



**4 1/2"OD PRE-HEAT & RE-HEAT**  
**SOUR SERVICE LINE HEATER**

**Serial# LH-712**

**Data Booklet**

Panax Oil & Gas Inc.  
3730 - 69<sup>th</sup> Avenue  
Edmonton, AB T6B-2V2  
PH: (780) 413-6656 Fax: 468-5784  
email: [panax@telusplanet.net](mailto:panax@telusplanet.net)  
Website: [WWW.PANAXINC.COM](http://WWW.PANAXINC.COM)

# Certificate of Authorization Permit

## Quality Management System

Expiry Date: August 5, 2012

Reg. No.: AQP-1268(S)

This is to certify that:

**PANAX OIL & GAS INC.**

3730 - 69 AVENUE

EDMONTON, ALBERTA

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

**Construct ASME Section VIII-1 Pressure Vessels**

**Manufacture Category 'H' Fittings in accordance with CSA B51**  
at the above SHOP address.

**Construct, Repair/Alter ASME B31.3 Process Piping.**

**Construct, Repair/Alter ASME B31.3 Indirect Fired Heater Coils**

**Repair/Alter ASME Section VIII-1 Pressure Vessels**

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



Dated at Edmonton, this 24th day of August, 2009

A handwritten signature in black ink, appearing to read "K. P. Mc...".

Chief Inspector and Administrator

Certificate No.: 7082

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- *Drawing Index* (Exhibit 7.1)



**Alberta Boilers Safety Association**

#200, 4208 - 97 Street  
Edmonton, Alberta, Canada T6E 5Z9  
Tel: (780) 437-9100 / Fax: (780) 437-7787

June 14, 2002

Phil Dade  
BLUE DIAMOND DESIGN LTD  
1977 VALLEY VIEW PLACE  
VICTORIA, BC V9B 6H8

Dear Phil Dade,

The drawings, specifications and/or information received on May 21, 2002 are accepted for registration as follows:

|                     |                        |                           |                         |
|---------------------|------------------------|---------------------------|-------------------------|
| <b>CRN :</b>        | P9417.2                | <b>Drawing No. :</b>      | BDD-400A Rev 1 As Noted |
| <b>Fee :</b>        | \$ 306.00              | <b>Accepted on :</b>      | June 14, 2002           |
| <b>Add. Prints:</b> | \$ 0                   | <b>Track No. :</b>        | 2002-03305              |
| <b>Reg Type :</b>   | New Design             | <b>Description</b>        |                         |
| <b>Description</b>  | Design Pr. - Per Chart | <b>Design Pressure</b>    | KPa                     |
|                     |                        | <b>Design Temperature</b> | 93° C                   |
|                     |                        | <b>MDMT</b>               | -29° C                  |

**The registration is conditional on your compliance with the following notes:**

*Please note that we have accepted the design with the following correction per your email of 13 June '02:*

*-Revised Note 3 to read, "... WPS qualified to 0.674" thk "*

**An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.**

Enclosed are stamped prints for your reference.

Sincerely,

B.C. DESAI, P. Eng.  
Design Survey Engineer



Corrections and  
Public Safety

Licensing and Inspections

Boiler & Pressure Vessel Safety  
330, 1855 Victoria Avenue  
REGINA, SK S4P 3V7  
PH : (306)787-4522  
FAX : (306)787-9273

## APPROVAL AND INVOICE

Thursday, July 04, 2002

Blue Diamond Design Ltd.  
1977 Valley View Place  
Victoria, B.C.  
V9B 6H8

**Our File** 31363 I 0 VI

ATTENTION : Phil Dade



With reference to your submission respecting the registration of the item below, for legal use in the province, please note we have surveyed, approved and registered this design as noted.

|                            |                          |          |
|----------------------------|--------------------------|----------|
| MANUFACTURER :             | Blue Diamond Design Ltd. |          |
| ITEM :                     | DRAWING NUMBER :         | CRN :    |
| 4" Heater Coil             | BDD-400A Rev1            | P9417.23 |
| REGISTRATION FEE: \$190.00 | ( CANADIAN FUNDS ONLY )  |          |

PLEASE SEND REMITTANCE WITH A COPY OF THIS INVOICE TO: MINISTER OF FINANCE. WE ACCEPT PAYMENT BY CHEQUE/MONEY ORDER OR BANK DRAFT.

We wish to point out that every vessel must be constructed strictly in accordance with the registered design.

In addition to stamping every vessel with the registration number given above and as required in CSA Code B51, a Manufacturer's Data Report must be forwarded to this office immediately at the time a vessel is shipped. Such forms may be obtained upon request.

Sincerely,

Mike Beriault

Codes and Standards Compliance

#327 Reg. of Design

REMARKS: CRN registered under reciprocal agreement.



TO : BLUE DIAMOND DESIGN LTD  
 1977 VALLEY VIEW PL  
 VICTORIA BC  
 V9B 6H8

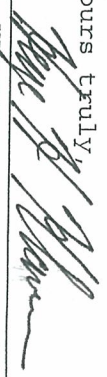
Registered: 2002/07/12  
 Journal #: 29129  
 Account #: 32255

Attn: PHIL DADE  
 Re: BLUE DIAMOND DESIGN LTD

**DESIGN REGISTRATION** C.R.N. P9417.21

| Drawings / Documents             | Description  |
|----------------------------------|--|
| 4" HEATER COIL<br>BDD-400A REV 1 | MDMT ----- MAWT ----- MAWP ----- EXT PRESS -----<br>-20 F 200 F  |
| H.S. : 471.2 ft^2 maximum        | Shell: 4.5" O.D.<br>Length per Pass: 20'-0" maximum<br>No. of Passes: 20 maximum<br>Pressure Rating: See Chart for MAWP<br>Code: ASME B31.3, 1999 Edition, 2001 Addenda. |
| <b>REGISTERED</b>                |  |

Remarks: This design has been registered as noted above. An invoice for survey will follow in the amount of \$ 60.00

Yours truly,  
  
 H. KAVER  
 Design Surveyor

dc

MINISTRY OF COMMUNITY, ABORIGINAL AND WOMEN'S SERVICES  
 Boiler, Gas and Railway Safety Branch  
 88 - 6th Street Suite 400  
 New Westminster BC V3L 5B3  
 Telephone: (604) 660-6254  
 Facsimile: (604) 660-3460

LH  
W7  
R11-100

MANUFACTURED AND CERTIFIED BY  
  
OIL & GAS INC.

PREHEAT COIL

DESIGN PRESS 3212 PSI AT 200 °F

DESIGN MIN. TEMP -20 °F AT 3212 PSI

REHEAT COIL

DESIGN PRESS 3212 PSI AT 200 °F

DESIGN MIN. TEMP -20 °F AT 3212 PSI

SERIAL NO. LH-712 YEAR BUILT 2011

CRN P9417.213

A 602830

3730-69 AVE. EDMONTON ALBERTA CANADA  
PH: 780-413-6656 WWW.PANAXINC.COM



# MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

the pressure equipment safety authority

AB-28 2006-02

PARTIAL

A# 1662830

Manufactured By: PANAX OIL & GAS INC. 3730-89th AVE EDMONTON, AB T6B 2V2

Manufactured For:

ARC PETROLEUM c/o XXL ENGINEERING 101, 807 MANNING ROAD NE CALGARY, AB T2E 7W8

Ultimate Owner:

ARC PETROLEUM c/o XXL ENGINEERING 101, 807 MANNING ROAD NE CALGARY, AB T2E 7W8

Location of Installation:

Unknown

|                           |        |                          |                |                  |            |         |
|---------------------------|--------|--------------------------|----------------|------------------|------------|---------|
| Manufacturer's Serial No. | LH-712 | Construction Drawing No. | BDD-401 Rev. 1 | CODE: ASME B31.3 | Year Built | 2011    |
|                           |        |                          |                | Edition          | 2008       | Addenda |

## CONSTRUCTION

| Coil ID/Purpose         | Design Pressure | Design Temp | Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN       |
|-------------------------|-----------------|-------------|--------------|---------------------|------------------------|-----------|
| a BDD-401 PRE-HEAT COIL | 3212 PSIG       | 200°F       | -20°F        | 0.125"              | BDD-400A Rev. 1        | P9417.213 |
| b BDD-401 RE-HEAT COIL  | 3212 PSIG       | 200°F       | -20°F        | 0.125"              | BDD-400A Rev. 1        | P9417.213 |
| c                       |                 |             |              |                     |                        |           |
| d                       |                 |             |              |                     |                        |           |
| e                       |                 |             |              |                     |                        |           |

## COIL

| Mat'l Spec.   | Diameter | Thickness | Return Band |           | End Closures     |        | Flanges     |              | Openings  |        |
|---------------|----------|-----------|-------------|-----------|------------------|--------|-------------|--------------|-----------|--------|
|               |          |           | Mat'l Spec. | Thickness | Mat'l Spec.      | Rating | Mat'l Spec. | Rating       | Size/Type | Rating |
| a SA-333 GR.6 | NPS 4    | 0.531"    | SA-420-WPL6 | 0.531"    | RTJWN/SA-350-LF2 | CL1500 | SA-105N     | NPS 3/4 CPLG | CL6000    |        |
| b SA-333 GR.6 | NPS 4    | 0.531"    | SA-420-WPL6 | 0.531"    | RTJWN/SA-350-LF2 | CL1500 | SA-105N     | NPS 3/4 CPLG | CL6000    |        |
| 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       |      |             |           |             |           |          |            |           |        |
| b       |      |             |           |             |           |          |            |           |        |
| 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  | Temp.                   | Time   |                       |                       |        |
| a 4818 PSIG               | 100%                           | NIR                      | 1150F | 1 HOUR                  | 20'-1" | 223.82FT <sup>2</sup> | 11.10 FT <sup>3</sup> |        |
| b 4818 PSIG               | 100%                           | NIR                      | 1150F | 1 HOUR                  | 20'-1" | 223.82FT <sup>2</sup> | 11.10 FT <sup>3</sup> |        |
| c                         |                                |                          |       |                         |        |                       |                       |        |
| d                         |                                |                          |       |                         |        |                       |                       |        |
| e                         |                                |                          |       |                         |        |                       |                       |        |
| f                         |                                |                          |       |                         |        |                       |                       |        |
| g                         |                                |                          |       |                         |        |                       |                       |        |

IMPACT TESTING: IMPACT TEST EXEMPT PER ASME B31.3 2010 EDITION (TABLE 323.2.2-COLUMN A)

REMARKS: SAFETY RELIEF VALVE IS THE RESPONSIBILITY OF THE END USER.

## 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 04-11-11 Signed  For PANAX OIL & GAS INC.  
 (Representative) (Manufacturer)

## CERTIFICATE OF SHOP INSPECTION

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

Date 04-11-11 Signed  For N612897 AB AB245  
 (Manufacturer)





GENEX CORPORATION

TRAVEL SHEET

① 602830

EXHIBIT 2 (REV.07)

Serial No.: LH-712 Vessel Description: 4" PRE/RE HEAT HEATER COIL  
 Drawing No.: BDD-401 Rev.0 JOB #: PX-9806  
 CRN No.: P9417.213 CRN Drawing No.: BDD-4004 Rev.1 Travel Sheet Initiation by:

| Seq | Item  | Comments                | Q.C.I. | Date     | A.I.<br>(Hold Points) | A.I.<br>Insp. | Date     | Owner<br>Insp. | Date |
|-----|---|-------------------------|--------|----------|-----------------------|---------------|----------|----------------|------|
| 1   | Hold Points Established                       |                         |        |          |                       |               |          |                |      |
| 2   | Calculations in File                          |                         |        |          |                       |               |          |                |      |
| 3   | Release of App'd Dwg.                         |                         |        | 03-24-11 |                       |               |          |                |      |
| 4   | Materials Examined                            |                         |        | 03-24-11 |                       |               | 04-11-11 |                |      |
| 5   | Heat Numbers Recorded                         |                         |        | 03-24-11 | ✓                     |               | 04-11-11 |                |      |
| 6   | MTR's Checked                                 |                         |        | 03-26-11 |                       |               |          |                |      |
| 7   | WPS(s) Checked                                |                         |        | 03-24-11 |                       |               |          |                |      |
| 8   | Welder(s) Qualified                           |                         |        | 03-24-11 |                       |               |          |                |      |
| 9   | Thickness Verified & Recorded                 |                         |        | 03-26-11 |                       |               |          |                |      |
| 10  | Shell(s) & Head(s) Fit-Up Inspection          | NR                      |        |          |                       |               |          |                |      |
| 11  | Nozzles & Fittings Fit-Up Inspection          |                         |        | 04-05-11 |                       |               |          |                |      |
| 12  | Nozzle Orientation                            |                         |        | 04-05-11 |                       |               |          |                |      |
| 13  | Nozzle & Flange Rating Checked                |                         |        | 03-26-11 |                       |               |          |                |      |
| 14  | Impact Tests                                  | NR                      |        |          |                       |               |          |                |      |
| 15  | Internals Checked                             | NR                      |        |          |                       |               |          |                |      |
| 16  | Final Internal Inspection                     | Shell Side<br>Tube Side |        |          |                       |               |          |                |      |
| 17  | Weld Sizes Checked                            |                         |        | 04-07-11 | 1                     |               | 04-11-11 |                |      |
| 18  | Welder I.D. Checked                           |                         |        | 04-07-11 |                       |               |          |                |      |
| 19  | Final External Inspection                     |                         |        | 04-07-11 | ✓ OK                  |               |          |                |      |
| 20  | Radiography                                   |                         |        | 04-06-11 | R                     |               | 04-11-11 |                |      |
| 21  | Other N.D.E. (specify)                        | NR                      |        |          |                       |               |          |                |      |
| 22  | Final External Prior to PWHT                  |                         |        | 04-07-11 | 1                     |               |          |                |      |
| 23  | PWHT Chart Checked                            |                         |        | 04-08-11 | R                     |               | 04-11-11 |                |      |
| 24  | Hydrostatic Test                              | Shell Side<br>Tube Side |        | 04-11-11 | H                     |               | 04-11-11 |                |      |
| 25  | GRN Drawing                                   |                         |        | 03-24-11 |                       |               |          |                |      |
| 26  | NCR #   |                         |        |          |                       |               |          |                |      |
| 27  | Nameplate Stamping                            |                         |        | 04-09-11 | H                     |               | 04-11-11 |                |      |
| 28  | Manufacturer Data Report Completed & Verified |                         |        | 04-11-11 | H                     |               | 04-11-11 |                |      |
| 29  | Nameplate Installation                        |                         |        | 04-11-11 |                       |               |          |                |      |



