------------|-------|--------|------|
| 401  | -      | SEE ENCLOSURE PLATFORM CUT LIST                         |       |        | 1    |
| 402  | BARCAA | BAR GRATING 3/16" x 1-1/2" SERRATED 3' x 160"           |       | 160"   | 1    |
| 403  | PLACYA | PLATFORM SUPPORT PLATE 3/8" x 10 1/8" x 5 5/8" SA36/44W |       |        | 2    |



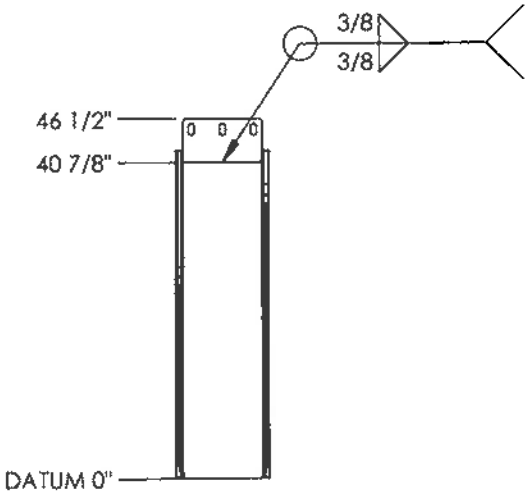
PLATFORM ISOMETRIC VIEW  
SCALE: 1:24



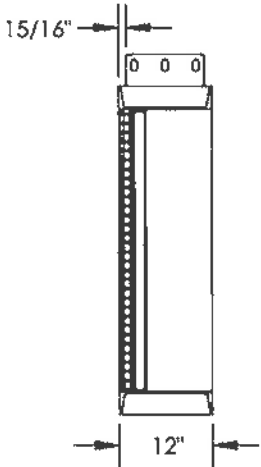
PLATFORM SUPPORT PLATE  
THK 3/8"  
SCALE: 1:4



PLATFORM  
PLAN VIEW  
SCALE: 1:24



PLATFORM  
SIDE VIEW  
SCALE: 1:24



PLATFORM  
SECTION M-M  
SCALE: 1:24

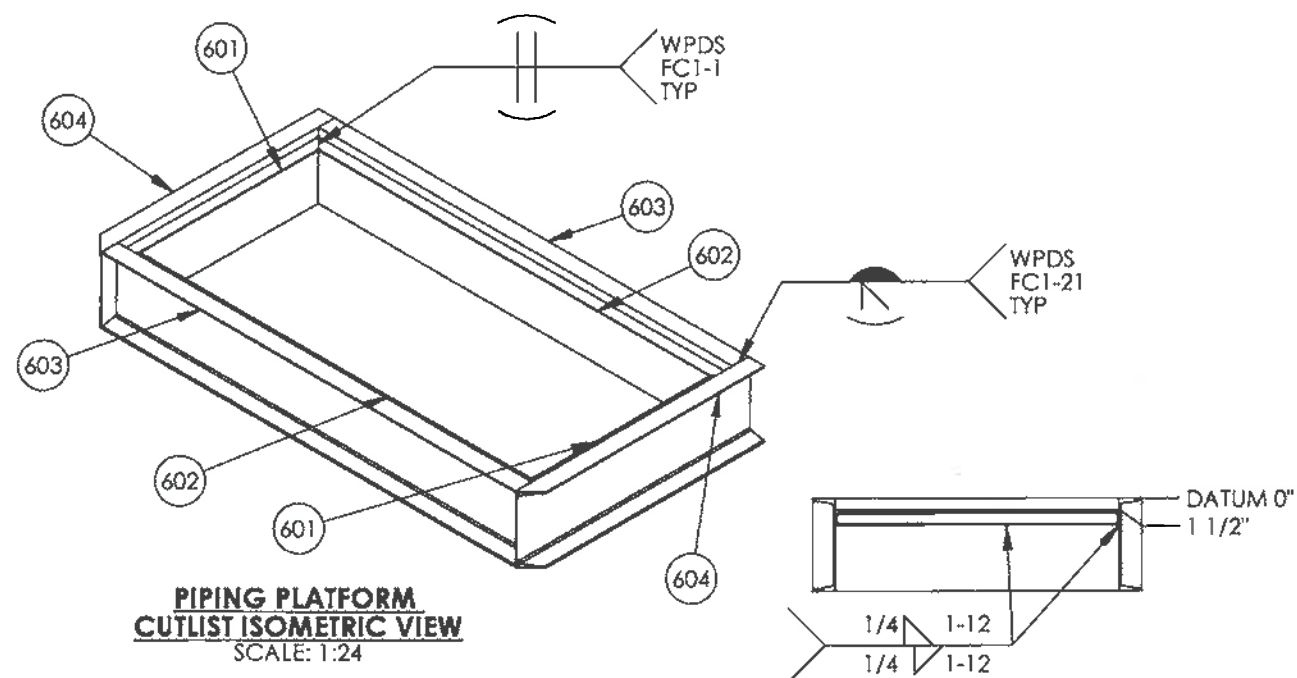
ORIGINAL

ENCLOSURE PLATFORM APPROX.WEIGHT 1230 LBS

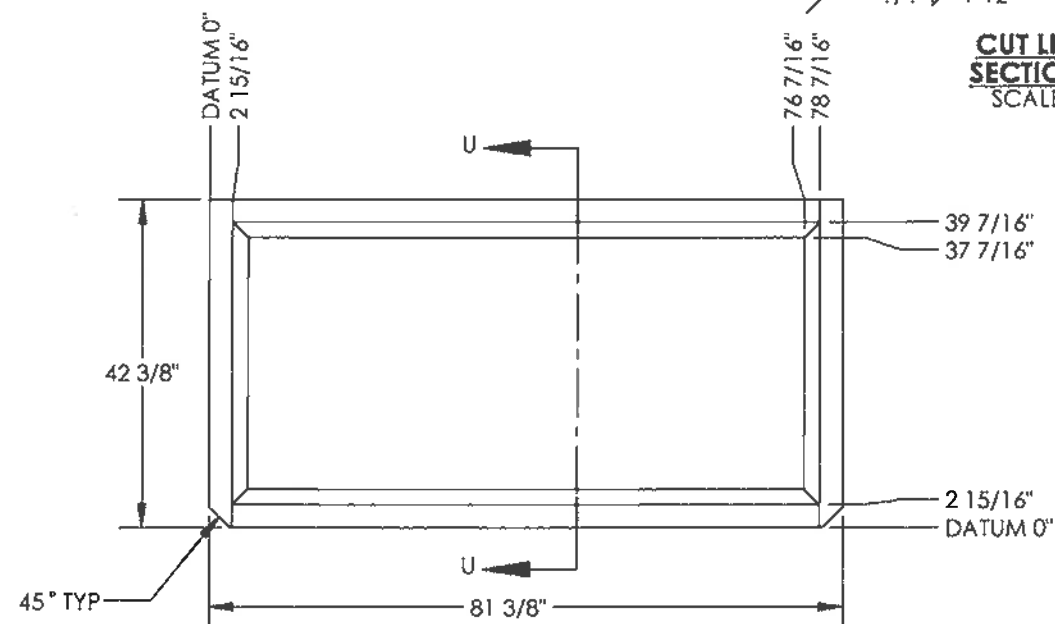
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| ITEM NO. | QTY. | DESCRIPTION                    | PART #   | LENGTH  |
|----------|------|--------------------------------|----------|---------|
| 601      | 2    | ANGLE IRON 1/4" x 2" x 2" 300W | ANGC22A  | 36 1/2" |
| 602      | 2    | ANGLE IRON 1/4" x 2" x 2" 300W | ANGC22A  | 75 1/2" |
| 603      | 2    | C-CHANNEL 12" @ 20.7# 300W     | CHA1220R | 75 1/2" |
| 604      | 2    | C-CHANNEL 12" @ 20.7# 300W     | CHA1220R | 42 3/8" |

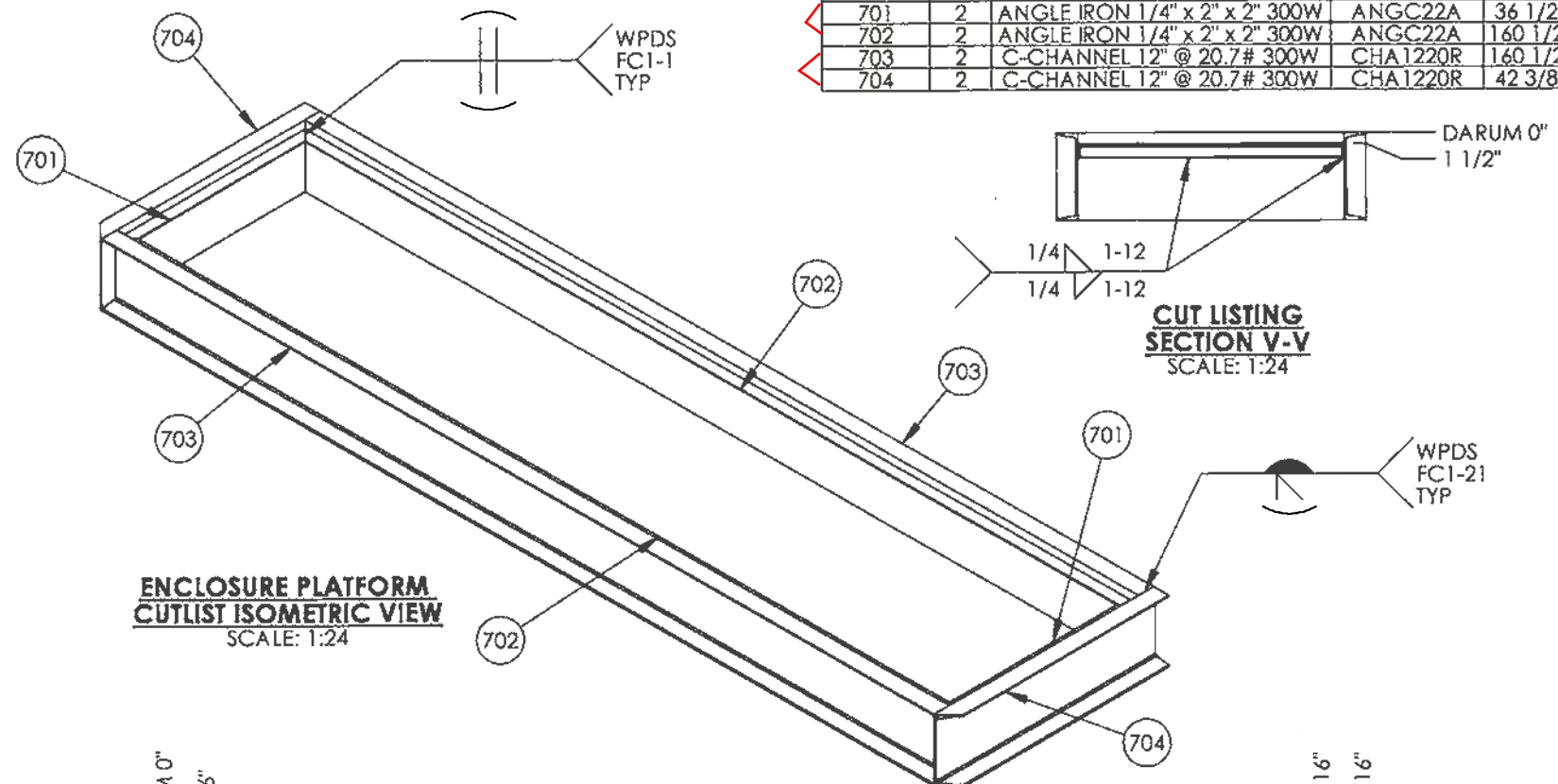


**PIPING PLATFORM  
CUTLIST ISOMETRIC VIEW**  
SCALE: 1:24

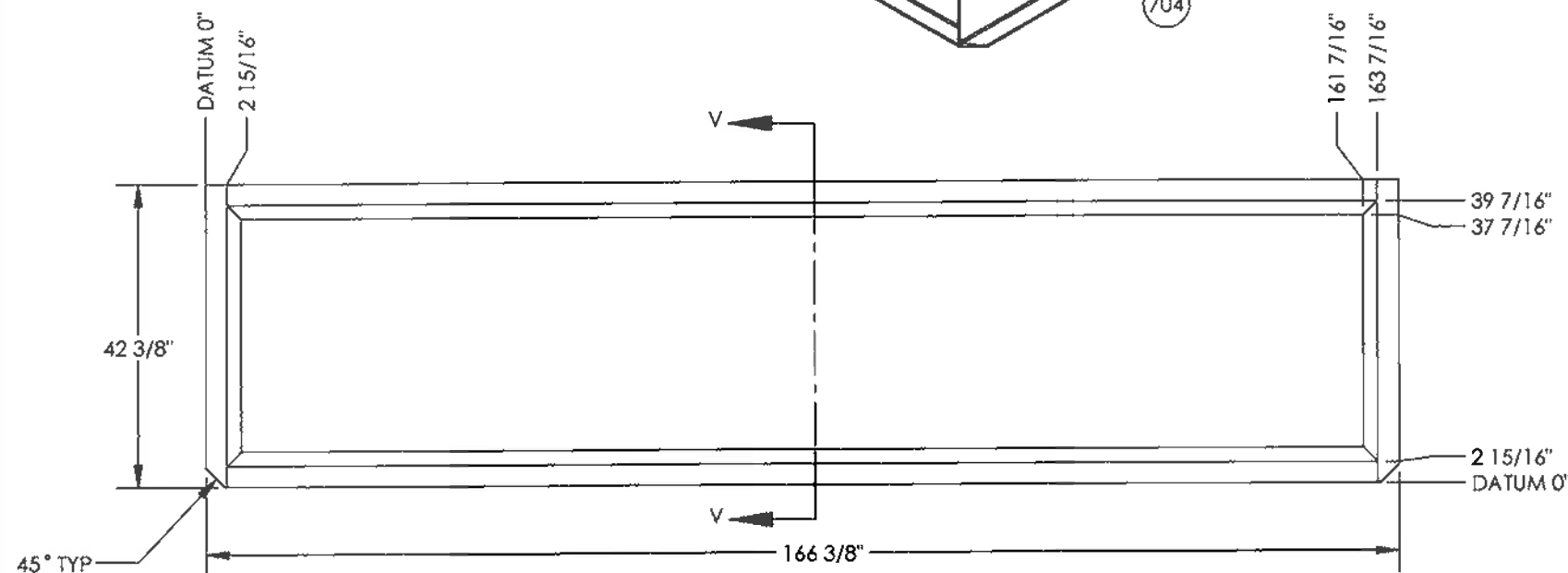


**PIPING PLATFORM  
CUT LISTING PLAN VIEW**  
SCALE: 1:24

**CUT LISTING  
SECTION U-U**  
SCALE: 1:24



**ENCLOSURE PLATFORM  
CUTLIST ISOMETRIC VIEW**  
SCALE: 1:24



**ENCLOSURE PLATFORM  
CUTLISTING PLAN VIEW**  
SCALE: 1:24

**ORIGINAL**

|                    |                                    |                   |           |    |                         |
|--------------------|------------------------------------|-------------------|-----------|----|-------------------------|
| <b>AS BUILT</b>    |                                    |                   |           |    |                         |
| LH-FIRSTK-24-2     | LINEHEATER FIRETUBE/STACK ASSEMBLY |                   |           |    |                         |
| LH-LAD-72          | LINEHEATER SKID LADDER ASSEMBLY    |                   |           |    |                         |
| LH-PH-7224-1       | LINEHEATER PREHEAT PIPING          | 0                 | OCT 31/12 | VW | ISSUED FOR CONSTRUCTION |
| 08562-6            | LINEHEATER PACKAGE BATH ASSEMBLY   | A                 | OCT 01/12 | VW | ISSUED FOR APPROVAL     |
| DOCUMENT NO.       | DESCRIPTION                        | REV               | DATE      | BY | CHK APP                 |
| REFERENCE DRAWINGS |                                    | DRAWING REVISIONS |           |    |                         |

**ISSUED FOR  
CONSTRUCTION**

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

W.O.: 08562-001

S/N: \_\_\_\_\_

ALL DIMENSIONS IN INCHES



P.O. BOX 6280, INNISFAIR, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC.  
AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.  
THIS DRAWING MUST BE RETURNED UPON REQUEST.

ENCANA CORPORATION  
LINEHEATER PACKAGE  
3.0 MMBTU/HR  
C/W 4" 2500# RTJ SPLIT COILS  
SKID ASSEMBLY

|                 |                         |                         |
|-----------------|-------------------------|-------------------------|
| DWN: VW         | CHK: <i>[Signature]</i> | APP: <i>[Signature]</i> |
| DATE: OCT 01/12 | DATE: NOV 02 2012       | DATE: NOV 02 2012       |
| SCALE: 1:24     | DWG: 08562-3            | REV: 0                  |
| SHEET: 7 OF 7   |                         |                         |



|                                            |                                                                                  |                                          |
|--------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                          |
| Date of Issue: March 13, 2008              |                                                                                  | QCFOFinalInspectionReleaseCertificateR00 |

FINAL INSPECTION RELEASE CERTIFICATE

|           |                                                                                       |                  |
|-----------|---------------------------------------------------------------------------------------|------------------|
| CUSTOMER: | ENCANA                                                                                |                  |
| PRODUCT:  | Valve Train, Encana Spec, NWP MFD, Pneumatic proof of Closure Valve, B149.3 Compliant | WO#: 08562-001-E |
|           |                                                                                       | DATE: Jan 9.13   |

FINAL INSPECTION DOCUMENTATION

|                                                                                                                        |           |           |
|------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                           | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                   |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC. ) |           |           |

|                                 |                   |
|---------------------------------|-------------------|
| Q.C. FILE CLOSURE BY: Kasha Fox | DATE: Jan 10 2013 |
|---------------------------------|-------------------|

LOOSE COMPONENTS REQUIRED / PREPARED

|                                           |                                                                     |
|-------------------------------------------|---------------------------------------------------------------------|
| ITEMS REQUIRED:                           | NO. OF BOXES OR PKGS. _____                                         |
| Value Train for 30mm Linehater            |                                                                     |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

PREPARATION FOR SHIPMENT / STORAGE

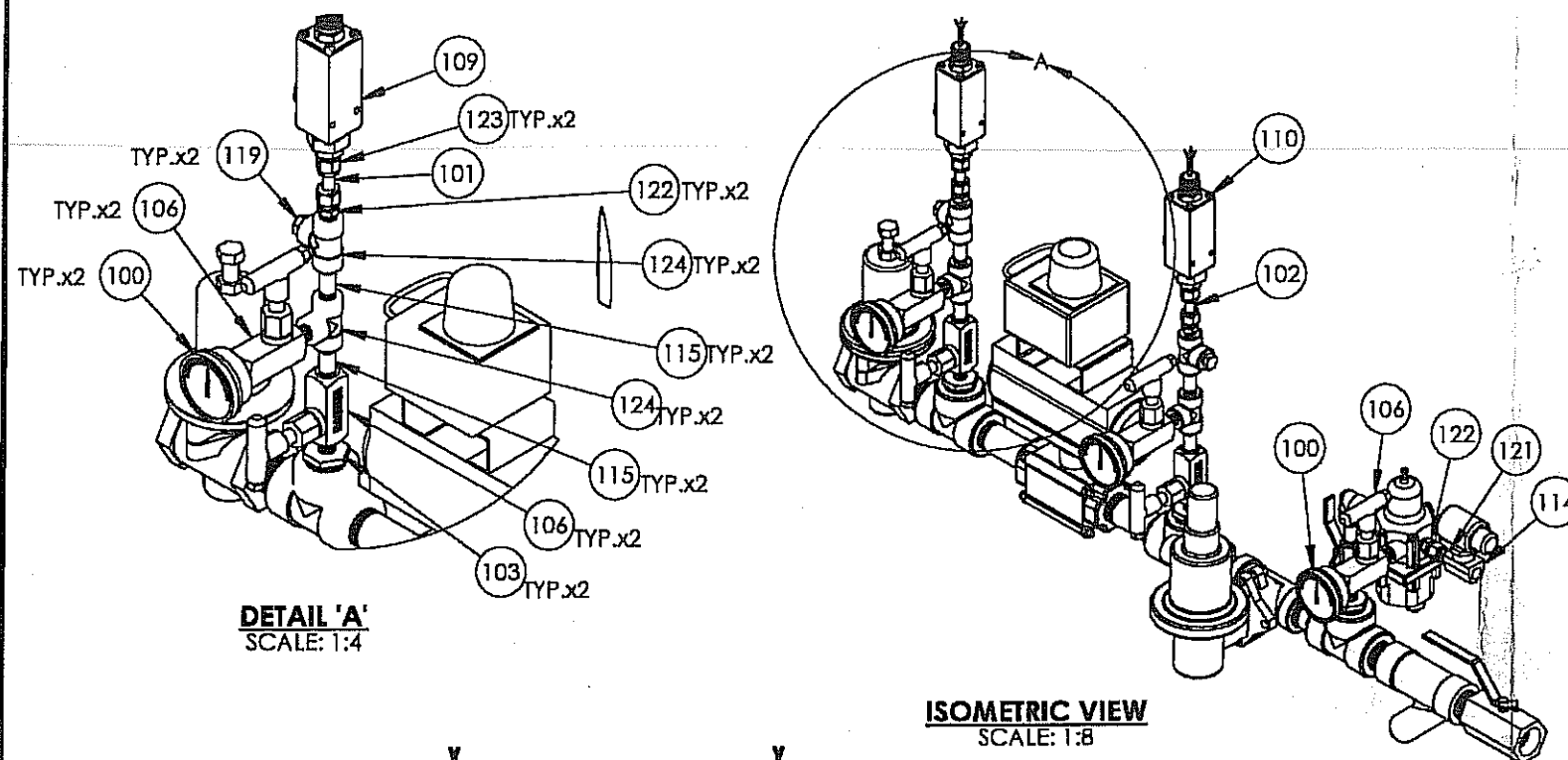
|                                |                 |
|--------------------------------|-----------------|
| PREPARATION NEEDED / COMPLETED |                 |
| Release to next process        |                 |
| SERIAL #                       | 08562-001-E     |
| ITEM #                         | LH-VALVETRAIN-1 |

|                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| INVENTORY TAGS ATTACHED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
|-------------------------|---------------------------------------------------------------------|

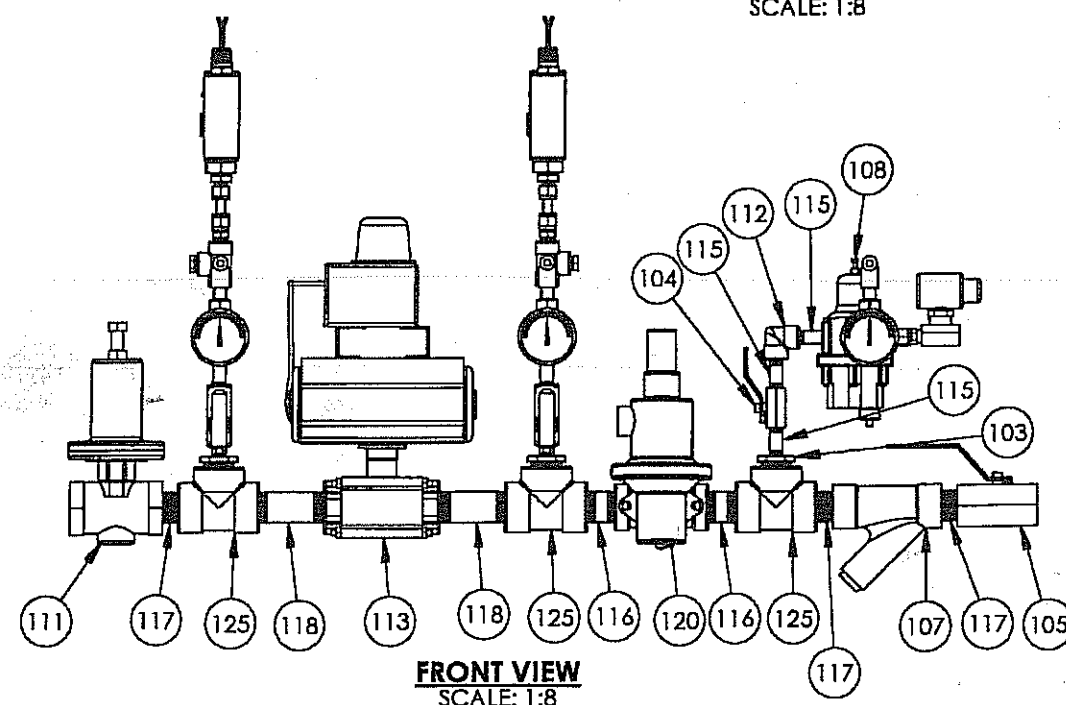
SHIPPING INSTRUCTIONS

|                                               |                                                                      |
|-----------------------------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED                        | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: |                                                                      |
| PHONE:                                        | FAX:                                                                 |

|                                   |                |
|-----------------------------------|----------------|
| RELEASED TO INVENTORY:            | DATE:          |
| RELEASED TO CUSTOMER: [Signature] | DATE: Jan 9.13 |



**DETAIL 'A'**  
SCALE: 1:4



| ITEM | PART #           | DESCRIPTION                                                                            | MTR #    | LENGTH | QTY. |
|------|------------------|----------------------------------------------------------------------------------------|----------|--------|------|
| 100  | 233.53           | PRESSURE GAUGE WIKA 2 1/2" FACE 1/4" NPT, 0-30 PSI, MODEL NO. 233.53 CENTER BACK MOUNT |          |        | 3    |
| 101  | SS-T6-S-035-20   | TUBING, 0.035" WT SMLS 3/8"                                                            |          | 2 3/4" | 1    |
| 102  | SS-T6-S-035-20   | TUBING, 0.035" WT SMLS 3/8"                                                            |          | 2 3/4" | 1    |
| 103  | BUS1.25YEE       | Bushing 1" x 1/4" THRD SA105N                                                          | 6007     |        | 3    |
| 104  | BUY              | BALL VALVE EMICO 1/4" 600 PSI                                                          |          |        | 1    |
| 105  | BUY              | BALL VALVE EMICO 1" 600 PSI                                                            |          |        | 1    |
| 106  | BUY              | VALVE NEEDLE MAGNUM 1/4" 6000 PSI MF-25-SS                                             |          |        | 5    |
| 107  | BUY              | STRAINER ALTA STRAINER 1" NPT CL 3000 MDL YS3000                                       |          |        | 1    |
| 108  | BUY              | PRESSURE REGULATOR FISHER 67CFR 0-35 PSI SPRING STD TRIM                               |          |        | 1    |
| 109  | BUY              | PRESSURE SWITCH CCS MODEL 6900GZE12 SET @ 14 PSI RISING                                |          |        | 1    |
| 110  | BUY              | PRESSURE SWITCH CCS MODEL 6900GZE12 SET @ 4 PSI FALLING                                |          |        | 1    |
| 111  | CV-1198869383    | Fisher 119 1" NPT 9/16" Orifice Spring Range: 5 to 35 psig                             |          |        | 1    |
| 112  | EL9.25GYEE       | Elbow 90 Deg 1/4" THRD SA105N                                                          | 3260     |        | 1    |
| 113  | FOSSIL-24        | PROOF OF CLOSURE VALVE FOSSIL 1" NPT                                                   |          |        | 1    |
| 114  | HV426716002      | SOLENOID VALVE ASCO 1/4" NPT                                                           |          |        | 1    |
| 115  | NIP.252Y80EK     | NIPPLE 1/4" x 2" SCH XH/80 316/316L SST                                                | YD11-113 | -      | 7    |
| 116  | NIP12.5Y80EA     | NIPPLE 1" x 2 1/2" SCH XH/80 SA106-B                                                   | NSY      | -      | 2    |
| 117  | NIP12Y80EA       | NIPPLE 1 x 2" SCH XH/80 SA106-B                                                        | NSY      | -      | 3    |
| 118  | NIP14Y80EA       | NIPPLE 1" x 2" SCH XH/80 SA106-B                                                       | 1X5 1/2  | -      | 2    |
| 119  | PLH.25HYEE       | PLUG HEX 1/4" 6M THRD SA105N                                                           | 4978     |        | 2    |
| 120  | PRV-627121729855 | PRESSURE REGULATOR FISHER 627-489 1" NPT 5-20 PSI 1/2" ORIFICE STD TRIM 250 MAWP       |          |        | 1    |
| 121  | SS-6-TA-1-4      | TUBE ADAPTOR 3/8" TUBE x 1/4" MNPT MDL SS-6-TA-1-4                                     |          |        | 1    |
| 122  | SS-600-1-4       | TUBING, STRAIGHT CONNECTOR, 3/8" TUBING x 1/4" MNPT, SS-600-1-4                        |          |        | 3    |
| 123  | SS-600-1-8       | TUBING, STRAIGHT CONNECTOR, 3/8" TUBING x 1/2" MNPT, SS-600-1-8                        |          |        | 2    |
| 124  | TEE.25GYEE       | Tee 1/4" CL 3M THRD SA105N                                                             | 753      |        | 4    |
| 125  | TEE1GYEE         | Tee 1" THRD SA105N                                                                     | 753      |        | 3    |

Build in Reverse order  
All Fittings to be 6000#

Nov 16/12

Engng 3.0 mm BTU/HR 08562/08563

ORIGINAL

| DOCUMENT NO. | DESCRIPTION | REV. | DATE       | BY  | CHK | APP | DESCRIPTION                                       |
|--------------|-------------|------|------------|-----|-----|-----|---------------------------------------------------|
|              |             | 1    | 2012.09.27 | EP  |     |     | RE-ISSUED FOR CONSTRUCTION (UPDATED PART NUMBERS) |
|              |             | 0    | 2012.06.22 | JHK |     |     | ISSUED FOR CONSTRUCTION                           |

ISSUED FOR CONSTRUCTION  
SIGNED: *[Signature]*  
DATE: NOV 16 2012  
8562-001-E  
S.O.:  
ALL DIMENSIONS IN INCHES

**NWP INDUSTRIES INC.**  
Total oilfield supply.  
P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

NWP INDUSTRIES INC  
VALVE TRAIN ASSEMBLY  
1" NPT  
RIGHT TO LEFT FLOW  
ASSEMBLY DRAWING

|                  |                         |                         |
|------------------|-------------------------|-------------------------|
| DWN: JHK         | CHK: <i>[Signature]</i> | APP: <i>[Signature]</i> |
| DATE: 2012.06.22 | DATE: 2012.06.22        | DATE: 2012.06.22        |
| SCALE: 1:8       | DWG: LH-VALVETRN-1      | REV: 1                  |
| SHEET: 1 OF 1    |                         |                         |



8300 Southwest 8th Street  
Oklahoma City, Oklahoma

telephone: 405.787.0145 facsimile: 405.789.8199

email: [info@taylorvalve.com](mailto:info@taylorvalve.com)

Date : 14-Jan-13

Serial # : 020724-115

Part#: 82D3341311

Sales Order # : 020724

Customer : **NWP INDUSTRIES INC**  
4017 - 60th AVE  
INNISFAIL, AB  
T4G - 1S9

Customer PO # : 711056

## Safety Relief Valve Certification

**Taylor Valve Technology, Inc.** Safety Relief Valves are designed, manufactured and tested in accordance with the provisions of the ASME Boiler and Pressure Vessel Code, as allowed for within the provisions of ASME. The published relieving capacities have been certified by the National Board of Boiler and Pressure Vessel Inspectors.

### Valve Specifications

|                      |                             |                |                       |
|----------------------|-----------------------------|----------------|-----------------------|
| Model Number :       | Taylor Model 8200 Soft Seat | Orifice :      | D                     |
| Body Size :          | 1 Inch                      | Diameter:      | 0.404 Inches          |
| Part Number :        | 82D3341311                  | Area :         | 0.128 In <sup>2</sup> |
| Body Configuration : | 1" MNPT X 1" FNPT           | Temperature :  | 70 °F                 |
| Inlet Connection :   |                             | Spring Range : | 101-215 PSIG          |
| Outlet Connection :  |                             | Set Pressure : | 150.0 PSIG            |
| CRN:                 | 0G01316.2C                  |                |                       |

### Materials

|                |                              |             |                              |
|----------------|------------------------------|-------------|------------------------------|
| Body :         | WCC Carbon Steel             | Spring :    | 17.7 PH Stainless Steel      |
| Seat Frame :   | Carbon Steel                 | Guide :     | 304 Stainless Steel          |
| Seat Housing : | 17-4 PH H900 Stainless Steel | Adj Screw : | Carbon Steel with EN Plating |
| Trim :         | Standard                     | Options :   | None                         |
| Seat :         | FKM 90d                      |             |                              |

### Set Pressure Specifications

|                       | ASME Units |
|-----------------------|------------|
| Set Pressure :        | 150.0 psig |
| ASME High Set Limit : | 154.5 psig |
| ASME Low Set Limit :  | 145.5 psig |

ASME (90%) rated capacity at set pressure for indicated fluid, specific gravity and temperature.

Certifying Fluid : Air 354 SCFM Spec Gravity : 1.00 Temp : 60 °F

Tested by :

Department : **Manufacturing**

Signed

Mason Burger

Approved by :

Department : **Engineering**

Signed

Jay Neill





8300 Southwest 8th Street  
Oklahoma City, Oklahoma

Serial #: 020724-92  
Part#: 82D3341311

telephone: 405.787.0145 facsimile: 405.789.8188  
email: info@taylorvalve.com

Date: 14-Jan-13

Sales Order #: 020724

Customer: NWP INDUSTRIES INC  
4017 - 60th AVE  
INNISFAIL, AB  
T4G - 1S9

Customer PO #: 711056

## Safety Relief Valve Certification

**Taylor Valve Technology, Inc.** Safety Relief Valves are designed, manufactured and tested in accordance with the provisions of the ASME Boiler and Pressure Vessel Code, as allowed for within the provisions of ASME. The published relieving capacities have been certified by the National Board of Boiler and Pressure Vessel Inspectors.

### Valve Specifications

|                      |                             |                |                       |
|----------------------|-----------------------------|----------------|-----------------------|
| Model Number :       | Taylor Model 8200 Soft Seat | Orifice :      | D                     |
| Body Size :          | 1 Inch                      | Diameter:      | 0.404 Inches          |
| Part Number :        | 82D3341311                  | Area :         | 0.128 In <sup>2</sup> |
| Body Configuration : | 1" MNPT X 1" FNPT           | Temperature :  | 70 °F                 |
| Inlet Connection :   |                             | Spring Range : | 101-215 PSIG          |
| Outlet Connection :  |                             | Set Pressure : | 150.0 PSIG            |
| CRN:                 | 0G01316.2C                  |                |                       |

### Materials

|                |                              |             |                              |
|----------------|------------------------------|-------------|------------------------------|
| Body :         | WCC Carbon Steel             | Spring :    | 17.7 PH Stainless Steel      |
| Seat Frame :   | Carbon Steel                 | Guide :     | 304 Stainless Steel          |
| Seat Housing : | 17-4 PH H900 Stainless Steel | Adj Screw : | Carbon Steel with EN Plating |
| Trim :         | Standard                     | Options :   | None                         |
| Seat :         | FKM 90d                      |             |                              |

### Set Pressure Specifications

|                       | ASME Units |
|-----------------------|------------|
| Set Pressure :        | 150.0 psig |
| ASME High Set Limit : | 154.5 psig |
| ASME Low Set Limit :  | 145.5 psig |

ASME (90%) rated capacity at set pressure for indicated fluid, specific gravity and temperature.

Certifying Fluid : Air 354 SCFM Spec Gravity : 1.00 Temp : 60 °F

Tested by :

Department : Manufacturing

Signed

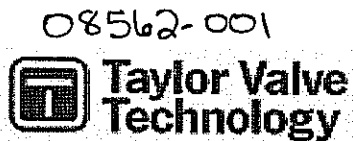
Mason Buerger

Approved by :

Department : Engineering

Signed

Jay Neill



8300 Southwest 8th Street

Oklahoma City, Oklahoma

telephone: 405.787.0145 facsimile: 405.789.8198

email: [info@taylorvalve.com](mailto:info@taylorvalve.com)

Date : 06-Dec-12

Sales Order #: 022617

Serial #: **022617-2**

Part#: **82F4661341**

Customer: **NWP INDUSTRIES INC.**

4017 - 60th AVE

INNISFAIL, AB

T4G - 1S9

Customer PO #: 710161

## Safety Relief Valve Certification

**Taylor Valve Technology, Inc.** Safety Relief Valves are designed, manufactured and tested in accordance with the provisions of the ASME Boiler and Pressure Vessel Code, as allowed for within the provisions of ASME. The published relieving capacities have been certified by the National Board of Boiler and Pressure Vessel Inspectors.

### Valve Specifications

|                      |                             |                |                       |
|----------------------|-----------------------------|----------------|-----------------------|
| Model Number :       | Taylor Model 8200 Soft Seat | Orifice :      | F                     |
| Body Size :          | 1 Inch                      | Diameter:      | 0.674 Inches          |
| Part Number :        | 82F4661341                  | Area :         | 0.357 In <sup>2</sup> |
| Body Configuration : | 1" MNPT X 1-1/2" FNPT       | Temperature :  | 70 °F                 |
| Inlet Connection :   |                             | Spring Range : | 141-290 PSIG          |
| Outlet Connection :  |                             | Set Pressure : | 150.0 PSIG            |
| CRN:                 | 0G01316.2C                  |                |                       |

### Materials

|                |                     |             |                              |
|----------------|---------------------|-------------|------------------------------|
| Body :         | WCC Carbon Steel    | Spring :    | MP35N or Equal               |
| Seat Frame :   | Carbon Steel        | Guide :     | 304 Stainless Steel          |
| Seat Housing : | 316 Stainless Steel | Adj Screw : | Carbon Steel with EN Plating |
| Trim :         | Nace                | Options :   | None                         |
| Seat :         | FKM 90d             |             |                              |

### Set Pressure Specifications

|                       | ASME Units |
|-----------------------|------------|
| Set Pressure :        | 150.0 psig |
| ASME High Set Limit : | 154.5 psig |
| ASME Low Set Limit :  | 145.5 psig |

ASME (90%) rated capacity at set pressure for indicated fluid, specific gravity and temperature.

Certifying Fluid : Air 982 SCFM Spec Gravity : 1.00 Temp : 60 °F

Tested by :

Department : **Manufacturing**

Signed Mason Buerger

Approved by :

Department : **Engineering**

Signed Jay Neill

**FACTORY SET SWITCH POINT CERTIFICATION**Customer: NWP Industries IncDate: Oct-30-2012  
(Mmm-dd-yyyy)Address: PO BOX 6280Purchase Order: 7099284017 - 60 AveInnisfail, AB T4G 1S9Telematic Work Order: 325072

In accordance to required instructions and specifications, we certify the Pressure Switch furnished on this order has been factory set as follows:

Model Number: 6900GZE12Deadband: 1.7 PSISerial Number: 325072 1012 003Tag No.: N/ASet Point: 14 PSI INCR.Test Equipment No.: TCI055

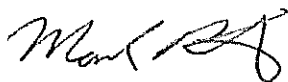
## General Features:

Dual Snap, Haz. Area, ½" NPT SST Port &Diaphragm, Viton O-Ring

|                        | PSIG                                      | BAR                 |
|------------------------|-------------------------------------------|---------------------|
| Max. System Pressure:  | <u>500</u>                                | <u>34.5</u>         |
| Proof (Test) Pressure: | <u>750</u>                                | <u>51.7</u>         |
| Adj. Setpoint Range    |                                           |                     |
| - On Increase:         | <u>3-20</u>                               | <u>0.21-1.4</u>     |
| - On Decrease:         | <u>1-18</u>                               | <u>0.07-1.2</u>     |
| Approximate Deadband:  | <u>2</u>                                  | <u>0.14</u>         |
| Wetted Parts:          | <u>SST Port &amp;</u><br><u>Diaphragm</u> | <u>Viton O-Ring</u> |

For Telematic Controls Inc.

Technician:



(Digital) Signature

Mark Rietveld

Print Name

**FACTORY SET SWITCH POINT CERTIFICATION**Customer: NWP Industries IncDate: Oct-30-2012

(Mmm-dd-yyyy)

Address: PO BOX 6280Purchase Order: 7099284017 - 60 AveInnisfail, AB T4G 1S9Telematic Work Order: 325072

In accordance to required instructions and specifications, we certify the Pressure Switch furnished on this order has been factory set as follows:

Model Number: 6900GZE12Deadband: 1.1 PSISerial Number: 325072 1012 007Tag No.: N/ASet Point: 4 PSI DECR.Test Equipment No.: TCI055**General Features:**Dual Snap, Haz. Area, ½" NPT SST Port &Diaphragm, Viton O-Ring

|                        | <b>PSIG</b>           | <b>BAR</b>          |
|------------------------|-----------------------|---------------------|
| Max. System Pressure:  | <u>500</u>            | <u>34.5</u>         |
| Proof (Test) Pressure: | <u>750</u>            | <u>51.7</u>         |
| Adj. Setpoint Range    |                       |                     |
| - On Increase:         | <u>3-20</u>           | <u>0.21-1.4</u>     |
| - On Decrease:         | <u>1-18</u>           | <u>0.07-1.2</u>     |
| Approximate Deadband:  | <u>2</u>              | <u>0.14</u>         |
| Wetted Parts:          | <u>SST Port &amp;</u> | <u>Viton O-Ring</u> |
|                        | <u>Diaphragm</u>      |                     |

For Telematic Controls Inc.

Technician: Mark Rietveld

Mark Rietveld

(Digital) Signature

Print Name



3364 - 114 Avenue SE • Calgary, Alberta, Canada • T2Z 3V6  
 Phone: +1 403.253.7939 • Fax: +1 403.255.0042  
 Email: info@telematic.ca • telematic.ca

## FACTORY SET SWITCH POINT CERTIFICATION

Customer: NWP Industries Inc Date: Nov-13-2012  
 (Mmm-dd-yyyy)

Address: Box 6280 Purchase Order: 710162  
4017 - 60<sup>th</sup> Ave.  
Innisfail AB, T4G 1S9 Telematic Work Order: 325360

In accordance to required instructions and specifications, we certify the Temperature Switch furnished on this order has been factory set as follows:

Model Number: 6900TE14 Deadband: 2.70°C  
 Serial Number: 325360-1112-003 Tag No.: N/A  
 Set Point: 90°C Incr.

Test Equipment No.: TCI014, TCI028, TCI031

### General Features:

Dual Snap, Haz. Area, 1/2" NPT 300SS

Direct Mount Probe

|                         | <u>°F</u>     | <u>°C</u>    |                   | <u>°F</u>    | <u>°C</u> |
|-------------------------|---------------|--------------|-------------------|--------------|-----------|
| Max. Probe Temperature: | <u>300</u>    | <u>149</u>   | Approx. Deadband: |              |           |
| Adj. Setpoint Range:    |               |              | - At Bottom:      | <u>20</u>    | <u>11</u> |
| - On Increase:          | <u>80-205</u> | <u>27-96</u> | - At Top:         | <u>5</u>     | <u>4</u>  |
| - On Decrease:          | <u>60-198</u> | <u>16-92</u> | Wetted Parts:     | <u>300SS</u> |           |
|                         |               |              |                   |              |           |
|                         |               |              |                   |              |           |

For Telematic Controls Inc.

Technician: Thomas  
 Thomas Hong

085 62-001-H



VALVES & MEASUREMENT

Wednesday, 12-Oct-2011

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

**Subject:**

|        |         |                 |     |
|--------|---------|-----------------|-----|
| Serial | 2218057 | Quantity/Series | 320 |
|--------|---------|-----------------|-----|

**Comments:**

Part# 5A-T3R10S30LZ

Description: BV R10 FNPT NUTRON T3 3000 WOG SOUR LT

Sales Order#: N/A

Customer PO#: N/A





VALVES & MEASUREMENT

Wednesday, 12-Oct-2011

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

## Document Summary Page

The documents are printed in the following order:

| # | Heat #     | Heat Code | Job/Serial # | Material # | Description                            |
|---|------------|-----------|--------------|------------|----------------------------------------|
| 1 | L          | LOC       |              |            | Nutron T3, B3, B2, TT Sour Low Temp.   |
| 2 | Hydro Test | 598       |              |            | API 598                                |
| 3 | S5714      |           |              |            | BALL,7/8",ASTM A351 GR CF8M            |
| 4 | S5606      |           |              |            | BALL,7/8",ASTM A351 GR CF8M            |
| 5 | R4184      |           |              |            | STEM,7/8",ASTM A564 17-4 H1150 NACE    |
| 6 | 318063     |           |              |            | CAP,1" RP 4000 WOG FNPT, ASTM A105/LF2 |
| 7 | 110052     | J         |              |            | BODY,7/8" 4000 WOG,ASTM A105/LF2       |



#### VALVES & MEASUREMENT

Cameron Canada Corporation  
3707 - 97 Street  
Edmonton Alberta Canada T6E 6J2  
Phone 780.463.6868  
Fax 780.465.1244  
www.c-a-m.com

### GENERAL LETTER OF COMPLIANCE

for Valve Models:

T3, B3 & B2 & TT

Style 'L': Sour Low Temperature Service

Cameron Valves & Measurement hereby certifies that the design, fabrication, testing and quality control of the above NUTRON brand ball valves for Sour Low Temperature Service have been made in accordance with the following applicable standards (latest edition in effect at time of manufacture): API 598 (1-1/2" and smaller), API 6D (TT only), ASME B16.34, CSA Z245.15 Sour Service (2" FP and larger) and V&M Engineering Standards. As part of compliance to these specifications, the valves have been marked in accordance with MSS SP-25. The valve has also been marked "SOUR" as required by CSA Z245.15 marking requirements for Sour Service.

The materials of construction for this valve conform to the metallurgical requirements of NACE MR0175/ISO 15156:2003 (Parts 1 & 2 for Carbon & Alloy Steels in SSC Region 3 Sour Service and Parts 1 & 3 for CRA's as specified in CSA Z245.15 Chapter 13). According to NACE MR0175-2003/ISO 15156, it is the customer's/user's responsibility to ensure that the valve materials will be satisfactory in the intended service.

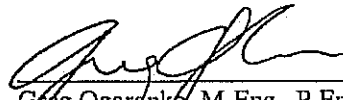
The minimum service temperature of these valves is -46°C/-50°F. Impact testing has been performed in accordance with applicable ASTM requirements and those of CSA Z245.15 for Category II M45C Service.

The 'Z' option code designation at the end of a figure number indicates that the valve meets the requirements of API-607 Fourth Edition, May 1993.

These valves (1-1/2" and larger) conform to the Pressure Equipment Directive requirements and are marked as CE certified (Certificate #8888-001-2002).

The B2 and TT valve models are constructed to be anti-static as standard.

Approved by:

  
Greg Ogarko, M.Eng., P.Eng.  
Engineering Manager



VALVES & MEASUREMENT  
Cameron Canada Corporation  
3707-97th St.  
Edmonton Alberta Canada T6E 6J2  
Phone 780.468.2732  
www.c-a-m.com

## CERTIFICATE OF CONFORMANCE

### API 598 Pressure Testing – Carbon and Low Alloy Steel (2" RP and Smaller)

**COMPLIANCE:** These valves are tested in accordance with Cameron Valves & Measurement's standard procedures and API Standard 598, as per the chart below.

Test durations are 15 seconds in length as a minimum. Test duration is defined as the period of inspection after the valve is fully prepared and is under full pressure.

Butt weld end valves shall be tested in accordance with the ANSI rating.

Actual test pressure is rounded to next highest increment on the gauge.

**Carbon & Low Alloy Steel  
Shell and Seat Test Pressures**  
(Table Based on Rating for Group 1.1 Materials per ANSI B16.34)

| Valve Class | Maximum Working Pressure | Hydrostatic Shell Test Pressure (PSI) | Air Seat Test Pressure +/- 10 PSI |
|-------------|--------------------------|---------------------------------------|-----------------------------------|
| 150 ANSI    | 285                      | 450                                   | 80                                |
| 300 ANSI    | 740                      | 1125                                  | 80                                |
| 600 ANSI    | 1480                     | 2225                                  | 80                                |
| 800 ANSI    | 1975                     | 3000                                  | 80                                |
| 900 ANSI    | 2220                     | 3350                                  | 80                                |
| 1500 ANSI   | 3705                     | 5575                                  | 80                                |
| 2500 ANSI   | 6170                     | 9275                                  | 80                                |
| 275 WOG     | 275                      | 425                                   | 80                                |
| 720 WOG     | 720                      | 1100                                  | 80                                |
| 1000 WOG    | 1000                     | 1500                                  | 80                                |
| 1440 WOG    | 1440                     | 2175                                  | 80                                |
| 1500 WOG    | 1500                     | 2250                                  | 80                                |
| 2000 WOG    | 2000                     | 3000                                  | 80                                |
| 2160 WOG    | 2160                     | 3250                                  | 80                                |
| 3000 WOG    | 3000                     | 4500                                  | 80                                |
| 3600 WOG    | 3600                     | 5400                                  | 80                                |
| 4000 WOG    | 4000                     | 6000                                  | 80                                |
| 5000 WOG    | 5000                     | 7500                                  | 80                                |
| 6000 WOG    | 6000                     | 9000                                  | 80                                |

Murray Aide, Quality Manager



ISO 9001  
No. 01 100 029188

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

320 桃園縣中壢市中華路2段185號3樓 統一編號: 16879927

Tel: (03)4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                        |                          |               |               |                       | CERTIFICATE NO. 110622- 4<br>DATE: 22-Jun-11 |               |                |                |  |
|--------------------------------------------------------------------------------------|--------------------------|---------------|---------------|-----------------------|----------------------------------------------|---------------|----------------|----------------|--|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA |                          |               |               |                       |                                              |               |                |                |  |
| INVOICE NO. WZ-110622A                                                               |                          |               |               |                       | Your Order No. 4502877267/878558/918444      |               |                |                |  |
| Material Specification: ASTM A351 CF8M                                               |                          |               |               |                       | Heat Treatment: Solution Annealed            |               |                |                |  |
| Q'TY                                                                                 | PART NAME                | DRAWING No.   | Heat Code     | Mechanical Properties |                                              |               |                |                |  |
|                                                                                      |                          |               |               | T.S.(KSI)             | Y.S.(KSI)                                    | ELO.(%)       | HB             |                |  |
|                                                                                      |                          |               |               | <u>70 min</u>         | <u>30 min</u>                                | <u>30 min</u> | <u>183 max</u> |                |  |
| 7,000                                                                                | Ball 1/2"                | #06001-010    | S5713         | 78.5                  | 50.5                                         | 55            | 172            |                |  |
| 9,360                                                                                | Ball 7/8"                | #06002-010    | S5714         | 78.2                  | 48.3                                         | 45.5          | 163            |                |  |
| 300                                                                                  | Ball 4"                  | #06011-010    | U1922         | 75.1                  | 45.8                                         | 39.4          | 160            |                |  |
| 70                                                                                   | Ball 6"                  | #06024        | U1901         | 74.5                  | 46.1                                         | 39.2          | 155            |                |  |
| 130                                                                                  | Ball 4"                  | #06040-041    | S5717         | 75.5                  | 46.4                                         | 37.4          | 158            |                |  |
| Heat<br>Code                                                                         | Chemical Composition (%) |               |               |                       |                                              |               |                |                |  |
|                                                                                      | C                        | Mn            | Si            | S                     | P                                            | Cr            | Ni             | Mo             |  |
|                                                                                      | <u>0.08max</u>           | <u>1.5max</u> | <u>1.5max</u> | <u>.040max</u>        | <u>.040max</u>                               | <u>18-21</u>  | <u>9-12</u>    | <u>2.0-3.0</u> |  |
| S5713                                                                                | 0.0675                   | 0.6884        | 1.0265        | 0.0085                | 0.0276                                       | 18.3760       | 9.0332         | 2.1062         |  |
| S5714                                                                                | 0.0582                   | 0.9382        | 0.4584        | 0.0092                | 0.0342                                       | 18.4782       | 9.1849         | 2.1566         |  |
| U1922                                                                                | 0.0540                   | 0.9133        | 1.1333        | 0.0127                | 0.0207                                       | 18.2133       | 9.0400         | 2.0867         |  |
| U1901                                                                                | 0.0507                   | 0.9967        | 1.1800        | 0.0107                | 0.0193                                       | 18.1867       | 9.0300         | 2.0500         |  |
| S5717                                                                                | 0.0580                   | 0.8600        | 1.1800        | 0.0140                | 0.0230                                       | 18.3500       | 9.0600         | 2.0700         |  |
| NOTE: <u>CERTIFICATE ACCORDING TO EN 10204/3.1B</u>                                  |                          |               |               |                       |                                              |               |                |                |  |
| QUALITY CONTROL INSPECTOR                                                            |                          |               |               |                       | MANAGER                                      |               |                |                |  |
| Sandy Yeh                                                                            |                          |               |               |                       | Grant Hsu                                    |               |                |                |  |

APPROVED

By Iai at 3:53 pm, 7/4/11

**Won Zone**

No. 0 100

**原 璋 實 業 有 限 公 司****WON ZONE CORPORATION**

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

320 桃園縣中壢市中華路二段185號3樓 統一編號: 16879927

Tel: (03)4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

| <b>CERTIFICATE OF CHEMICAL ANALYSIS<br/>AND MECHANICAL PROPERTIES</b>                |                          |               |               |                       | <b>CERTIFICATE NO. 110511- 4</b><br><b>DATE: 11-May-11</b> |               |                |                |  |
|--------------------------------------------------------------------------------------|--------------------------|---------------|---------------|-----------------------|------------------------------------------------------------|---------------|----------------|----------------|--|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE. EDMONTON AB T6P 1Z4, CANADA |                          |               |               |                       |                                                            |               |                |                |  |
| INVOICE NO. WZ-110511A                                                               |                          |               |               |                       | Your Order No. 4502836671/836684                           |               |                |                |  |
| Material Specification: ASTM A351 CF8M                                               |                          |               |               |                       | Heat Treatment: Solution Annealed                          |               |                |                |  |
| Q'TY                                                                                 | PART NAME                | DRAWING No.   | Heat Code     | Mechanical Properties |                                                            |               |                |                |  |
|                                                                                      |                          |               |               | T.S.(KSI)             | Y.S.(KSI)                                                  | ELO.(%)       | HB             |                |  |
|                                                                                      |                          |               |               | <u>70 min</u>         | <u>30 min</u>                                              | <u>30 min</u> | <u>183 max</u> |                |  |
| 2,800                                                                                | Ball 1/2"                | #06001-010    | S5605         | 79.2                  | 49.6                                                       | 52            | 172            |                |  |
| 8,640                                                                                | Ball 7/8"                | #06002-010    | S5606         | 78.9                  | 46.2                                                       | 45.5          | 163            |                |  |
| 816                                                                                  | Ball 1-1/2"              | #06003-010    | S5607         | 76.6                  | 42.1                                                       | 46            | 150            |                |  |
| 540                                                                                  | Ball 2"                  | #06004-010    | S5608         | 78.2                  | 52.6                                                       | 46            | 167            |                |  |
| 216                                                                                  | Ball 3"                  | #06005-010    | U1891         | 75.5                  | 47.0                                                       | 40.6          | 168            |                |  |
| 19                                                                                   | Ball 4"                  | #06040-041    | S5609         | 75.1                  | 46.5                                                       | 39.4          | 160            |                |  |
| Heat<br>Code                                                                         | Chemical Composition (%) |               |               |                       |                                                            |               |                |                |  |
|                                                                                      | C                        | Mn            | Si            | S                     | P                                                          | Cr            | Ni             | Mo             |  |
|                                                                                      | <u>0.08max</u>           | <u>1.5max</u> | <u>1.5max</u> | <u>0.040max</u>       | <u>0.040max</u>                                            | <u>18-21</u>  | <u>9-12</u>    | <u>2.0-3.0</u> |  |
| S5605                                                                                | 0.0450                   | 1.0588        | 0.5062        | 0.0059                | 0.0315                                                     | 18.6619       | 9.0723         | 2.0811         |  |
| S5606                                                                                | 0.0550                   | 0.9325        | 0.4876        | 0.0105                | 0.0346                                                     | 18.4871       | 9.2540         | 2.0916         |  |
| S5607                                                                                | 0.047                    | 1.04          | 0.396         | 0.015                 | 0.031                                                      | 18.3          | 9.3            | 2.13           |  |
| S5608                                                                                | 0.0559                   | 0.8248        | 0.4648        | 0.0090                | 0.0309                                                     | 18.5866       | 9.2880         | 2.1677         |  |
| U1891                                                                                | 0.0740                   | 0.8550        | 1.1500        | 0.0135                | 0.0230                                                     | 18.2600       | 9.0400         | 2.0650         |  |
| S5609                                                                                | 0.0567                   | 0.8533        | 1.1700        | 0.0106                | 0.0290                                                     | 18.1767       | 9.2067         | 2.0533         |  |
| NOTE: <u>CERTIFICATE ACCORDING TO EN 10204/3.1B</u>                                  |                          |               |               |                       |                                                            |               |                |                |  |
| QUALITY CONTROL INSPECTOR                                                            |                          |               |               |                       | MANAGER                                                    |               |                |                |  |
| <i>Sandy Yeh</i>                                                                     |                          |               |               |                       | <i>Grant Hsu</i>                                           |               |                |                |  |