SER# LH-712  
CRN: P9417.213

DISCRPTION: NPS 4 PRE-HEAT COIL @ 3212Psig

CONSTRUCTION DWG: BDD-401 Rev.1

| Mark                   | Mat. I.D.    | Neck                                 | Fitting                     | Flange              | Repad or Attachment | WELDR. SYMBOLS / FIT-UP |         |        |        |
|------------------------|--------------|--------------------------------------|-----------------------------|---------------------|---------------------|-------------------------|---------|--------|--------|
|                        |              |                                      |                             |                     |                     | Cat. B                  | Cat. C  | Cat. F | Cat. D |
| N1A<br>(PRE-HEAT COIL) | Spec. -Grnd. | SA-333 GR.6 / SMLS                   | SA-420-WPL6                 | SA-350-LF2          | (RTJWN) Attachment  |                         |         |        |        |
|                        | Thk./Rating  | NPS4 SCH.160                         | NPS4 SCH.160 LR 180° RETURN | NPS4 SCH.160 CL1500 |                     |                         | FITR F  |        |        |
|                        | Heat/PO #    | Item#21 & 22> 10608805 & 31B530      | 04P01008 / 16994            | 738967 / 16899      |                     |                         | WILDR F |        |        |
| N1B<br>(PRE-HEAT COIL) | Spec. -Grnd. | SA-333 GR.6 / SMLS                   | SA-420-WPL6                 | SA-350-LF2          | (RTJWN) Attachment  |                         |         |        |        |
|                        | Thk./Rating  | NPS4 SCH.160                         | NPS4 SCH.160 LR 180° RETURN | NPS4 SCH.160 CL1500 |                     |                         | FITR F  |        |        |
|                        | Heat/PO #    | Item #23, 24 & 25> 10608805 & 31B530 | 07P01015 / 16994            | 738967 / 16899      |                     |                         | WILDR F |        |        |
| C6A<br>(T.I.)          | Spec. -Grnd. |                                      | SA-105N                     |                     | (GPLG) Attachment   |                         |         |        |        |
|                        | Thk./Rating  |                                      | NPS 3/4 CL6000              |                     |                     |                         | FITR F  |        |        |
|                        | Heat/PO #    |                                      | 4780 / 17268                |                     |                     |                         | WILDR F |        |        |
| C6C<br>(T.I.)          | Spec. -Grnd. |                                      | SA-105N                     |                     | (GPLG) Attachment   |                         |         |        |        |
|                        | Thk./Rating  |                                      | NPS 3/4 CL6000              |                     |                     |                         | FITR F  |        |        |
|                        | Heat/PO #    |                                      | 4780 / 17268                |                     |                     |                         | WILDR F |        |        |

DISCRPTION: NPS 4 RE-HEAT COIL @ 3212Psig

CONSTRUCTION DWG: BDD-401 Rev.0

| Mark                  | Mat. I.D.    | Neck                                 | Fitting                     | Flange              | Repad or Attachment | WELDR. SYMBOLS / FIT-UP |         |        |        |
|-----------------------|--------------|--------------------------------------|-----------------------------|---------------------|---------------------|-------------------------|---------|--------|--------|
|                       |              |                                      |                             |                     |                     | Cat. B                  | Cat. C  | Cat. F | Cat. D |
| N2A<br>(RE-HEAT COIL) | Spec. -Grnd. | SA-333 GR.6 / SMLS                   | SA-420-WPL6                 | SA-350-LF2          | (RTJWN) Attachment  |                         |         |        |        |
|                       | Thk./Rating  | NPS4 SCH.160                         | NPS4 SCH.160 LR 180° RETURN | NPS4 SCH.160 CL1500 |                     |                         | FITR F  |        |        |
|                       | Heat/PO #    | Item#21 & 22> 10608805 & 31B530      | 10E01017 / 16994            | 425M0 / 17228       |                     |                         | WILDR F |        |        |
| N2B<br>(RE-HEAT COIL) | Spec. -Grnd. | SA-333 GR.6 / SMLS                   | SA-420-WPL6                 | SA-350-LF2          | (RTJWN) Attachment  |                         |         |        |        |
|                       | Thk./Rating  | NPS4 SCH.160                         | NPS4 SCH.160 LR 180° RETURN | NPS4 SCH.160 CL1500 |                     |                         | FITR F  |        |        |
|                       | Heat/PO #    | Item #23, 24 & 25> 10608805 & 31B530 | 10E01017 / 16994            | 738967 / 16899      |                     |                         | WILDR F |        |        |
| C6B<br>(T.I.)         | Spec. -Grnd. |                                      | SA-105N                     |                     | (GPLG) Attachment   |                         |         |        |        |
|                       | Thk./Rating  |                                      | NPS 3/4 CL6000              |                     |                     |                         | FITR F  |        |        |
|                       | Heat/PO #    |                                      | 4780 / 17268                |                     |                     |                         | WILDR F |        |        |
| C6D<br>(T.I.)         | Spec. -Grnd. |                                      | SA-105N                     |                     | (GPLG) Attachment   |                         |         |        |        |
|                       | Thk./Rating  |                                      | NPS 3/4 CL6000              |                     |                     |                         | FITR F  |        |        |
|                       | Heat/PO #    |                                      | 4780 / 17268                |                     |                     |                         | WILDR F |        |        |

Panax PO# 43-899 Item# 4  
 Heat Number: 738967  
 Trans Am Piping Products Ltd.  
 Shipmt/Seq # 10 1183

Rev'd By: SB

4" CL 1500 W/N FLANGE RTJ  
 SCH 160 BORE A350-LF2 CL 1



SAN ENG STEEL FORGING CO LTD  
 311, Jen Hsin Road, Jen Wu Hsiang  
 Kaohsiung Hsien, Taiwan, R.O.C.  
 TEL:07-3724249 ; FAX:07-3712923  
 URL: www.saneng.com.tw  
 e-mail: saneng@ksis.seed.net.tw

**MILL TEST CERTIFICATE**

EN10204-3.1.B(DIN50049/3.1.B)  
 Customer: SEYBOLD INTERNATIONAL CORP.  
 Order No.: 7002442(1)-TJA

MTR Approved  
 Meets ASME Section II, latest code edition  
 02-03-2011 C. 2010ED.  
 Panax Oil & Gas Inc.

Certificate No.: SE-2442A 90# 16899  
 Date: 04/21/2010  
 Page: 1 OF 1

| PRODUCT                     |              | MATERIAL SPECIFICATIONS                  |          |                          |       |       |       |       |       |       |       | DIMENSIONAL SPECIFICATIONS   |       |       |       |        |   |       |  |
|-----------------------------|--------------|--|----------|--------------------------|-------|-------|-------|-------|-------|-------|-------|------------------------------|-------|-------|-------|--------|---|-------|--|
| FORGED CARBON STEEL FLANGES |              | ASTM A350 LF2-07 CL 1/ ASME SA350 LF2-07 |          |                          |       |       |       |       |       |       |       | ASME B16.5-09<br>CSA Z245.12 |       |       |       |        |   |       |  |
| Item No.                    | CUSTOMER P/N | DESCRIPTION                              | QUANTITY | CHEMICAL COMPOSITION (%) |       |       |       |       |       |       |       |                              |       |       |       |        |   |       |  |
|                             |              |  |          | C                        | Si    | Mn    | P     | S     | Cu    | Cr    | Ni    | Mo                           | V     | Nb    | N     | CE(*3) |   |       |  |
| 1                           |              | 900 WNRF XS 8" LF2                       |          | 0.300                    | 0.150 | 0.600 | 0.035 | 0.040 | 0.400 | 0.300 | 0.400 | 0.120                        | 0.080 | 0.080 | -     | -      | - | 0.452 |  |
| 2                           |              | 900 WNRF S120 8" LF2                     |          | 0.200                    | 0.200 | 1.130 | 0.025 | 0.010 | 0.220 | 0.190 | 0.080 | 0.030                        | 0.010 | 0.002 | 0.008 | -      | - | 0.452 |  |
| 3                           |              | 900 WNRF S120 8" LF2                     |          | 0.220                    | 0.210 | 1.100 | 0.024 | 0.007 | 0.270 | 0.080 | 0.110 | 0.030                        | 0.002 | 0.001 | 0.007 | -      | - | 0.451 |  |
| 4                           |              | 1500 WNRTJ XS 4" LF2                     |          | 0.220                    | 0.270 | 0.940 | 0.021 | 0.008 | 0.036 | 0.020 | 0.031 | 0.003                        | 0.007 | 0.002 | -     | -      | - | 0.386 |  |
| 5                           |              | 1500 WNRTJ S160 4" LF2                   |          | 0.195                    | 0.290 | 0.930 | 0.014 | 0.019 | 0.007 | 0.019 | 0.049 | 0.002                        | 0.004 | 0.005 | 0.005 | -      | - | 0.358 |  |
| 6                           |              | 1500 WNRTJ XXS(SC) 4" LF2                |          | 0.195                    | 0.290 | 0.930 | 0.014 | 0.019 | 0.007 | 0.019 | 0.049 | 0.002                        | 0.004 | 0.005 | 0.005 | -      | - | 0.358 |  |
| 7                           |              | 1500 WNRTJ XXS(SC) 4" LF2                |          | 0.185                    | 0.240 | 0.960 | 0.010 | 0.020 | 0.012 | 0.013 | 0.047 | 0.002                        | 0.004 | 0.005 | 0.006 | -      | - | 0.352 |  |


  

| Item No. | Heat No. | T.S.( <sup>1</sup> ) (MPA) | Y.S.( <sup>1</sup> ) (MPA) | E.L.( <sup>1</sup> ) (%) | Hardness (HB) | R.A.( <sup>1</sup> ) (%) | Impact Test Temp:   |      |      | Material Supplier | HEAT TREATMENT(*2)                    |
|----------|----------|----------------------------|----------------------------|--------------------------|---------------|--------------------------|---------------------|------|------|-------------------|---------------------------------------|
|          |          |                            |                            |                          |               |                          | Minimum: 20.0 Joule |      |      |                   |                                       |
|          |          | Min                        | Max                        |                          |               |                          | 1                   | 2    | 3    |                   |                                       |
| 1        | 278359   | 517.8                      | 354.0                      | 32.2                     | 151           | 69.5                     | 108.0               | 99.0 | 96.0 | SEAH BESTEEL      | <input checked="" type="checkbox"/> N |
| 2        | 278359   | 517.8                      | 354.0                      | 32.2                     | 151           | 69.5                     | 108.0               | 99.0 | 96.0 | SEAH BESTEEL      | <input checked="" type="checkbox"/> N |
| 3        | 182314   | 537.4                      | 359.9                      | 35.8                     | 163           | 69.5                     | 39.0                | 41.0 | 46.0 | SEAH BESTEEL      | <input checked="" type="checkbox"/> N |
| 4        | 06861    | 509.6                      | 333.2                      | 37.6                     | 166           | 70.4                     | 44.0                | 37.0 | 40.0 | PANZHUIHUA IRON   | <input checked="" type="checkbox"/> N |
| 5        | 738967   | 501.1                      | 316.8                      | 38.0                     | 154           | 65.0                     | 38.0                | 32.0 | 43.0 | NTMK              | <input checked="" type="checkbox"/> N |
| 6        | 738967   | 501.1                      | 316.8                      | 38.0                     | 154           | 65.0                     | 38.0                | 32.0 | 43.0 | NTMK              | <input checked="" type="checkbox"/> N |
| 7        | 716283   | 503.1                      | 327.5                      | 35.0                     | 149           | 68.0                     | 41.0                | 47.0 | 44.0 | NTMK              | <input checked="" type="checkbox"/> N |

\*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 /6) + (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

CLIENTE / Customer / Client

**CERTIFICADO DE INSPECCION**  
**Inspection Certificate - Certificat de Réception**

DIN EN 10204 / 3.1  
 ISO 10474 / 3.1



ULMA FORJA, S.COOP.

FECHA: 28/01/2011 N.º 135597

HOJA: Page: 2

PRODUCTO Article - Produit

FLANGES

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

DE of. - de 23/06/2010

Certified acc. PED 97/23/EC+AD2000-WR by TÜV Rheinland N.º 01 202 E/Q 02 7443

Bº Zubillaga, 3 - Apdo. 1º 20560 OÑATI (Gipuzkoa) SPAIN Tel.: 34 - 943 780552 Fax: 34 - 943 78180E E-mail: ulma@ulmapiping.com

NORMAS APLICABLES Requirements - Normes Applicables:

ASME B16.5-09

MARCA DEL FABRICANTE Mark of factory Marque du fabricant:



81236

MATERIAL CORRESPONDIENTE Material Correspondent - Qualité

AISA350LF2CL1-07 ASTM/ASME

DEPARTAMENTO QUALITY ASSURANCE Section Département

70# 17228

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

NACEMR0175/ISO15166-2 Region 3-2003 NACE MR0103 : 2007 CSA-Z245.12-09 GR248 CAT II - SS

| PARTIDA Item Poste | CANTIDAD Quantity Quantité | DESCRIPCION Description Description | LOTE | OBSERVACIONES Remarks Observations (*) | COLADA N.º Heat No N.ºCoulée | RESISTENCIA T.Strength Resist Rupt N/mm2 | LIMITE ELAST. Y.Strength 0.2 % N/mm2 | ALARGAM. Elongation Alongement Lc: 4 d % | ESTRICCION Red. Area Striction % | RESILIENCIA Impact test Résilience Joules |    |    | MEDIA Average Moyenne |     | DUREZA Hardness Dureté HB |
|--------------------|----------------------------|-------------------------------------|------|--|------------------------------|--|--------------------------------------|--|----------------------------------|---|----|----|-----------------------|-----|---------------------------|
|                    |                            |                                     |      |  |                              |  |                                      |  |                                  | 71  | 43 | 36 | 50                    | -50 |                           |
| 90 7588000         | 1                          | WN 4 1500LB S160 RTJ A350LF2        | 1560 | NE                                     | 212V0                        | 529                                      | 327                                  | 25,80                                    | 49,40                            | 71  | 43 | 36 | 50                    | -50 | 152 156                   |
| 90 7588000         | 14                         | WN 4 1500LB S160 RTJ A350LF2        | 2580 | NE                                     | 425M0                        | 518                                      | 366                                  | 35,30                                    | 65,10                            | 80  | 76 | 91 | 82                    | -50 | 148 157                   |

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 03-21-2011 [Signature] - 2010ED.  
 Panax Oil & Gas Inc.

| COLADA N.º Heat No N.ºCoulée | COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                              | C %   | Si %  | Mn %  | P %   | S %   | Cr %  | Ni %  | Mo %  | Nb %  | V %   | Cu %  | Al %  | Ti %  | N %   | CEq % |
| 212V0                        | 0,210   | 0,250 | 0,850 | 0,010 | 0,001 | 0,080 | 0,090 | 0,030 | 0,005 | 0,003 | 0,220 | 0,022 | 0,000 | 0,000 | 0,395 |
| 425M0                        | 0,160   | 0,250 | 1,260 | 0,008 | 0,001 | 0,080 | 0,070 | 0,030 | 0,001 | 0,065 | 0,210 | 0,043 | 0,000 | 0,000 | 0,420 |

- 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 aplicable.
- Manufacturing requirements are satisfied
- Les normes applicables sont respectées

EL INSPECTOR Works Inspector - L'Inspecteur



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

max PO# TOM Item# 2  
 at Number: 10608805  
 ans Am Piping Products Ltd. Rev'd By: SB  
 ipment/Seq #: S 10 1687

4" S-160 SEAMLESS STEEL PIPE  
 A333 GR 6 P.E. (S.R.L.)



YANTAI LUBAO STEEL PIPE CO., LTD.

### MILL TEST CERTIFICATE

(EN10204 3.1)

MTR Approved  
 Meets ASME Section II, latest code edition  
 02-15-2011. C. 2010ED.  
 Panax Oil & Gas Inc.