**APPROVED**

By LAIA at 10:37 am, 5/20/11



ISO 9001  
No. 01 100 029185

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

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| <b>CERTIFICATE OF CHEMICAL ANALYSIS<br/>AND MECHANICAL PROPERTIES</b>                                                                                                                     |                          |               |               |                       | <b>CERTIFICATE NO. 110803- 1</b>               |                  |                |                |                |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------|---------------|-----------------------|------------------------------------------------|------------------|----------------|----------------|----------------|------------------|
|                                                                                                                                                                                           |                          |               |               |                       | <b>DATE: 3-Aug-11</b>                          |                  |                |                |                |                  |
| <b>To. COOPER CAMERON CANADA LTD.-NUTRON</b><br><b>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA</b>                                                                                        |                          |               |               |                       |                                                |                  |                |                |                |                  |
| <b>INVOICE NO. WZ-110803A</b>                                                                                                                                                             |                          |               |               |                       | <b>Your Order No. 4502918444/956946/990586</b> |                  |                |                |                |                  |
| <b>MATERIAL SPECIFICATION: ASTM A-564 TYPE 630 H1150D</b>                                                                                                                                 |                          |               |               |                       |                                                |                  |                |                |                |                  |
| Q'TY                                                                                                                                                                                      | PART NAME                | DRAWING No.   | Heat Code     | Mechanical Properties |                                                |                  |                |                |                |                  |
|                                                                                                                                                                                           |                          |               |               | Y.S.(KSI)             | T.S.(KSI)                                      | ELO.(%)          | HRC            | RA (%)         | ft-lbf (-75°F) |                  |
|                                                                                                                                                                                           |                          |               |               | <u>105 min</u>        | <u>125 min</u>                                 | <u>16 min</u>    | <u>24~33</u>   | <u>50 min</u>  | <u>15 min</u>  |                  |
| 5,000                                                                                                                                                                                     | Stem 1/2"                | #02001        | R4183         | 125                   | 138                                            | 23               | 30             | 70             | 92/92/89       |                  |
| 7,040                                                                                                                                                                                     | Stem 7/8"                | #02002        | R4184         | 126                   | 140                                            | 20               | 30             | 70             | 97/98/96       |                  |
| 2,700                                                                                                                                                                                     | Stem 1-1/2"              | #02122        | DJ            | 122                   | 137                                            | 22.5             | 31             | 72             | 112/115/113    |                  |
| 240                                                                                                                                                                                       | Stem 3"                  | #02005        | DE            | 129                   | 138                                            | 25               | 32             | 75             | 122/127/120    |                  |
| 700                                                                                                                                                                                       | Ball 1/2"                | #06001        | S5751         | 115                   | 136                                            | 23               | 30             | 72             | 98/92/93       |                  |
| 1,620                                                                                                                                                                                     | Ball 7/8"                | #06002        | S5752         | 130                   | 140                                            | 20.5             | 30             | 70             | 103/98/102     |                  |
| 108                                                                                                                                                                                       | Ball 1-1/2"              | #06003        | S5753         | 126                   | 138                                            | 21               | 32             | 68             | 82/77/79       |                  |
| 306                                                                                                                                                                                       | Ball 2"                  | #06004        | S5791         | 131                   | 141                                            | 20               | 31             | 70             | 38/36/36       |                  |
| Heat Code                                                                                                                                                                                 | Chemical Composition (%) |               |               |                       |                                                |                  |                |                |                |                  |
|                                                                                                                                                                                           | C                        | Mn            | Si            | S                     | P                                              | Cr               | Ni             | Mo             | Cu             | Nb+Ta            |
|                                                                                                                                                                                           | <u>0.07max</u>           | <u>1.0max</u> | <u>1.0max</u> | <u>.030max</u>        | <u>.040max</u>                                 | <u>15-17.5</u>   | <u>3.0-5.0</u> | <u>0.5 max</u> | <u>3.0-5.0</u> | <u>0.15-0.45</u> |
| R4183                                                                                                                                                                                     | 0.02                     | 0.62          | 0.45          | 0.021                 | 0.028                                          | 15.13            | 4.24           | 0.10           | 3.41           | 0.20             |
| R4184                                                                                                                                                                                     | 0.02                     | 0.62          | 0.45          | 0.021                 | 0.028                                          | 15.13            | 4.24           | 0.10           | 3.41           | 0.20             |
| DJ                                                                                                                                                                                        | 0.02                     | 0.64          | 0.49          | 0.002                 | 0.028                                          | 15.24            | 4.35           | 0.11           | 3.32           | 0.23             |
| DE                                                                                                                                                                                        | 0.03                     | 0.66          | 0.47          | 0.027                 | 0.029                                          | 15.26            | 4.15           | 0.19           | 3.35           | 0.21             |
| S5751                                                                                                                                                                                     | 0.02                     | 0.64          | 0.50          | 0.024                 | 0.028                                          | 15.16            | 4.22           | 0.13           | 3.38           | 0.22             |
| S5752                                                                                                                                                                                     | 0.02                     | 0.62          | 0.45          | 0.021                 | 0.028                                          | 15.13            | 4.24           | 0.10           | 3.41           | 0.20             |
| S5753                                                                                                                                                                                     | 0.03                     | 0.66          | 0.47          | 0.027                 | 0.029                                          | 15.26            | 4.15           | 0.19           | 3.35           | 0.21             |
| S5791                                                                                                                                                                                     | 0.02                     | 0.66          | 0.49          | 0.024                 | 0.029                                          | 15.05            | 4.34           | 0.19           | 3.34           | 0.20             |
| <b>Solution Treatment: 1900°F for 30 Min/Inch (Minimum of 1 Hour), Fast Air Cooling to below 90°F</b><br><b>Double Aged at 1150°F for 4 hours minimum and cooled to below 90°F in air</b> |                          |               |               |                       |                                                |                  |                |                |                |                  |
| <b>NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B</b>                                                                                                                                       |                          |               |               |                       |                                                |                  |                |                |                |                  |
| <b>QUALITY CONTROL INSPECTOR</b>                                                                                                                                                          |                          |               |               |                       |                                                | <b>MANAGER</b>   |                |                |                |                  |
| <i>Sandy Yeh</i>                                                                                                                                                                          |                          |               |               |                       |                                                | <i>Grant Hsu</i> |                |                |                |                  |

**APPROVED**

By lala at 11:41 am, 8/22/11



# Material Test Report

## Specification Notes:

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings |               |

## Product Information:

| Item # | Product Code     | Description                            | Heat Number | Heat Code | PO # |
|--------|------------------|----------------------------------------|-------------|-----------|------|
| 1      | 5A-1010101032400 | CAP,1" RP 4000 WOG FNPT, ASTM A105/LF2 | 318063      |           |      |

## Chemical Information:

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu  | V    | CE    | Co/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|-----|-----|------|-----|------|-------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |     |     |      |     |      |       |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4 | 0.08 | 0.43  | 0.02  | 1.00  | 0.32  |
| 1      | .2   | .82  | .022  | .014  | .2   | .08 | .1  | .01  | .24 | .002 | 0.380 | 0.0   |       |       |

## Physical Information:

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|--------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15           | -80              | 30            | 137                |
| Max    | 95000         |             |              |              | -50              |               | 197                |
| 1      | 78355         | 58869       | 33.6         | 44, 50, 48   | -51              | 75.6          | 164                |

## Additional Notes:

AUSTENITIZED@920°C 80 MIN OIL QUENCHED  
TEMPERED @590-704°C 30MIN/IN

Chemical Information Notes:  
1. RES 0.432

We certify that the items referenced  
in this document were manufactured  
and tested in accordance with  
Cameron Purchase Order  
requirements and EIH0204 3.1

*M. Aida*  
Quality Manager  
Cameron Canada

# Material Test Report

**Specification Notes:**

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings | 2010          |

**Product Information:**

| Item # | Product Code   | Description                        | Heat Number | Heat Code | PO # |
|--------|----------------|------------------------------------|-------------|-----------|------|
| 1      | 5A-10001032400 | BODY, 7/8" 4000 WOG, ASTM A105/LF2 | 110052      | J         |      |

**Chemical Information:**

| Item # | C    | Mn   | P     | S     | Si   | Ni   | Cr   | Mo   | Cu  | V    | CE    | Cb/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|------|------|------|-----|------|-------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |      |      |      |     |      |       |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4  | 0.3  | 0.12 | 0.4 | 0.08 | 0.43  | 0.02  | 1.00  | 0.32  |
| 1      | .20  | .90  | .011  | .030  | .24  | .072 | .094 | .019 | .19 | .036 | 0.417 | .004  |       |       |

**Physical Information:**

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|--------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15           | -80              | 30            | 137                |
| Max    | 95000         |             |              |              | -50              |               | 197                |
| 1      | 79500         | 58400       | 28           | 16, 25, 20   | -50              | 59            | 157                |

**Additional Notes:**

|                                                                          |
|--------------------------------------------------------------------------|
| <b>QUENCHING @920°C 2HRS @800°C 2HRS</b><br><b>TEMPERING @700°C 2HRS</b> |
|--------------------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Aida*  
 Quality Manager  
 Cameron Canada

08562-001-H



VALVES & MEASUREMENT

Monday, 04-Jun-2012

**From:**

**To:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**Subject:**

|        |         |                 |   |
|--------|---------|-----------------|---|
| Serial | 2448662 | Quantity/Series | 8 |
|--------|---------|-----------------|---|

**Comments:**

Part #: 5A-T3F02S30LZ

Description: BV F02 FNPT NUTRON T3 3000 WOG SOUR LT

Sales Order#: N/A

Customer PO#: N/A



VALVES & MEASUREMENT

Monday, 04-Jun-2012

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

## Document Summary Page

The documents are printed in the following order:

| # | Heat #     | Heat Code | Job/Serial # | Material # | Description                             |
|---|------------|-----------|--------------|------------|-----------------------------------------|
| 1 | L          | LOC       |              |            | Nutron T3, B3, B2, TT Sour Low Temp.    |
| 2 | Hydro Test | 598       |              |            | API 598                                 |
| 3 | S6114      |           |              |            | BALL,1/2", ASTM A351 GR CF8M            |
| 4 | R4421      |           |              |            | STEM,1/2",ASTM A564 17-4 H1150 NACE     |
| 5 | A83D443    |           |              |            | CAP,1/4" FP 6000 WOG FNPT, ASTM A350 GR |
| 6 | D70456     | HE        |              |            | BODY,1/2" 6000 WOG,ASTM A105/LF2        |



**VALVES & MEASUREMENT**  
Cameron Canada Corporation  
3707 - 97 Street  
Edmonton Alberta Canada T6E 6J2  
Phone 780.463.6868  
Fax 780.465.1244  
www.c-a-m.com

## **GENERAL LETTER OF COMPLIANCE**

**for Valve Models:**

**T3, B3 & B2 & TT**

**Style 'L': Sour Low Temperature Service**

Cameron Valves & Measurement hereby certifies that the design, fabrication, testing and quality control of the above NUTRON brand ball valves for Sour Low Temperature Service have been made in accordance with the following applicable standards (latest edition in effect at time of manufacture): API 598 (1-1/2" and smaller), API 6D (TT only), ASME B16.34, CSA Z245.15 Sour Service (2" FP and larger) and V&M Engineering Standards. As part of compliance to these specifications, the valves have been marked in accordance with MSS SP-25. The valve has also been marked "SOUR" as required by CSA Z245.15 marking requirements for Sour Service.

The materials of construction for this valve conform to the metallurgical requirements of NACE MR0175/ISO 15156:2003 (Parts 1 & 2 for Carbon & Alloy Steels in SSC Region 3 Sour Service and Parts 1 & 3 for CRA's as specified in CSA Z245.15 Chapter 13). According to NACE MR0175-2003/ISO 15156, it is the customer's/user's responsibility to ensure that the valve materials will be satisfactory in the intended service.

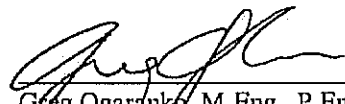
The minimum service temperature of these valves is -46°C/-50°F. Impact testing has been performed in accordance with applicable ASTM requirements and those of CSA Z245.15 for Category II M45C Service.

The 'Z' option code designation at the end of a figure number indicates that the valve meets the requirements of API-607 Fourth Edition, May 1993.

These valves (1-1/2" and larger) conform to the Pressure Equipment Directive requirements and are marked as CE certified (Certificate #8888-001-2002).

The B2 and TT valve models are constructed to be anti-static as standard.

Approved by:

  
Greg Ogarko, M.Eng., P.Eng.  
Engineering Manager

09/13/10

EWR 7463-01 Rev.06.doc



VALVES & MEASUREMENT  
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3707-97th St.  
Edmonton Alberta Canada T6E 6J2  
Phone 780.468.2732  
www.c-a-m.com

## CERTIFICATE OF CONFORMANCE

### API 598 Pressure Testing – Carbon and Low Alloy Steel (2" RP and Smaller)

**COMPLIANCE:** These valves are tested in accordance with Cameron Valves & Measurement's standard procedures and API Standard 598, as per the chart below.

Test durations are 15 seconds in length as a minimum. Test duration is defined as the period of inspection after the valve is fully prepared and is under full pressure.

Butt weld end valves shall be tested in accordance with the ANSI rating.

Actual test pressure is rounded to next highest increment on the gauge.

**Carbon & Low Alloy Steel  
Shell and Seat Test Pressures**  
(Table Based on Rating for Group 1.1 Materials per ANSI B16.34)

| Valve Class | Maximum Working Pressure | Hydrostatic Shell Test Pressure (PSI) | Air Seat Test Pressure +/- 10 PSI |
|-------------|--------------------------|---------------------------------------|-----------------------------------|
| 150 ANSI    | 285                      | 450                                   | 80                                |
| 300 ANSI    | 740                      | 1125                                  | 80                                |
| 600 ANSI    | 1480                     | 2225                                  | 80                                |
| 800 ANSI    | 1975                     | 3000                                  | 80                                |
| 900 ANSI    | 2220                     | 3350                                  | 80                                |
| 1500 ANSI   | 3705                     | 5575                                  | 80                                |
| 2500 ANSI   | 6170                     | 9275                                  | 80                                |
| 275 WOG     | 275                      | 425                                   | 80                                |
| 720 WOG     | 720                      | 1100                                  | 80                                |
| 1000 WOG    | 1000                     | 1500                                  | 80                                |
| 1440 WOG    | 1440                     | 2175                                  | 80                                |
| 1500 WOG    | 1500                     | 2250                                  | 80                                |
| 2000 WOG    | 2000                     | 3000                                  | 80                                |
| 2160 WOG    | 2160                     | 3250                                  | 80                                |
| 3000 WOG    | 3000                     | 4500                                  | 80                                |
| 3600 WOG    | 3600                     | 5400                                  | 80                                |
| 4000 WOG    | 4000                     | 6000                                  | 80                                |
| 5000 WOG    | 5000                     | 7500                                  | 80                                |
| 6000 WOG    | 6000                     | 9000                                  | 80                                |

Murray Aide, Quality Manager



**Wen Zone**

No. 0 100

**原 璋 實 業 有 限 公 司****WON ZONE CORPORATION**

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Tel: (03)-4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                          |                           |               |               |                       | CERTIFICATE NO. 120229- 1<br>DATE: 29-Feb-12 |               |                |                |  |
|----------------------------------------------------------------------------------------|---------------------------|---------------|---------------|-----------------------|----------------------------------------------|---------------|----------------|----------------|--|
| To: COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE E. EDMONTON AB T6P 1Z4, CANADA |                           |               |               |                       |                                              |               |                |                |  |
| INVOICE NO. WZ-120229A                                                                 |                           |               |               |                       | Your Order No. 4503194451/205888             |               |                |                |  |
| Material Specification: ASTM A351 CF8M                                                 |                           |               |               |                       | Heat Treatment: Solution Annealed            |               |                |                |  |
| Q'TY                                                                                   | PART NAME                 | DRAWING No.   | Heat Code     | Mechanical Properties |                                              |               |                |                |  |
|                                                                                        |                           |               |               | T.S.(KSI)             | Y.S.(KSI)                                    | ELO.(%)       | HBW            |                |  |
|                                                                                        |                           |               |               | <u>70 min</u>         | <u>30 min</u>                                | <u>30 min</u> | <u>140-237</u> |                |  |
| 4,200                                                                                  | 5A-11500541617 Ball 1/2"  | #06001-010    | S6114         | 79.2                  | 50.0                                         | 48            | 170            |                |  |
| 30                                                                                     | 5A-21503041220 Ball 3"    | #5A-06029     | S6115         | 72.6                  | 31.0                                         | 47.5          | 171            |                |  |
| 30                                                                                     | 5A-21504041220002 Ball 4" | #06040-041    | S6117         | 76.6                  | 44.7                                         | 37.0          | 159            |                |  |
| Heat<br>Code                                                                           | Chemical Composition (%)  |               |               |                       |                                              |               |                |                |  |
|                                                                                        | C                         | Mn            | Si            | S                     | P                                            | Cr            | Ni             | Mo             |  |
|                                                                                        | <u>0.08max</u>            | <u>1.5max</u> | <u>1.5max</u> | <u>.040max</u>        | <u>.040max</u>                               | <u>18-21</u>  | <u>9-12</u>    | <u>2.0-3.0</u> |  |
| S6114                                                                                  | 0.0652                    | 0.8437        | 0.9549        | 0.0098                | 0.0318                                       | 18.3670       | 9.0911         | 2.0788         |  |
| S6115                                                                                  | 0.061                     | 0.87          | 0.97          | 0.012                 | 0.032                                        | 18.21         | 9.21           | 2.08           |  |
| S6117                                                                                  | 0.0605                    | 0.7100        | 1.1550        | 0.0066                | 0.0255                                       | 18.1950       | 9.1850         | 2.0400         |  |
| NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B                                           |                           |               |               |                       |                                              |               |                |                |  |
| QUALITY CONTROL INSPECTOR                                                              |                           |               |               |                       | MANAGER                                      |               |                |                |  |
| Sandy Yeh                                                                              |                           |               |               |                       | Grant Hsu                                    |               |                |                |  |

Cameron Approved

By: Iala Date:03/09/12 2:22



1500 0001  
No. 01 100 020108

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

320 桃園縣中壢市中華路2段185號3樓 統一編號: 16879927

Tel: (03)4341325 Fax: +886-3-4341525 E-mail: wonzone.taiwan@msa.hinet.net

CERTIFICATE OF CHEMICAL ANALYSIS  
AND MECHANICAL PROPERTIES

CERTIFICATE NO. 111214- 1

DATE: 14-Dec-11

To. COOPER CAMERON CANADA LTD.-NUTRON

2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA

INVOICE NO. WZ-111214A

Your Order No. 4503130699/130702/131676

MATERIAL SPECIFICATION: ASTM A-564 TYPE 630 H1150D ✓

| Q'TY  | PART NAME     | DRAWING No. | Heat Code | Mechanical Properties |           |           |       |        |                |
|-------|---------------|-------------|-----------|-----------------------|-----------|-----------|-------|--------|----------------|
|       |               |             |           | Y.S.(KSI)             | T.S.(KSI) | ELONG.(%) | HRC   | RA (%) | ft-lbf (-75°F) |
|       |               |             |           | 105 min               | 125 min   | 16 min    | 24~33 | 50 min | 15 min         |
| 3,000 | Stem 1/2" ✓   | #02001      | R4421     | 130                   | 138       | 20.5      | 32    | 74     | 120/114/107    |
| 3,840 | Stem 7/8" ✓   | #02002      | R4422     | 105                   | 138       | 22        | 29    | 73     | 109/110/114    |
| 1,500 | Stem 1-1/2" ✓ | #02122      | DL        | 120                   | 133       | 23        | 30    | 74     | 89/103/94      |
| 180   | Stem 3" ✓     | #02005      | DK        | 136                   | 144       | 19        | 33    | 70     | 35/38/36       |
| 900   | Ball 7/8" ✓   | #06002      | S5972     | 128                   | 139       | 21        | 32    | 71     | 99/111/111     |
| 288   | Ball 1-1/2" ✓ | #06003      | S5973     | 118                   | 138       | 24        | 30    | 69     | 75/71/76       |

| Heat Code | Chemical Composition (%) |        |        |          |          |         |         |         |         |           |
|-----------|--------------------------|--------|--------|----------|----------|---------|---------|---------|---------|-----------|
|           | C                        | Mn     | Si     | S        | P        | Cr      | Ni      | Mo      | Cu      | Nb+Ta     |
|           | 0.07max                  | 1.0max | 1.0max | 0.030max | 0.040max | 15-17.5 | 3.0-5.0 | 0.5 max | 3.0-5.0 | 0.15-0.45 |
| ✓ R4421   | 0.02                     | 0.65   | 0.46   | 0.024    | 0.029    | 15.45   | 4.27    | 0.17    | 3.50    | 0.22      |
| ✓ R4422   | 0.02                     | 0.65   | 0.46   | 0.024    | 0.029    | 15.45   | 4.27    | 0.17    | 3.50    | 0.22      |
| ✓ DL      | 0.02                     | 0.62   | 0.45   | 0.021    | 0.028    | 15.13   | 4.24    | 0.10    | 3.41    | 0.20      |
| ✓ DK      | 0.02                     | 0.66   | 0.49   | 0.024    | 0.029    | 15.05   | 4.34    | 0.19    | 3.34    | 0.20      |
| ✓ S5972   | 0.02                     | 0.61   | 0.44   | 0.020    | 0.027    | 15.09   | 4.34    | 0.21    | 3.39    | 0.21      |
| ✓ S5973   | 0.02                     | 0.66   | 0.49   | 0.022    | 0.024    | 15.06   | 4.39    | 0.13    | 3.41    | 0.22      |

Solution Treatment: 1900°F for 30 Min/Inch (Minimum of 1 Hour), Fast Air Cooling to below 90°F

Double Aged at 1150°F for 4 hours minimum and cooled to below 90°F in air

NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B

QUALITY CONTROL INSPECTOR

MANAGER

Sandy Yeh

Grant Hsu

CAMERON

DEC 27 2011

Q.C. APPROVED



# Material Test Report

**Specification Notes:**

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings | 2011          |

**Product Information:**

| Item # | Product Code     | Description                              | Heat Number | Heat Code | PO # |
|--------|------------------|------------------------------------------|-------------|-----------|------|
| 1      | 5A-1020100231600 | CAP, 1/4" FP 6000 WOG FNPT, ASTM A350 GR | A83D443     |           |      |

**Chemical Information:**

| Item # | C    | Mn   | P     | S     | Si   | Ni    | Cr   | Mo    | Cu    | V     | CE     | Cb/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|-------|------|-------|-------|-------|--------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.15 |       |      |       |       |       |        |       |       |       |
| Max    | 0.23 | 1.35 | 0.035 | 0.035 | 0.3  | 0.4   | 0.3  | 0.12  | 0.4   | 0.08  | 0.43   | 0.02  | 1.00  | 0.32  |
| 1      | 0.19 | 0.89 | 0.01  | 0.006 | 0.23 | 0.046 | 0.13 | 0.006 | 0.081 | 0.041 | 0.3822 | 0.009 |       |       |

**Physical Information:**

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft-lb (average of a set) | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|---------------------------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15                              | -80              | 30            | 137                |
| Max    | 95000         |             |              |                                 | -50              |               | 187                |
| 1      | 73244         | 52939       | 30.5         | 69                              | -50              | 68.5          | 170.33             |

**Additional Notes:**

|                                                                              |
|------------------------------------------------------------------------------|
| <b>QUENCHING 920°C @ 2HRS, 800°C @ 2HRS</b><br><b>TEMPERING 700°C @ 2HRS</b> |
|------------------------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Aida*  
Quality Manager  
Cameron Canada

# Material Test Report

## Specification Notes:

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings | 2010          |

## Product Information:

| Item # | Product Code   | Description                        | Heat Number | Heat Code | PO # |
|--------|----------------|------------------------------------|-------------|-----------|------|
| 1      | 5A-10000532600 | BODY, 1/2" 6000 WOG, ASTM A105/LF2 | D70456      | HE        |      |

## Chemical Information:

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu   | V    | CE   | Co/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|-----|-----|------|------|------|------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |     |     |      |      |      |      |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4  | 0.08 | 0.43 | 0.02  | 1.00  | 0.32  |
| 1      | .2   | 1.21 | .009  | .018  | .21  | .04 | .05 | .01  | .110 | 0.0  |      | .014  |       |       |

## Physical Information:

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|--------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15           | -80              | 30            | 137                |
| Max    | 95000         |             |              |              | -50              |               | 197                |
| 1      | 76300         | 49700       | 34           | 83, 57, 87   | -50              | 71            | 148                |

## Additional Notes:

|                             |
|-----------------------------|
| NORMALIZED AS PER ASTM A105 |
|-----------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EHF0204 3.1

*M. Aida*  
Quality Manager  
Cameron Canada

08562-001-H



VALVES & MEASUREMENT

Wednesday, 17-Aug-2011

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

**Subject:**

|          |         |                 |    |
|----------|---------|-----------------|----|
| Serial # | 2165879 | Quantity/Series | 50 |
|----------|---------|-----------------|----|

**Comments:**

Part# 5A-T3F02S30BZ

Description: BV F02 FNPT NUTRON T3 3000 WOG STD

Sales Order#: N/A

Customer PO#: N/A



VALVES & MEASUREMENT

Wednesday, 17-Aug-2011

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

## Document Summary Page

The documents are printed in the following order:

| # | Heat #     | Heat Code | Job/Serial # | Material # | Description                             |
|---|------------|-----------|--------------|------------|-----------------------------------------|
| 1 | B          | LOC       |              |            | Nutron T3, B3 Standard                  |
| 2 | Hydro Test | 598       |              |            | API 598                                 |
| 3 | S5423      |           |              |            | BALL,1/2", ASTM A351 GR CF8M            |
| 4 | R4041      |           |              |            | STEM,1/2",ASTM A564 17-4 H1150 NACE     |
| 5 | A64D016    |           |              |            | CAP,1/4" FP 6000 WOG FNPT, ASTM A350 GR |
| 6 | G55D113    |           |              |            | BODY,1/2" 6000 WOG,ASTM A105/LF2        |
| 7 | G57D116    |           |              |            | BODY,1/2" 6000 WOG,ASTM A105/LF2        |
| 8 | A50D235    |           |              |            | CAP,1/4" FP 6000 WOG FNPT, ASTM A350 GR |



#### VALVES & MEASUREMENT

Cameron Canada Corporation  
3707 - 97 Street  
Edmonton Alberta Canada T6E 6J2  
Phone 780.463.6868  
Fax 780.465.1244  
www.c-a-m.com

### GENERAL LETTER OF COMPLIANCE

for Valve Models:

T3 & B3

Style 'B': Standard Service

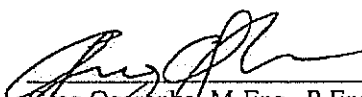
Cameron Valves & Measurement hereby certifies that the design, fabrication, testing and quality control of the above NUTRON brand ball valves for Standard Service have been made in accordance with the following applicable standards (latest edition in effect at time of manufacture): API 598 (1-1/2" and smaller), ASME B16.34, CSA Z245.15 (2" FP and larger) and V&M Engineering Standards. As part of compliance to these specifications, the valves have been marked in accordance with MSS SP-25.

The minimum service temperature of these valves is -29°C/-20°F.

The 'Z' option code designation at the end of a figure number indicates that the valve meets the requirements of API-607 Fourth Edition, May 1993.

These valves (1-1/2" and larger) conform to the Pressure Equipment Directive requirements and are marked as CE certified (Certificate #8888-001-2002).