PO# 16794

NO. 185 XINGFU MIDDLE ROAD, YANTAI, CHINA  
 TEL: 0086 535-6843946/6854750 FAX: (0535)6842245  
 HTTP://WWW.LUBAOSTEEL.TUBE.COM

PAGE 1 OF 1

|                        |   |                         |                                       |                    |
|------------------------|---|-------------------------|---------------------------------------|--------------------|
| PURCHASER              | TRANS AM PIPING PRODUCTS LTD.,          | DESCRIPTION OF GOODS    | PIPE                                  |                    |
| DIMENSION STANDARD     | ASME B36.10                             | CUSTOMER'S NO.          | 0001095                               | CERTIFICATE NO.    |
| MATERIAL SPECIFICATION | ASTM A333 GR 6-2005/ASME SA333 GR6-2007 | DATE OF DELIVERY        | 20101021                              | BGTYG1010210002700 |
|                        | NACE MR0175-2003/ISO 15156              | P. O. NO.               | CF-10-366                             | SUB_CONTRACT NO.   |
|                        |   | STAMP OF MILL INSPECTOR | GOC6015878<br>DATE OF ISSUE: 20101021 |                    |

| O. D.        |          | 114.3mm 4 S160 W. T. |      | 13.49mm            |       | Length    |      | 5.8-6.7M      |      | Total Length          |    | Total Bundles |   | Order Quantity |      |         |                      |      |      |      |             |                     |  |   |              |        |    |     |    |
|--------------|----------|----------------------|------|--------------------|-------|-----------|------|---------------|------|-----------------------|----|---------------|---|----------------|------|---------|----------------------|------|------|------|-------------|---------------------|--|---|--------------|--------|----|-----|----|
| Total Pieces |          | Total Weight         |      | Delivery Condition |       | As-Rolled |      | Making Method |      | Hot Finished Seamless |    | Hardness      |   | Weight         |      |         |                      |      |      |      |             |                     |  |   |              |        |    |     |    |
| No           | Heat No. | Chemical Composition |      |                    |       |           |      |               |      |                       |    |               |   |                |      | Lot No. | Tensile Test G.L.=L4 |      |      |      | Impact Test |                     |  |   | Brinell (HB) | Pieces | MT |     |    |
|              |          | C                    | Si   | Mn                 | P     | S         | Cu   | Ni            | Cr   | V                     | Mo | Ti            | B | Nb             | Al   |         | CE                   | V.S. | T.S. | E.L. | EXT.        | J Akv Absorb Energy |  |   |              |        |    | AVG |    |
| MIN          | MAX      | 0                    | 0.1  | 0.29               | 0     | 0         | 0    | 0             | 0    | 0                     | 0  | 0             | 0 | 0              | 0    | 240     | 415                  | 30.0 |      |      |             |                     |  |   |              |        |    |     |    |
| 10608805     | H P      | 0.20                 | 0.39 | 1.32               | 0.017 | 0.007     | 0.01 | 0.01          | 0.02 | 0                     | 0  | 0             | 0 | 0              | 0.43 | 0209105 | 16L                  | 400  | 545  | 32.0 |             |                     |  |   | 1            | 2      | 3  | 11  | 14 |
|              |          |                      |      |                    |       |           |      |               |      |                       |    |               |   |                |      | 16L     | 380                  | 520  | 32.5 |      |             |                     |  | 1 | 2            | 3      | 45 | 50  |    |

|           |  |              |            |                     |          |            |   |
|-----------|--|--------------|------------|---------------------|----------|------------|---|
| E. T.     | E. M. I.   | U. T.        | M. P. I.   | Visual & Dimensions | Coating  | Drift Test | Hydrostatic Pressure                      |
|           | GOOD   |              |            | GOOD                | GOOD     |            | 19.00MPa                                  |
| Expansion | Ring Expansion   | Ring Tensile | Flattening | Bending             | Flanging | SSCC       | Macrostructure                            |
|           |  |              | GOOD       |                     |          |            | Duration of Time                          |
| NOTES     | *1Chemical Composition:H=Heat(Ladle)Analysis;*2P=Pipe Body;*3Orientation:l=Longitudinal;*4Size:6=StripT×25.4mmC=10×10×55mm;*5Temp:A=-49° F or -45° C L=18° C-25° C;<br>*6Gauge Length:l=CharpyV C. E. =C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 |              |            |                     |          |            |   |
| Remark    | Heat Treatment Condition For Pipe Normalized:900°CX15MIN   |              |            |                     |          |            |   |
| SURVEYOR  | WE HERE 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.                    |              |            |                     |          |            | 质检站<br><br>CHIEF OF QUALITY CONTROL DEPT. |

4" S-160 SEAMLESS STEEL PIPE  
A333 GR 6 P.E.E. (S.R.L.)



YANTAI LUBAO STEEL PIPE CO., LTD.

MILL TEST CERTIFICATE

(EN10204 3.1)

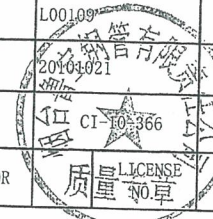
MTR Approved  
Meets ASME Section II, latest code edition  
03-26-2011 *TC* 2010ED.  
Panax Oil & Gas Inc.

PO# 17267

NO.185 XINGFU MIDDLE ROAD, YANTAI, CHINA  
TEL: 0086 535-6843946/6854750 FAX: (0535)6842245  
HTTP://WWW.LUBAOSTEEL.TUBE.COM

PAGE 1 OF 1

|                        |   |                         |                        |                    |
|------------------------|---|-------------------------|------------------------|--------------------|
| PURCHASER              | TRANS AM PIPING PRODUCTS LTD.,          | DESCRIPTION OF GOODS    | PIPE                   |                    |
| DIMENSION STANDARD     | ASME B36.10                             | CUSTOMER'S NO.          | L00109                 | CERTIFICATE NO.    |
| MATERIAL SPECIFICATION | ASTM A333 GR 6-2005/ASME SA333 GR6-2007 | DATE OF DELIVERY        | 20101021               | BGTYG1010210002900 |
|                        | NACE MR0175-2003/ISO 15156              | P.O.NO.                 | CI-103366              | GOC6015879         |
|                        |   | STAMP OF MILL INSPECTOR | DATE OF ISSUE 20101021 |                    |



| O.D.         |  | 114.3mm 4 S160 W.T.  |      | 13.49mm      |       | Length              |          | 5.8-6.7M  |                | Total Length  |                      | Total Bundles         |   | Order Quantity |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
|--------------|--|----------------------|------|--------------|-------|---------------------|----------|-----------|----------------|---------------|----------------------|-----------------------|---|----------------|------|---------|----------------------|------|------|------|-------------|---------------------|---|---|-----------------------|--------|-----------|-----|----|-----|
| Total Pieces |  |                      |      | Total Weight |       | Delivery Condition  |          | As-Rolled |                | Making Method |                      | Hot Finished Seamless |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
| No           | Heat No.   | Chemical Composition |      |              |       |                     |          |           |                |               |                      |                       |   |                |      | Lot No. | Tensile Test G.L.=L4 |      |      |      | Impact Test |                     |   |   | Hardness Brinell (HB) | Pieces | Weight MT |     |    |     |
|              |  | C                    | Si   | Mn           | P     | S                   | Cu       | Ni        | Cr             | V             | Mo                   | Ti                    | B | Nb             | Al   |         | CE                   | Y.S. | T.S. | E.L. | EXT.        | J Akv Absorb Energy |   |   |                       |        |           | AVG |    |     |
| MIN          | MAX  | 0                    | 0.1  | 0.29         | 0     | 0                   | 0        | 0         | 0              | 0             | 0                    | 0                     | 0 | 0              | 0    | 240     | 415                  | 30.0 |      | 3    | 4           | 5                   | 6 | 7 | 1                     | 2      | 3         |     |    |     |
| 31B530       | HP   | 0.18                 | 0.29 | 1.34         | 0.013 | 0.009               | 0.13     | 0.09      | 0.08           | 0             | 0                    | 0                     | 0 | 0              | 0.43 | 0209108 | 16L                  | 390  | 535  | 32.0 |             | 1                   | C | A | 1                     | 47     | 50        | 49  | 49 | 165 |
|              |  |                      |      |              |       |                     |          |           |                |               |                      |                       |   |                |      |         | 16L                  | 390  | 545  | 32.0 |             | 1                   | C | A | 1                     | 48     | 49        | 48  | 48 | 165 |
| E.T.         | E.M.I.   | U.T.                 |      | M.P.I.       |       | Visual & Dimensions |          | Coating   | Drift Test     |               | Hydrostatic Pressure |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
|              | GOOD   |                      |      |              |       | GOOD                |          | GOOD      |                |               | 19.00MPa             |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
| Expansion    | Ring Expansion   | Ring Tensile         |      | Flattening   |       | Bending             | Flanging | SSCC      | Macrostructure |               | Duration of Time     |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
|              |  |                      |      | GOOD         |       |                     |          |           |                |               | 5s                   |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
| NOTES        | *1Chemical Composition:H=Heat(Ladle)Analysis;*2P=Pipe Body;*3Orientation:l=Longitudinal;*4Size:6=StripT×25.4mmC=10×10×55mm;*5Temp:A=-49° F or -45° C L=18° C-25° C;<br>*6Gauge Length:l=CharpyV C.E.=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 |                      |      |              |       |                     |          |           |                |               |                      |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
| Remark       | Heat Treatment Condition For Pipe Normalized:900°CX15MIN   |                      |      |              |       |                     |          |           |                |               |                      |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |
| SURVEYOR     | WE HERE 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>质检站 站长<br>CHIEF OF QUALITY CONTROL DEPT.   |                      |      |              |       |                     |          |           |                |               |                      |                       |   |                |      |         |                      |      |      |      |             |                     |   |   |                       |        |           |     |    |     |

anax PO# 17267 Item# 1  
Heat Number: 31B530  
Trans Am Piping Products Ltd. Rev'd By: SB  
Shipmment/Seq #: S 10 - 1687 - 1

4" S-160 SEAMLESS STEEL PIPE  
A333 GR 6 P.E. (S.R.L.)

MTR Approved  
Meets ASME Section II, latest code edition  
02-15-2011 *P* - 2010ED.  
Panax Oil & Gas Inc.



YANTAI LUBAO STEEL PIPE CO., LTD.

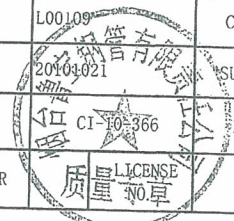
MILL TEST CERTIFICATE

(EN10204 3.1)

PO# 16994  
NO. 185 XINGFU MIDDLE ROAD, YANTAI, CHINA  
TEL: 0086 535-6843946/6854750 FAX: (0535)6842245  
HTTP://WWW.LUBAOSTEEL TUBE.COM

PAGE 1 OF 1

|                        |   |                         |               |                    |
|------------------------|---|-------------------------|---------------|--------------------|
| PURCHASER              | TRANS AM PIPING PRODUCTS LTD.,          | DESCRIPTION OF GOODS    | PIPE          |                    |
| DIMENSION STANDARD     | ASME B36.10                             | CUSTOMER'S NO.          | L00109        | CERTIFICATE NO.    |
| MATERIAL SPECIFICATION | ASTM A333 GR 6-2005/ASME SA333 GR6-2007 | DATE OF DELIVERY        | 20101021      | BGTYG1010210002900 |
|                        | NACE MR0175-2003/ISO 15156              | P. O. NO.               | CI-10-366     | SUB CONTRACT NO.   |
|                        |   | STAMP OF MILL INSPECTOR | GOC6015879    |                    |
|                        |   |                         | DATE OF ISSUE | 20101021           |



|              |  |                      |              |                    |            |              |                     |                |         |                       |      |                      |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
|--------------|--|----------------------|--------------|--------------------|------------|--------------|---------------------|----------------|---------|-----------------------|------|----------------------|------|------|------|---------|----------------------------|------|------|------|-------------|------------------------|---|----|-----------------------------|--------|--------------|-----|---|---|-----|--|--|--|
| O. D.        | 114.3mm  | W. T.                | 13.49mm      | Length             | 5.8-6.7M   | Total Length | Total Bundles       | Order Quantity |         |                       |      |                      |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
| Total Pieces |  | Total Weight         |              | Delivery Condition |            | As-Rolled    |                     | Making Method  |         | Hot Finished Seamless |      |                      |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
| No           | Heat No.   | Chemical Composition |              |                    |            |              |                     |                |         |                       |      |                      |      |      |      | Lot No. | Tensile Test<br>G. L. = L4 |      |      |      | Impact Test |                        |   |    | Hardness<br>Brinell<br>(HB) | Pieces | Weight<br>MT |     |   |   |     |  |  |  |
|              |  | C                    | Si           | Mn                 | P          | S            | Cu                  | Ni             | Cr      | V                     | Mo   | Ti                   | B    | Nb   | Al   |         | CE                         | Y.S. | T.S. | E.L. | EXT.        | J Akv<br>Absorb Energy |   |    |                             |        |              |     |   |   |     |  |  |  |
|              |  | MIN                  | MAX          | MIN                | MAX        | MIN          | MAX                 | MIN            | MAX     | MIN                   | MAX  | MIN                  | MAX  | MIN  | MAX  |         | MIN                        | MAX  | Mpa  | %    | %           | %                      | 3 | 4  |                             |        |              | 5   | 6 | 7 | AVG |  |  |  |
|              |  | 0                    | 0.1          | 0.29               | 0          | 0            | 0                   | 0              | 0       | 0                     | 0    | 0                    | 0    | 0    | 0    | 0       | 240                        | 415  | 30.0 |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
|              |  | 0.24                 | 0.99         | 1.35               | 0.025      | 0.025        | 0.99                | 0.99           | 0.99    | 0.99                  | 0.99 | 0.99                 | 0.99 | 0.99 | 0.99 | 0.43    | 999                        | 999  |      |      |             |                        |   |    |                             |        | 11           | 14  |   |   |     |  |  |  |
|              | 31B530   | HP                   | 0.18         | 0.29               | 1.34       | 0.013        | 0.009               | 0.13           | 0.09    | 0.08                  | 0    | 0                    | 0    | 0    | 0    | 16L     | 390                        | 535  | 32.0 | 1    | C           | A                      | 1 | 47 | 50                          | 49     | 49           | 165 |   |   |     |  |  |  |
|              |  |                      |              |                    |            |              |                     |                |         |                       |      |                      |      |      |      | 16L     | 390                        | 545  | 32.0 | 1    | C           | A                      | 1 | 48 | 49                          | 48     | 48           | 165 |   |   |     |  |  |  |
| E. T.        | E. M. I.   |                      | U. T.        |                    | M. P. I.   |              | Visual & Dimensions |                | Coating | Drift Test            |      | Hydrostatic Pressure |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
|              | GOOD   |                      |              |                    |            |              | GOOD                |                | GOOD    |                       |      | 19.00MPa             |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
| Expansion    | Ring Expansion   |                      | Ring Tensile |                    | Flattening |              | Bending             | Flanging       | SSCC    | Macrostructure        |      | Duration of Time     |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
|              |  |                      |              |                    | GOOD       |              |                     |                |         |                       |      | 5s                   |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
| NOTES        | *1Chemical Composition:H=Heat(Ladle)Analysis;*2P=Pipe Body;*3Orientation:l=Longitudinal;*4Size:6=StripT×25.4mmC=10×10×55mm;*5Temp:A=-49° F or -45° C L=18° C-25° C;<br>*6Gauge Length:l=CharpyV C.E.=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 |                      |              |                    |            |              |                     |                |         |                       |      |                      |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
| Remark       | Heat Treatment Condition For Pipe Normalized:900°CX15MIN   |                      |              |                    |            |              |                     |                |         |                       |      |                      |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |
| SURVEYOR     | WE HERE 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>CHIEF OF QUALITY CONTROL DEPT.   |                      |              |                    |            |              |                     |                |         |                       |      |                      |      |      |      |         |                            |      |      |      |             |                        |   |    |                             |        |              |     |   |   |     |  |  |  |

anax PO# 16994 Item# 2  
Heat Number: 31B530  
Trans Am Piping Products Ltd. - Rev'd By: SB  
Shipment/Seq #: S 10 - 1687

MTR Approved  
 Meets ASME Section II, latest code edition  
 02-11-2011 *P* 2010ED.  
 Panax Oil & Gas Inc.

Purchaser: TRANS-AM PIPING PRODUCTS LTD.

# INSPECTION CERTIFICATE

TO EN10204 3.1



Thai Benkan Co., Ltd. *Perf 16994*  
 58 Soi Watkrunai, Bangkru, Prapadaeng,  
 Samutprakarn, 10130 Thailand.

Purchase Order No. CI-07-465 Job No. (MILL TEST REPORTS)

D M Y Certificate No.  
 05/02/2008 T - 2008060032

| E-No.                              | Specification for Material Made from Seamless Pipe    | Specification for Inspection | Visual Examination | Dimensional Inspection |           |          |          |          |          |           |           |           |          |                 |     |    |  |          |
|------------------------------------|---|------------------------------|--------------------|------------------------|-----------|----------|----------|----------|----------|-----------|-----------|-----------|----------|-----------------|-----|----|--|----------|
| MB-121                             | ASTM A420-06 / ASME SA420-04 WPL6<br>NACE MR0175-2003 | ASME B16.9                   | Good               | Good                   |           |          |          |          |          |           |           |           |          |                 |     |    |  |          |
| MFG. No. (Heat Identification No.) | Product & Size (T:*1)                                 |                              | Quantity           |                        |           |          |          |          |          |           |           |           |          |                 |     |    |  |          |
| 04P01008                           | 180 EL WPL6 4 S160                                    |                              |                    |                        |           |          |          |          |          |           |           |           |          |                 |     |    |  |          |
| Material Manufacturer              | Material Heat No.                                     |                              |                    |                        |           |          |          |          |          |           |           |           |          |                 |     |    |  |          |
|                                    | J4K9446   |                              |                    |                        |           |          |          |          |          |           |           |           |          |                 |     |    |  |          |
| Specifi-<br>cation                 | Chemical Composition %                                |                              |                    |                        |           |          |          |          |          |           |           |           |          | *2 Tension Test |     |    | Hardness Max 197 HB : GOOD                   |          |
|                                    | C   | Si                           | Mn                 | P                      | S         | Cu       | Ni       | Cr       | Mo       | Al        | V         | Nb        | C.E.     | YS              | TS  | E  | Impact Test (J)<br>10 X 10 X 2V<br>AT -45 °C |          |
| Min.                               | X<br>100  | X<br>100                     | X<br>100           | X<br>1000              | X<br>1000 | X<br>100 | X<br>100 | X<br>100 | X<br>100 | X<br>1000 | X<br>1000 | X<br>1000 | X<br>100 | MPa.            |     | %  |  |          |
| Max.                               | 30  | 40                           | 135                | 35                     | 40        | 40       | 40       | 30       | 12       |           | 80        | 20        |          | 240             | 415 | 30 | 208  | AVE. 213 |
|                                    | 12  | 31                           | 128                | 12                     | 4         | 2        | 2        | 6        | 0        |           | 0         | 0         | 35       | 324             | 480 | 48 | 218  |          |

NORMALIZING 910 C X 0.5 HR. AIR COOLING

THE RESULTS OF THE TESTS AND INSPECTIONS MEET THE REQUIREMENTS.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

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

\* 1 : "T" symbolized wall thickness in mm. \* 2 : YS Yield strength TS = Tensile strength E = Elongation  
 Form TZ 6C/2

*ft*  
 Quality Assurance Manager  
 Thai Benkan Co., Ltd.

4" SCH 160 LR 180 BW RETURN  
 BEND A420-WPL6

HEAT NUMBER : 04P01008  
 TRANS AM PIPING PRODUCTS - REV'D BY:  
 Shipment/Seq #: S 8 - 1033 40

panax PO# TOM Item# 4



4" SCH 160 LR 180 BW RETURN  
 BEND A420-WPL6  
 panax TOM Item# 4  
 panax Piping Products Ltd. ; Rev'd By: SB  
 1304  
 panax Piping Products Ltd. ; Rev'd By: SB  
 1304  
 panax Piping Products Ltd. ; Rev'd By: SB  
 1304

MTR Approved  
 Meets ASME Section II, latest code edition  
 02-11-2011 C. 2010ED.  
 Panax Oil & Gas Inc.



Purchaser: TRANS-AM PIPING PRODUCTS LTD.

# INSPECTION CERTIFICATE

TO EN10204.3.1

90# 16994

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

Purchase Order No.  
CI-10-176

Job No.  
(MILL TEST REPORTS)

D M Y  
08/07/2010

Certificate No.  
T- 2010060083

| E-No.                              | Specification for Material Made from Seamless Pipe  | Specification for Inspection | Visual Examination | Dimensional Inspection |      |     |     |     |     |      |      |      |      |                 |     |    |                            |         |
|------------------------------------|---|------------------------------|--------------------|------------------------|------|-----|-----|-----|-----|------|------|------|------|-----------------|-----|----|----------------------------|---------|
| MB-944                             | ASTM A420-07 / ASME SA420-07 WPL6<br>CSA Z245.11 Gr.241 CAT II NACE MR0176 / ISO 15156-2:2003 | ASME B16.9-2007              | Good               | Good                   |      |     |     |     |     |      |      |      |      |                 |     |    |                            |         |
| MFG. No. (Heat Identification No.) | Product & Size (T*1)  |                              | Quantity           | Hardness Actual Data   |      |     |     |     |     |      |      |      |      |                 |     |    |                            |         |
| 10E01017                           | 180 EL WPL6 4 S160  |                              |                    | HB : 130-150           |      |     |     |     |     |      |      |      |      |                 |     |    |                            |         |
| Material Manufacturer              |   | Material Heat No.            |                    |                        |      |     |     |     |     |      |      |      |      |                 |     |    |                            |         |
| SUMITOMO METAL INDUSTRIES LTD.     |   | JOL2759                      |                    |                        |      |     |     |     |     |      |      |      |      |                 |     |    |                            |         |
| Specification                      | Chemical Composition %  |                              |                    |                        |      |     |     |     |     |      |      |      |      | *2 Tension Test |     |    | Hardness Max 197 HB : GOOD |         |
|                                    | C   | Si                           | Mn                 | P                      | S    | Cu  | Ni  | Cr  | Mo  | Al   | V    | Nb   | C.E. | YS              | TS  | E  | Impact Test (J)            |         |
|                                    | X   | X                            | X                  | X                      | X    | X   | X   | X   | X   | X    | X    | X    | X    | MPa.            |     | %  | 10 X                       | 10 X 2V |
|                                    | 100   | 100                          | 100                | 1000                   | 1000 | 100 | 100 | 100 | 100 | 1000 | 1000 | 1000 | 100  |                 |     |    | AT -45 °C                  |         |
| Min.                               |   | 15                           | 50                 |                        |      |     |     |     |     |      |      |      |      | 240             | 415 | 30 | 351                        |         |
| Max.                               | 30  | 40                           | 135                | 35                     | 40   | 40  | 40  | 30  | 12  |      | 80   | 20   |      |                 | 585 |    | 375                        | AVE 364 |
|                                    | 12  | 26                           | 128                | 12                     | 2    | 2   | 3   | 12  | 0   |      | 0    | 0    | 36   | 327             | 472 | 48 | 365                        |         |

**ORIGINAL**

NORMALIZING 910 C X 0.5 HR. AIR COOLING

The fittings was manufactured, sampled, tested, and inspected in accordance with the specification, and was found to meet the requirements.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

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

\* 1 : "T" symbolized wall thickness in mm. \* 2 : YS Yield strength TS = Tensile strength E = Elongation Form TZ 6C/2

Quality Assurance Manager  
 Thai Benkan Co., Ltd.

MTR Approved  
 Meets ASME Section II, latest code edition  
 02-11-2011 *E.* 2010ED.  
 Panax Oil & Gas Inc.



Thai Benkan Co., Ltd. *PO# 16794*  
 58 Soi Watkrunai, Bangkok, Prapadaeng,  
 Samutprakarn, 10130 Thailand.

Purchaser : TRANS-AM PIPING PRODUCTS LTD.

# INSPECTION CERTIFICATE

TO EN10204 3.1

Purchase Order No.

Job No.

D M Y Certificate No.

CI-07-485

(MILL TEST REPORTS)

05/02/2008

T - 2008060034

| E-No.                              | Specification for Material Made from Seamless Pipe    | Specification for Inspection | Visual Examination | Dimensional Inspection |     |     |     |     |     |      |      |      |      |                 |     |    |                            |            |
|------------------------------------|---|------------------------------|--------------------|------------------------|-----|-----|-----|-----|-----|------|------|------|------|-----------------|-----|----|----------------------------|------------|
| MB-121                             | ASTM A420-06 / ASME SA420-04 WPL6<br>NACE MR0175-2003 | ASME B16.9                   | Good               | Good                   |     |     |     |     |     |      |      |      |      |                 |     |    |                            |            |
| MFG. No. (Heat Identification No.) | Product & Size (T:*1)                                 |                              | Quantity           |                        |     |     |     |     |     |      |      |      |      |                 |     |    |                            |            |
| 07P01015                           | 180 EL WPL6 4 S160 ←                                  |                              | 211/300            |                        |     |     |     |     |     |      |      |      |      |                 |     |    |                            |            |
| Material Manufacturer              |   | Material Heat No.            |                    |                        |     |     |     |     |     |      |      |      |      |                 |     |    |                            |            |
|                                    |   | 385731                       |                    |                        |     |     |     |     |     |      |      |      |      |                 |     |    |                            |            |
| Specification                      | Chemical Composition %                                |                              |                    |                        |     |     |     |     |     |      |      |      |      | *2 Tension Test |     |    | Hardness Max 197 HB : GOOD |            |
|                                    | C   | Si                           | Mn                 | P                      | S   | Cu  | Ni  | Cr  | Mo  | Al   | V    | Nb   | C.E. | YS              | TS  | E  | Impact Test (J)            |            |
| X                                  | X   | X                            | X                  | X                      | X   | X   | X   | X   | X   | X    | X    | X    | X    | MPa.            |     | %  | 10 X 10 X 2V<br>AT -45 °C  |            |
| 100                                | 100   | 100                          | 1000               | 1000                   | 100 | 100 | 100 | 100 | 100 | 1000 | 1000 | 1000 | 100  | 240             | 415 | 30 | 360                        | ← AVE. 348 |
| Min.                               | 15  | 50                           |                    |                        |     |     |     |     |     |      |      |      |      |                 |     |    | 340                        |            |
| Max.                               | 30  | 40                           | 135                | 35                     | 40  | 40  | 40  | 30  | 12  |      | 80   | 20   |      |                 | 655 |    | 340                        |            |
|                                    | 15  | 18                           | 102                | 12                     | 1   | 4   | 6   | 11  | 1   |      | 0    | 0    | 35   | 327             | 483 | 45 | 345                        |            |

NORMALIZING 910 C X 0.5 HR. AIR COOLING

THE RESULTS OF THE TESTS AND INSPECTIONS MEET THE REQUIREMENTS.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

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

\*1 : "T" symbolized wall thickness in mm. \*2 : YS Yield strength TS = Tensile strength E = Elongation  
 Form TZ 6C/2

*H*  
 Quality Assurance Manager  
 Thai Benkan Co., Ltd.

4" SCH 160 LR 180 BW RETURN  
 BEND A420-WPL6

*AB*

HEAT NUMBER : 07P01015  
 TRANS AM PIPING PRODUCTS - REV'D BY:  
 Shipment/Seq #: S 8 - 1033 42

anax PO# TOM Item# 4



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# CERTIFIED MILL TEST REPORT

LOG NO. F00000000010962  
 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 MIDDLEFIELD  
 ORDER NO.: S759094394

BONNEY ORDER NO. B0000090745  
 DATE 02/11/2011

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

MTR Approved  
 Meets ASME Section II, latest code edition  
 03-26-2011 *P. Specht* 2010ED.  
 Panax Oil & Gas Inc.

PO# 17368

| ITEM     | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. | CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:      |
|----------|----------|---------|----------------------------|---|
| 18C11809 | 5687     | NUT-MO  | 1 3000 A105N UNAR T        | SA/A105N  |
|          |          |         | Al 0.026 C 0.230           | Cb 0.001 Cr 0.090 Cu 0.290 Mn 0.800 Mo 0.030 Ni 0.110 |
|          |          |         | P 0.009 S 0.018            | Si 0.250 V 0.001                                      |
|          |          |         | CE(Long Formula) =         | 0.41  |
|          |          |         | T/S(PSI) 75,440            | Y/S(PSI) 47,940 EL(%) 33.20 RA(%) 64.50               |
|          |          |         | Brinell                    | 139 BHN   |
| 51       | 30       | 4819    | 2 6M A105N CAP T           | SA/A105N  |
| 18C12094 |          |         | Al 0.027 C 0.170           | Cb 0.001 Co 0.006 Cr 0.090 Cu 0.180 Mn 1.130 Mo 0.020 |
|          |          |         | N 0.008 Ni 0.070           | P 0.007 S 0.019 Si 0.270 V 0.036                      |
|          |          |         | CE(Long Formula) =         | 0.40  |
|          |          |         | T/S(PSI) 73,500            | Y/S(PSI) 50,500 EL(%) 30.00 RA(%) 67.00               |
|          |          |         | Brinell                    | 144 BHN   |
| 52       | 75       | 4705    | 1/2 6M A105N COUP T        | SA/A105N  |
| 18C12106 |          |         | Al 0.026 C 0.200           | Co 0.005 Cr 0.060 Cu 0.170 Mn 1.070 Mo 0.010 N 0.006  |
|          |          |         | Nb 0.012 Ni 0.050          | P 0.014 S 0.019 Si 0.190 V 0.005                      |
|          |          |         | CE(Long Formula) =         | 0.41  |
|          |          |         | T/S(PSI) 75,000            | Y/S(PSI) 52,500 EL(%) 34.70 RA(%) 66.30               |
|          |          |         | Brinell                    | 139 BHN   |
| 53       | 125      | 4780    | 3/4 6000 A105N COUP T      | SA/A105N  |
| 18C12118 |          |         | Al 0.026 C 0.210           | Co 0.005 Cr 0.060 Cu 0.080 Mn 1.040 Mo 0.010 N 0.007  |
|          |          |         | Nb 0.013 Ni 0.030          | P 0.007 S 0.019 Si 0.230 V 0.004                      |
|          |          |         | CE(Long Formula) =         | 0.41  |
|          |          |         | T/S(PSI) 73,750            | Y/S(PSI) 52,500 EL(%) 32.00 RA(%) 63.75               |
|          |          |         | Brinell                    | 147 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.