Approved by:

  
Greg Ogarko, M.Eng., P.Eng.  
Engineering Manager





VALVES & MEASUREMENT  
Cameron Canada Corporation  
3707-97th St.  
Edmonton Alberta Canada T6E 6J2  
Phone 780.468.2732  
www.c-a-m.com

## CERTIFICATE OF CONFORMANCE

### API 598 Pressure Testing – Carbon and Low Alloy Steel (2" RP and Smaller)

**COMPLIANCE:** These valves are tested in accordance with Cameron Valves & Measurement's standard procedures and API Standard 598, as per the chart below.

Test durations are 15 seconds in length as a minimum. Test duration is defined as the period of inspection after the valve is fully prepared and is under full pressure.

Butt weld end valves shall be tested in accordance with the ANSI rating.

Actual test pressure is rounded to next highest increment on the gauge.

Carbon & Low Alloy Steel  
Shell and Seat Test Pressures  
(Table Based on Rating for Group 1.1 Materials per ANSI B16.34)

| Valve Class | Maximum Working Pressure | Hydrostatic Shell Test Pressure (PSI) | Air Seat Test Pressure +/- 10 PSI |
|-------------|--------------------------|---------------------------------------|-----------------------------------|
| 150 ANSI    | 285                      | 450                                   | 80                                |
| 300 ANSI    | 740                      | 1125                                  | 80                                |
| 600 ANSI    | 1480                     | 2225                                  | 80                                |
| 800 ANSI    | 1975                     | 3000                                  | 80                                |
| 900 ANSI    | 2220                     | 3350                                  | 80                                |
| 1500 ANSI   | 3705                     | 5575                                  | 80                                |
| 2500 ANSI   | 6170                     | 9275                                  | 80                                |
| 275 WOG     | 275                      | 425                                   | 80                                |
| 720 WOG     | 720                      | 1100                                  | 80                                |
| 1000 WOG    | 1000                     | 1500                                  | 80                                |
| 1440 WOG    | 1440                     | 2175                                  | 80                                |
| 1500 WOG    | 1500                     | 2250                                  | 80                                |
| 2000 WOG    | 2000                     | 3000                                  | 80                                |
| 2160 WOG    | 2160                     | 3250                                  | 80                                |
| 3000 WOG    | 3000                     | 4500                                  | 80                                |
| 3600 WOG    | 3600                     | 5400                                  | 80                                |
| 4000 WOG    | 4000                     | 6000                                  | 80                                |
| 5000 WOG    | 5000                     | 7500                                  | 80                                |
| 6000 WOG    | 6000                     | 9000                                  | 80                                |

Murray Aide, Quality Manager

# Wen Zone

No. 0 100

## 原 璋 實 業 有 限 公 司

### WON ZONE CORPORATION

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| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                        |                          |               |               |                       | CERTIFICATE NO. 110112-4<br>DATE: 12-Jan-11 |               |                |                |  |
|--------------------------------------------------------------------------------------|--------------------------|---------------|---------------|-----------------------|---------------------------------------------|---------------|----------------|----------------|--|
| To: COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA |                          |               |               |                       |                                             |               |                |                |  |
| INVOICE NO. WZ-110112A                                                               |                          |               |               |                       | Your Order No. 4502688608                   |               |                |                |  |
| Material Specification: ASTM A351 CF8M                                               |                          |               |               |                       | Heat Treatment: Solution Annealed           |               |                |                |  |
| Q'TY                                                                                 | PART NAME                | DRAWING No.   | Heat Code     | Mechanical Properties |                                             |               |                |                |  |
|                                                                                      |                          |               |               | T.S.(KSI)             | Y.S.(KSI)                                   | ELO.(%)       | HB             |                |  |
|                                                                                      |                          |               |               | <u>70 min</u>         | <u>30 min</u>                               | <u>30 min</u> | <u>183 max</u> |                |  |
| 2,800                                                                                | Ball 1/2"                | #06001-010    | S5423         | 79.3                  | 50.2                                        | 58            | 172            |                |  |
| 5,760                                                                                | Ball 7/8"                | #06002-010    | S5424         | 76.1                  | 47.6                                        | 44            | 164            |                |  |
| 1,872                                                                                | Ball 1-1/2"              | #06003-010    | S5425         | 76.6                  | 42.6                                        | 48            | 149            |                |  |
| 396                                                                                  | Ball 2"                  | #06004-010    | S5426         | 82.5                  | 52.6                                        | 46            | 167            |                |  |
| 324                                                                                  | Ball 3"                  | #06005-010    | U1841         | 74.5                  | 45.5                                        | 38.8          | 158            |                |  |
| 150                                                                                  | Ball 4"                  | #06011-010    | U1842         | 75.4                  | 46.3                                        | 38.7          | 159            |                |  |
| 26                                                                                   | Ball 6"                  | #06024        | U1843         | 74.8                  | 46.3                                        | 39.8          | 160            |                |  |
| 31                                                                                   | Ball 2"                  | #5A-06028     | S5427         | 76.4                  | 42.3                                        | 48            | 147            |                |  |
| 24                                                                                   | Ball 3"                  | #5A-06029     | S5428         | 75.8                  | 39.3                                        | 46            | 150            |                |  |
| 40                                                                                   | Ball 4"                  | #06040-041    | S5429         | 74.1                  | 44.8                                        | 38.9          | 159            |                |  |
| Heat Code                                                                            | Chemical Composition (%) |               |               |                       |                                             |               |                |                |  |
|                                                                                      | C                        | Mn            | Si            | S                     | P                                           | Cr            | Ni             | Mo             |  |
|                                                                                      | <u>0.08max</u>           | <u>1.5max</u> | <u>1.5max</u> | <u>.040max</u>        | <u>.040max</u>                              | <u>18-21</u>  | <u>9-12</u>    | <u>2.0-3.0</u> |  |
| S5423                                                                                | 0.0642                   | 0.5697        | 1.0757        | 0.0090                | 0.0349                                      | 18.5370       | 9.1897         | 2.0571         |  |
| S5424                                                                                | 0.0512                   | 0.9946        | 0.5037        | 0.0072                | 0.0323                                      | 18.5308       | 9.2423         | 2.2465         |  |
| S5425                                                                                | 0.048                    | 1.165         | 0.4420        | 0.0120                | 0.0320                                      | 18.230        | 9.465          | 2.12           |  |
| S5426                                                                                | 0.0511                   | 0.9378        | 0.4678        | 0.0066                | 0.0364                                      | 18.5606       | 9.2591         | 2.2014         |  |
| U1841                                                                                | 0.0580                   | 0.8950        | 1.0050        | 0.0105                | 0.0295                                      | 18.2050       | 9.2150         | 2.0600         |  |
| U1842                                                                                | 0.0610                   | 0.8800        | 0.8300        | 0.0110                | 0.0340                                      | 18.6200       | 9.4000         | 2.0100         |  |
| U1843                                                                                | 0.0520                   | 0.9300        | 0.8300        | 0.0099                | 0.0300                                      | 18.0300       | 9.3300         | 2.0500         |  |
| S5427                                                                                | 0.047                    | 1.13          | 0.467         | 0.0110                | 0.030                                       | 18.61         | 9.27           | 2.10           |  |
| S5428                                                                                | 0.0630                   | 0.998         | 0.795         | 0.0059                | 0.027                                       | 18.58         | 9.4            | 2.121          |  |
| S5429                                                                                | 0.0570                   | 0.8900        | 0.9000        | 0.0100                | 0.0320                                      | 18.0100       | 9.2300         | 2.0700         |  |
| NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B                                         |                          |               |               |                       |                                             |               |                |                |  |
| QUALITY CONTROL INSPECTOR                                                            |                          |               |               |                       | MANAGER                                     |               |                |                |  |
| Handy Yeh                                                                            |                          |               |               |                       | Grant Hsu                                   |               |                |                |  |

## APPROVED

By laia at 2:06 pm, 1/21/11



No. 0 100

## 原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

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Tel: (03)4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                                  |                          |             |           | CERTIFICATE NO. 110413-1<br>DATE: 13-Apr-11 |           |                                                                                                                                                        |         |         |                             |           |  |
|------------------------------------------------------------------------------------------------|--------------------------|-------------|-----------|---------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-----------------------------|-----------|--|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA           |                          |             |           |                                             |           |                                                                                                                                                        |         |         |                             |           |  |
| INVOICE NO. WZ-110413A                                                                         |                          |             |           | Your Order No. 4502789030/836671            |           |                                                                                                                                                        |         |         |                             |           |  |
| MATERIAL SPECIFICATION: ASTM A-564 TYPE 630 H1150D                                             |                          |             |           |                                             |           |                                                                                                                                                        |         |         |                             |           |  |
| Q'TY                                                                                           | PART NAME                | DRAWING No. | Heat Code | Mechanical Properties                       |           |                                                                                                                                                        |         |         |                             |           |  |
|                                                                                                |                          |             |           | Y.S.(KSI)                                   | T.S.(KSI) | ELO.(%)                                                                                                                                                | HRC     | RA (%)  | R <sub>1</sub> -lbF (-75°F) |           |  |
|                                                                                                |                          |             |           | 105 min                                     | 125 min   | 16 min                                                                                                                                                 | 24~33   | 50 min  | 15 min                      |           |  |
| 3,000                                                                                          | Stem 1/2"                | #02001      | R4041     | 123                                         | 137       | 21                                                                                                                                                     | 32      | 70      | 108/108/105                 |           |  |
| 11,520                                                                                         | Stem 7/8"                | #02002      | R4042     | 125                                         | 139       | 22                                                                                                                                                     | 30      | 68      | 64/68/66                    |           |  |
| 516                                                                                            | Stem 1-1/2"              | #02122      | DC        | 123                                         | 139       | 20                                                                                                                                                     | 32.0    | 68      | 83/86/88                    |           |  |
| 984                                                                                            | Stem 1-1/2"              | #02122      | DG        | 124                                         | 139       | 22                                                                                                                                                     | 31      | 71      | 83/78/77                    |           |  |
| 660                                                                                            | Stem 2"                  | #02123      | DD        | 119                                         | 137       | 22                                                                                                                                                     | 30.0    | 70      | 111/106/104                 |           |  |
| 100                                                                                            | Stem 3"                  | #02124      | DE        | 129                                         | 138       | 25                                                                                                                                                     | 32      | 75      | 122/127/120                 |           |  |
| 240                                                                                            | Stem 3"                  | #02005      | DE        | 129                                         | 138       | 25                                                                                                                                                     | 32      | 75      | 122/127/120                 |           |  |
| 144                                                                                            | Stem 4"                  | #02125      | DD        | 119                                         | 137       | 22                                                                                                                                                     | 30.0    | 70      | 111/106/104                 |           |  |
| 2,100                                                                                          | Ball 1/2"                | #06001      | S5541     | 115                                         | 136       | 23                                                                                                                                                     | 30.0    | 72      | 98/92/93                    |           |  |
| 3,420                                                                                          | Ball 7/8"                | #06002      | S5542     | 124                                         | 139       | 22                                                                                                                                                     | 31      | 71      | 83/78/77                    |           |  |
| 192                                                                                            | Ball 1-1/2"              | #06003      | S5543     | 131                                         | 142       | 21                                                                                                                                                     | 32      | 67      | 52/61/63                    |           |  |
| 90                                                                                             | Ball 2"                  | #06004      | S5601     | 118                                         | 135       | 24                                                                                                                                                     | 31      | 69      | 60/58/58                    |           |  |
| Heat Code                                                                                      | Chemical Composition (%) |             |           |                                             |           |                                                                                                                                                        |         |         |                             |           |  |
|                                                                                                | C                        | Mn          | Si        | S                                           | P         | Cr                                                                                                                                                     | Ni      | Mo      | Cu                          | Nb+Ta     |  |
|                                                                                                | 0.07max                  | 1.0max      | 1.0max    | 0.030max                                    | 0.040max  | 15-17.5                                                                                                                                                | 3.0-5.0 | 0.5 max | 3.0-5.0                     | 0.15-0.45 |  |
| R4041                                                                                          | 0.02                     | 0.64        | 0.50      | 0.024                                       | 0.028     | 15.16                                                                                                                                                  | 4.22    | 0.13    | 3.38                        | 0.22      |  |
| R4042                                                                                          | 0.02                     | 0.61        | 0.48      | 0.025                                       | 0.027     | 15.18                                                                                                                                                  | 4.26    | 0.12    | 3.49                        | 0.22      |  |
| DC                                                                                             | 0.02                     | 0.66        | 0.46      | 0.029                                       | 0.028     | 15.43                                                                                                                                                  | 4.27    | 0.21    | 3.36                        | 0.22      |  |
| DD                                                                                             | 0.03                     | 0.65        | 0.44      | 0.021                                       | 0.030     | 15.39                                                                                                                                                  | 4.29    | 0.16    | 3.31                        | 0.22      |  |
| DE                                                                                             | 0.03                     | 0.66        | 0.47      | 0.027                                       | 0.029     | 15.26                                                                                                                                                  | 4.15    | 0.19    | 3.35                        | 0.21      |  |
| DG                                                                                             | 0.02                     | 0.64        | 0.50      | 0.024                                       | 0.028     | 15.16                                                                                                                                                  | 4.22    | 0.13    | 3.38                        | 0.22      |  |
| S5541                                                                                          | 0.02                     | 0.64        | 0.50      | 0.024                                       | 0.028     | 15.16                                                                                                                                                  | 4.22    | 0.13    | 3.38                        | 0.22      |  |
| S5542                                                                                          | 0.02                     | 0.64        | 0.50      | 0.024                                       | 0.028     | 15.16                                                                                                                                                  | 4.22    | 0.13    | 3.38                        | 0.22      |  |
| S5543                                                                                          | 0.03                     | 0.64        | 0.50      | 0.028                                       | 0.029     | 15.21                                                                                                                                                  | 4.32    | 0.13    | 3.38                        | 0.22      |  |
| S5601                                                                                          | 0.02                     | 0.63        | 0.41      | 0.023                                       | 0.030     | 15.42                                                                                                                                                  | 4.31    | 0.14    | 3.31                        | 0.23      |  |
| Solution Treatment: 1900°F for 30 Min/Inch (Minimum of 1 Hour), Fast Air Cooling to below 90°F |                          |             |           |                                             |           |                                                                                                                                                        |         |         |                             |           |  |
| Double Aged at 1150°F for 4 hours minimum and cooled to below 90°F in air                      |                          |             |           |                                             |           |                                                                                                                                                        |         |         |                             |           |  |
| NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B                                                   |                          |             |           |                                             |           |                                                                                                                                                        |         |         |                             |           |  |
| QUALITY CONTROL INSPECTOR                                                                      |                          |             |           |                                             |           | MANAGER                                                                                                                                                |         |         |                             |           |  |
| Sandy Yeh                                                                                      |                          |             |           |                                             |           | Grant Hsu                                                                                                                                              |         |         |                             |           |  |
|                                                                                                |                          |             |           |                                             |           | <div style="border: 2px solid black; padding: 5px; display: inline-block;"> <b>APPROVED</b><br/>           By Iala at 11:22 am, 4/25/11         </div> |         |         |                             |           |  |

# Material Test Report

**Specification Notes:**

| Name                     | Revision | Grade       | Description                       | Revision Year |
|--------------------------|----------|-------------|-----------------------------------|---------------|
| ASTM A350 GR LF2 Cameron |          | LF2 Class 1 | Carbon & Low-Alloy Steel Forgings | 2010          |

**Product Information:**

| Item # | Product Code     | Description                              | Heat Number | Heat Code | PO # |
|--------|------------------|------------------------------------------|-------------|-----------|------|
| 1      | 5A-1020100231600 | CAP, 1/4" FP 6000 WOG FNPT, ASTM A350 GR | A64D016     |           |      |

**Chemical Information:**

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu  | V    | CE     | Cb/Nb |
|--------|------|------|-------|-------|------|-----|-----|------|-----|------|--------|-------|
| Min    |      | 0.6  |       |       | 0.15 |     |     |      |     |      |        |       |
| Max    | 0.23 | 1.35 | 0.035 | 0.035 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4 | 0.08 | 0.43   | 0.02  |
| 1      | .16  | .93  | .012  | .007  | .24  | .04 | .02 | .01  | .06 | .08  | 0.3437 | .01   |

**Physical Information:**

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb  | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|---------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15            | -80              | 30            | 137                |
| Max    | 95000         |             |              |               | -50              |               | 197                |
| 1      | 78320         | 60916       | 31.5         | 107, 107, 107 | -50              | 75.5          | 161                |

**Additional Notes:**

|                                                                          |
|--------------------------------------------------------------------------|
| <b>QUENCHING @920°C 2HRS @800°C 2HRS</b><br><b>TEMPERING @700°C 2HRS</b> |
|--------------------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Aisle*  
 Quality Manager  
 Cameron Canada

# Material Test Report

**Specification Notes:**

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings |               |

**Product Information:**

| Item # | Product Code   | Description                        | Heat Number | Heat Code | PO # |
|--------|----------------|------------------------------------|-------------|-----------|------|
| 1      | 5A-10000532600 | BODY, 1/2" 6000 WOG, ASTM A105/LF2 | G55D113     |           |      |

**Chemical Information:**

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu  | V    | CE     | Cb/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|-----|-----|------|-----|------|--------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |     |     |      |     |      |        |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4 | 0.08 | 0.43   | 0.02  | 1.00  | 0.32  |
| 1      | .21  | .94  | .015  | .011  | .26  | .01 | .01 | .006 | .01 | .001 | 0.3714 | .001  |       |       |

**Physical Information:**

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|--------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15           | -80              | 30            | 137                |
| Max    | 95000         |             |              |              | -50              |               | 197                |
| 1      | 72519         | 53664       | 31.5         | 16, 19, 15   | -50              | 73.5          | 153                |

**Additional Notes:**

|                                                                          |
|--------------------------------------------------------------------------|
| <b>QUENCHING @920°C 2HRS @800°C 2HRS</b><br><b>TEMPERING @700°C 2HRS</b> |
|--------------------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Ciolek*  
 Quality Manager  
 Cameron Canada

# Material Test Report

**Specification Notes:**

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings |               |

**Product Information:**

| Item # | Product Code   | Description            | Heat Number | Heat Code | PO # |
|--------|----------------|------------------------|-------------|-----------|------|
| 1      | 5A-10000532600 | BODY, 1/2" 6000 WOG T3 | G57D116     |           |      |

**Chemical Information:**

| Item # | C    | Mn   | P     | S     | Si   | Ni   | Cr   | Mo    | Cu   | V     | CE     | Cl/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|------|------|-------|------|-------|--------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |      |      |       |      |       |        |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4  | 0.3  | 0.12  | 0.4  | 0.08  | 0.43   | 0.02  | 1.00  | 0.32  |
| 1      | 0.18 | 0.88 | 0.013 | 0.004 | 0.23 | 0.01 | 0.01 | 0.007 | 0.01 | 0.001 | 0.3316 | 0.003 |       |       |

**Physical Information:**

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb  | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|---------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15            | -80              | 30            | 137                |
| Max    | 95000         |             |              |               | -50              |               | 197                |
| 1      | 71793         | 50763       | 323          | 179, 202, 168 | -51              | 75.5          | 152                |

**Additional Notes:**

|                                                               |
|---------------------------------------------------------------|
| QUENCHED @920°C, 2HRS @800°C, 2HRS.<br>TEMPERED @700°C, 2HRS. |
|---------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

  
Quality Manager  
Cameron Canada

# Material Test Report

**Specification Notes:**

| Name                     | Revision | Grade       | Description                       | Revision Year |
|--------------------------|----------|-------------|-----------------------------------|---------------|
| ASTM A350 GR LF2 Cameron |          | LF2 Class 1 | Carbon & Low-Alloy Steel Forgings | 2010          |

**Product Information:**

| Item # | Product Code     | Description                              | Heat Number | Heat Code | PO # |
|--------|------------------|------------------------------------------|-------------|-----------|------|
| 1      | 5A-1020100231600 | CAP, 1/4" FP 6000 WOG FNPT, ASTM A350 GR | A500235     |           |      |

**Chemical Information:**

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu  | V    | CE    | Cb/Nb |
|--------|------|------|-------|-------|------|-----|-----|------|-----|------|-------|-------|
| Min    |      | 0.6  |       |       | 0.15 |     |     |      |     |      |       |       |
| Max    | 0.23 | 1.35 | 0.035 | 0.035 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4 | 0.08 | 0.43  | 0.02  |
| 1      | .19  | .85  | .009  | .009  | .22  | .01 | .02 | .01  | .01 | .06  | 0.351 | .005  |

**Physical Information:**

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb  | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|---------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15            | -80              | 30            | 137                |
| Max    | 95000         |             |              |               | -50              |               | 197                |
| 1      | 70434         | 50038       | 29.5         | 116, 119, 114 | -50              | 75            | 169                |

**Additional Notes:**

|                                                                          |
|--------------------------------------------------------------------------|
| <b>QUENCHING @920°C 2HRS @800°C 2HRS</b><br><b>TEMPERING @700°C 2HRS</b> |
|--------------------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Ciolek*  
 Quality Manager  
 Cameron Canada



08562-001-H



VALVES & MEASUREMENT

Saturday, 01-Oct-2011

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

**Subject:**

|        |         |                 |    |
|--------|---------|-----------------|----|
| Serial | 2207441 | Quantity/Series | 50 |
|--------|---------|-----------------|----|

**Comments:**

Part# 5A-T3F02S30BZ

Description: BV F02 FNPT NUTRON T3 3000 WOG STD

Sales Order#: N/A

Customer PO#: N/A



VALVES & MEASUREMENT

Saturday, 01-Oct-2011

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

## Document Summary Page

The documents are printed in the following order:

| # | Heat #     | Heat Code | Job/Serial # | Material # | Description                             |
|---|------------|-----------|--------------|------------|-----------------------------------------|
| 1 | B          | LOC       |              |            | Nutron T3, B3 Standard                  |
| 2 | Hydro Test | 598       |              |            | API 598                                 |
| 3 | S5713      |           |              |            | BALL,1/2", ASTM A351 GR CF8M            |
| 4 | R4183      |           |              |            | STEM,1/2",ASTM A564 17-4 H1150 NACE     |
| 5 | A50D235    |           |              |            | CAP,1/4" FP 6000 WOG FNPT, ASTM A350 GR |
| 6 | D70456     | HE        |              |            | BODY,1/2" 6000 WOG,ASTM A105/LF2        |



#### VALVES & MEASUREMENT

Cameron Canada Corporation  
3707 - 97 Street  
Edmonton Alberta Canada T6E 6J2  
Phone 780.463.6868  
Fax 780.465.1244  
www.c-a-m.com

### GENERAL LETTER OF COMPLIANCE

for Valve Models:

**T3 & B3**

**Style 'B': Standard Service**

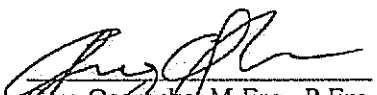
Cameron Valves & Measurement hereby certifies that the design, fabrication, testing and quality control of the above NUTRON brand ball valves for Standard Service have been made in accordance with the following applicable standards (latest edition in effect at time of manufacture): API 598 (1-1/2" and smaller), ASME B16.34, CSA Z245.15 (2" FP and larger) and V&M Engineering Standards. As part of compliance to these specifications, the valves have been marked in accordance with MSS SP-25.

The minimum service temperature of these valves is -29°C/-20°F.

The 'Z' option code designation at the end of a figure number indicates that the valve meets the requirements of API-607 Fourth Edition, May 1993.

These valves (1-1/2" and larger) conform to the Pressure Equipment Directive requirements and are marked as CE certified (Certificate #8888-001-2002).

Approved by:

  
Greg Ogarko, M.Eng., P.Eng.  
Engineering Manager

**VALVES & MEASUREMENT**

Cameron Canada Corporation  
3707-97th St.  
Edmonton Alberta Canada T6E 6J2  
Phone 780.468.2732  
www.c-a-m.com

**CERTIFICATE OF CONFORMANCE****API 598 Pressure Testing – Carbon and Low Alloy Steel  
(2" RP and Smaller)**

**COMPLIANCE:** These valves are tested in accordance with Cameron Valves & Measurement's standard procedures and API Standard 598, as per the chart below.

Test durations are 15 seconds in length as a minimum. Test duration is defined as the period of inspection after the valve is fully prepared and is under full pressure.

Butt weld end valves shall be tested in accordance with the ANSI rating.

Actual test pressure is rounded to next highest increment on the gauge.