CMTR: REV2

by Meloney Specht  
 Meloney Specht  
 QUALITY PROCESS MANAGER



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## CERTIFIED MILL TEST REPORT

LOG NO. F0000000010962  
 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 02/11/2011

CUSTOMER  
 ORDER NO.: S759094394

BONNEY ORDER NO. B000090745

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

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

- | ITEM  | QUANTITY | LOT NO. |
|---|----------|---------|
| 1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.  |          |         |
| 2. CERTIFYING TO ASTM A350 LP2 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 A105-09 / ASME SA105-07 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 A105QT 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 IN 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

## CERTIFYING STATEMENT & APPOINTMENT LETTER

EXHIBIT 12.1

I have reviewed the:

|  |   |
|--|---|
| Written Practice   | <p style="text-align: center;">TISI Inspection Services West INC. (operating as &amp; referred to hereafter as)<br/> <b>TEAM INDUSTRIAL SERVICES, INSPECTION SERVICES CANADA</b></p> <p style="text-align: center;"><i>TEAM INDUSTRIAL SERVICES NDE PROCEDURES MANUAL SECTION 1 TO 9 ISSUE NO.1 REV.1)</i></p>  |
| NDE Procedure  | <p>RT-1, RT-2, RT-3, RT-4, RT-5, RT-6, RT-7 (SECTION 1)<br/>         UT-1, UT-2, UT-3, UT-4, UT-5, UT-6, UT-7, UT-8, AUTO-1 (SECTION 2)<br/>         MT-1, MT-2, MT-3, MT-4 (SECTION 3)<br/>         LT-1V, LT-2F, LT-3V, LT-4F (SECTION 4)<br/>         GVP-1 (SECTION 5)<br/>         PMI-1 (SECTION 6)<br/>         TELEBRINELL COMPARATIVE &amp; ELECTRONIC HARDNESS TESTING (HD) (SECTION 7)<br/>         FERRITE TESTING (FT) (SECTION 8)<br/>         VB-1, VB-2 (SECTION 9)</p> |
| <p>And personnel certification records and vision examination records of all Examiners that will perform NDE at<br/> <b>PANAX OIL &amp; GAS INC. 3730-69<sup>th</sup> Ave. Edmonton, Alberta, Canada. T6B-2V2</b></p>  |   |
| <p>FOR:</p> <p style="text-align: center;"><b>TEAM INDUSTRIAL SERVICES, INSPECTION SERVICES CANADA, 2507-94<sup>th</sup> Ave. Edmonton, Alberta, Canada. T6B-1K1</b></p> <p style="text-align: center;">It is my opinion that the specified NDE procedures are in accordance with ASME Section V requirements as referenced by the applicable construction Code and that the Written Practice complies in all aspects within the requirements of the construction Code accepted Edition / Addenda of SNT-TC-1A.</p> <p style="text-align: center;">Based upon my review of the above referenced documents I hereby certify that personnel performing and evaluating NDE have been qualified and certified in accordance with their employers Written Practice and that the demonstration of the procedure(s) to the satisfaction of the AI, as required by the ASME Code,</p> <p style="text-align: center;">Section V, paragraph T-150, has been completed as specified within the <b>TEAM INDUSTRIAL SERVICES, INSPECTION SERVICES CANADA</b><br/>         Written Practice</p>  |   |
| <p>Therefore:</p> <p><b>TEAM INDUSTRIAL SERVICES, INSPECTION SERVICES CANADA</b> are hereby appointed to perform <b>RT, UT, MT, LT, PMI, HD, FT, VB</b><br/> <i>(RT, UT, PT, MT, ET, VT, and/or LT)</i></p> <p>For: <b>PANAX OIL &amp; GAS INC.</b></p> <p style="text-align: center;"><b>APPOINTMENT OF LEVEL III EXAMINER</b></p> <p style="text-align: center;">is by this statement appointed to act as the Level III Examiner on behalf of:</p> <p style="text-align: center;"><b>MOE SHANDRO</b><br/> <i>(Name of Level III Examiner )</i></p> <p style="text-align: center;"><b>PANAX OIL &amp; GAS INC.</b><br/> <i>(Name of Manufacturer)</i></p> <p style="text-align: center;"><br/> <i>(Signature of Quality Control Manager )</i></p> <p style="text-align: center;">September 01, 2010 <span style="margin-left: 100px;">September 01, 2011</span><br/> <i>(Date)</i> <span style="margin-left: 100px;"><i>(Appointment Expiry Date )</i></span></p> <p style="text-align: center;"><b>LEVEL III EXAMINER ACCEPTANCE OF APPOINTMENT</b></p> <p style="text-align: center;">I hereby accept the appointment as indicated above</p> <p style="text-align: center;"><br/> <i>(Signature of Level III Examiner )</i></p> |   |































---

## R & R Stress Relieving Service Ltd.

2103 - 6 Street, Nisku, AB T9E 7X8 Ph: (780) 955-7559 Fx: (780) 955-2903 1-800-499-4328  
#13 Burbank Industrial Park, Blackfalds, AB Ph: (403) 885-2280 Fx: (403) 885-0177

# CERTIFICATE OF CONFORMANCE OF RECORDING INSTRUMENTS

|                  |  |
|------------------|--|
| CERTIFIED BY:    | <u>R &amp; R Stress Relieving Service Ltd.</u> |
| TEST NUMBER:     | <u>RR0615</u>                                  |
| DATE:            | <u>December 6, 2010</u>                        |
| DATE DUE:        | <u>June 6, 2011</u>                            |
| INSTRUMENT MFG:  | <u>Yokogawa</u>                                |
| MODEL NUMBER:    | <u>DR241-12-33-1W/C7/H1/D2</u>                 |
| SERIAL NUMBER:   | <u>12AC14978</u>                               |
| RECORDER NUMBER: | <u>IR-155</u>                                  |

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

---

### REFERENCE STANDARDS

|  |                            |
|--|----------------------------|
| <u>DIGIMITE 311600 S/N 48430-5522</u>          | <u>CERT DATE NOV 1/10</u>  |
| <u>GORDON 5060 CALIBRATOR S/N 028-84257113</u> | <u>CERT DATE OCT 28/10</u> |

**R&R Stress Relieving Service Ltd.** certifies that the above listed instrument meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the National Institute of Standards and Technology (NIST), or to the NIST accepted intrinsic standards of measurement, or derived by the ratio type of self-calibration techniques. This calibration complies with NIL-STD-45662A and ANSI/NCSL Z540.3-2006.

---

  
Steve Pierson

**HEAT TREATMENT INSTRUCTIONS**  
[ as per ASME SECTION VIII, 2007 EDITION/2009 ADD. ]  
[ as per ASME B31.3 2008 EDITION ]

Heat Treatment Company: R & R STRESS RELIEVING SERVICE LTD.  
Description: (1) NPS4 10(X2) PASS HEATER COIL

Job# LH-712

Diameter : NPS4 Length: 20' Weight: approx 2000 lbs  
Shell Thickness: 0.531" Head Thickness: 0.531" CL1500 RTJWN

1) Temperature to be raised from 800°F to 1150°F (427°C to 621°C)  
at a maximum rate of 400°F (204°C)  
Note: must not exceed 400 °F (204° C) per hour.

2) Temperature to be held at 1150°F plus 25°F, minus 25°F  
(at 607°C plus -4°C, minus -4°C) for -- hr(s) 60 min.(minimum)

3) Temperature to be lowered from 1150°F to 800°F (607°C to 427°C)  
at a maximum rate of 500°F (260°C)  
Note: must not exceed a drop of 500°F (260°C) per hour.

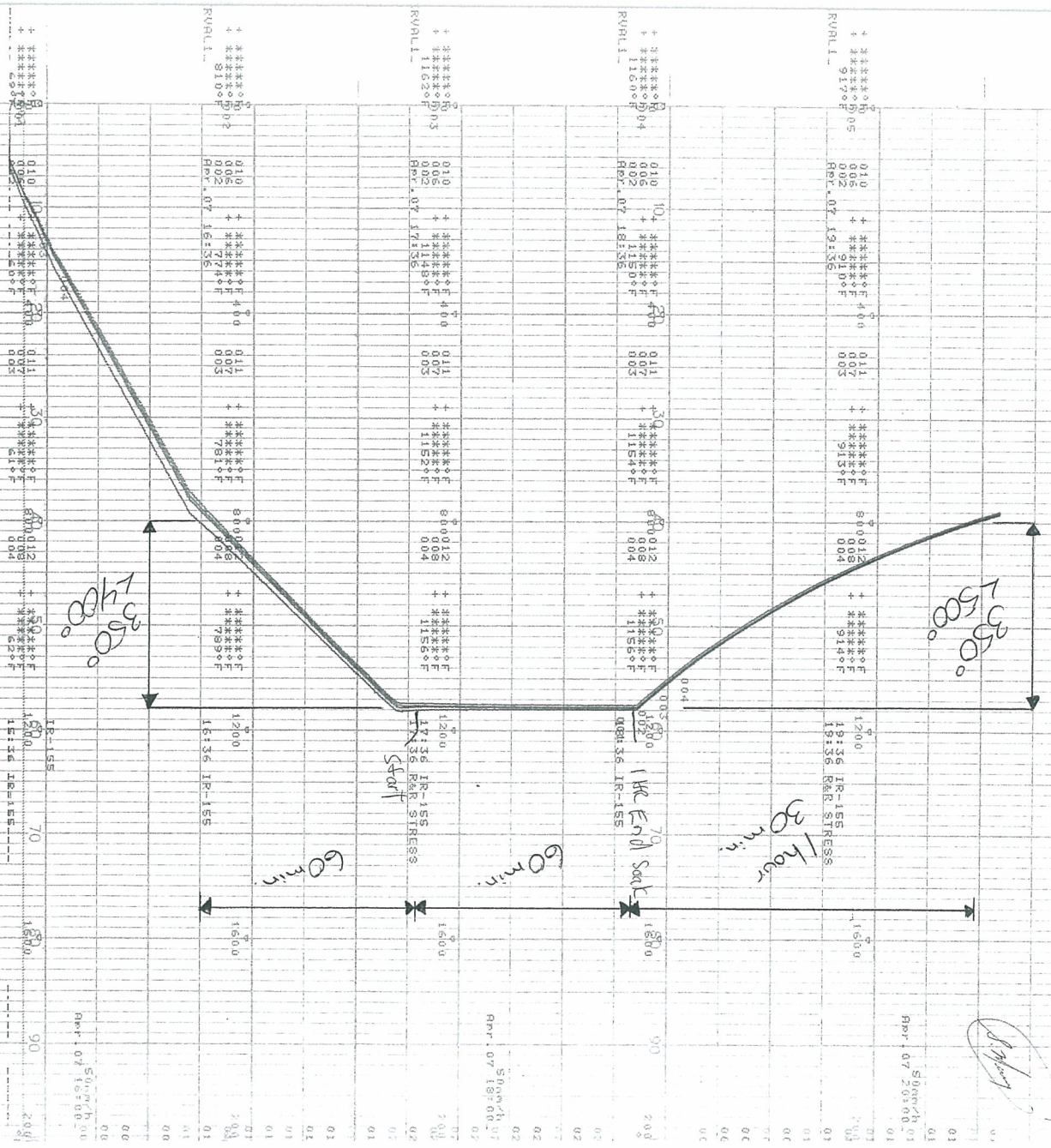
4) Additional requirements

Heat Number: E29-110522

Operator's signature *Steve* Date APRIL 7/11

QC Manager *[Signature]* Date 04-08-11

\*\*\*\*\*  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



+ \*\*\*\*\*  
 + \*\*\*\*\*  
 RVP11 91905  
 010 + \*\*\*\*\*  
 006 + \*\*\*\*\*  
 002 + \*\*\*\*\*  
 Rev. 07 191.00 01

+ \*\*\*\*\*  
 + \*\*\*\*\*  
 RVP11 11600  
 010 + \*\*\*\*\*  
 006 + \*\*\*\*\*  
 002 + \*\*\*\*\*  
 Rev. 07 189.00 01

+ \*\*\*\*\*  
 + \*\*\*\*\*  
 RVP11 11630  
 010 + \*\*\*\*\*  
 006 + \*\*\*\*\*  
 002 + \*\*\*\*\*  
 Rev. 07 171.00 01

+ \*\*\*\*\*  
 + \*\*\*\*\*  
 RVP11 81000  
 010 + \*\*\*\*\*  
 006 + \*\*\*\*\*  
 002 + \*\*\*\*\*  
 Rev. 07 161.00 01

Accepted & Received  
 By  
 Panax Quality Control  
 Date: 04-08-11  
 Initial: *[Signature]*

**REGR**

CLIENT: Panax  
 DATE: April 7, 2011  
 CHART SHEET: 50 min  
 OPERATOR: S. Murfroy  
 REC No.: 19155

Job No. EV-10285  
 (35) Spools NPS2 3.4  
 Job No. LH-712  
 (1) NPS4 10 (x2) Pass Heater Coil





**HEAT TREATMENT INSTRUCTIONS**  
[ as per ASME SECTION VIII, 2007 EDITION/2009 ADD. ]  
[ as per ASME B31.3 2008 EDITION ]

Heat Treatment Company: R & R STRESS RELIEVING SERVICE LTD.  
Description: (1) NPS20 FIRETUBE

Job# SER# LH-712

Diameter : NPS 20 Length: 21' Weight: approx 1000 lbs  
Shell Thickness: 0.375" Head Thickness: 0.250"

1) Temperature to be raised from 800°F to 1150°F (427°C to 621°C)  
at a maximum rate of 400°F (204°C)  
Note: must not exceed 400 °F (204° C) per hour.

2) Temperature to be held at 1150°F plus 25°F, minus 25°F  
(at 607°C plus -4°C, minus -4°C) for -- hr(s) 60 min.(minimum)

3) Temperature to be lowered from 1150°F to 800°F (607°C to 427°C)  
at a maximum rate of 500°F (260°C)  
Note: must not exceed a drop of 500°F (260°C) per hour.

4) Additional requirements \_\_\_\_\_

Heat Number: F 26 - 110536

Operator's signature \_\_\_\_\_ Date Apr 11/11

QC Manager [Signature] Date 04-18-11

\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Exhibit 9.3A / AB-76 A Modified WELDER QUALIFICATION RECORD (WOR)

Welder's Name: Young Cockney

ABSA File No.: W-10676

Stamp No.: F

Identification of WPS followed by welder during welding of test coupon: PX-4A (rev 0)

W.P. Reg. # WP-1760.2

Base material(s) welded: SA 106 GR B

Thickness: 0.344"

Test Coupon  Prod. Weld

Testing Conditions and Qualification Limits

**Welding Variables ( QW-350 )**

Welding Process(es) Used:

Type of Welding (manual, semi-automatic) Used:

Base Metal P or S Number to P or S Number:

Plate  Pipe  enter diameter:

Backing (metal, weld metal, double weld etc.):

Filler Metal or Electrode Specification(s) SFA#:

Filler Metal or Electrode Classification(s):

Filler Metal or Electrode F - number(s):

Filler Type (solid metal, or flux cored/powder) GTAW or PAW:

Consumable Insert for GTAW or PAW:

Deposit Thickness for each process, electrode type, etc. (in.):

Process/Electrode 1: 3 layers minimum Yes  No

Welding position (2G, 5G, 6G, 3F, etc.):

Progression (Uphill or Downhill):

Inert Gas backing for GTAW, PAW, GMAW:

Transfer Mode (spray/globular or pulse to short circuit):

GTAW Current Type/ Polarity (AC, DCEP, DCEN):

| Actual Values                         |   | Range Qualified |              |
|---------------------------------------|---|-----------------|--------------|
| GMAW                                  | SMAW  | GMAW            | SMAW         |
| Semi-Automatic                        | Manual  | Semi-Automatic  | Manual       |
| P1                                    | P1  | P1              | P1           |
| NPS 2                                 | NPS 2   | 1.0" OD Min     | 1.0" OD Min. |
| None/Weld                             | Weld Metal  | Without/With    | With         |
| 5.18                                  | 5.1   |                 |              |
| ER70S-6                               | E7018-1   |                 |              |
| F6                                    | F4  | F6              | F4           |
| N/A                                   | N/A   | N/A             | N/A          |
| N/A                                   | N/A   | N/A             | N/A          |
| 0.125"                                | 0.219"  | 0.1375"         | 0.438"       |
| Process/Electrode 2: 3 layers minimum | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                 |              |
| 1G                                    | 1G  | 1G              | 1G           |
| N/A                                   | N/A   | N/A             | N/A          |
| N/A                                   | N/A   | N/A             | N/A          |
| Short Circuit                         | N/A   | Short Circuit   | N/A          |
| DCEP                                  | DCEP  | DCEP            | DCEP         |

Results

Visual Examination of Fit-Up Root Gap: 5/32" Tack Welds: Bridge Length: 0.5" Number: 3

Root Pass (Describe Discontinuity if Unacceptable): OK

Complete Weld (Describe Defects if Unacceptable): OK

Bend Test

Transverse Root and Face QW-462.3a

Pipe Bend Specimen, corrosion-resistant overlay QW-462.5c

Side Bend QW-462.2  Macro Test for Fusion QW-462.5b

Macro Test for Fusion QW-462.5e

| Bend Type | Result | Bend Type | Result | Bend Type | Result | Bend Type | Result |
|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| # 1 Root  | Pass   | # 2 Face  | Pass   |           |        |           |        |

For alternative qualification of groove welds by radiography to QW-191

Radiographic Results: N/A

Fillet Weld-Fracture Test (QW-180): N/A

Length and Percent of Defects: N/A

Macro Examination (QW-184): N/A

Fillet Legs Size (in.): N/A X N/A Concavity/Convexity (in.): N/A

Other Tests: N/A

Record Information

Film or Specimens Evaluated by: Bruce Cormier

Company: GRB Enterprises Ltd

Welding Test Conducted by: Bruce Cormier

Mechanical Tests Conducted by: GRB Enterprises Ltd

Laboratory Test no.: N/A

Welding Supervised by: Panax Representative: Tomasz Chruszcz

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

Accredited Organization: GRB ENTERPRISES LTD. AOPP No: 7107(C) Expiry Date: May 21 2012

Certified by: Bruce Cormier

W.E.File: E-00252

Date: July 29, 2009

PQ Card No. (When Issued): 14255

Performance Test Reference No.: 09-07-29-09

Test Coupon ID No.: Welder Name

Date Coupon is Retained To: N/A





**PANAX OIL & GAS INC.**  
**HYDROSTATIC TEST REPORT**

DATE April 11, 2011

SERIAL NUMBER(S): LH-712 JOB NUMBER: PX-09806

VESSEL(S) DESCRIPTION: 10(X2) PASS HEATER COIL SOUR  
SERVICE LINE HEATER

HOLDING TIME @ TEST PRESSURE: 15 min (minimum) @ 4818 psig

GAUGE SERIAL #(S) + CALIBRATION DATE: PX-06J (March 24/2011) 4850 psig  
PX-09J (March 24/2011) 4850 psig

RESULTS + COMMENTS: NO LEAKS

START TIME 12:30 @ 0 PSIG

FINISH TIME 1:15 @ 4850 PSIG

  
Signature of QC

\_\_\_\_\_  
Signature of Owners Inspector.

\_\_\_\_\_  
Signature of ABSA Inspector or other code Inspector(s)



# BERJA Meter & Controls Ltd.

831-77th Avenue, Edmonton, Alberta, Canada T6P 1S9 ♦ Ph: (780) 440-1234 Fx: (780) 440-4775 email: shop@berjagroup.com

## Certificate of Calibration

Report number FASTCAL-C09684

**CRYSTAL**  
engineering corporation

| Company | Location    | Date of P. O. | P. O. Number |
|---------|-------------|---------------|--------------|
| Panox   | Edmonton AB | 3/23/2011     | 17260        |

| Manufacturer | Model          | Serial Number | Calibration Date | Expiration Date |
|--------------|----------------|---------------|------------------|-----------------|
| CPW          | 901.0-10000PSI | PX-06J        | 3/24/2011        | 3/23/2012       |

| Model Uncertainty        |
|--------------------------|
| +/- ASME 1A of span (1%) |

All instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification. Your particular quality assurance requirements may supersede this recommendation.

**As Received Condition:** In tolerance

**As Left Condition:** In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCSL 2540-1-1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation.

**Definitions:**

- Temperature Reference Reading
- Gauge Reading Condition
- Difference
- Relative Difference
- Allowable Tolerance
- Water column
- Test Accuracy Ratio

- Measured temperature of test during data collection. True value according to our reference standards.
- Displayed reading from test unit. Pass or Fail.
- Indicated reading minus reference reading. (Difference / reference reading) x 100 ± according to manufacturer's specifications. Referenced at 20° C and 1 atmosphere.
- At least 4:1 unless otherwise stated.

Laboratory ambient conditions throughout this calibration were:

Temperature 20 To 24° C  
Humidity 30 to 55% RH  
Pressure 100 to 103 kPa

Accepted & Received  
BY  
Panox Quality Control  
Date: 03-24-11  
Initial: [Signature]

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology of the United States, through the following report numbers:

| Manufacturer        | Model      | Serial Number | Report Number | Due Date | Reference Uncertainty                                       |
|---------------------|------------|---------------|---------------|----------|---|
| Crystal Engineering | 10KPSIXP2I | 649269        | J3615         | 9-Jun-11 | 0-20% of FS: +/- 0.02% FS, 20%-100% of FS: +/- 0.1% reading |
|                     |            |               |               |          |   |
|                     |            |               |               |          |   |

This certificate shall not be reproduced except in full, without written approval.

*Shyson Smith*

Laboratory Representative

Quality Representative

# Test Results

Report number FASTCAL-C09584

**CRYSTAL**  
engineering corporation

## As Received Test Results

10000 PSI

| Reference Reading | Gauge Reading | Allowable Tolerance | Difference | Difference (% of FS) | Condition |
|-------------------|---------------|---------------------|------------|----------------------|-----------|
| 1000              | 1000          | 100                 | 0          | 0.00%                | PASS      |
| 3000              | 3000          | 100                 | 0          | 0.00%                | PASS      |
| 5000              | 5000          | 100                 | 0          | 0.00%                | PASS      |
| 7000              | 7000          | 100                 | 0          | 0.00%                | PASS      |
| 10000             | 10000         | 100                 | 0          | 0.00%                | PASS      |

## As Left Test Results

10000 PSI

| Reference Reading | Gauge Reading | Allowable Tolerance | Difference | Difference (% of FS) | Condition |
|-------------------|---------------|---------------------|------------|----------------------|-----------|
| 1000              | 1000          | 100                 | 0          | 0.00%                | PASS      |
| 3000              | 3000          | 100                 | 0          | 0.00%                | PASS      |
| 5000              | 5000          | 100                 | 0          | 0.00%                | PASS      |
| 7000              | 7000          | 100                 | 0          | 0.00%                | PASS      |
| 10000             | 10000         | 100                 | 0          | 0.00%                | PASS      |

AR Head correction:

0 PSI

AL Head correction:

0 PSI



# BERJA Meter & Controls Ltd.

831-77th Avenue, Edmonton, Alberta, Canada T6P 1S9 ♦ Ph: (780) 440-1234 Fx: (780) 440-4775 email: shop@berjagroup.com

## Certificate of Calibration

Report number FASTCAL-C09683

**CRYSTAL**  
engineering corporation

|                          |                 |                        |                         |
|--------------------------|-----------------|------------------------|-------------------------|
| <b>Company</b>           | <b>Location</b> | <b>Date of P.O.</b>    | <b>P.O. Number</b>      |
| Panox                    | Edmonton AB     | 3/23/2011              | 17260                   |
| <b>Manufacturer</b>      | <b>Model</b>    | <b>Serial Number</b>   | <b>Calibration Date</b> |
| CPW                      | 901.0-10000PSI  | PX-091                 | 3/24/2011               |
| <b>Model Uncertainty</b> |                 | <b>Expiration Date</b> |                         |
| +/- ASME 1A of span (1%) |                 | 3/23/2012              |                         |

All instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification. Your particular quality assurance requirements may supersede this recommendation.

**As Received Condition:** In tolerance

**As Left Condition:** In tolerance

All calibrations are performed in a controlled environment by qualified personnel using instrumentation and methods which guarantee that specifications claimed are reliable. Calibrations conform to ANSI/NCSL Z540-1-1994, MIL-STD 45662A, 10CFR21 and 10CFR50 when specified by customer documentation.

**Definitions:**

Temperature: Measured temperature of test during data collection.  
Reference Reading: True value according to our reference standards.  
Gauge Reading: Displayed reading from test unit.  
Condition: Pass or Fail.  
Difference: Indicated reading minus reference reading.  
Relative Difference: (Difference / reference reading) x 100  
Allowable Tolerance: ± according to manufacturer's specifications.  
Water column: Referenced at 20° C and 1 atmosphere.  
Test Accuracy Ratio: At least 4:1 unless otherwise stated.

Laboratory ambient conditions throughout this calibration were:

Temperature 20 to 24°C  
Humidity 30 to 55% RH  
Pressure 100 to 103 KPa

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology of the United States, through the following report numbers:

| Manufacturer        | Model      | Serial Number | Report Number | Due Date | Reference Uncertainty                                       |
|---------------------|------------|---------------|---------------|----------|---|
| Crystal Engineering | 10KP3IXP2I | 649269        | J3615         | 9-Jun-11 | 0-20% of FS; +/- 0.02% FS; 20%-100% of FS; +/- 0.1% reading |
|                     |            |               |               |          |   |
|                     |            |               |               |          |   |

This certificate shall not be reproduced except in full, without written approval.

*Chyson Duthie*

Laboratory Representative

Quality Representative

Accepted & Received  
By  
Panax Quality Control

Date: 03-24-11  
Initial: *[Signature]*

# Test Results

Report number FASTCAL-C09683

**CRYSTAL**  
engineering corporation

## As Received Test Results

10000 PSI

| Reference Reading | Gauge Reading | Allowable Tolerance | Difference | Difference (% of FS) | Condition |
|-------------------|---------------|---------------------|------------|----------------------|-----------|
| 1000              | 1000          | 100                 | 0          | 0.00%                | PASS      |
| 3000              | 3000          | 100                 | 0          | 0.00%                | PASS      |
| 5000              | 5000          | 100                 | 0          | 0.00%                | PASS      |
| 7000              | 7000          | 100                 | 0          | 0.00%                | PASS      |
| 10000             | 10000         | 100                 | 0          | 0.00%                | PASS      |

## As Left Test Results

10000 PSI

| Reference Reading | Gauge Reading | Allowable Tolerance | Difference | Difference (% of FS) | Condition |
|-------------------|---------------|---------------------|------------|----------------------|-----------|
| 1000              | 1000          | 100                 | 0          | 0.00%                | PASS      |
| 3000              | 3000          | 100                 | 0          | 0.00%                | PASS      |
| 5000              | 5000          | 100                 | 0          | 0.00%                | PASS      |
| 7000              | 7000          | 100                 | 0          | 0.00%                | PASS      |
| 10000             | 10000         | 100                 | 0          | 0.00%                | PASS      |

AR Head correction:

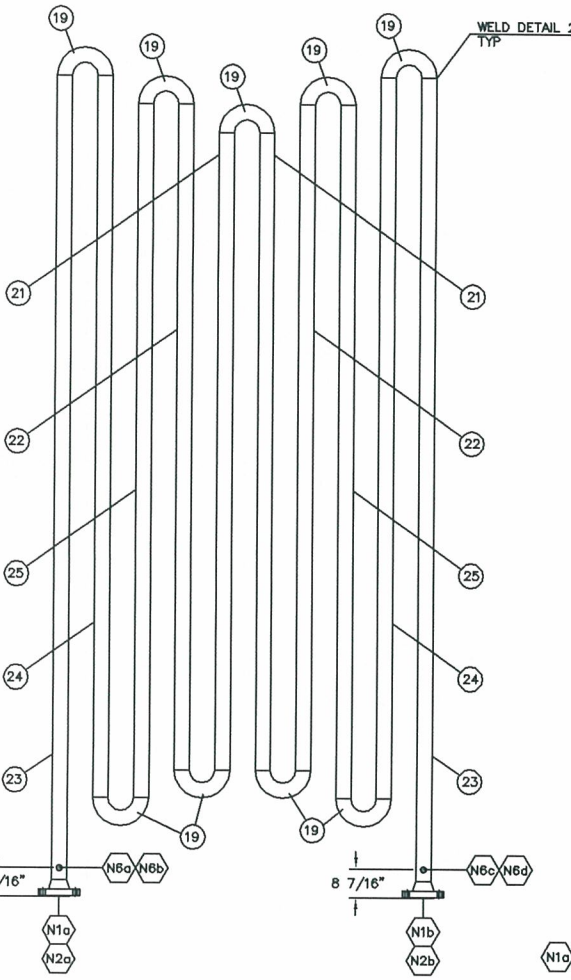
0 PSI

AL Head correction:

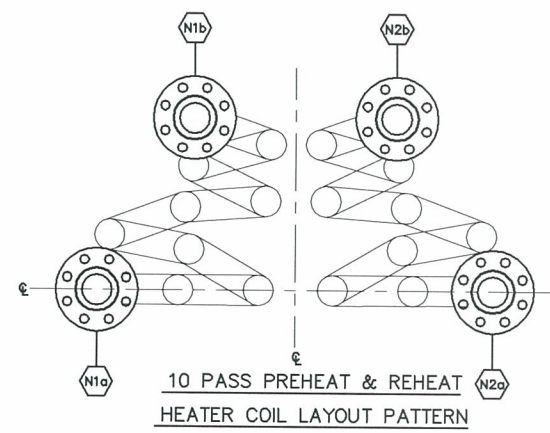
0 PSI



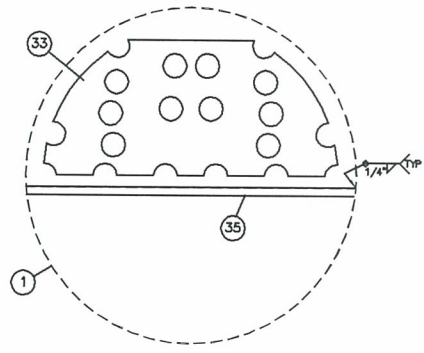
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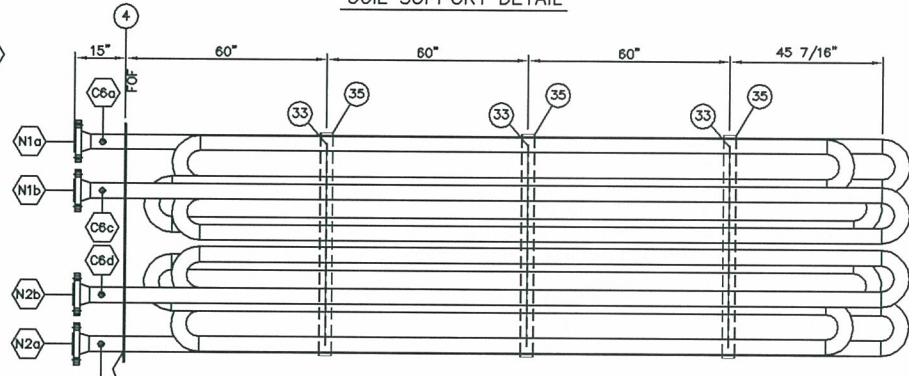
10 PASS PREHEAT & REHEAT  
HEATER COIL STRETCH OUT