**Carbon & Low Alloy Steel  
Shell and Seat Test Pressures**  
(Table Based on Rating for Group 1.1 Materials per ANSI B16.34)

| Valve Class | Maximum Working Pressure | Hydrostatic Shell Test Pressure (PSI) | Air Seat Test Pressure +/- 10 PSI |
|-------------|--------------------------|---------------------------------------|-----------------------------------|
| 150 ANSI    | 285                      | 450                                   | 80                                |
| 300 ANSI    | 740                      | 1125                                  | 80                                |
| 600 ANSI    | 1480                     | 2225                                  | 80                                |
| 800 ANSI    | 1975                     | 3000                                  | 80                                |
| 900 ANSI    | 2220                     | 3350                                  | 80                                |
| 1500 ANSI   | 3705                     | 5575                                  | 80                                |
| 2500 ANSI   | 6170                     | 9275                                  | 80                                |
| 275 WOG     | 275                      | 425                                   | 80                                |
| 720 WOG     | 720                      | 1100                                  | 80                                |
| 1000 WOG    | 1000                     | 1500                                  | 80                                |
| 1440 WOG    | 1440                     | 2175                                  | 80                                |
| 1500 WOG    | 1500                     | 2250                                  | 80                                |
| 2000 WOG    | 2000                     | 3000                                  | 80                                |
| 2160 WOG    | 2160                     | 3250                                  | 80                                |
| 3000 WOG    | 3000                     | 4500                                  | 80                                |
| 3600 WOG    | 3600                     | 5400                                  | 80                                |
| 4000 WOG    | 4000                     | 6000                                  | 80                                |
| 5000 WOG    | 5000                     | 7500                                  | 80                                |
| 6000 WOG    | 6000                     | 9000                                  | 80                                |

Murray Aide, Quality Manager



ISO 9001  
No. 01 100 029186

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

320 桃園縣中壢市中華路2段185號3樓 統一編號: 16879927

Tel: (03)4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                        |                          |               |               |                       | CERTIFICATE NO. 110622- 4<br>DATE: 22-Jun-11 |               |                |                |  |
|--------------------------------------------------------------------------------------|--------------------------|---------------|---------------|-----------------------|----------------------------------------------|---------------|----------------|----------------|--|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA |                          |               |               |                       |                                              |               |                |                |  |
| INVOICE NO. WZ-110622A                                                               |                          |               |               |                       | Your Order No. 4502877267/878558/918444      |               |                |                |  |
| Material Specification: ASTM A351 CF8M                                               |                          |               |               |                       | Heat Treatment: Solution Annealed            |               |                |                |  |
| Q'TY                                                                                 | PART NAME                | DRAWING No.   | Heat Code     | Mechanical Properties |                                              |               |                |                |  |
|                                                                                      |                          |               |               | T.S.(KSI)             | Y.S.(KSI)                                    | ELO.(%)       | HB             |                |  |
|                                                                                      |                          |               |               | <u>70 min</u>         | <u>30 min</u>                                | <u>30 min</u> | <u>183 max</u> |                |  |
| 7,000                                                                                | Ball 1/2"                | #06001-010    | S5713         | 78.5                  | 50.5                                         | 55            | 172            |                |  |
| 9,360                                                                                | Ball 7/8"                | #06002-010    | S5714         | 78.2                  | 48.3                                         | 45.5          | 163            |                |  |
| 300                                                                                  | Ball 4"                  | #06011-010    | U1922         | 75.1                  | 45.8                                         | 39.4          | 160            |                |  |
| 70                                                                                   | Ball 6"                  | #06024        | U1901         | 74.5                  | 46.1                                         | 39.2          | 155            |                |  |
| 130                                                                                  | Ball 4"                  | #06040-041    | S5717         | 75.5                  | 46.4                                         | 37.4          | 158            |                |  |
| Heat<br>Code                                                                         | Chemical Composition (%) |               |               |                       |                                              |               |                |                |  |
|                                                                                      | C                        | Mn            | Si            | S                     | P                                            | Cr            | Ni             | Mo             |  |
|                                                                                      | <u>0.08max</u>           | <u>1.5max</u> | <u>1.5max</u> | <u>.040max</u>        | <u>.040max</u>                               | <u>18-21</u>  | <u>9-12</u>    | <u>2.0-3.0</u> |  |
| S5713                                                                                | 0.0675                   | 0.6884        | 1.0265        | 0.0085                | 0.0276                                       | 18.3760       | 9.0332         | 2.1062         |  |
| S5714                                                                                | 0.0582                   | 0.9382        | 0.4584        | 0.0092                | 0.0342                                       | 18.4782       | 9.1849         | 2.1566         |  |
| U1922                                                                                | 0.0540                   | 0.9133        | 1.1333        | 0.0127                | 0.0207                                       | 18.2133       | 9.0400         | 2.0867         |  |
| U1901                                                                                | 0.0507                   | 0.9967        | 1.1800        | 0.0107                | 0.0193                                       | 18.1867       | 9.0300         | 2.0500         |  |
| S5717                                                                                | 0.0580                   | 0.8600        | 1.1800        | 0.0140                | 0.0230                                       | 18.3500       | 9.0600         | 2.0700         |  |
| NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B                                         |                          |               |               |                       |                                              |               |                |                |  |
| QUALITY CONTROL INSPECTOR                                                            |                          |               |               |                       | MANAGER                                      |               |                |                |  |
| Sandy Yeh                                                                            |                          |               |               |                       | Grant Hsu                                    |               |                |                |  |

APPROVED

By Iala at 3:53 pm, 7/4/11



ISO 9001  
No. 01 100 029186

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

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| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                                  |                          |               |               |                       | CERTIFICATE NO. 110803- 1<br>DATE: 3-Aug-11 |                |                |                |                |                  |
|------------------------------------------------------------------------------------------------|--------------------------|---------------|---------------|-----------------------|---------------------------------------------|----------------|----------------|----------------|----------------|------------------|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA           |                          |               |               |                       |                                             |                |                |                |                |                  |
| INVOICE NO. WZ-110803A                                                                         |                          |               |               |                       | Your Order No. 4502918444/956946/990586     |                |                |                |                |                  |
| MATERIAL SPECIFICATION: ASTM A-564 TYPE 630 H1150D                                             |                          |               |               |                       |                                             |                |                |                |                |                  |
| Q'TY                                                                                           | PART NAME                | DRAWING No.   | Heat Code     | Mechanical Properties |                                             |                |                |                |                |                  |
|                                                                                                |                          |               |               | Y.S.(KSD)             | T.S.(KSD)                                   | ELO.(%)        | HRC            | RA (%)         | ft-lbf (-75°F) |                  |
|                                                                                                |                          |               |               | <u>105 min</u>        | <u>125 min</u>                              | <u>16 min</u>  | <u>24-33</u>   | <u>50 min</u>  | <u>15 min</u>  |                  |
| 5,000                                                                                          | Stem 1/2"                | #02001        | R4183         | 125                   | 138                                         | 23             | 30             | 70             | 92/92/89       |                  |
| 7,040                                                                                          | Stem 7/8"                | #02002        | R4184         | 126                   | 140                                         | 20             | 30             | 70             | 97/98/96       |                  |
| 2,700                                                                                          | Stem 1-1/2"              | #02122        | DJ            | 122                   | 137                                         | 22.5           | 31             | 72             | 112/115/113    |                  |
| 240                                                                                            | Stem 3"                  | #02005        | DE            | 129                   | 138                                         | 25             | 32             | 75             | 122/127/120    |                  |
| 700                                                                                            | Ball 1/2"                | #06001        | S5751         | 115                   | 136                                         | 23             | 30             | 72             | 98/92/93       |                  |
| 1,620                                                                                          | Ball 7/8"                | #06002        | S5752         | 130                   | 140                                         | 20.5           | 30             | 70             | 103/98/102     |                  |
| 108                                                                                            | Ball 1-1/2"              | #06003        | S5753         | 126                   | 138                                         | 21             | 32             | 68             | 82/77/79       |                  |
| 306                                                                                            | Ball 2"                  | #06004        | S5791         | 131                   | 141                                         | 20             | 31             | 70             | 38/36/36       |                  |
| Heat Code                                                                                      | Chemical Composition (%) |               |               |                       |                                             |                |                |                |                |                  |
|                                                                                                | C                        | Mn            | Si            | S                     | P                                           | Cr             | Ni             | Mo             | Cu             | Nb+Ta            |
|                                                                                                | <u>0.07max</u>           | <u>1.0max</u> | <u>1.0max</u> | <u>.030max</u>        | <u>.040max</u>                              | <u>15-17.5</u> | <u>3.0-5.0</u> | <u>0.5 max</u> | <u>3.0-5.0</u> | <u>0.15-0.45</u> |
| R4183                                                                                          | 0.02                     | 0.62          | 0.45          | 0.021                 | 0.028                                       | 15.13          | 4.24           | 0.10           | 3.41           | 0.20             |
| R4184                                                                                          | 0.02                     | 0.62          | 0.45          | 0.021                 | 0.028                                       | 15.13          | 4.24           | 0.10           | 3.41           | 0.20             |
| DJ                                                                                             | 0.02                     | 0.64          | 0.49          | 0.002                 | 0.028                                       | 15.24          | 4.35           | 0.11           | 3.32           | 0.23             |
| DE                                                                                             | 0.03                     | 0.66          | 0.47          | 0.027                 | 0.029                                       | 15.26          | 4.15           | 0.19           | 3.35           | 0.21             |
| S5751                                                                                          | 0.02                     | 0.64          | 0.50          | 0.024                 | 0.028                                       | 15.16          | 4.22           | 0.13           | 3.38           | 0.22             |
| S5752                                                                                          | 0.02                     | 0.62          | 0.45          | 0.021                 | 0.028                                       | 15.13          | 4.24           | 0.10           | 3.41           | 0.20             |
| S5753                                                                                          | 0.03                     | 0.66          | 0.47          | 0.027                 | 0.029                                       | 15.26          | 4.15           | 0.19           | 3.35           | 0.21             |
| S5791                                                                                          | 0.02                     | 0.66          | 0.49          | 0.024                 | 0.029                                       | 15.05          | 4.34           | 0.19           | 3.34           | 0.20             |
| Solution Treatment: 1900°F for 30 Min/Inch (Minimum of 1 Hour), Fast Air Cooling to below 90°F |                          |               |               |                       |                                             |                |                |                |                |                  |
| Double Aged at 1150°F for 4 hours minimum and cooled to below 90°F in air                      |                          |               |               |                       |                                             |                |                |                |                |                  |
| NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B                                                   |                          |               |               |                       |                                             |                |                |                |                |                  |
| QUALITY CONTROL INSPECTOR                                                                      |                          |               |               |                       |                                             | MANAGER        |                |                |                |                  |
| Sandy Yeh                                                                                      |                          |               |               |                       |                                             | Grant Hsu      |                |                |                |                  |

APPROVED

By Iala at 11:41 am, 8/22/11

# Material Test Report

## Specification Notes:

| Name                     | Revision | Grade       | Description                       | Revision Year |
|--------------------------|----------|-------------|-----------------------------------|---------------|
| ASTM A350 GR LF2 Cameron |          | LF2 Class 1 | Carbon & Low-Alloy Steel Forgings | 2010          |

## Product Information:

| Item # | Product Code     | Description                              | Heat Number | Heat Code | PO # |
|--------|------------------|------------------------------------------|-------------|-----------|------|
| 1      | 5A-1020100231600 | CAP, 1/4" FP 6000 WOG FNPT, ASTM A350 GR | A50D235     |           |      |

## Chemical Information:

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu  | V    | CE    | Cb/Nb |
|--------|------|------|-------|-------|------|-----|-----|------|-----|------|-------|-------|
| Min    |      | 0.6  |       |       | 0.15 |     |     |      |     |      |       |       |
| Max    | 0.23 | 1.35 | 0.035 | 0.035 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4 | 0.08 | 0.43  | 0.02  |
| 1      | .19  | .85  | .009  | .009  | .22  | .01 | .02 | .01  | .01 | .06  | 0.351 | .005  |

## Physical Information:

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb  | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|---------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15            | -80              | 30            | 137                |
| Max    | 95000         |             |              |               | -50              |               | 197                |
| 1      | 70434         | 50038       | 29.5         | 116, 119, 114 | -50              | 75            | 169                |

## Additional Notes:

|                                                                          |
|--------------------------------------------------------------------------|
| <b>QUENCHING @920°C 2HRS @800°C 2HRS</b><br><b>TEMPERING @700°C 2HRS</b> |
|--------------------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Aida*  
Quality Manager  
Cameron Canada



# Material Test Report

## Specification Notes:

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings | 2010          |

## Product Information:

| Item # | Product Code   | Description                        | Heat Number | Heat Code | PO # |
|--------|----------------|------------------------------------|-------------|-----------|------|
| 1      | 5A-10000532600 | BODY, 1/2" 6000 WOG, ASTM A105/LF2 | D70456      | HE        |      |

## Chemical Information:

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu   | V    | CE   | Cb/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|-----|-----|------|------|------|------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |     |     |      |      |      |      |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4  | 0.08 | 0.43 | 0.02  | 1.00  | 0.32  |
| 1      | .2   | 1.21 | .009  | .018  | .21  | .04 | .05 | .01  | .110 | 0.0  |      | .014  |       |       |

## Physical Information:

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|--------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15           | -80              | 30            | 137                |
| Max    | 95000         |             |              |              | -50              |               | 197                |
| 1      | 76300         | 49700       | 34           | 83, 57, 87   | -50              | 71            | 148                |

## Additional Notes:

|                             |
|-----------------------------|
| NORMALIZED AS PER ASTM A105 |
|-----------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Ciole*  
Quality Manager  
Cameron Canada

08562-001-H



VALVES & MEASUREMENT

Monday, 02-Apr-2012

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

**Subject:**

|        |         |                 |    |
|--------|---------|-----------------|----|
| Serial | 2388581 | Quantity/Series | 50 |
|--------|---------|-----------------|----|

**Comments:**

Part #: 5A-T3R20S30BZ

Description: BV R20 FNPT NUTRON T3 3000 WOG STD

Sales Order#: N/A

Customer PO#: N/A



VALVES & MEASUREMENT

Monday, 02-Apr-2012

**From:**

Cameron Canada  
3707 97 Street  
Edmonton, Alberta, Canada  
T6E 6J2  
Phone : 780-468-2732

**To:**

## Document Summary Page

The documents are printed in the following order:

| # | Heat #     | Heat Code | Job/Serial # | Material # | Description                             |
|---|------------|-----------|--------------|------------|-----------------------------------------|
| 1 | B          | LOC       |              |            | Nutron T3, B3 Standard                  |
| 2 | Hydro Test | 598       |              |            | API 598                                 |
| 3 | S597A      |           |              |            | BALL,1-1/2",ASTM A675 GR 70,HARD CHROME |
| 4 | KS         |           |              |            | STEM,1-1/2",w/O-RING SEAL,ASTM A108 GR  |
| 5 | 318232     |           |              |            | CAP,2" RP 4000 WOG FNPT,ASTM A105/LF2   |
| 6 | A80D400    |           |              |            | BODY,1-1/2" 6000 WOG, A105/LF2          |



**VALVES & MEASUREMENT**  
Cameron Canada Corporation  
3707 - 97 Street  
Edmonton Alberta Canada T6E 6J2  
Phone 780.463.6868  
Fax 780.465.1244  
www.c-a-m.com

## **GENERAL LETTER OF COMPLIANCE**

**for Valve Models:**

**T3 & B3**

**Style 'B': Standard Service**

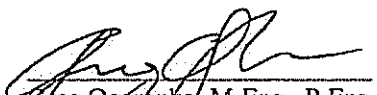
Cameron Valves & Measurement hereby certifies that the design, fabrication, testing and quality control of the above NUTRON brand ball valves for Standard Service have been made in accordance with the following applicable standards (latest edition in effect at time of manufacture): API 598 (1-1/2" and smaller), ASME B16.34, CSA Z245.15 (2" FP and larger) and V&M Engineering Standards. As part of compliance to these specifications, the valves have been marked in accordance with MSS SP-25.

The minimum service temperature of these valves is -29°C/-20°F.

The 'Z' option code designation at the end of a figure number indicates that the valve meets the requirements of API-607 Fourth Edition, May 1993.

These valves (1-1/2" and larger) conform to the Pressure Equipment Directive requirements and are marked as CE certified (Certificate #8888-001-2002).

Approved by:

  
Greg Ogarko, M.Eng., P.Eng.  
Engineering Manager

**VALVES & MEASUREMENT**

Cameron Canada Corporation  
3707-97th St.  
Edmonton Alberta Canada T6E 6J2  
Phone 780.468.2732  
www.c-a-m.com

**CERTIFICATE OF CONFORMANCE****API 598 Pressure Testing – Carbon and Low Alloy Steel  
(2" RP and Smaller)**

**COMPLIANCE:** These valves are tested in accordance with Cameron Valves & Measurement's standard procedures and API Standard 598, as per the chart below.

Test durations are 15 seconds in length as a minimum. Test duration is defined as the period of inspection after the valve is fully prepared and is under full pressure.

Butt weld end valves shall be tested in accordance with the ANSI rating.

Actual test pressure is rounded to next highest increment on the gauge.

**Carbon & Low Alloy Steel  
Shell and Seat Test Pressures**  
*(Table Based on Rating for Group 1.1 Materials per ANSI B16.34)*

| Valve Class | Maximum Working Pressure | Hydrostatic Shell Test Pressure (PSI) | Air Seat Test Pressure +/- 10 PSI |
|-------------|--------------------------|---------------------------------------|-----------------------------------|
| 150 ANSI    | 285                      | 450                                   | 80                                |
| 300 ANSI    | 740                      | 1125                                  | 80                                |
| 600 ANSI    | 1480                     | 2225                                  | 80                                |
| 800 ANSI    | 1975                     | 3000                                  | 80                                |
| 900 ANSI    | 2220                     | 3350                                  | 80                                |
| 1500 ANSI   | 3705                     | 5575                                  | 80                                |
| 2500 ANSI   | 6170                     | 9275                                  | 80                                |
| 275 WOG     | 275                      | 425                                   | 80                                |
| 720 WOG     | 720                      | 1100                                  | 80                                |
| 1000 WOG    | 1000                     | 1500                                  | 80                                |
| 1440 WOG    | 1440                     | 2175                                  | 80                                |
| 1500 WOG    | 1500                     | 2250                                  | 80                                |
| 2000 WOG    | 2000                     | 3000                                  | 80                                |
| 2160 WOG    | 2160                     | 3250                                  | 80                                |
| 3000 WOG    | 3000                     | 4500                                  | 80                                |
| 3600 WOG    | 3600                     | 5400                                  | 80                                |
| 4000 WOG    | 4000                     | 6000                                  | 80                                |
| 5000 WOG    | 5000                     | 7500                                  | 80                                |
| 6000 WOG    | 6000                     | 9000                                  | 80                                |

Murray Aide, Quality Manager



TW No. 0 100 329 86

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

320 桃園縣中壢市中華路2段185號3樓 統一編號: 16879927

Tel: (03)4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                        |                                       |                  |                  | CERTIFICATE NO. 120111- 3<br>DATE: 11-Jan-12 |                |               |               |                |               |               |               |
|--------------------------------------------------------------------------------------|---------------------------------------|------------------|------------------|----------------------------------------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA |                                       |                  |                  |                                              |                |               |               |                |               |               |               |
| INVOICE NO. WZ-120111A                                                               |                                       |                  |                  | Your Order No. 4503131676/30702/63960/62021  |                |               |               |                |               |               |               |
| Material Specification: ASTM A105N                                                   |                                       |                  |                  | Heat Treatment: NORMALIZING                  |                |               |               |                |               |               |               |
| Q'TY                                                                                 | PART NAME                             | DRAWING No.      | Heat Code        | Mechanical Properties                        |                |               |               |                |               |               |               |
|                                                                                      |                                       |                  |                  | Y.S.(Mpa)                                    | T.S.(Mpa)      | ELO.(%)       | RA (%)        | HB             |               |               |               |
|                                                                                      |                                       |                  |                  | <u>250 min</u>                               | <u>485 min</u> | <u>30 min</u> | <u>30 min</u> | <u>137-187</u> |               |               |               |
| 2,736                                                                                | 5A-11501501617001 Ball 1½" #06003-301 |                  | S597A            | 288                                          | 492            | 36.1          | 63.9          | 146            |               |               |               |
| 720                                                                                  | 5A-11502001617001 Ball 2" #06004-301  |                  | S597A            | 288                                          | 492            | 36.1          | 63.9          | 146            |               |               |               |
| 900                                                                                  | 5A-11503001617001 Ball 3" #06005-301  |                  | S597A            | 288                                          | 492            | 36.1          | 63.9          | 146            |               |               |               |
| Heat<br>Code                                                                         | Chemical Composition (%)              |                  |                  |                                              |                |               |               |                |               |               |               |
|                                                                                      | C                                     | Mn               | Si               | S                                            | P              | Cr            | Ni            | Mo             | V             | Cu            | Nb            |
| S597A                                                                                | <u>0.35max</u>                        | <u>0.60-1.05</u> | <u>0.10-0.35</u> | <u>.040max</u>                               | <u>.035max</u> | <u>.30max</u> | <u>.40max</u> | <u>.12max</u>  | <u>.05max</u> | <u>.40max</u> | <u>.02max</u> |
|                                                                                      | 0.180                                 | 0.820            | 0.230            | 0.007                                        | 0.014          | 0.020         | 0.010         | Tr             | 0.001         | 0.010         | 0             |
| PLATING: NICKEL UNDER CHROME AS PER NATIONAL STANDARD 4157 CNS H3060                 |                                       |                  |                  |                                              |                |               |               |                |               |               |               |
| QUALITY CONTROL INSPECTOR                                                            |                                       |                  |                  |                                              |                | MANAGER       |               |                |               |               |               |
| Sandy Yeh                                                                            |                                       |                  |                  |                                              |                | Grant Hsu     |               |                |               |               |               |

APPROVED

By Iala at 9:19 am, 1/20/12



No. 100

原 璋 實 業 有 限 公 司

WON ZONE CORPORATION

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 320, Taiwan R.O.C.

320 桃園縣中壢市中華路2段185號3樓 統一編號: 16879927

Tel: (03)4341325 Fax: +886-3-4341525 E-mail: wonzone.taiwan@msa.hinet.net

| CERTIFICATE OF CHEMICAL ANALYSIS<br>AND MECHANICAL PROPERTIES                        |                             |                          |                           |                           | CERTIFICATE NO. 120215- 3<br>DATE: 15-Feb-12 |         |        |     |  |
|--------------------------------------------------------------------------------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------------------------|---------|--------|-----|--|
| To. COOPER CAMERON CANADA LTD.-NUTRON<br>2125-64 AVENUE, EDMONTON AB T6P 1Z4, CANADA |                             |                          |                           |                           |                                              |         |        |     |  |
| INVOICE NO. WZ-120215A                                                               |                             |                          |                           |                           | Your Order No. 4503171536                    |         |        |     |  |
| MATERIAL SPECIFICATION: ASTM A108 GR 12L14                                           |                             |                          |                           |                           |                                              |         |        |     |  |
| Q'TY                                                                                 | PART NAME                   | DRAWING No.              | Heat Code                 | Mechanical Properties     |                                              |         |        |     |  |
|                                                                                      |                             |                          |                           | Y.S.(KSI)                 | T.S.(KSI)                                    | ELO.(%) | RA (%) | HB  |  |
| 2,100<br>528                                                                         | 5A-1130150-4300010 Stem 1½" | #02122                   | KS                        | 74.8                      | 80.1                                         | 16.8    | 37.2   | 178 |  |
|                                                                                      | 5A-1130200-4300010 Stem 2"  | #02123                   | KR                        | 72.2                      | 78.5                                         | 19.0    | 49.0   | 165 |  |
| Heat<br>Code                                                                         | Chemical Composition (%)    |                          |                           |                           |                                              |         |        |     |  |
|                                                                                      | C                           | Mn                       | P                         | S                         | Pb                                           |         |        |     |  |
| KS                                                                                   | <u>0.15max</u><br>0.06      | <u>0.85-1.15</u><br>1.04 | <u>0.04-0.09</u><br>0.061 | <u>0.26-0.35</u><br>0.327 | <u>0.15-0.35</u><br>0.28                     |         |        |     |  |
|                                                                                      | 0.07                        | 0.97                     | 0.057                     | 0.308                     | 0.26                                         |         |        |     |  |
| KR                                                                                   |                             |                          |                           |                           |                                              |         |        |     |  |
| NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B                                         |                             |                          |                           |                           |                                              |         |        |     |  |
| QUALITY CONTROL INSPECTOR                                                            |                             |                          |                           |                           | MANAGER                                      |         |        |     |  |
| Sandy Yeh                                                                            |                             |                          |                           |                           | Grant Hsu                                    |         |        |     |  |

Cameron Approved

By: Iala Date: 02/24/12 4:11



# Material Test Report

## Specification Notes:

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR.LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings |               |

## Product Information:

| Item # | Product Code     | Description                             | Heat Number | Heat Code | PO # |
|--------|------------------|-----------------------------------------|-------------|-----------|------|
| 1      | 5A-1010102032400 | CAP, 2" RP 4000 WOG FNPT, ASTM A105/LF2 | 318232      |           |      |

## Chemical Information:

| Item # | C    | Mn   | P     | S     | Si   | Ni  | Cr  | Mo   | Cu  | V    | CE    | Cl/Nb | Cr+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|-----|-----|------|-----|------|-------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.10 |     |     |      |     |      |       |       |       |       |
| Max    | 0.21 | 1.35 | 0.030 | 0.030 | 0.3  | 0.4 | 0.3 | 0.12 | 0.4 | 0.08 | 0.43  | 0.02  | 1.00  | 0.32  |
| 1      | .2   | .82  | .021  | .013  | .210 | .06 | .1  | .01  | .2  | .002 | 0.380 | 0.0   |       |       |

## Physical Information:

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft/lb | Charpy Temp (°F) | % Red of Area | Hardness (Brinell) |
|--------|---------------|-------------|--------------|--------------|------------------|---------------|--------------------|
| Min    | 70000         | 36000       | 22           | 15           | -80              | 30            | 137                |
| Max    | 95000         |             |              |              | -50              |               | 197                |
| 1      | 73732         | 44774       | 37.3         | 95, 97, 102  | -50              | 76.8          | 150                |

## Additional Notes:

AUSTENITIZED @920°C 80 MIN OIL QUENCHED  
TEMPERED @590-704°C 30MIN/IN

Chemical Information Notes:  
1. RES 0.372

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Aida*  
Quality Manager  
Cameron Canada

# Material Test Report

## Specification Notes:

| Name                               | Revision | Grade | Description                       | Revision Year |
|------------------------------------|----------|-------|-----------------------------------|---------------|
| ASTM A105/ASTM A350 GR LF2 Cameron |          |       | Carbon & Low-Alloy Steel Forgings | 2011          |

## Product Information:

| Item # | Product Code   | Description                     | Heat Number | Heat Code | PO # |
|--------|----------------|---------------------------------|-------------|-----------|------|
| 1      | 5A-10001532600 | BODY, 1-1/2" 6000 WOG, A105/LF2 | A80D400     |           |      |

## Chemical Information:

| Item # | C    | Mn   | P     | S     | Si   | Ni   | Cr  | Mo   | Cu   | V    | CE     | Cb/Nb | Cu+Ni | Cr+Mo |
|--------|------|------|-------|-------|------|------|-----|------|------|------|--------|-------|-------|-------|
| Min    |      | 0.6  |       |       | 0.15 |      |     |      |      |      |        |       |       |       |
| Max    | 0.23 | 1.35 | 0.035 | 0.035 | 0.3  | 0.4  | 0.3 | 0.12 | 0.4  | 0.08 | 0.43   | 0.02  | 1.00  | 0.32  |
| 1      | .19  | .91  | .013  | .008  | .22  | .049 | .10 | .009 | .085 | .045 | 0.3814 | .008  |       |       |

## Physical Information:

| Item # | Tensile (psi) | Yield (psi) | % Elongation | Charpy ft-lb<br>(average of a set) | Charpy Temp<br>(°F) | % Red of Area | Hardness<br>(Brinell) |
|--------|---------------|-------------|--------------|------------------------------------|---------------------|---------------|-----------------------|
| Min    | 70000         | 36000       | 22           | 15                                 | -80                 | 30            | 137                   |
| Max    | 95000         |             |              |                                    | -50                 |               | 187                   |
| 1      | 74694         | 55840       | 31           | 98, 89, 89                         | -50                 | 67            | 167                   |

## Additional Notes:

|                                                            |
|------------------------------------------------------------|
| QUENCHING @920°C 2HRS @800°C 2HRS<br>TEMPERING @700°C 2HRS |
|------------------------------------------------------------|

We certify that the items referenced in this document were manufactured and tested in accordance with Cameron Purchase Order requirements and EIH0204 3.1

*M. Aida*  
 Quality Manager  
 Cameron Canada

|                                            |                                                                                  |                                               |
|--------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|
| Issuing Authority: Marvin J. (Ty) DeBelser |  | Quality Control                               |
| Date of Issue: March 13, 2008              |                                                                                  | QCFO Final Inspection Release Certificate R00 |

### FINAL INSPECTION RELEASE CERTIFICATE

|           |                                                                                          |               |                  |
|-----------|------------------------------------------------------------------------------------------|---------------|------------------|
| CUSTOMER: | <b>NWP STOCK</b>                                                                         | SALES ORDER#: | <b>NA</b>        |
| PRODUCT:  | <b>Scrubber, Vertical Vessel, 8-5/8" x 23" x 285#, 1/8 CA, 100F to -50F, Radiography</b> | WO#:          | <b>08500</b>     |
| Qty 5     | None                                                                                     | DATE:         | <b>OCT 05/12</b> |

#### FINAL INSPECTION DOCUMENTATION

|                                                                                                                       |           |           |
|-----------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| REVIEWED BY:                                                                                                          | ACCEPTED: | REJECTED: |
| STANDARD DOCUMENTATION REQUIREMENTS: (SEE DOCUMENT REQUIREMENT LIST)                                                  |           |           |
| ADDITIONAL DOCUMENT REQUIREMENTS: (TO BE RECORDED HERE IF APPLICABLE I.E. DOCUMENT PACKAGE REQUIRED BY CUSTOMER ETC.) |           |           |

|                                         |                         |
|-----------------------------------------|-------------------------|
| Q.C. FILE CLOSURE BY: <i>Kachra Joz</i> | DATE: <b>OCT 5 2012</b> |
|-----------------------------------------|-------------------------|

#### LOOSE COMPONENTS REQUIRED / PREPARED

|                                                          |                                                                     |
|----------------------------------------------------------|---------------------------------------------------------------------|
| ITEMS REQUIRED:                                          | NO. OF BOXES OR PKGS. _____                                         |
| <p><b>8" O.D. x 23" S/S FUEL GAS SCRUBBERS QTY-5</b></p> |                                                                     |
| ADDITIONAL HARDWARE OR FASTENERS REQUIRED                | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

#### PREPARATION FOR SHIPMENT / STORAGE

|                                       |
|---------------------------------------|
| PREPARATION NEEDED / COMPLETED        |
| <p><b>RELEASE TO NEXT PROCESS</b></p> |

|                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| S/N #                   | NWP-08500-1 TO NWP-08500-5                                          |
| INVENTORY TAGS ATTACHED | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |

#### SHIPPING INSTRUCTIONS

|                        |                                                                      |
|------------------------|----------------------------------------------------------------------|
| CUSTOMER P.O. REVIEWED | YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
|------------------------|----------------------------------------------------------------------|

|                                               |       |
|-----------------------------------------------|-------|
| CONTACT PERSON AUTHORIZED TO RELEASE PRODUCT: | _____ |
| PHONE:                                        | FAX:  |

|                        |                  |       |                  |
|------------------------|------------------|-------|------------------|
| RELEASED TO INVENTORY: | <i>Roy Smith</i> | DATE: | <b>OCT 05/12</b> |
| RELEASED TO CUSTOMER:  |                  | DATE: |                  |

|                             |                                |                       |
|-----------------------------|--------------------------------|-----------------------|
| NWP Industries Inc™         | <b>NWP</b><br>Industries Inc.™ | Website: www.nwp.ca   |
| PO Box 6280<br>4017-60 Ave. |                                | Phone: (403) 227-4100 |
| T4G 1S9                     |                                | Fax: (403) 227-4102   |

## HYDROSTATIC TEST AFFIDAVIT

Customer: NWP Industries Inc JO# 08500  
 Project: 8" OD x 23" S/S Fuel Gas Scrubbers Project#  
 Test Pressure: 371 PSI Hold Time: 15 Min  
 Code Requirements: ASME Sec VIII Div 1 2010 Edition, 2011a Addenda

All Personnel Advised of Test ☒ All Signs & Flagging Posted ☒

Prior to Filling – Fitting/Hoses & Component Meet Required Test Pressure

Sign-Off Supervisor: \_\_\_\_\_ Tester: \_\_\_\_\_ Date: \_\_\_\_\_

### Product Description:

|                               |
|-------------------------------|
| 5 vertical-fuel gas scrubbers |
|                               |
|                               |
|                               |
|                               |
|                               |

50% Test Pressure Leak/Systems Check Completed ☒

|         |
|---------|
| 186 PSI |
|         |
|         |
|         |
|         |
|         |

Equipment Drained & Flushed to Prevent Freezing: Yes: ☐ No: ☐

|             |              |
|-------------|--------------|
| Start Time: | Finish Time: |
|             |              |

| Test Gauge Identification # | Pressure Range | Calibration Date   |
|-----------------------------|----------------|--------------------|
| NWPG- 1000- <u>77</u>       | 0-1000 PSI     | <u>07 MAR 2013</u> |
| NWPG- 1000- <u>#1004</u>    | 0-1000 PSI     | <u>17 SEP 2013</u> |
| NWPG-                       | PSI            |                    |
| NWPG-                       | PSI            |                    |
| NWPG-                       | PSI            |                    |
| NWPG-                       | PSI            |                    |
| NWPG-                       | PSI            |                    |
| NWPG-                       | PSI            |                    |

|                                 |                       |
|---------------------------------|-----------------------|
| Test By: <u>Matt Alexander</u>  | Date: <u>Oct 5/12</u> |
| Approved By: <u>[Signature]</u> | Date: <u>OCT 5/12</u> |

## ALBERTA MUNICIPAL AFFAIRS

ABSA, the pressure equipment safety authority  
9410 – 20<sup>th</sup> Avenue  
Edmonton, AB T6N 0A4

MANUFACTURER'S DATA REPORT  
FOR MINIATURE PRESSURE VESSEL  
DÉCLARATION DE CONFORMITÉ DU CONSTRUCTEUR  
D'APPAREILS SOUS PRESSION

Upon shipment of a pressure vessel, this form fully and correctly filled in must be mailed to the office of the Chief Inspector in the province of installation in accordance with the regulations under the Act, governing the construction and installation of pressure vessels.

Au moment de l'expédition d'un appareil sous pression, ce formulaire complété correctement, doit être envoyé au bureau de l'inspecteur en chef de la province d'installation tel que prévu dans les règlements de la loi sur les appareils sous pression.

|                                                 |                                                                                                                                                              |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manufactured by<br>Construit par                | Name and address of Manufacturer/ Nom et adresse du constructeur<br>NWP Industries Inc 4017 60 <sup>th</sup> Ave Innisfail AB T4G 1S9                        |
| Manufactured for<br>Construit pour              | Name and address of Purchaser or Consignee/ Nom et adresse du client ou de son représentant<br>NWP Industries 4017 60 <sup>th</sup> Ave Innisfail AB T4G 1S9 |
| Ultimate owner<br>Utilisateur                   | Name and address/ Nom et adresse<br>NWP Industries Inc 4017 60 <sup>th</sup> Ave Innisfail AB T4G 1S9                                                        |
| Location of installation<br>Lieu d'installation | Name and address/ Nom et adresse<br>Stock                                                                                                                    |

## Pressure vessel/ Appareil

|                                                                                             |                                       |                                                       |                                                            |
|---------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------|------------------------------------------------------------|
| Type/ Genre<br>Vertical Fuel Gas Scrubber                                                   | Overall Length/Longueur totale<br>23" | Serial No./ N° de série<br>NWP-08500-1 to NWP-08500-5 | Year built/Année de fabrication<br>2012                    |
| Provincial Registration No. – C.R.N./N° d'enregistrement provincial - N.E.C.<br>OH09319.213 |                                       |                                                       | Drawing No./ N° de dessin<br>2959.01A Rev 1, 2959.01B Rev1 |

The chemical and physical properties of all parts meet the requirements of material specifications of the A.S.M.E. Code.

Les propriétés chimiques et physiques de toutes les composantes respectent les exigences des spécifications de matériaux de code ASME.

|                                                                                                                                                                                                                                                                                                                                                                             |                           |                                                |                                                   |                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------|---------------------------------------------------|----------------------------------|
| The design, construction and workmanship conform to CSA B51.<br>La conception, la construction et la façon sont conformes à ACNOR B51.                                                                                                                                                                                                                                      | ASME<br>Section VIII      | Division<br>1                                  | Addenda/Supplément<br>2011A                       | Code case No.<br>N° de cas<br>NA |
| Manufacturer's partial data reports properly identified and signed by authorized inspectors have been furnished for the following items of the report, and attached to this report:<br>Les rapports partiels du constructeur adéquatement identifiés et signés par les inspecteurs autorisés ont été produits pour les items suivants du rapport, et attachés à ce rapport: |                           |                                                |                                                   |                                  |
| Names of parts/ Nom de la composante<br>NA                                                                                                                                                                                                                                                                                                                                  | Item No./ N° d'item<br>NA | Manufacturer's Name/ Nom du constructeur<br>NA | Identifying Stamp/ Estampe d'identification<br>NA |                                  |
| NA                                                                                                                                                                                                                                                                                                                                                                          | NA                        | NA                                             | NA                                                |                                  |

## Shell/ Virole

| Description | Material<br>Matériau | Thickness<br>Épaisseur | Corr.<br>Allow.<br>Surépais.<br>de corr. | Diameter<br>Diamètre | Longitudinal Joints<br>Joints longitudinaux |                 |                          | P.W.H.T.<br>Traitement therm |               | Girth Joints<br>Joints de circonférence |                 | Number of<br>courses<br>Nombre de<br>sections |
|-------------|----------------------|------------------------|------------------------------------------|----------------------|---------------------------------------------|-----------------|--------------------------|------------------------------|---------------|-----------------------------------------|-----------------|-----------------------------------------------|
|             |                      |                        |                                          |                      | Type                                        | R.T.<br>Radiog. | Efficiency<br>Efficacité | Temp.                        | Time<br>Durée | Type                                    | R.T.<br>Radiog. |                                               |
| Shell       | SA-106B              | 0.322"                 | 1/8"                                     | 8 5 / 8"             | NA                                          | NA              | 1.0                      | NA                           | NA            | 1                                       | NA              | 1                                             |
|             |                      |                        |                                          |                      |                                             |                 |                          |                              |               |                                         |                 |                                               |

## Heads/ Têtes

| Description                                                                                                   | Material<br>Matériau | Min. Thicken.<br>Épais min. | Corr.<br>Allow<br>Surép.<br>Corr. | Crown.<br>Radius<br>Rayon<br>couron. | Knuckle<br>Radius<br>Petit rayon | Ellipse Ratio<br>Rapp. ellipse | Conical<br>Apex Angle<br>Angle conique | Hemisph.<br>Radius<br>Ray.<br>Hémisph | Flat<br>Diameter<br>Diam. plat | Side to<br>pressure<br>Côté sous<br>pression |
|---------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------|-----------------------------------|--------------------------------------|----------------------------------|--------------------------------|----------------------------------------|---------------------------------------|--------------------------------|----------------------------------------------|
| Weld Cap                                                                                                      | SA-234-WPB           | .282"                       | 1/8"                              | NA                                   | NA                               | NA                             | NA                                     | NA                                    | NA                             | Concave                                      |
| Weld Cap                                                                                                      | SA-234-WPB           | .282"                       | 1/8"                              | NA                                   | NA                               | NA                             | NA                                     | NA                                    | NA                             | Concave                                      |
| Removable bolts used (describe other fastenings)<br>Boulons amovible utilisés (décrire tout autre attache) NA |                      |                             |                                   |                                      | Mat'l Spec./ Spéc. du mat.<br>NA |                                |                                        | Grade<br>NA                           |                                | Size/ Dimension<br>NA                        |

## Pressure - Temperature/ Pression - température

|                                              |                                                                                                           |                                   |                                          |                                                                                                         |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Pressure Vessel Part<br>Partie de l'appareil | Constructed for max. allowable working pressure<br>Construit pour une pression maximale de marche permise | At max. temp.<br>A une temp. max. | Minimum design metal temp.<br>Temp. min. | Test pressure (hydro-pneumatic or combination)<br>Pression d'épreuve (hydro-pneumatique ou combinaison) |
| Full Vessel                                  | 285 PSI                                                                                                   | 100 F                             | -50 F                                    | 371 PSI                                                                                                 |

**Tube Section/ Faisceau tubulaire**

|                                   |                    |                                                           |                                         |                                           |                                       |
|-----------------------------------|--------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------------------------|---------------------------------------|
| Tubesheet/ Plaque tubulaire       | Material/ Matériau | Diameter/ Diamètre                                        | Nominal Thickness<br>Épaisseur nominale | Corr. Allow.<br>Surépais. corrosion       | Attachment<br>Mode d'attachement      |
| NA                                | NA                 | NA                                                        | NA                                      | NA                                        | NA                                    |
| Tube material/ Matériau des tubes | Diameter/ Diamètre | Nominal Thickness (gauge)<br>Épaisseur nominale (calibre) | Number/ Nbre                            | Type (Straight or U)<br>Type (Droit ou U) | Heating Surface<br>Surface de chauffe |
| NA                                | NA                 | NA                                                        | NA                                      | NA                                        | NA                                    |

**Jacket/ Chemise**

|                                  |                                        |                                  |                                       |                |
|----------------------------------|----------------------------------------|----------------------------------|---------------------------------------|----------------|
| Type of jacket/ Genre de chemise | Jacket closure<br>Fermeture de chemise | Proof Test<br>Pression d'épreuve | Heating Surface<br>Surface de chauffe | Sketch/ Schéma |
| NA                               | NA                                     | NA                               | NA                                    | NA             |

**Safety Valve Outlets/ Soupapes de sûreté**

|                |           |                   |
|----------------|-----------|-------------------|
| Number/ Nombre | Dimension | Location/ Endroit |
| NA             | NA        | NA                |

**Nozzles and Openings/ Tubulures et ouvertures**

| Purpose/ But              | Number<br>Nombre | Dimension | Type          | Material<br>Matériau | Nominal<br>Thickness<br>Épaisseur<br>nominale | Reinforcement<br>material<br>Matériau<br>de renfort | How<br>attached<br>Genre<br>d'attaches | Location/ Endroit |
|---------------------------|------------------|-----------|---------------|----------------------|-----------------------------------------------|-----------------------------------------------------|----------------------------------------|-------------------|
| C1 Outlet / Inspection    | 1                | 2" NPT    | Half Coupling | SA-105N              | CL 3000                                       | Weld                                                | UW 16.1 C                              | Top Cap           |
| C2 Inlet                  | 1                | 1" NPT    | TOL           | SA-105N              | CL 3000                                       | Weld                                                | UW 16.1 A                              | Shell             |
| C3 HOR. Drain/ Inspection | 1                | 3/4" NPT  | TOL           | SA-105N              | CL 6000                                       | Weld                                                | UW 16.1 A                              | Bottom Cap        |
|                           |                  |           |               |                      |                                               |                                                     |                                        |                   |
|                           |                  |           |               |                      |                                               |                                                     |                                        |                   |
|                           |                  |           |               |                      |                                               |                                                     |                                        |                   |
|                           |                  |           |               |                      |                                               |                                                     |                                        |                   |

**Supports/ Supports**

|                                                                                                 |                                   |                                |                                   |                                                                         |
|-------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------|-----------------------------------|-------------------------------------------------------------------------|
| Skirt/ Jupe<br>Yes/ Oui No/ Non<br><input checked="" type="checkbox"/> <input type="checkbox"/> | Lugs/ Oreilles<br>No./ Nbre<br>NA | Legs/ Pieds<br>No./ Nbre<br>NA | Other/ Autres (Description)<br>NA | Attached/ Attaches<br>(Where and How/ Méthode et endroit)<br>By Welding |
|-------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------|-----------------------------------|-------------------------------------------------------------------------|

**Remarks/ Observations (Cubical capacity/ Volume)**

Construction Drawing SCR823-1 Rev2  
Impact Test Exempt Per UCS-66B (Figure UCS-66.1)  
Radiography None per UW11C Hydrotested in Vertical Position  
Weight Empty 145 lbs JO# 08500

**Certificate of Compliance/ Certificat de conformité**

We certify that the statements made in this data report are correct and that the said vessel has been constructed in accordance with the Provincial Registered design below and the requirements of standard CSA B51.

Nous certifions que les données de la déclaration de conformité sont correctes et que l'appareil a été construit en accord avec l'enregistrement provincial ci-dessous et les exigences de la norme ACNOR B51.

Provincial Registered Design  
Enregistrement provincial OH09319.213

Manufacturer  
Constructeur NWP Industries Inc.

Signature RW/ L. L. L. Date OCT 05/12  
(Representative)

Signature \_\_\_\_\_ Date \_\_\_\_\_  
(Certified Individual)

|                                  |             |                                                                                                                      |            |
|----------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------|------------|
|                                  |             | CERTIFIED BY                                                                                                         |            |
|                                  |             | <br><b>NWP</b><br>INDUSTRIES INC. |            |
|                                  |             | MADE IN CANADA                                                                                                       |            |
| JDD X 1234 S/S FUEL GAS SCHEFFER |             |                                                                                                                      |            |
| MAWP                             | 28.5        | PSI AT                                                                                                               | 100 °F     |
| MAEWP                            |             | PSI AT                                                                                                               | °F         |
| MDMT                             |             | °F AT                                                                                                                | PSI        |
| S/N.                             | NWP 08500-2 |                                                                                                                      | YEAR BUILT |
| CRN                              | 0103-12-13  |                                                                                                                      |            |

08500-2



## TRAVEL SHEET (FRONT)

| DO NOT START CONSTRUCTION WITHOUT AI REVIEW |                                                  |                          |                 |                                                    | TRAVEL SHEET REVISION NO.: |      |      |       |      |
|---------------------------------------------|--------------------------------------------------|--------------------------|-----------------|----------------------------------------------------|----------------------------|------|------|-------|------|
| AI REVIEW:                                  |                                                  |                          |                 |                                                    | REVIEW DATE:               |      |      |       |      |
| SERIAL NO. NWP-08500-2                      |                                                  | JOB NO.: 08500           |                 | VESSEL TYPE: 8 5/8" OD X 23" S/S, 285 PSI SCRUBBER |                            |      |      |       |      |
| DRAWING NO. SCR823-1                        |                                                  | DWG. REVISION NO.: 2     |                 | 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>ROY/R</i>    | <i>AUG 07/12</i>                                   |                            |      |      |       |      |
| 2.                                          | Release of App'd Dwg.                            |                          | <i>ROY/R</i>    | <i>AUG 07/12</i>                                   |                            |      |      |       |      |
| 3.                                          | Materials Examined                               |                          | <i>Ka Floor</i> | <i>8/13/12</i>                                     |                            |      |      |       |      |
| 4.                                          | Heat Numbers Recorded                            |                          | <i>Ka Floor</i> | <i>8/13/12</i>                                     |                            |      |      |       |      |
| 5.                                          | MTRs Checked                                     |                          | <i>ROY/R</i>    | <i>SEP 27/12</i>                                   |                            |      |      |       |      |
| 6.                                          | W.P.S. Checked                                   |                          | <i>Ka Floor</i> | <i>8/13/12</i>                                     |                            |      |      |       |      |
| 7.                                          | Welder (s) Qualified                             |                          | <i>Ka Floor</i> | <i>8/13/12</i>                                     |                            |      |      |       |      |
| 8.                                          | Thicknesses Verified & Recorded                  |                          | <i>ROY/R</i>    | <i>SEP 27/12</i>                                   |                            |      |      |       |      |
| 9.                                          | Shell(s) & Head(s) Fit-up Inspection <i>HOLD</i> |                          | <i>KB</i>       | <i>AUG 11/12</i>                                   |                            |      |      |       |      |
| 10.                                         | Nozzles & Fittings Fit-up Inspection             |                          | <i>KB</i>       | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 11.                                         | Nozzle Orientation <i>HOLD</i>                   |                          | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 12.                                         | Nozzle & Flange Rating Checked                   |                          | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 13.                                         | Impact Tests <i>NR</i>                           |                          |                 |                                                    |                            |      |      |       |      |
| 14.                                         | Internals Checked                                |                          | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 15.                                         | Final Internal Inspection                        | Shell Side               | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
|                                             |                                                  | Tube Side                | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 16.                                         | Weld Size Checked                                |                          | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 17.                                         | Welder I.D. Checked                              |                          | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 18.                                         | Final External Inspection                        |                          | <i>Ka Floor</i> | <i>AUG 21/12</i>                                   |                            |      |      |       |      |
| 19.                                         | Radiography <i>NR</i>                            |                          |                 |                                                    |                            |      |      |       |      |
| 20.                                         | Other N.D.E. <i>NR</i>                           |                          |                 |                                                    |                            |      |      |       |      |
| 21.                                         | Final Ext. Prior to P.W.H.T. <i>NR</i>           |                          |                 |                                                    |                            |      |      |       |      |
| 22.                                         | PWHT Chart Checked <i>NR</i>                     |                          |                 |                                                    |                            |      |      |       |      |
| 23.                                         | Hydrostatic Test                                 | Shell Side               |                 |                                                    |                            |      |      |       |      |
|                                             |                                                  | Tube Side                | <i>NR/R</i>     | <i>SEP 05/12</i>                                   |                            |      |      |       |      |
| 24.                                         | CRN Drawing                                      | CRN# <i>0104319-2131</i> | <i>ROY/R</i>    | <i>AUG 07/12</i>                                   |                            |      |      |       |      |
| 25.                                         | N.C.R. #                                         |                          |                 |                                                    |                            |      |      |       |      |
| 26.                                         | Nameplate Stamping                               |                          | <i>Ka Floor</i> | <i>SEP 21/12</i>                                   |                            |      |      |       |      |
| 27.                                         | Manuf. Data Report                               |                          | <i>ROY/R</i>    | <i>SEP 05/12</i>                                   |                            |      |      |       |      |
| 28.                                         | Nameplate Installation                           |                          |                 |                                                    |                            |      |      |       |      |

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.

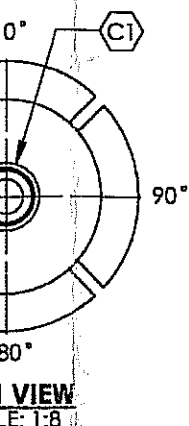
\* Denotes an A.I. Inspection Point \*\* Denotes an A.I. Hold Point

# TRAVEL SHEET (BACK)

| MATERIAL THICKNESS VERIFICATION AND IDENTIFICATION |           |                        |                                   | WELD I.D. / WELDER SYMBOLS / FIT-UP |               |             |           |               |             |                     |
|----------------------------------------------------|-----------|------------------------|-----------------------------------|-------------------------------------|---------------|-------------|-----------|---------------|-------------|---------------------|
| Description                                        | Thickness | Material Spec. & Grade | Heat & Slab Number or I.D. Number | Weld I.D.                           | Welder Symbol | Fit-Up Exam | Weld I.D. | Welder Symbol | Fit-Up Exam | Verify Type 1 Joint |
| Shell #1                                           | 0.318     | SA106B                 | 370548                            | L-                                  |               |             | C-        |               |             |                     |
| Shell #2                                           |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Shell #3                                           |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Shell #4                                           |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Shell #5                                           |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Shell #6                                           |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Head #1                                            | 0.322 w/n | SA234WPB               | S627                              |                                     |               |             | C- U      |               | Kai         |                     |
| Head #2                                            | 0.322     | SA234WPB               | S627                              |                                     |               |             | C- U      |               | Kai         |                     |
| Head #3                                            |           |                        |                                   |                                     |               |             | C-        |               |             |                     |
| Head #4                                            |           |                        |                                   |                                     |               |             | C-        |               |             |                     |
| Boot #1 Shell                                      |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Boot #1 Head                                       | 0.271     | SA106B                 | PL11105900                        |                                     |               |             | C- U      |               | Kai         |                     |
| Boot #2 Shell                                      |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |
| Boot #2 Head                                       |           |                        |                                   |                                     |               |             | C-        |               |             |                     |
| Cone                                               |           |                        |                                   | L-                                  |               |             | C-        |               |             |                     |

| ATTACHMENT AND / OR NOZZLE MATERIAL THICKNESS VERIFICATION AND IDENTIFICATION |             |      |         |        |                     | WELDER SYMBOLS / FIT-UP |        |        |        |
|-------------------------------------------------------------------------------|-------------|------|---------|--------|---------------------|-------------------------|--------|--------|--------|
| Mark                                                                          | Mat. I.D.   | Neck | Fitting | Flange | Repad or Attachment | Cat. B                  | Cat. C | Cat. D | Pad OD |
| C1                                                                            | Spec.-Grd.  |      | SA105N  |        |                     |                         |        | K      |        |
|                                                                               | Thk./Rating |      | 3000    |        |                     |                         |        | Kai    |        |
|                                                                               | Heat# or ID |      | 3797    |        |                     |                         |        |        |        |
| C2                                                                            | Spec.-Grd.  |      | SA105N  |        |                     |                         | U      |        |        |
|                                                                               | Thk./Rating |      | 3000    |        |                     |                         | Kai    |        |        |
|                                                                               | Heat# or ID |      | 58582   |        |                     |                         |        |        |        |
| C3                                                                            | Spec.-Grd.  |      | SA105N  |        |                     |                         | K      |        |        |
|                                                                               | Thk./Rating |      | 6000    |        |                     |                         | Kai    |        |        |
|                                                                               | Heat# or ID |      | 58614   |        |                     |                         |        |        |        |
|                                                                               | Spec.-Grd.  |      |         |        |                     |                         |        |        |        |
|                                                                               | Thk./Rating |      |         |        |                     |                         |        |        |        |
|                                                                               | Heat# or ID |      |         |        |                     |                         |        |        |        |
|                                                                               | Spec.-Grd.  |      |         |        |                     |                         |        |        |        |
|                                                                               | Thk./Rating |      |         |        |                     |                         |        |        |        |
|                                                                               | Heat# or ID |      |         |        |                     |                         |        |        |        |
|                                                                               | Spec.-Grd.  |      |         |        |                     |                         |        |        |        |
|                                                                               | Thk./Rating |      |         |        |                     |                         |        |        |        |
|                                                                               | Heat# or ID |      |         |        |                     |                         |        |        |        |
|                                                                               | Spec.-Grd.  |      |         |        |                     |                         |        |        |        |
|                                                                               | Thk./Rating |      |         |        |                     |                         |        |        |        |
|                                                                               | Heat# or ID |      |         |        |                     |                         |        |        |        |

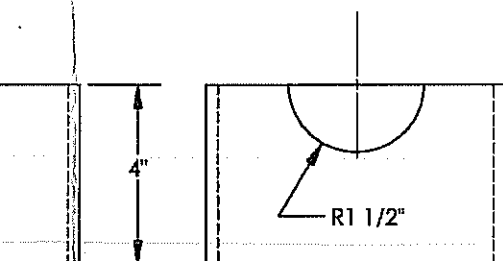
| ITEM | PART #          | DESCRIPTION                                               | MTR #    | LENGTH | QTY. |
|------|-----------------|-----------------------------------------------------------|----------|--------|------|
| 1    | BRACKET-NAME-1  | TANK/VESSEL NAME PLATE BRACKET SA36/44W                   | 6291049  |        | 1    |
| 2    | CAP8Y40GC       | WELD CAP 8" SCH STD/40 BW SA234-WPB                       | 5627     |        | 2    |
| 3    | COH2GYEE        | Coupling Half 2" 3M THRD SA105N                           | 3747     |        | 1    |
| 4    | PIP640A         | 6" SCH. STD/40 PIPE (0.280" NOM) SA-106B                  | 21105100 | 4" / 2 | 1    |
| 5    | PIP840A         | VESSEL SHELL 8" SCH STD/40 (0.322" NOM.) x 23" S/S SA106B | 370548   | 23"    | 1    |
| 6    | SCR-BP8-1       | BASEPLATE FOR 8" OD SCRUBBER SA36/44W                     | 589386   |        | 1    |
| 7    | TOL75H1.536E    | THREDOLET 3/4" 6M (1 1/2"-36") SA105N                     | 58614    |        | 1    |
| 8    | TOL1G336E       | THREDOLET 1" 3M (3"-36") SA105N                           | 58582    |        | 1    |
| 9    | VES-NAMEPLATE-1 | VESSEL NAME PLATE BLACK/SILVER DEEP ETCHED                |          |        | 1    |



**ORIGINAL**

#### NOTES

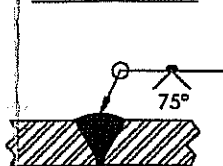
1. EXPOSED INSIDE EDGES OF NOZZLES OR OPENINGS SHALL BE ROUNDED PER UG-76C.
2. VESSEL TO BE CLEANED WITH ALL OPENINGS PLUGGED BEFORE SHIPMENT.
3. USED WELD PROCEDURE NWP-1 OR NWP-3 FOR ALL TACK WELDS.
4. PRIME AND PAINT: AS PER CLIENT SPECIFICATIONS.
5. SURFACE PREPARATION: HAND TOOL CLEAN (MIN.).



**SKIRT DETAIL**  
SCALE: 1:4

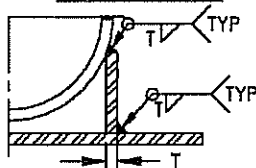
| VESSEL DESIGN DATA                      |                                                              |
|-----------------------------------------|--------------------------------------------------------------|
| DESIGN AND FABRICATE TO:                | ASME SECTION VIII, DIVISION 1<br>2010 EDITION, 2011a ADDENDA |
| MAX. ALLOWABLE WORKING PRESSURE (MAWP): | 285 PSI                                                      |
| DESIGN TEMPERATURE:                     | 100°F                                                        |
| MIN. DESIGN METAL TEMPERATURE (MDMT):   | -50°F                                                        |
| IMPACT TEST:                            | EXEMPT PER UCS-66b [FIG UCS-66.1]                            |
| RADIOGRAPHY:                            | NONE PER UW-11c                                              |
| POST WELD HEAT TREATMENT:               | NONE                                                         |
| HYDROSTATIC TEST PRESSURE:              | 371 PSI                                                      |
| CORROSION ALLOWANCE:                    | 1/8"                                                         |
| PRE-HEAT:                               | 50°F                                                         |
| HEAD THICKNESS MIN.:                    | 0.282"                                                       |
| WEIGHT EMPTY:                           | 145LBS                                                       |
| WEIGHT FULL:                            | 200LBS                                                       |
| CAPACITY:                               | 0.87 CU FT                                                   |
| QUALITY CONTROL PROGRAM:                | AQP-1253                                                     |
| WELDING PROCEDURE REGISTRATION NO.:     | 1604.2                                                       |
| WELD PROCEDURES:                        | NWP-1 REV 4, NWP-3 REV 3                                     |
| SERVICE:                                | HYDROCARBONS                                                 |
| CRN NO.:                                | OH09319.213                                                  |
| DESIGN REGISTRATION DRAWINGS:           | 2959.01A REV 1, 2959.01B REV 1                               |
| REFERENCE CALCULATIONS:                 | 08-2-0285-2959-R0                                            |

**WELD DETAIL #10**



WPS NWP-3

**WELD DETAIL #11**



WPS NWP-1

**ISSUED FOR CONSTRUCTION**

SIGNED: *[Signature]*  
DATE: JUL 19 2012  
W.O.: 8500  
S.O.: *[Signature]*

ALL DIMENSIONS IN INCHES



P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC.  
AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.  
THIS DRAWING MUST BE RETURNED UPON REQUEST.