10 PASS PREHEAT & REHEAT  
HEATER COIL LAYOUT PATTERN



COIL SUPPORT DETAIL

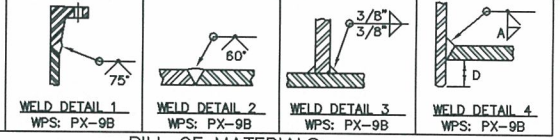


PREHEAT & REHEAT COIL  
PLAN VIEW

|     |          |                                     |    |     |
|-----|----------|-------------------------------------|----|-----|
| 1   | 04-07-11 | C10 ADDED / CHANGED TO 2008 EDITION | TC | BT  |
| 0   | 02-28-11 | C2 TO 3/4" / ISSUE FOR CONSTRUCTION | TC | BT  |
| NO. | DATE     | REVISION                            | BY | APP |

CONNECTION SCHEDULE

| MARK  | SIZE | SCH | CLASS  | TYPE  | SERVICE      | WELD | A    | B | C MIN | D MIN | ITEM NO'S   |
|-------|------|-----|--------|-------|--------------|------|------|---|-------|-------|-------------|
| N1a/b | 4"   | 160 | 1500   | RTJWN | PREHEAT COIL | 1, 2 | -    | - | -     | -     | 10,19,21-25 |
| N2a/b | 4"   | 160 | 1500   | RTJWN | RE-HEAT COIL | 1, 2 | -    | - | -     | -     | 10,19,21-25 |
| C8a-d | 3/4" | NPT | CL6000 | CPLG  | TI           | 4    | 3/8" | - | -     | 0"    | 16          |



BILL OF MATERIALS

| ITEM | QTY | DESCRIPTION   | MATERIAL                |
|------|-----|---|-------------------------|
| 2    | 2   | MATING FLANGE PLATE - 70" OD x 66" ID x 3/8" THK (PER DETAIL) | SA-36                   |
| 4    | 1   | BLIND FLANGE PLATE - 70" OD x 3/8" THK N1-N2(PER DEATAIL)     | SA-36                   |
| 10   | 4   | FLANGE - 4" CL1500 RTJWN c/w SCH.160 BORE                     | N1a/b,N2a/b SA-350-LF2  |
| 16   | 4   | CPLG - 3/4" NPT CL6000 FULL                                   | C8a/b SA-105N           |
| 19   | 18  | RETURN BEND - 4" SCH.160 LR 180°                              | N1a/b,N2a/b SA-420-WPL6 |
| 21   | 4   | PIPE - 4" SCH.160 (.531") x 186 1/2"                          | COIL SA-333 GR.6        |
| 22   | 4   | PIPE - 4" SCH.160 (.531") x 194 3/4"                          | COIL SA-333 GR.6        |
| 23   | 4   | PIPE - 4" SCH.160 (.531") x 235 9/16"                         | COIL SA-333 GR.6        |
| 24   | 4   | PIPE - 4" SCH.160 (.531") x 211 1/4"                          | COIL SA-333 GR.6        |
| 25   | 4   | PIPE - 4" SCH.160 (.531") x 203"                              | COIL SA-333 GR.6        |
| 33   | 3   | PLATE - 3/8" THK x 28 3/16" x 62" WD                          | COIL SUPPORTS SA-36     |
| 35   | 3   | CHANNEL - C4 x 5.4 x 65 3/8" LG                               | COIL SUPP. 44W          |

DESIGN NOTES

DESIGN & FABRICATE TO: ASME B31.3, 2008 EDITION  
 DESIGN PRESSURE: 3212 PSIG  
 MAXIMUM DESIGN METAL TEMPERATURE: 200° F  
 MINIMUM DESIGN METAL TEMPERATURE: -20° F  
 IMPACT TESTS: EXEMPT PER TABLE 323.2.2 - COLUMN A  
 RADIOGRAPHY: 100% OF TOTAL WELDS  
 POST WELD HEAT TREATMENT: 1150° F ± 50° F FOR 1 HOUR MIN.  
 HYDROSTATIC TEST TEMPERATURE: 4818 PSIG  
 CORROSION ALLOWANCE: (INTERNAL) 1/8"  
 CORROSION ALLOWANCE: (EXTERNAL) ATMOSPHERE  
 HEATING SURFACE: 223.82 FT2 (PER 10 PASS COIL)  
 PREHEAT: 50° F

| NO. | DATE     | REVISION                            | BY | APP |
|-----|----------|-------------------------------------|----|-----|
| I   | 02-23-11 | C4 TO 3/4" CPLG CONNECTION          | TC | BT  |
| H   | 02-08-11 | C8a-d TO 3/4" CPLG                  | TC | BT  |
| G   | 02-07-11 | COIL REVISED                        | TC | BT  |
| F   | 02-03-11 | C9 ADDED/EXPAN. TANK LNG INCREASE   | TC | BT  |
| E   | 01-26-11 | C8c & C8d ADDED TO COIL             | TC | BT  |
| D   | 01-25-11 | EXPANSION TANK REVISED              | TC | BT  |
| C   | 01-19-11 | C8a/b TO 3/4"/NAMEPLATE ELE. CHNGE. | TC | BT  |
| B   | 01-12-11 | REVISED PER CLIENT MARK-UPS         | TC | BT  |
| A   | 01-07-11 | ISSUED FOR APPROVAL                 | TC | BT  |

PANAX OIL & GAS INC.

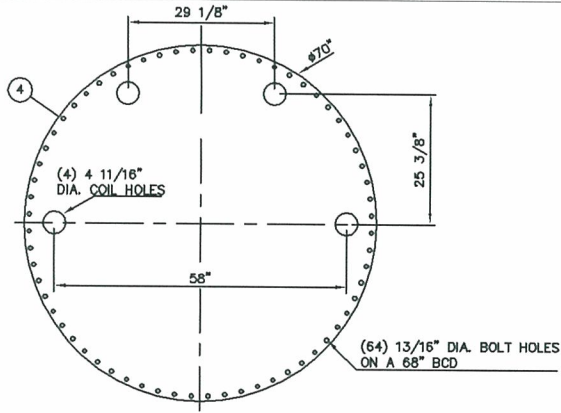
3730 - 69 AVENUE  
 EDMONTON, AB T6B 2V2  
 TELEPHONE: (780) 413-6656 FAX: (780) 468-5784

|             |                |                           |
|-------------|----------------|---------------------------|
| REF DWG:    | BDD-400A REV.1 | CRN: P9417.213            |
| DATE:       | 01-07-2011     |                           |
| BDD NO.:    | --             | 10(X2) PASS HEATER COIL   |
| JOB NO.:    | --             | SOUR SERVICE LINE HEATER  |
| SCALE:      | NTS            | 3212 PSIG AT -20 / 200° F |
| DRAWN BY:   | TC             |                           |
| CHECKED BY: | BT             |                           |
| APP BY:     |                |                           |

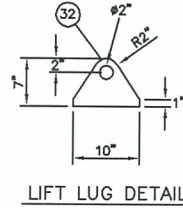
|          |              |      |
|----------|--------------|------|
| DWG NO.: | SHEET 2 OF 4 | REV. |
|          | BDD-401      | 1    |

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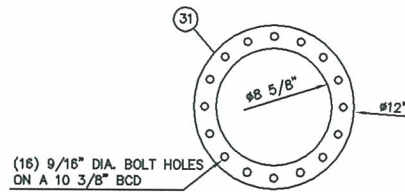
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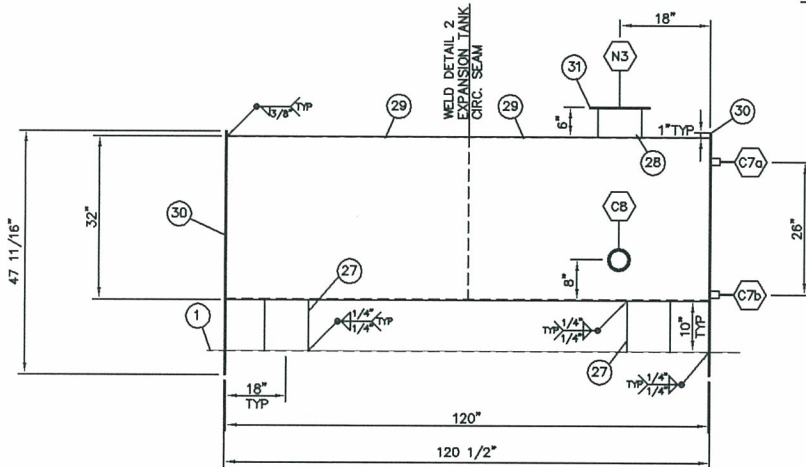
COIL (N1/N2) BLIND FLANGE DETAIL



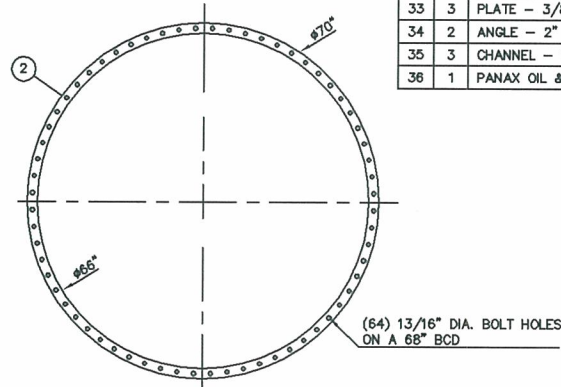
LIFT LUG DETAIL



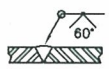
EXPANSION TANK MATING FLANGE DETAIL



EXPANSION TANK DETAIL



MATING FLANGE DETAIL



WELD DETAIL 2  
WPS: PX-9B

BILL OF MATERIALS

| ITEM | QTY | DESCRIPTION   | MATERIAL                |
|------|-----|---|-------------------------|
| 1    | 1   | SHELL PLATE - 66" OD x 1/4" THK x 20'-0" LG                   | SA-36                   |
| 2    | 2   | MATING FLANGE PLATE - 70" OD x 66" ID x 3/8" THK (PER DETAIL) | SA-36                   |
| 3    | 1   | BLIND FLANGE PLATE - 70" OD x 3/8" THK FT(PER DETAIL)         | SA-36                   |
| 4    | 1   | BLIND FLANGE PLATE - 70" OD x 3/8" THK N1-N2(PER DETAIL)      | SA-36                   |
| 5    | 2   | BASE PLATE - 3/8" THK x 58" x 12" WD                          | SA-36                   |
| 6    | 4   | SADDLE SIDE PLATE - 1/4" THK x 36 7/8" x 12" WD               | SA-36                   |
| 7    | 2   | SADDLE FACE PLATE - 1/4" THK x 36 7/8" x 58" WD TRIM TO SUIT  | SA-36                   |
| 10   | 4   | FLANGE - 4" CL1500 RTJWN e/w SCH.160 BORE N1a/b,N2a/b         | SA-350-LF2              |
| 12   | 2   | CPLG - 1/2" NPT CL3000 FULL                                   | C7a/b SA-105N           |
| 13   | 4   | CPLG - 3/4" NPT CL3000 FULL                                   | C2,C3,C4,C10 SA-105N    |
| 14   | 2   | CPLG - 1" NPT CL3000 FULL                                     | C1a/b SA-105N           |
| 15   | 3   | CPLG - 2" NPT CL3000 FULL                                     | C5,C8,C9 SA-105N        |
| 16   | 4   | CPLG - 3/4" NPT CL6000 FULL                                   | C6a/b SA-105N           |
| 18   | 2   | ELBOW - 1" SCH.XH LR 90 BW                                    | C1a/b SA-234-WPB        |
| 19   | 1B  | RETURN BEND - 4" SCH.160 LR 180°                              | N1a/b,N2a/b SA-420-WPL6 |
| 21   | 4   | PIPE - 4" SCH.160 (.531") x 186 1/2"                          | COIL SA-333 GR.6        |
| 22   | 4   | PIPE - 4" SCH.160 (.531") x 194 3/4"                          | COIL SA-333 GR.6        |
| 23   | 4   | PIPE - 4" SCH.160 (.531") x 235 9/16"                         | COIL SA-333 GR.6        |
| 24   | 4   | PIPE - 4" SCH.160 (.531") x 211 1/4"                          | COIL SA-333 GR.6        |
| 25   | 4   | PIPE - 4" SCH.160 (.531") x 203"                              | COIL SA-333 GR.6        |
| 26   | 1   | PIPE - 1" SCH.XH (.179") x 213" LG                            | C1a/b SA-105N           |
| 27   | 2   | PIPE - 8" SCH.STD (.322") x 12" LG EXPAN. TANK SUPPORT        | SA-53-ERW               |
| 28   | 1   | PIPE - 8" SCH.STD (.322") x 7" LG                             | N3 SA-53-ERW            |
| 29   | 2   | PLATE - 1/4" THK x 60" LG ROLL TO 32" OD EXPAN. TANK          | SA-36                   |
| 30   | 2   | PLATE - 1/4" THK x 47 11/16" x 34" WD EXPAN. TANK             | SA-36                   |
| 31   | 1   | PLATE - 1/4" THK x 12" OD x 8 5/8" ID MATING FLANGE           | SA-36                   |
| 32   | 2   | PLATE - 3/8" THK x 7" x 10" WD LIFT LUG                       | SA-36                   |
| 33   | 3   | PLATE - 3/8" THK x 28 3/16" x 62" WD COIL SUPPORTS            | SA-36                   |
| 34   | 2   | ANGLE - 2" x 2" x 1/4" THK x 8" LG EXT. COIL SUPP.            | 44W                     |
| 35   | 3   | CHANNEL - C4 x 5.4 x 65 3/8" LG COIL SUPP.                    | 44W                     |
| 36   | 1   | PANAX OIL & GAS STANDARD NAMEPLATE & BRACKET ASSEMBLY         | 304SS/SA-36             |

| NO. | DATE     | REVISION                            | BY | APP |
|-----|----------|-------------------------------------|----|-----|
| I   | 02-23-11 | C4 TO 3/4" CPLG CONNECTION          | TC | BT  |
| H   | 02-08-11 | C6a-d TO 3/4" CPLG                  | TC | BT  |
| G   | 02-07-11 | COIL REVISED                        | TC | BT  |
| F   | 02-03-11 | C9 ADDED/EXPAN. TANK LNG INCREASE   | TC | BT  |
| E   | 01-26-11 | C6c & C6d ADDED TO COIL             | TC | BT  |
| D   | 01-25-11 | EXPANSION TANK REVISED              | TC | BT  |
| C   | 01-19-11 | C6a/b TO 3/4"/NAMEPLATE ELE. CHNGE. | TC | BT  |
| B   | 01-12-11 | REVISED PER CLIENT MARK-UPS         | TC | BT  |
| A   | 01-07-11 | ISSUED FOR APPROVAL                 | TC | BT  |