NWP INDUSTRIES LTD  
VERTICAL SCRUBBER

8 5/8" OD x 23" S/S x 285 PSI  
1/8" C.A., 100°F, -50°F

FULL GAS SCRUBBER ASSEMBLY

|                  |                  |                  |
|------------------|------------------|------------------|
| DWN: DJ          | CHK: GH          | APP: DF          |
| DATE: 2011.08.02 | DATE: 2011.09.01 | DATE: 2011.09.01 |
| SCALE: 1:8       | DWG: SCR823-1    | REV: 2           |
| SHEET: 1 OF 1    |                  |                  |



NWP Industries  
Job Order Paperwork



Order: 08089-D

Item: BRACKET-NAME-1

Description Tank/Vessel Name Plate Bracket

Ordered: 85.00

Qty To Mfg: 85.00

Entered: 04/16/12

Delv Req: 04/23/12

Customer: STOCK

Name: STOCK

Customer PO:

Contact:

Parent Order: 08089

Drawing: BRACKET-NAME-1

| OPER | S | WORK CENTER | QTY | SETUP | RUN | START/END | DESCRIPTION | U/M | QTY |
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|

|    |  |     |       |      |      |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|
| 10 |  | CNC | 85.00 | 0.00 | 8.50 |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|

Plasma/Shear/Brk

OPER:



WC:



Structural Welding As Per CSA W47.1 and W59

Employee Identification:

*CYRUS HARKONEN*

MTR

*Stock HT # 6251049*

Fabrication:

*C.N.C*

Date:

*April 20 / 2012*

Quality:

Date:

*85 made*  
*GS*

PLAA60120A

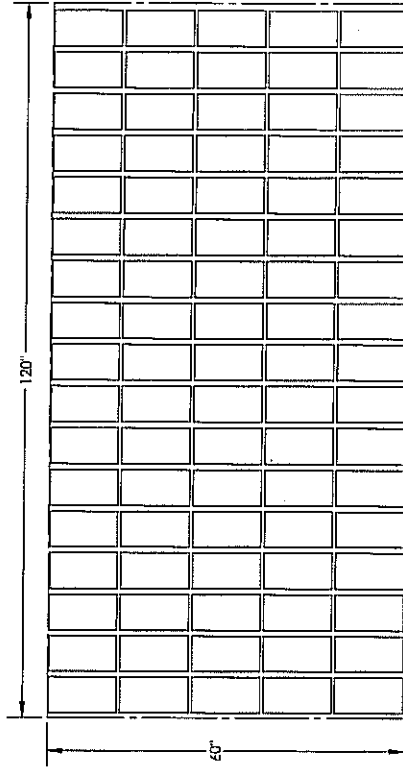
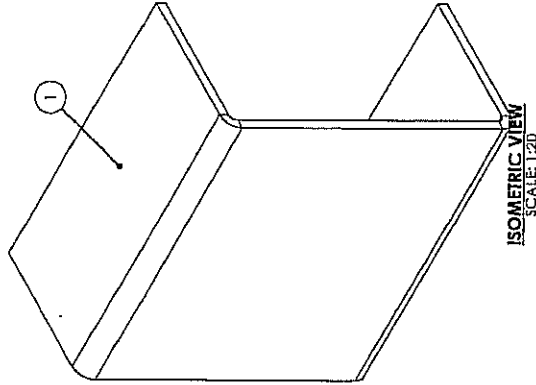
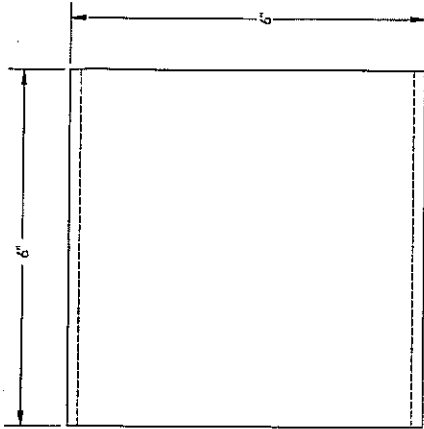
Each

1.02

Plate 3/16" x 60" x 120" SA36/44W



| ITEM | PART #     | DESCRIPTION                       | AMT # | LENGTH | QTY. |
|------|------------|-----------------------------------|-------|--------|------|
| 1    | PLAA60120A | PLATE 3/16" x 60" x 120" SA36/44W |       |        | 1    |



# ISSUED FOR CONSTRUCTION

- NOTES**
1. HEAT NUMBER TO BE CLEARLY MARKED ON EACH PIECE WITH PAINT PEN AS A MINIMUM.
  2. ALL DOCUMENTATION MUST ACCOMPANY SHIPMENT OF PARTS IF PART IS OUTSOURCED.
  3. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
  4. DEBURR AND RADIUS ALL SHARP EDGES.

|                                                                                                                                                                                                                          |  |                                                                                                                                                                                                           |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>ISSUED FOR CONSTRUCTION</b><br>SIGNED: <i>[Signature]</i><br>DATE: <i>APRIL 17/12</i><br>W.O. <i>08089-D</i><br>S.O.: <i>---</i>                                                                                      |  | <b>NWP INDUSTRIES INC.</b><br>TANK/VESSEL NAME PLATE BRACKET<br>6" x 6" x 3" x 3/16" THK<br>FORMED PART DRAWING<br>DWN: JHK<br>CHK: <i>[Signature]</i><br>DATE: 2011.03.16<br>SCALE: 1:2<br>SHEET: 1 OF 1 |  |
| P.O. BOX 6980, INNESVILLE, VIC 3740<br>PH: (03) 227-4100 FAX: (03) 227-4102<br>THIS DRAWING IS PROPERTY OF NWP INDUSTRIES INC. AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST BE RETURNED UPON REQUEST. |  | NWP INDUSTRIES INC.<br>TANK/VESSEL NAME PLATE BRACKET<br>6" x 6" x 3" x 3/16" THK<br>FORMED PART DRAWING<br>DWN: JHK<br>CHK: <i>[Signature]</i><br>DATE: 2011.03.16<br>SCALE: 1:2<br>SHEET: 1 OF 1        |  |
| ALL DIMENSIONS IN INCHES<br>DRAWING REVISIONS                                                                                                                                                                            |  | NWP INDUSTRIES INC.<br>TANK/VESSEL NAME PLATE BRACKET<br>6" x 6" x 3" x 3/16" THK<br>FORMED PART DRAWING<br>DWN: JHK<br>CHK: <i>[Signature]</i><br>DATE: 2011.03.16<br>SCALE: 1:2<br>SHEET: 1 OF 1        |  |



EVRAZ INC. NA

8250 130th Street, Surrey, BC, V3V 8J9

## Test Certificate

Form TCT: Revision 1: Date 31 Oct 2000

Customer:  
VARSTEEL LTD.  
330-220 4TH STREET  
LETHBRIDGE  
AB T1J 4J7

Customer P.O. No.: RD-943813

Mail Order No.: 41-242722-01 Shipping Manifest: ST048151

Product Description: CSA G40.21(2004)435W/30MW / ASTM A36(05)  
A709(01A)36(ASME SA36(01ED))Ship Date: 24 Oct 11  
Cert Date: 24 Oct 11  
Cert No: 011131457  
(Page 1 of 1)

Size: 0.188 X 60.00 X 120.0 (IN)

| Tested Pieces |          |                     | Tensiles |          |           |     | Charpy Impact Tests |         |                  |                              |                   |          |         |              |                 |
|---------------|----------|---------------------|----------|----------|-----------|-----|---------------------|---------|------------------|------------------------------|-------------------|----------|---------|--------------|-----------------|
| Heat Id       | Piece Id | Piece Dimensions    | Tst Loc  | YS (PSI) | UTS (PSI) | %RA | Elong % 2in 8in     | Tst Dir | Average Hardness | Abs. Energy (FTLB) 1 2 3 Avg | % Shear 1 2 3 Avg | Tst Temp | Tst Dir | Tst Siz (mm) | BDWTT Temp %Shr |
| 6251049       | 1H4F1961 | 0.188 X 60.00 (CUT) | L        | 54000    | 71000     | ✓   | 27                  | ✓       | T                |                              |                   |          |         |              |                 |
|               |          |                     | C        | 56000    | 69000     | ✓   | 31                  | ✓       | T                |                              |                   |          |         |              |                 |
|               |          |                     | L        | 60000    | 73000     | ✓   | 30                  | ✓       | T                |                              |                   |          |         |              |                 |
| 6251049       | 1H4F1965 | 0.188 X 60.00 (CUT) | C        | 59000    | 72000     | ✓   | 25                  | ✓       | T                |                              |                   |          |         |              |                 |

| Chemical Analysis |     |      |      |      |     |       |     |     |     |     |      |      |      |       |       | ORGN |
|-------------------|-----|------|------|------|-----|-------|-----|-----|-----|-----|------|------|------|-------|-------|------|
| Heat Id           | C   | Mn   | P    | S    | Si  | Total | Cu  | Ni  | Cr  | Mo  | Co   | V    | Ti   | B     | N     |      |
| ✓6251049          | .15 | 1.00 | .022 | .013 | .01 | .030  | .03 | .02 | .02 | .00 | .001 | .003 | .002 | .0000 | .0038 | AU   |

MATERIAL MARKED WITH AN ASSERISK IS PRODUCED FROM COIL  
\* 6251049 1H4F1965 PCES: 20, NGT: 7678

"Conforms with ASME

Sec II Part A, 2010 edition  
2011a addenda"

Sec II, Part A, 2010 edition"

APPROVED

By Ceri Steen at 9:10 am, Apr 19, 2012

(b) Cust Part # :

WE HEREBY CERTIFY THAT THIS MATERIAL  
WAS TESTED IN ACCORDANCE WITH THE  
APPROPRIATE SPECIFICATION

Greg Balsdon

CHECKED BY



NWP Industries  
Job Order Paperwork



Order: 08491-A

Item: SCR-BP8-1

Description: Baseplate for 8" OD Scrubber

Ordered: 45.00

Qty To Mfg: 45.00

Entered: 07/13/12

Delv Req: 07/20/12

Customer: STOCK

Name: STOCK

Customer PO:

Contact:

Parent Order: 08491

Drawing: 438529

| OPER | S | WORK CENTER | QTY | SETUP | RUN | START/END | DESCRIPTION | U/M | QTY |
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|
|------|---|-------------|-----|-------|-----|-----------|-------------|-----|-----|

|    |  |     |       |      |      |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|
| 10 |  | CNC | 45.00 | 0.00 | 3.75 |  |  |  |  |
|----|--|-----|-------|------|------|--|--|--|--|

Plasma/Shear/Brk

OPER:



WC:



Structural Welding As Per CSA W47.1 and W59

Employee Identification:

CYRUS MARKONEN

MTR

HT# NW4706

HT# 2804m

HT# 0054m

HT# 488386

Fabrication:

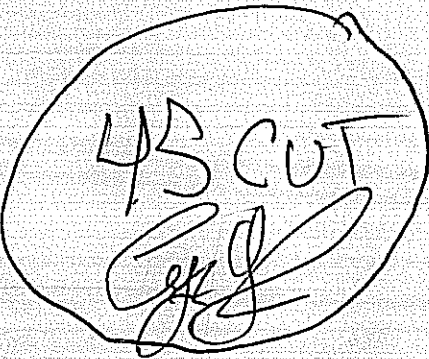
C.N.C

Date:

JUL 19 2012

Quality:

Date:



PLAB60120A

Each

0.999

Plate 1/4" x 60" x 120" SA36/44W



all N.I  
Plate used

The diagram shows a ring-shaped structure with four protruding elements. A label '1' with an arrow points to the outer ring.

A diagram showing a rectangular deck area measuring 120 inches in width and 60 inches in height. The deck is covered with a grid of life preservers. There are 9 life preservers in each of the 5 rows, totaling 45 life preservers. The life preservers are arranged in a staggered pattern, with each life preserver touching its neighbors in the same row and the rows immediately above and below it.

Technical drawing of a circular mechanical part, likely a flange or cover plate, showing concentric circles and radial slots. The drawing includes the following dimensions and features:

- Outer diameter:  $\phi 12''$
- Inner diameter:  $\phi 6''$
- Intermediate diameter:  $\phi 9''$
- Radial slots: CUT (4)  $9/16'' \phi$  SLOTS
- Slot width:  $R5/16''$  TYP
- Angle:  $45^\circ$

ORIGINAL

1. ALL DIMENSIONS TO HAVE A TOLERANCE OF  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.  
2. DEBURR AND RADIUS ALL SHARP EDGES.

ISSUED FOR  
CONSTRUCTION  
SIGNED: [Signature]  
DATE: JUL 13 2012  
W.O.: 08491-A  
S.O.:                       
ALL DIMENSIONS IN INCHES



P.O. BOX 6280, INNISFAIL, AB T4G 1S9  
PH: (403) 227-4100 FAX: (403) 227-4102

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AND MAY NOT BE REPRODUCED WITHOUT PERMISSION.  
THIS DRAWING MUST BE RETURNED UPON REQUEST.

NWP INDUSTRIES INC  
SCRUBBER BASE PLATE  
12"OD x 6"ID x 1/4"THK  
FOR 8 5/8" Ø x 23"S/S FUEL GAS SCRUBBER  
FORMED PART DRAWING

|                  |                        |                        |
|------------------|------------------------|------------------------|
| DWN: DJ          | CHK: <i>SL</i>         | APP: <i>O</i>          |
| DATE: 2011.08.26 | DATE: <i>Sept 1/11</i> | DATE: <i>Sept 1/12</i> |
| SCALE: 1:4       | DWG: SCR-BPB-1         | REV: 0                 |
| SHEET: 1 OF 1    |                        |                        |



EVRAZ INC. NA

# Test Certificate

Form TCI: Revision 1: Date 31 Oct 2000

Customer:  
WILKINSON  
A DIVISION OF PREMETAL CO INC.  
6125 51ST ST. S.E.  
CALGARY  
AB T2C3V2

Customer P.O. No.: P20117ME001C

Mill Order No.: 41-244124-03

Shipping Manifest: C1031508

Product Description: CSA G40.21(2004)44W/300W / ASTM A36(05)

A709(01A)36/ASME SA36(01ED)

Ship Date: 22 Feb 12  
Cert Date: 22 Feb 12  
Cert No: 051061366  
(Page 1 of 1)

Size: 0.250 X 72.00 X 150.0 (IN)

## Tested Pieces

| Heat Id | Piece Id | Piece Dimensions    | Tst Loc | YS (PSI) | UTS (PSI) | %RA | Elong % 2in 8in | Tst Dir | Average Hardness | Abs. Energy(FTLB) | % Shear | Tst Temp | Tst Dir | Tst Size (mm) | BDVTT Temp %Shear |
|---------|----------|---------------------|---------|----------|-----------|-----|-----------------|---------|------------------|-------------------|---------|----------|---------|---------------|-------------------|
| 488386  | B0011    | 0.245 X 72.00 (CUT) | L67000  | 67000    | 75000     | 35  | 17              | T       |                  |                   |         |          |         |               |                   |
| 488386  | B0014    | 0.308 X 72.00 (CUT) | L62000  | 62000    | 73000     | 45  | 22              | T       |                  |                   |         |          |         |               |                   |
|         |          |                     | L66000  | 66000    | 75000     | 43  | 22              | T       |                  |                   |         |          |         |               |                   |
|         |          |                     | C60000  | 60000    | 72000     | 46  | 25              | T       |                  |                   |         |          |         |               |                   |

## Chemical Analysis

| Heat Id | C    | Mn   | P     | S     | Si   | Al    | Cu   | Ni   | Cr   | Mo   | Co    | V     | Ti    | B     | N      | ORGN |
|---------|------|------|-------|-------|------|-------|------|------|------|------|-------|-------|-------|-------|--------|------|
| 488386  | 0.05 | 0.73 | 0.015 | 0.005 | 0.25 | 0.029 | 0.39 | 0.12 | 0.19 | 0.05 | 0.024 | 0.002 | 0.018 | 0.001 | 0.0078 | CAN  |

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT  
MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL  
\* 488386 B0012 PCS: 43, WGT: 32924

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2014a addenda"

60138112  
[Signature]

(9) Cust Part # :

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION

Jason Wall  
Checked by

# ESSAR Steel Alberta Inc.

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

CUSTOMER PURCHASE ORDER NUMBER  
15302-B5

ENTRY DATE  
2011/12/19

CREATE DATE  
2012/01/30

INVENTORY NUMBER  
261477

SHIPPER'S NO.  
-

CARRIER  
CP

-346829

TEL 905-888-1543

CHARACTER TO CUSTOMER NAME AND ADDRESS

ALBERTA INDUSTRIAL METALS LTD  
4821 - 78TH STREET  
RED DEER ALBERTA  
T4P 1N5

ALBERTA INDUSTRIAL METALS LTD  
7660 49TH AVENUE  
CALGARY, ALBERTA  
T4P 4G6

SHIP TO CUSTOMER NAME AND ADDRESS

CUSTOMER SPECIFICATION  
HOT ROLLED STEEL SHEET - HSLA - TO CHEM OF ASTM A36/CSA G40.21 44W (05) - TO  
THE CHEM OF CSA G40.21 38W - TOP SEMI-CRITICAL SURFACE - STANDARD SHAPE -  
HSLA - CUT EDGE ACCEPTABLE - RESTRICTED GAUGE 1/2 TOL. - T/R INFO ONLY-COIL  
END 1/HEAT

## MILL TEST REPORTS

ESSAR STEEL ALBERTA INC. HEREBY  
CERTIFIES THAT THE MATERIAL HEREIN  
DESCRIBED WAS MADE AND TESTED IN  
ACCORDANCE WITH THE RULES OF THE  
SPECIFICATION SHOWN. ALL RESULTS  
ARE RETAINED IN ACCORDANCE WITH THE  
COMPANY'S STANDARD RECORD KEEPING  
PRACTICES.

K. UGHADPAGA

MANAGER METALLURGICAL SERVICES

SUPPLEMENTARY INSTRUCTIONS  
TEST CERT 1: BRADGABIM.CA TEST CERT 2: PLATE TEST COUPON:

WSP T/R TEST REPORTS REQUIRED

2000212222 DS

CUST VETTED RESALE

2012/01/31 10:59

THIS MILL TEST REPORT MAY NOT BE  
REPRODUCED EXCEPT IN FULL WITHOUT  
WRITTEN APPROVAL OF ESSAR STEEL  
ALBERTA INC. IF YOU RECEIVE THIS  
DOCUMENT AND ARE NOT THE INTENDED  
RECEIVER, PLEASE CALL (705) 945-2624  
COLLECT FOR INSTRUCTIONS ON METHOD  
OF DISPOSAL OF DOCUMENT.

MEETS EN 10204:2004 TYPE 3.1 CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALBERTA.COM  
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALBERTA.COM  
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

CUSTOMER ITEM 00007 OUR ITEM 003 DIMENSIONS 240 MIN X 60 X COIL

COIL NUMBER 60411004 HEAT-MS 2804M-53 NO. WEIGHT 1 37711 COIL NUMBER 60411005 HEAT-MS 2804M-04 NO. WEIGHT 1 38084

### TENSILE TESTS:

HEAT 2804M SRCE DSPC GAUGE 2400 COND METH AR 2 YIELD TENSILE KSI 59.0 KSI 73.0 % ELONG 31(2%)

HEAT 2804M (WT %) C TI MN P S SI CR NI CU MO AL CB V B LAB ALG  
2804M + <.18 .89 .008 .008 .02 .02 .02 .05 .01 .030 .016 <.008

### \*\*WARNING\*\*

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.

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2014 addenda"

Paul M. B.

# ESSAR Steel Algoma Inc.

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

CUSTOMER PURCHASE ORDER NUMBER  
15063-B5

ENTRY DATE  
2011/10/05

CREATE DATE  
2011/11/20

FALL NUMBER  
251758

SHIPPER'S NO.  
-

CARRIER  
NOXL

-380828

MILL ORDER  
12116

ALBERTA INDUSTRIAL METALS LTD  
4821 - 78TH STREET  
RED DEER ALBERTA  
T4P 1N5

ALBERTA INDUSTRIAL METALS LTD  
7660 49TH AVENUE  
CALGARY, ALBERTA  
T4P 4G6

## MILL TEST REPORTS

CUSTOMER SPECIFICATION  
HOT ROLLED STEEL SHEET - HSLA - TO CHEMISTRIES OF CSA G40.21 44W/ASTM A36  
(04) (08) - CHEM OF CSA G40.21 38W - STRL Q - TEMPER ROLLED - RESTRICTED GAUGE  
3/4 TOL - TOP SEMI-CRITICAL SURFACE - STANDARD SHAPE

ESSAR STEEL ALGOMA INC. HEREBY  
CERTIFIES THAT THE MATERIAL HEREIN  
DESCRIBED WAS MADE AND TESTED IN  
ACCORDANCE WITH THE RULES OF THE  
SPECIFICATION SHOWN. ALL RESULTS  
ARE RETAINED IN ACCORDANCE WITH THE  
COMPANY'S STANDARD RECORD KEEPING  
PRACTICES.

K. UGHADPAGA

MANAGER METALLURGICAL SERVICES

## SUPPLEMENTARY INSTRUCTIONS

TEST CERT 1: BRADGABIM.CA TEST CERT 2: PLATE TEST COUPON:

"Conforms with ASME Sec II, Part A, 2010 edition,"

WSP T/M TEST REPORTS REQUIRED

2000204562 WS

CUST VETTED RESALE

2011/11/21 19:02

THIS MILL TEST REPORT MAY NOT BE  
REPRODUCED EXCEPT IN FULL WITHOUT  
WRITTEN APPROVAL OF ESSAR STEEL  
ALGOMA INC. IF YOU RECEIVE THIS  
DOCUMENT AND ARE NOT THE INTENDED  
RECEIVER, PLEASE CALL (705) 945-2624  
COLLECT FOR INSTRUCTIONS ON METHOD  
OF DISPOSAL OF DOCUMENT.

MEETS EN 10204:2004 TYPE 3.1  
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM  
HEATS INDICATED WITH (+) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS

CUSTOMER ITEM 00004 OUR ITEM 004 DIMENSIONS .240 MIN X 72 X COIL

| COIL NUMBER | HEAT-MS  | PIECES | NO. WEIGHT | COIL NUMBER | HEAT-MS  | PIECES | NO. WEIGHT |
|-------------|----------|--------|------------|-------------|----------|--------|------------|
| 446011000   | 0054M-03 | 1      | 39480      | 446013000   | 0054M-05 | 1      | 39100      |
| 446015000   | 0054M-54 | 1      | 38750      |             |          |        |            |

## TENSILE TESTS:

| HEAT  | GAUGE | COND  | TEST | YIELD | TENSILE | ELONG. |
|-------|-------|-------|------|-------|---------|--------|
| 0054M | 106"  | .2400 | AR   | 64.2  | 77.2    | 26(2") |

| HEAT  | (WT %) | C   | MN  | P    | S    | SI  | CR  | NI  | CU  | MO   | AL   | CB   | V | B |
|-------|--------|-----|-----|------|------|-----|-----|-----|-----|------|------|------|---|---|
| 0054M | +      | .16 | .87 | .010 | .007 | .02 | .02 | .04 | .01 | .032 | .022 | .000 |   |   |

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.

JUN 11 2012



Form TC1: Revision 1: Date 31 Oct 2000

**EVRAZ**

EVRAZ INC. NA

8250 130th Street, Surrey, BC, V3W 8J9

**Test Certificate**

| Customer:<br>RUSSEL METALS INC - CALGARY<br>5724 40TH STREET S.E.<br><br>CALGARY<br>AB T2C1A1                                                                    |          |                     | Customer P.O. No.: M64036048 |          |           | Mill Order No.: 41-245688-01        |               |                     | Shipping Manifest: ST050443                                                                            |                    |      |      |         |          |         |         |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------|------------------------------|----------|-----------|-------------------------------------|---------------|---------------------|--------------------------------------------------------------------------------------------------------|--------------------|------|------|---------|----------|---------|---------|-----------------|
| Product Description: CSA G40.21(2004)44W/300W / ASTM A36(05)<br>A709(01A)36/ASME SA36(01ED)                                                                      |          |                     | Ship Date: 08 Jan 12         |          |           | Cert No: 011139794<br>(Page 1 of 1) |               |                     |                                                                                                        |                    |      |      |         |          |         |         |                 |
| Size: 0.250 X 96.00 X 288.0 (IN)                                                                                                                                 |          |                     |                              |          |           |                                     |               |                     |                                                                                                        |                    |      |      |         |          |         |         |                 |
| Tested Pieces                                                                                                                                                    |          |                     | Tensiles                     |          |           |                                     |               | Charpy Impact Tests |                                                                                                        |                    |      |      |         |          |         |         |                 |
| Heat Id                                                                                                                                                          | Piece Id | Piece Dimensions    | Tst Loc                      | YS (PSI) | UTS (PSI) | %RA                                 | Elong 2in 8in | Tst Dir             | Average Hardness                                                                                       | Abs. Energy (FTLb) |      |      | % Shear | Tst Trap | Tst Dir | Tst Siz | BDWTT Trap %Shr |
| NW4702                                                                                                                                                           | A86681AA | 0.250 X 96.00 (CUT) | L                            | 62000    | 78000     |                                     | 25            | T                   |                                                                                                        |                    |      |      |         |          |         |         |                 |
| NW4706                                                                                                                                                           | A86689AA | 0.250 X 96.00 (CUT) | C                            | 60000    | 77000     |                                     | 26            | T                   |                                                                                                        |                    |      |      |         |          |         |         |                 |
|                                                                                                                                                                  |          |                     | L                            | 61000    | 79000     |                                     | 24            | T                   |                                                                                                        |                    |      |      |         |          |         |         |                 |
|                                                                                                                                                                  |          |                     | C                            | 61000    | 79000     |                                     | 22            | T                   |                                                                                                        |                    |      |      |         |          |         |         |                 |
| Chemical Analysis                                                                                                                                                |          |                     |                              |          |           |                                     |               |                     |                                                                                                        |                    |      |      |         |          |         |         |                 |
| Heat Id                                                                                                                                                          | C        | Mn                  | P                            | S        | SI        | Tot Al                              | Cu            | Ni                  | Cr                                                                                                     | Mo                 | Co   | V    | Ti      | B        | N       | ORGN    |                 |
| NW4702                                                                                                                                                           | .14      | .87                 | .011                         | .004     | .26       | .032                                | .02           | .05                 | .03                                                                                                    | .00                | .005 | .007 | .002    | .0000    | .0052   | CAN     |                 |
| NW4706                                                                                                                                                           | .15      | .86                 | .011                         | .004     | .25       | .043                                | .02           | .05                 | .03                                                                                                    | .00                | .005 | .006 | .005    | .0000    | .0040   | CAN     |                 |
| MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL<br>* NW4702      A06681AA      PCES: 22, WGT: 43124      * NW4706      A86689AA      PCES: 23, WGT: 45085 |          |                     |                              |          |           |                                     |               |                     |                                                                                                        |                    |      |      |         |          |         |         |                 |
| <p>"Conforms with ASME<br/>Sec II, Part A, 2010 edition,<br/>2011a addenda"</p> <p><i>June 26/12</i></p>                                                         |          |                     |                              |          |           |                                     |               |                     |                                                                                                        |                    |      |      |         |          |         |         |                 |
| Cust Part # :                                                                                                                                                    |          |                     |                              |          |           |                                     |               |                     | WE HEREBY CERTIFY THAT THIS MATERIAL<br>WAS TESTED IN ACCORDANCE WITH THE<br>APPROPRIATE SPECIFICATION |                    |      |      |         |          |         |         |                 |
|                                                                                                                                                                  |          |                     |                              |          |           |                                     |               |                     | Greg Balodan<br>CHECKED BY                                                                             |                    |      |      |         |          |         |         |                 |

HEAT NUMBER : 370548  
TRANS AM PIPING PRODUCTS - REV'D BY: 2  
Shipmnet/Seq #: S 9 - 1144

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

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda" 370548  
R Aug. 9/12



烟台鲁宝钢管有限责任公司

YANTAI LUBAO STEEL PIPE CO., LTD.

V.T. 318

产品质量证明书  
MILL TEST CERTIFICATE

(EN10204 3.1)

PN 244347

烟台市幸福中路185号  
NO. 185 XINGFU MIDDLE ROAD, YANTAI, CHINA  
TEL: 0535 535 68439-16/6854750 FAX:  
HTTP://WWW.LUBAOSTEELPIRE.COM

PAGE 1 OF 1

|                                |                        |                                                                                                                                                                                                                                                                      |                      |                  |                  |         |                             |                         |                |              |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
|--------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------|------------------|---------|-----------------------------|-------------------------|----------------|--------------|--------------------|----------------------------------|------------------------------|----------------------------|--------------------------|-------------------|------------|------------------|---------------------------|---------|---|---|---------------------|--------------------|-----------------|---|---|---|------|--|
| 订购单位<br>PURCHASER              |                        | TRANS AM PIPING PRODUCTS LTD.                                                                                                                                                                                                                                        |                      |                  |                  |         |                             |                         |                |              |                    | 产品名称<br>DESCRIPTION OF GOODS     |                              | 8" STD SEAMLESS STEEL PIPE |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 尺寸标准<br>DIMENSION STANDARD     |                        | ASME B36.10                                                                                                                                                                                                                                                          |                      |                  |                  |         |                             |                         |                |              |                    | 客户代号<br>CUSTOMER'S NO.           |                              | 100108                     |                          |                   |            |                  | 证书号<br>CERTIFICATE NO.    |         |   |   |                     | BQTYG0902200001600 |                 |   |   |   |      |  |
| 材料规格<br>MATERIAL SPECIFICATION |                        | ASTM A106-B, ASME SA106-B, API 5L H                                                                                                                                                                                                                                  |                      |                  |                  |         |                             |                         |                |              |                    | 交货日期<br>DATE OF DELIVERY         |                              | 20090920                   |                          |                   |            |                  | 订货合同号<br>SUB CONTRACT NO. |         |   |   |                     | G9C69026-14        |                 |   |   |   |      |  |
|                                |                        | CSA Z245.1 Gr.211 Cat 1                                                                                                                                                                                                                                              |                      |                  |                  |         |                             |                         |                |              |                    | 客户订单编号<br>P.O. NO.               |                              |                            |                          |                   |            |                  | 签发日期<br>DATE OF ISSUE     |         |   |   |                     | 20090220           |                 |   |   |   |      |  |
|                                |                        | NACE MR0175/ISO 15156                                                                                                                                                                                                                                                |                      |                  |                  |         |                             |                         |                |              |                    | 工厂检验员<br>STAMP OF MILL INSPECTOR |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 外经 O.D.                        |                        | 219.1mm                                                                                                                                                                                                                                                              |                      | 壁厚 W.T.          |                  | 8.18mm  |                             | 长度 Length               |                | 5.8-6.7M     |                    | 总长度 Total Length                 |                              |                            |                          | 总捆数 Total Bundles |            | 订货款 Order        |                           | 260.00吨 |   |   |                     |                    |                 |   |   |   |      |  |
| 总根数 Total Pieces               |                        | 886                                                                                                                                                                                                                                                                  |                      | 总重量 Total Weight |                  | 248.238 |                             | 交货状态 Delivery Condition |                | 轧态 As-Rolled |                    | 制造方法 Making Method               |                              | 热轧无缝 Hot Finished Seamless |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 序号<br>No.                      | 炉号<br>Heat No.         | 化学成分<br>Chemical Composition                                                                                                                                                                                                                                         |                      |                  |                  |         |                             |                         |                |              |                    | 试批号<br>Lot No.                   | 拉伸试验 Tensile Test            |                            |                          |                   |            | 冲击试验 Impact Test |                           |         |   |   | 硬度<br>Hardness Test | 支数<br>Pieces       | 重量<br>Weight MT |   |   |   |      |  |
|                                |                        | C                                                                                                                                                                                                                                                                    | Si                   | Mn               | P                | S       | Cu                          | NI                      | Cr             | V            | Mo                 |                                  | CE                           | 屈服<br>Y.S.                 | 抗拉<br>T.S.               | 伸长<br>E.L.        | 断后<br>EXT. | 3                | 4                         | 5       | 6 | 7 |                     |                    |                 | 1 | 2 | 3 | AVG. |  |
|                                |                        |                                                                                                                                                                                                                                                                      |                      |                  |                  |         |                             |                         |                |              |                    |                                  | Mpa                          |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 最小 MIN                         |                        | 0                                                                                                                                                                                                                                                                    | 0.1                  | 0.29             | 0                | 0       | 0                           | 0                       | 0              | 0            | 0                  | 0                                | 0.01                         | 0.10                       | 0.10                     | 0.04              | 0.15       |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 最大 MAX                         |                        | 0.22                                                                                                                                                                                                                                                                 | 0.9                  | 2.06             | 0.035            | 0.035   | 0.10                        | 0.10                    | 0.09           | 0.15         |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 370548                         | H                      | 0.19                                                                                                                                                                                                                                                                 | 0.21                 | 0.54             | 0.008            | 0.005   | 0.07                        | 0.04                    | 0.03           | 0            | 0.01               |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
|                                |                        |                                                                                                                                                                                                                                                                      |                      |                  |                  |         |                             |                         |                |              |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 沟流<br>E.T.                     | 弯曲<br>R.M.I.           |                                                                                                                                                                                                                                                                      | 超声波<br>U.T.          |                  | 磁粉<br>M.P.T.     |         | 外观尺寸<br>Visual & Dimensions |                         | 涂层<br>Coating  |              | 通体检验<br>Drift Test |                                  | 静水压力<br>Hydrostatic Pressure |                            | 静水时间<br>Duration of Time |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| GOOD                           | GOOD                   |                                                                                                                                                                                                                                                                      | ---                  |                  | ---              |         | Good                        |                         | Good           |              | ---                |                                  | 11.00MPa                     |                            | 5s                       |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 扩口<br>Expansion                | 环状扩口<br>Ring Expansion |                                                                                                                                                                                                                                                                      | 环状拉伸<br>Ring Tensile |                  | 压扁<br>Flattening |         | 弯曲<br>Bending               |                         | 卷边<br>Flanging |              | 屈服<br>SSCR         |                                  | 热处理工艺<br>Heat Treatment      |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 注释<br>NOTES                    |                        | 2* 化学成分 Chemical Composition H:Heat (Ladle) Analysis 3* P=管体 Pipe Body; 1* 纵向 Longitudinal 5* 2=弧长试样 Script X 20mm; G.L.=Gauge Length<br>L1=5.65SQRT(FU)                                                                                                             |                      |                  |                  |         |                             |                         |                |              |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 备注: Remark                     |                        | *** L.C. NO.: DPCRCV920603                                                                                                                                                                                                                                           |                      |                  |                  |         |                             |                         |                |              |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
| 公称<br>SURVEYOR                 |                        | 兹证明本厂所产产品, 均依标准规定制造, 取样, 试验和检验, 并符合标准要求及合同要求。<br>WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF ABOVE SPECIFICATIONS AND PURCHASE ORDER, AND MET THE REQUIREMENTS. |                      |                  |                  |         |                             |                         |                |              |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |
|                                |                        | <br>QUALITY CONTROL DEPT.                                                                                                                                                                                                                                            |                      |                  |                  |         |                             |                         |                |              |                    |                                  |                              |                            |                          |                   |            |                  |                           |         |   |   |                     |                    |                 |   |   |   |      |  |



An ISO 9001:2008 Registered Manufacturer



**BUREAU VERITAS**

№ TW11082Q

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web site: <http://www.bothwell.com.tw> e-mail: [bothwell@www.bothwell.com.tw](mailto:bothwell@www.bothwell.com.tw) or [box@bothwell.com.tw](mailto:box@bothwell.com.tw)

[illegible]

## REQUIREMENTS

1000

19

# CERTIFIED MILL TEST REPORT

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LOG NO. F00000000017351

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 07/29/2011

CUSTOMER

ORDER NO.: S759118576

BONNEY ORDER NO. B000101590

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

"Conforms with ASME  
Sec II, Part A, 2010 edition"  
*2011a addenda*

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.

CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

|          |     |       |                                                                                                                                                                                                                                                                          |          |
|----------|-----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 20       | 950 | 4916  | 2 3000 A105N HCP T                                                                                                                                                                                                                                                       | SA/A105N |
| 18C10966 |     |       | Al 0.022 C 0.200 ✓ Co 0.004 Cr 0.040 ✓ Cu 0.130 ✓ Mn 1.020 ✓ Mo 0.010 ✓ N 0.005 ✓<br>Nb 0.014 Ni 0.040 ✓ P 0.006 ✓ S 0.015 ✓ Si 0.200 ✓ V 0.003 ✓<br>CE(Long Formula) = 0.39<br>T/S(PSI) 74,375 ✓ Y/S(PSI) 51,500 ✓ EL(%) 32.80 ✓ RA(%) 63.25<br>Brinell 132 BHN 132 BHN |          |
| 22       | 25  | 58288 | 3/4X3/4X 1/2 3000 A105N TEE T                                                                                                                                                                                                                                            | SA/A105N |
| 18C11116 |     |       | Al 0.022 C 0.190 Co 0.005 Cr 0.040 Cu 0.210 Mn 1.050 Mo 0.010 N 0.005<br>Nb 0.015 Ni 0.060 P 0.007 S 0.019 Si 0.200 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(PSI) 73,750 Y/S(PSI) 51,250 EL(%) 31.90 RA(%) 67.00<br>Brinell 135 BHN 137 BHN                             |          |
| 23       | 120 | 58414 | 1X1X1/2 3M A105N TEE T                                                                                                                                                                                                                                                   | SA/A105N |
| 18C11128 |     |       | C 0.200 Cb 0.000 Co 0.003 Cr 0.060 Cu 0.100 Mn 0.990 Mo 0.010 Ni 0.030<br>P 0.009 S 0.018 Si 0.190 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(PSI) 75,000 Y/S(PSI) 52,500 EL(%) 32.25 RA(%) 65.60<br>Brinell 135 BHN 132 BHN                                              |          |
| 26       | 75  | 58259 | 1 3M A105N STEL T                                                                                                                                                                                                                                                        | SA/A105N |
| 18C11263 |     |       | Al 0.022 C 0.190 Cb 0.000 Co 0.004 Cr 0.040 Cu 0.100 Mn 1.020 Mo 0.010<br>N 0.005 Nb 0.012 Ni 0.040 P 0.007 S 0.016 Si 0.180 V 0.004<br>CE(Long Formula) = 0.38<br>T/S(PSI) 76,875 Y/S(PSI) 52,500 EL(%) 33.55 RA(%) 66.10<br>Brinell 137 BHN 137 BHN                    |          |

MN:C= 5.1

**ENCANA**

MATERIAL CONFORMS TO CUSTOMER SPECS

By ceris at 11:46:09 AM, 4/4/2012

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 07/29/2011

CUSTOMER

BONNEY ORDER NO. B000101590

ORDER NO.: S759118576

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

ITEM QUANTITY LOT NO.

GRADE OR SPECIFICATION NO.

CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
4. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
5. CERTIFYING ASTM A105-10 / ASME SA105-10 EDITION.
6. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
7. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
8. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
9. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
10. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
11. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
12. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Meloney Specht*

Meloney Specht

QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 04/20/2011

CUSTOMER

BONNEY ORDER NO. B000095208

ORDER NO.: S759104356

SHIP TO: MRC MIDFIELD  
502-25 AVENUE  
NISKU AB T9E 0K6  
Canada

"Conforms with ASME  
Sec II, Part A, 2010 edition,  
2011a addenda"

*Jan 27/12*  
*[Signature]*

| ITEM            | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------|----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 175<br>18C13549 | 25       | 58012   | 21/2-11/4X3/4 6M A105N THRD T<br>SA/A105N<br>A10.026 C 0.200 Cb 0.000 Co 0.003 Cr 0.030 Cu 0.090 Mn 1.070 Mo 0.010<br>Nb 0.015 Ni 0.030 P 0.008 S 0.024 Si 0.210 Sn 0.010 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(Psi) 72,500 Y/S(Psi) 51,250 EL(%) 34.45 RA(%) 65.40<br>Brinell 132 BHN 135 BHN                                                                                                                                                                            |
| 176<br>18C13552 | 47       | 58332   | 10-3 X 3/4 6000 A105N THRD T<br>SA/A105N<br>A10.018 C 0.200 Co 0.003 Cr 0.030 Cu 0.140 Mn 1.030 Mo 0.010 N 0.006<br>Nb 0.016 Ni 0.040 P 0.008 S 0.017 Si 0.200 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 73,125 Y/S(Psi) 48,750 EL(%) 31.80 RA(%) 62.30<br>Brinell 130 BHN 130 BHN<br><i>MRC = 5.15</i><br><i>[Signature]</i>                                                                                                                                            |
| 18C13552        |          | 58268   | 10-3 X 3/4 6000 A105N THRD T<br>SA/A105N<br>A10.023 C 0.200 Cb 0.000 Co 0.003 Cr 0.040 Cu 0.170 Mn 1.040 Mo 0.010<br>N 0.005 Nb 0.013 Ni 0.040 P 0.008 S 0.019 Si 0.200 V 0.004<br>CE(Long Formula) = 0.40<br>T/S(Psi) 71,125 Y/S(Psi) 48,775 EL(%) 34.90 RA(%) 67.25<br>Brinell 132 BHN 132 BHN                                                                                                                                                                              |
| 177<br>18C13561 | 50       | 58181   | 21/2-2 X1 6000 A105N THRD T<br>SA/A105N<br>A10.021 C 0.200 Co 0.004 Cr 0.030 Cu 0.080 Mn 1.040 Mo 0.010 N 0.004<br>Nb 0.014 Ni 0.020 P 0.008 S 0.019 Si 0.220 V 0.004<br>CE(Long Formula) = 0.39<br>T/S(Psi) 78,375 Y/S(Psi) 50,000 EL(%) 34.95 RA(%) 65.85<br>Brinell 135 BHN 135 BHN<br>MATERIAL CONFORMS<br>TO CUSTOMER<br>SPECIFICATIONS<br>AS PER P.O.<br>REQUIREMENTS<br>Name: <i>C. Steele</i><br>Date: <i>Jan 27/12</i><br><i>[Signature]</i><br><i>(MRC) W. Pepp</i> |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht  
Meloney Specht  
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT



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

LOG NO. F00000000013522

BONNEY FORGE CORPORATION

P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330

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

www.bonneyforge.com

CUSTOMER: MRC MIDFIELD

DATE 04/20/2011

CUSTOMER

BONNEY ORDER NO. B000095208

ORDER NO.: S759104356

SHIP TO: MRC MIDFIELD

502-25 AVENUE

NISKU AB T9E 0K6

Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|------|----------|---------|--------------------------------------------------------------------------------|
|------|----------|---------|--------------------------------------------------------------------------------|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2. ✓
4. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE MATERIAL SUPPLIED IDENTIFIED AS A105QT WAS QUENCHED AND TEMPERED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
7. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
8. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

*Meloney Specht*

Meloney Specht

QUALITY PROCESS MANAGER

CMTR: REV2



Manufacturer of Piping and Pressure Vessel Components

4407 Haygood St - Houston, TX 77022

Phone: 713-695-3633 Fax: 713-695-3528

A Booney Forge Company

Page 8 of 8

Sold To: TRANS AM PIPING PRODUCTS  
 LTD  
 9335 ENDEAVOR DRIVE S.E.  
 CALGARY AB T3S 0A1

MTR #: 220,759

PO #: CI-11-645

Sales Order #: C00115274

Date: 12/16/2011

### Certified Material Test Report

Heat Code: 58582

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.

We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Material: A/SA105N 09

| Item | Description                                         |
|------|-----------------------------------------------------|
| 11   | 36 - 3 X 1 3M THP<br>SHIP AND BACKORDER<br>A/SA105N |

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 Sec II Part A, 2010 edition  
 2011a addenda"**

### Chemical Composition

| Ladle | C     | CR   | CU    | MN   | MO    | NB    | NI   | P     |
|-------|-------|------|-------|------|-------|-------|------|-------|
|       | 0.200 | 0.03 | 0.050 | 1.04 | 0.000 | 0.014 | 0.02 | 0.005 |
| S     | SI    | V    |       |      |       |       |      |       |
|       | 0.023 | 0.23 | 0.003 |      |       |       |      |       |

**APPROVED**

By Ceri Steen at 11:32 am, Apr 17, 2012

Carbon Equivalency:

Ladle

0.39

mn:c= 5.2

| Product | C     | CR    | CU    | MN   | MO    | NI   | P     | S     |
|---------|-------|-------|-------|------|-------|------|-------|-------|
|         | 0.000 | 0.00  | 0.000 | 0.00 | 0.000 | 0.00 | 0.000 | 0.000 |
| SI      | V     |       |       |      |       |      |       |       |
|         | 0.00  | 0.000 |       |      |       |      |       |       |

| Product | Tensile PSI | Yield PSI | Elong % | RA %  | Hardness |
|---------|-------------|-----------|---------|-------|----------|
|         | 72,758      | 47,951    | 36.70   | 62.56 | 137 BHN  |

Normalized

IAW NACE MR0175/ISO 15156- 2009

**MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS**

**Encana**

Marie Dehmer  
 Quality Assurance Representative



Manufacturer of Piping and Pressure Vessel Components

4407 Haygood St - Houston, TX 77022

Phone: 713-695-3633 Fax: 713-695-3528

A Donney Forge Company

Page 1 of 1

Sold To: TRANS AM PIPING PRODUCTS  
 LTD  
 9335 ENDEAVOR DRIVE S.E.  
 CALGARY AB T3S 0A1

MTR #: 222,961

PO #: CI-11-645

Sales Order #: C001115274

Date: 01/26/2012

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.

We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

### Certified Material Test Report

Heat Code: 58614

MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS

Material: A/SA105N 09

| Item | Description                         |
|------|-------------------------------------|
| 15   | 36 - 1 1/2 X 3/4 6M THP<br>A/SA105N |

MN:C= 4.63

Paramount  
 Encana

### Chemical Composition

| Ladle | C     | CR   | CU    | MN   | MO    | NB    | NI   | P     |
|-------|-------|------|-------|------|-------|-------|------|-------|
|       | 0.220 | 0.03 | 0.040 | 1.02 | 0.000 | 0.014 | 0.02 | 0.007 |
| B     | SI    | V    |       |      |       |       |      |       |
|       | 0.021 | 0.19 | 0.004 |      |       |       |      |       |

Carbon Equivalency: 0.40

| Product | Tensile PSI | Yield PSI | Elong % | RA %  | Hardness |
|---------|-------------|-----------|---------|-------|----------|
|         | 74,320      | 45,333    | 31.20   | 61.09 | 130 BHN  |

Normalized

IAW NACE MR0175/ ISO 15156- 2009

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 Sec II, Part A, 2010 edition,  
 2011a addenda"  
 May 10.12

Marie Delmer  
 Quality Assurance Representative



VT.277-280



**燁輝企業股份有限公司**  
YIEH PHUI ENTERPRISE CO., LTD.

**品質證明書**  
**INSPECTION CERTIFICATE**

台灣省高雄市楠梓區芋寮里字寮路369號  
No. 369, Yuliao Road, Qiaotou District  
Kaohsiung City 82544, Taiwan (R.O.C.)  
TEL:+886(0)7 6117181 FAX:+886(0)7 6126355

|                   |                                                                                                                               |                          |                                                                                                             |                       |          |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------|----------|
| 客戶名稱<br>CLIENT    | STEMCOR USA INC. 350 FIFTH AVENUE,<br>SUITE-1526 NY10118 NEW YORK U.S.A.                                                      | 證明書編號<br>CERTIFICATE NO. | P113136                                                                                                     | 證明書開立日期<br>ISSUE DATE | 20110329 |
| 商品名稱<br>COMMODITY | PRIME NEWLY MANUFACTURED E.R.W. PIPE IN ACCORDANCE<br>WITH YPS OR ASTM A53-2007 GRADE A OR B AS APPLICABLE.<br>NX2986/4644701 | 訂單號碼<br>ORDER ITEM NO.   | PRP93A1                                                                                                     | 發票號碼<br>INVOICE NO.   | PRP93A1  |
|                   |                                                                                                                               | 產品名稱<br>PRODUCT          | HOT-ROLLED STEEL PLAIN END E.R.W. PIPE                                                                      |                       |          |
|                   |                                                                                                                               | 產品規格<br>SPECIFICATION    | ASTM A53-2007 GRADE B / ASME SA53-2004 GRADE B,<br>ELECTRIC-RESISTANCE WELDED, PLAIN END, BLACK STEEL PIPE. |                       |          |

2513005

| 序號<br>SEQ<br>NO. | 批號<br>HT NO. | 訂單尺寸 ORDERED DIMENSIONS                              |                   |                  | MECHANICAL PROPERTIES AND OTHERS |                                                                           |              |                   |                      |             | 衝擊試驗<br>IMPACT TEST |       | 鍍鋅試驗<br>ZINC COATING TEST |                             | 化學成分 CHEMICAL COMPOSITION wt% |                                                                                      |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |
|------------------|--------------|------------------------------------------------------|-------------------|------------------|----------------------------------|---------------------------------------------------------------------------|--------------|-------------------|----------------------|-------------|---------------------|-------|---------------------------|-----------------------------|-------------------------------|--------------------------------------------------------------------------------------|----|--------------|--------------|------------|--------------|------------|------------|------------|------------|------------|------------|--------------|------------|--------------|---------------|
|                  |              | 管徑*厚度*長度<br>OD*THICK*LENGTH                          | 數量(支)<br>Q'TY/PCS | 重量<br>WEIGHT(KG) | TENSILE TEST                     |                                                                           |              | 彎曲試驗<br>BEND TEST | 壓扁試驗<br>FLATTEN TEST | 水壓試驗<br>E.T | 溫度試驗<br>E.T         | Ave J | TEMP °C                   | 附著量<br>WT. OF<br>Zn<br>g/m² | 均勻性<br>UNIFORMITY<br>Time/批   | BASIC OXYGEN FURNACE & CONTINUOUS CASTING - A1-KILLED STEEL                          |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |
|                  |              |                                                      |                   |                  | 屈服強度<br>YIELD                    | 抗拉強度<br>TENSILE                                                           | 伸長率<br>EL(%) |                   |                      |             |                     |       |                           |                             |                               | C                                                                                    | Mn | Si           | P            | S          | Cu           | Ni         | Cr         | Mo         | V          | Al         | Nb         | Ti           | CEV        |              |               |
|                  |              |                                                      |                   |                  | N/mm²                            | N/mm²                                                                     | %            |                   |                      |             |                     |       |                           |                             |                               | X10 <sup>2</sup> X10 <sup>3</sup> X10 <sup>2</sup> X10 <sup>3</sup> X10 <sup>3</sup> |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |
|                  |              | 規格值<br>SPECIFICATION                                 |                   |                  | 240<br>min                       | 415<br>min                                                                | 24<br>min    |                   | 2/30<br>1/30         |             |                     |       |                           |                             |                               |                                                                                      |    | 15.0<br>12.0 | 43.0<br>40.0 | 1.0<br>1.0 | 19.0<br>12.0 | 8.0<br>5.0 | 3.0<br>2.0 | 2.0<br>1.0 | 3.0<br>2.0 | 0.0<br>0.0 | 0.0<br>0.0 | 45.0<br>45.0 | 0.0<br>0.0 | 0.00<br>0.00 | 27.37<br>21.8 |
| 1                | P11105600    | 6"x0.280"x21.00'                                     | 294               | 54184            | 378                              | 437                                                                       | 33.6         |                   | OK                   | OK          | OK                  |       |                           |                             |                               |                                                                                      |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |
| 2                | P11360300    | 6"x0.280"x21.00'                                     | 56                | 10130            | 378                              | 438                                                                       | 31.0         |                   | OK                   | OK          | OK                  |       |                           |                             |                               |                                                                                      |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |
|                  |              | 重量: 63314<br>TOTAL WEIGHT: 63314                     |                   |                  |                                  |                                                                           |              |                   |                      |             |                     |       |                           |                             |                               |                                                                                      |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |
|                  |              | "Conforms with ASME<br>Sec II, Part A, 2010 edition, |                   |                  |                                  | "Conforms with ASME<br>Sec II, Part A, 2010 edition"<br>Sept - Oct - 2011 |              |                   |                      |             |                     |       |                           |                             |                               |                                                                                      |    |              |              |            |              |            |            |            |            |            |            |              |            |              |               |

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"Conforms with ASME  
Sec II, Part A, 2010 edition"  
Sept - Oct - 2011

2011a addenda"  
LR Aug 9, 2012

無放射性污染證明  
NON-RADIOACTIVE CONTAMINATION CERTIFICATION

茲證明上述產品符合「放射性污染建築物事件防範及處理辦法」之規定，無放射性污染現象。原子能委員會合格証號：鋼構偵字第131號。  
THIS IS TO CERTIFY THE PRODUCT(S) THAT LISTED ABOVE COMPLIES WITH THE RULE OF "REGULATIONS FOR PREVENTION AND MANAGEMENT OF INCIDENT OF RADIOACTIVE CONTAMINATED BUILDINGS" AND NO RADIO CONTAMINATION PHENOMENON WAS FOUND.  
CERTIFICATE OF ATOMIC ENERGY COUNCIL: DOCUMENT NO. 131.

SUBSCRIPTION  
  
Chang-Hsin Ming

茲證明本表所列製品，均依材料規格製造及試驗，並符合規格之要求。  
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION.

技 術 部 協 理  
ASSISTANT VICE PRESIDENT-TECHNOLOGY DIVISION

2789440-09

1505000

Encana



# INSPECTION CERTIFICATE

Paramount

MATERIAL CONFORMS  
 TO CUSTOMER  
 SPECIFICATIONS  
 AS PER P.O.  
 REQUIREMENTS

Customer: TRANS AM PIPING PRODUCTS LTD.  
 Product: SEAMLESS CARBON STEEL BUTT WELD FITTINGS  
 Spec: ASME SA/ASTM A234 WPB-05b  
 GSA A245 11-96 Gr 241 CAP 11 NACE MR0175-03

17 TUNG LI ROAD HSIAO KANG  
 KAOHSIUNG, TAIWAN R.O.C.  
 TEL: (07) 831-9157  
 FAX: (07) 831-2942, 821-7500

Certificate No.: 09900116-0116  
 Order No: C110547  
 Date: 2011/06/27

(MILL TEST)  
 CHUP HSIN ENTERPRISE CO., LTD.

| Specification for Raw Material |                  | Specification for Inspection |         | Visual Examination |                  | Dimensional Inspection |  |
|--------------------------------|------------------|------------------------------|---------|--------------------|------------------|------------------------|--|
| ASME SA516 GR.70               |                  | ASME B16.9-2003              |         | GOOD               |                  | GOOD                   |  |
| Item                           | Description      | Quantity                     | Heat ID | Heat No.           | Raw Material Mfg | Raw Certificate NO.    |  |
| 7                              | CAP STD SEAMLESS | 50                           | G689    | 6C689              | C.S.C.           | 9701E1H0056            |  |
| 10                             | CAP STD SEAMLESS | 125                          | W921    | 5W921              | C.S.C.           | 970202H0077            |  |
| 11                             | CAP STD SEAMLESS | 100                          | S627    | 2S627              | C.S.C.           | 95078A0340             |  |

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 Sec II, Part A, 2010 edition,  
 2011e addenda"  
 May 30, 12

| Chemical Composition % |      |      |      |      |       |      |      |      |      |      |      |      |       | Tension Test |    |              |                   |
|------------------------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|--------------|----|--------------|-------------------|
| Specifi-<br>cation     | C    | Si   | Mn   | P    | S     | Cu   | Ni   | Cr   | Mo   | V    | Nb   | C.E. | Y.S   | T.S          | E  | HARD<br>NESS | Heat<br>Treatment |
| MIN                    | 0.10 | 0.29 | 0.05 | 0.01 | 0.005 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 35000 | 60000        | 17 | 197          |                   |
| MAX                    | 0.30 | 0.35 | 0.10 | 0.01 | 0.01  | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 49769 | 74726        | 41 | 144          | S.R. 650°C        |
|                        | 21   | 24   | 88   | 24   | 4     | 2    | 1    | 3    | 0    | 3    | 10   | 36   | 47448 | 68342        | 23 | 138          | X0.5HR            |
|                        | 10   | 12   | 85   | 18   | 8     | 3    | 2    | 1    | 1    | 3    | 10   | 32   | 55428 | 80385        | 23 | 124          |                   |
|                        | 11   | 22   | 25   | 109  | 16    | 1    | 1    | 3    | 1    | 4    | 11   | 41   |       |              |    |              |                   |

MIN: C = 4.95

C.E. = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15  
 We hereby certify that the material herein described has been manufactured,  
 sampled, tested and inspected in accordance with the requirements of above  
 specifications and purchaser's order.

Chief of Quality Assurance Section

L. S. Tsai