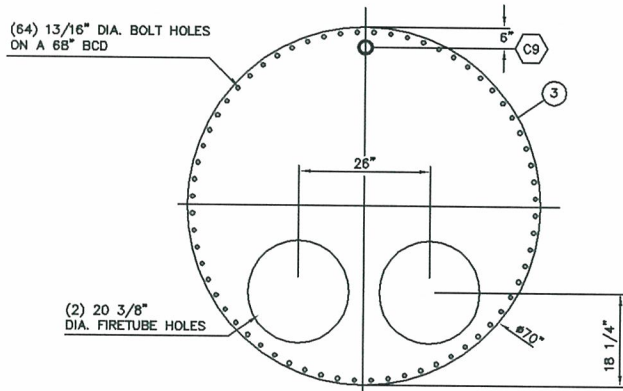
**PANAX OIL & GAS INC.**  
3730 - 69 AVENUE  
EDMONTON, AB T6B 2V2  
TELEPHONE: (780) 413-6656 FAX: (780) 468-5784

|             |                |                           |
|-------------|----------------|---------------------------|
| REF DWG:    | BDD-400A REV.1 | CRN: P9417.213            |
| DATE:       | 01-07-2011     |                           |
| BDD NO.:    | ---            | 2.0MM BTU/HR              |
| JOB NO.:    | ---            | SOUR SERVICE LINE HEATER  |
| SCALE:      | NTS            | 3212 PSIG AT -20 / 200° F |
| DRAWN BY:   | TC             | DWG NO.: SHEET 3 OF 4     |
| CHECKED BY: | BT             | BDD-401                   |
| APP BY:     |                | REV. 1                    |

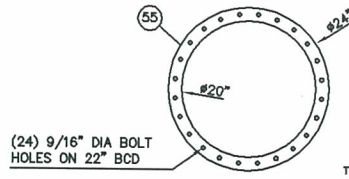
| NO. | DATE     | REVISION                            | BY | APP |
|-----|----------|-------------------------------------|----|-----|
| 1   | 04-07-11 | C10 ADDED / CHANGED TO 2008 EDITION | TC | BT  |
| 0   | 02-28-11 | C2 TO 3/4" / ISSUE FOR CONSTRUCTION | TC | BT  |



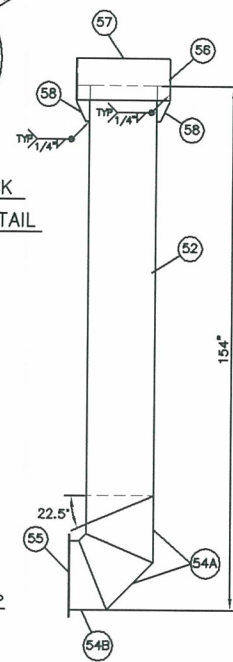
THIS DRAWING IS THE PROPERTY OF PANAX OIL & GAS INC. IT MAY NOT BE REPRODUCED WITHOUT THE PERMISSION OF PANAX OIL & GAS INC.



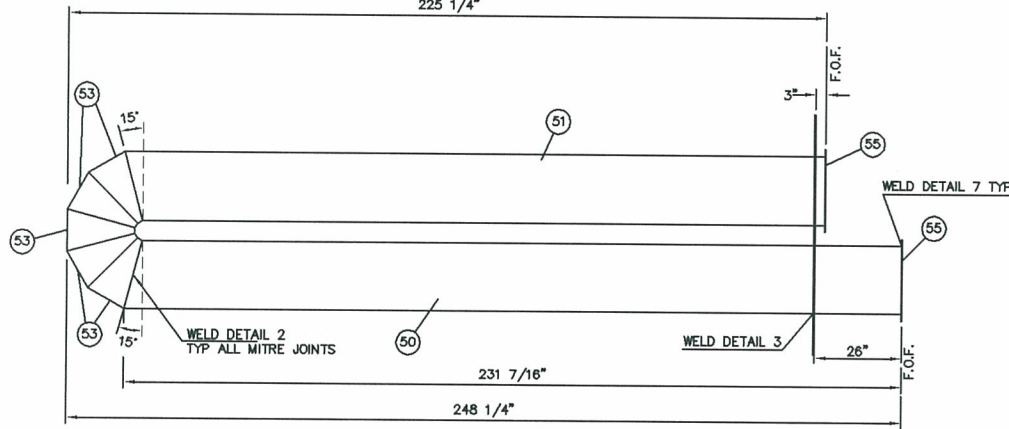
FIRETUBE BLIND FLANGE DETAIL



FIRETUBE & STACK MATING FLANGE DETAIL

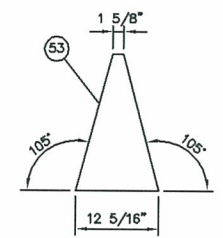


STACK DETAIL

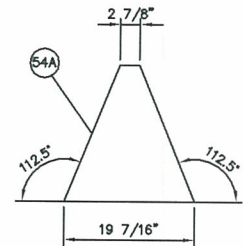


FIRETUBE DETAIL

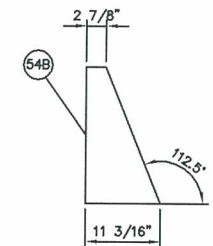
**DESIGN NOTE**  
PWHT FIRETUBE @ 1150° F ± 50° F FOR 1 HOUR MIN.



FIRETUBE MITRE DETAIL

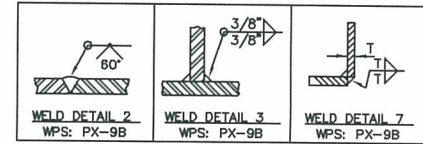


STACK MITRE DETAILS



BILL OF MATERIALS

| ITEM | QTY | DESCRIPTION                                   | MATERIAL                     |
|------|-----|---|------------------------------|
| 50   | 1   | PIPE - 20" SCH.20 (.375") x 231 3/16" LG      | TRIM TO SUIT SA-53-ERW       |
| 51   | 1   | PIPE - 20" SCH.20 (.375") x 208 3/16" LG      | TRIM TO SUIT SA-53-ERW       |
| 52   | 1   | PIPE - 20" SCH.20 (.375") x 129" LG           | TRIM TO SUIT SA-53-ERW       |
| 53   | 5   | PIPE - 20" SCH.20 (.375") x 20" x 12 5/16" WD | SEE MITRE DETAIL SA-53-ERW   |
| 54A  | 2   | PIPE - 20" SCH.20 (.375") x 20" x 19 7/16" WD | SEE MITRE DETAIL SA-53-ERW   |
| 54B  | 1   | PIPE - 20" SCH.20 (.375") x 20" x 11 3/16" WD | SEE MITRE DETAIL SA-53-ERW   |
| 55   | 2   | PLATE - 1/4" THK x 24" OD x 20" ID            | FT/STACK MATING FLANGE SA-36 |
| 56   | 1   | PLATE - 1/4" THK x 87 3/16" x 12" WD          | ROLL TO 28" OD SA-36         |
| 57   | 1   | PLATE - 1/4" THK x 27 1/2" OD                 | STACK CAP SA-36              |
| 58   | 4   | PLATE - 1/4" THK x 10 3/8" x 3 3/4" WD        | CAP SUPP. SA-36              |



| NO. | DATE     | REVISION                            | TC | BT |
|-----|----------|-------------------------------------|----|----|
| 1   | 04-07-11 | C10 ADDED / CHANGED TO 2008 EDITION | TC | BT |
| 0   | 02-28-11 | C2 TO 3/4" / ISSUE FOR CONSTRUCTION | TC | BT |
| I   | 02-23-11 | C4 TO 3/4" CPLG CONNECTION          | TC | BT |
| H   | 02-08-11 | C6a-d TO 3/4" CPLG                  | TC | BT |
| G   | 02-07-11 | COIL REVISED                        | TC | BT |
| F   | 02-03-11 | C9 ADDED/EXPAN. TANK LNG INCREASE   | TC | BT |
| E   | 01-26-11 | C6c & C6d ADDED TO COIL             | TC | BT |
| D   | 01-25-11 | EXPANSION TANK REVISED              | TC | BT |
| C   | 01-19-11 | C6a/b TO 3/4"/NAMEPLATE ELE. CHNGE. | TC | BT |
| B   | 01-12-11 | REVISED PER CLIENT MARK-UPS         | TC | BT |
| A   | 01-07-11 | ISSUED FOR APPROVAL                 | TC | BT |

PANAX OIL & GAS INC.

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EDMONTON, AB T6B 2V2  
TELEPHONE: (780) 413-6656 FAX: (780) 468-5784

|                         |  |        |
|-------------------------|--|--------|
| REF DWG: BDD-400A REV.1 | CRN: P9417.213   |        |
| DATE: 01-07-2011        | SOUR SERVICE LINE HEATER<br>20" FIRETUBE DETAILS<br>2.0MM BTU/HR |        |
| BDD NO.: ---            |  |        |
| JOB NO.: ---            |  |        |
| SCALE: NTS              |  |        |
| DRAWN BY: TC            |  |        |
| CHECKED BY: BT          | DWG NO.: SHEET 4 OF 4  | REV. 1 |
| APP BY:                 | BDD-401  |        |



**DRAWING INDEX** (EXHIBIT 7.1)

SER#(s): LH-711, H-717

| Drawing Number | Rev. No. | Drawing Title   | Date Issued | Copies To QCM | Copies To Shop Mgr. | Copies To Purch. Mgr. | Copies To Eng. File | Copies To ABSA | Copies To                       |
|----------------|----------|---|-------------|---------------|---------------------|-----------------------|---------------------|----------------|---------------------------------|
| BDD-401        | 0        | <u>2.0MM BTU/HR SOUR SERVICE</u><br><u>LINE HEATER</u><br>66" OD x 20'-0" s/s<br>3212psig @ -20°F / 200°F | 01-19-2011  | 1             | -----               | -----                 | -----               | -----          | (customer<br>databook)<br>----- |
| BDD-401        | 1        | <u>2.0MM BTU/HR SOUR SERVICE</u><br><u>LINE HEATER</u><br>66" OD x 20'-0" s/s<br>3212psig @ -20°F / 200°F | 04-07-2011  | 1             | 1                   | 1                     | 1                   | -----          | (customer<br>databook)<br>1     |



Customer Instructions: SET AND SEALED @ 150 PSI Contact: ALAN CC#: Phone: 780.413.6656  
 Requested Completion Date: APR.07/11 A#: LSD: CRN#: 0C013162C

**INCOMING RECEIVING**  
 Make: TAYLOR Model: T-8200-1 S/N: 009792-46 Shop # CRN#: 0C013162C  
 Size: 1 In E Orf: 1 Out End Type: NPT Cap Assy.:  Open  Closed  Lift Lever Adj. Screw Meas.  
 Visual Condition:  Good  Fair  Poor  Fouling  Dirty  Plugged Condition Rating:  New  Routine  Minor  Major  BER  
 Seal Condition: Top: ACC Bottom: Insignia: T Last Service Date: Data Plate Condition: GOOD  
 Op. Temp.: C Capacity: 582 SCEM/AIR Code Symbol:  V  UV  HV  NB  None  Other  
 Set Pressure: 150 1034 Back Pressure: 582 SCEM/AIR Cold Differential Set: Info. Verification:  
 psig kpag psig kpag psig kpag

**PRE TEST**  
 Set Pressure: psig kpag Reseat Press.: psig kpag Tested By: Testing Medium:  PASS  
 Relieve Press.: psig kpag Reseat Press.: psig kpag No Reseat:  FAIL  
 Comments: 1<sup>ST</sup>. psig 2<sup>ND</sup>. psig 3<sup>RD</sup>. psig Leakge Rate: BPM

**LABOUR:** Dismantle: Reassemble:

| CONDITION CODES          | ITEM | DESCRIPTION             | QTY | MATERIAL:                 | QTY | PCI P.O. # |
|--------------------------|------|-------------------------|-----|---------------------------|-----|------------|
| A - Good                 | 1    | Recondition & Test      | 32  |                           |     |            |
| B - Bent                 | 2    | Priority Rate           | 33  |                           |     |            |
| C - Broken               | 3    | Certification Test Only | 34  |                           |     |            |
| D - Cracked              | 4    | Pre Pop Test            | 35  |                           |     |            |
| E - Collapsed            | 5    | Back Pressure Test      | 36  | Duplicate Tag (SPM 3.5)   |     |            |
| F - Corroded             | 6    | Bel lows Test           | 37  | Sub Contractor            |     |            |
| G - Corroded Severe      | 7    | Cap Assembly            | 38  | Lift Lever                |     |            |
| H - Deposited Light      | 8    | Repack Lift Lever       | 39  | Adjusting Screw / Nut     |     |            |
| I - Deposits Heavy       | 9    | Adjusting Screw / Nut   | 40  | Bonnet                    |     |            |
| J - Etched               | 10   | Bonnet                  | 41  | Spring / Number           |     |            |
| K - Galled               | 11   | Spring / Number         | 42  | Spring Buttons            |     |            |
| L - Inconform            | 12   | Spring Buttons          | 43  | Spindle / Stem            |     |            |
| M - Inconform            | 13   | Spindle / Stem          | 44  | Stem Retainer             |     |            |
| N - Inconform            | 14   | Stem Retainer           | 45  | Guide                     |     |            |
| O - Missing              | 15   | Guide                   | 46  | Bel lows                  |     |            |
| P - Out of Tolerance     | 16   | Bel lows                | 47  | Ring Pin                  |     |            |
| Q - Pitted               | 17   | Ring Pin                | 48  | Blowdown Ring             |     |            |
| R - Plugged              | 18   | Blowdown Ring(s)        | 49  | Disc Holder               |     |            |
| S - Poor                 | 19   | Disc Holder             | 50  | Disc                      |     |            |
| T - Scored/Scratched     | 20   | Disc                    | 51  | Nozzle                    |     |            |
| U - Leaks                | 21   | Nozzle                  | 52  | Ball Keeper               |     |            |
| V - Requires Re-Aligning | 22   | Ball Keeper             | 53  | Keeper Seal               |     |            |
| W - Requires Re-Aligning | 23   | Keeper Seal             | 54  | Ball                      |     |            |
| X - Seized               | 24   | Ball                    | 55  | Ball / Seat Assembly      |     |            |
| Y - Stripped             | 25   | Ball / Seat Assembly    | 56  | Seat Frame                |     |            |
| Z - Worn                 | 26   | Seat Frame              | 57  | Body                      |     |            |
| 1 - Stripped             | 27   | Body                    | 58  | Gasket Set                |     |            |
| 2 - Non-OEM              | 28   | Gaskets                 | 59  | Reset Tag (SPM 3.3 : 3.4) |     |            |
| 3 - Threads Stripped     | 29   | Inlet                   | 60  | Shop Supplies             |     |            |
| 4 - Blown                | 30   | Outlet                  | 61  | Hazardous Waste Disposal  |     |            |
| 5 - Pin Holes            | 31   | Lap Nozzle to Base      | 62  |                           |     |            |
| 6 - Spindle Runout       |      |                         |     |                           |     |            |
| 7 - Steam Cut            |      |                         |     |                           |     |            |
| 8 - N/A                  |      |                         |     |                           |     |            |

**INTERNAL CONDITIONS** See SWI# 4043 on the left of this document for definitions.

**Additional:**  Cleaning  Lapping Nozzle  Lapping Disc  Pipe fitting for Reassembly & Test  Recommended Replacements

**POST ASSEMBLY INSPECTION & SIGN OFF** (Refer to OR8 #14): DATE: NEW MODEL #:

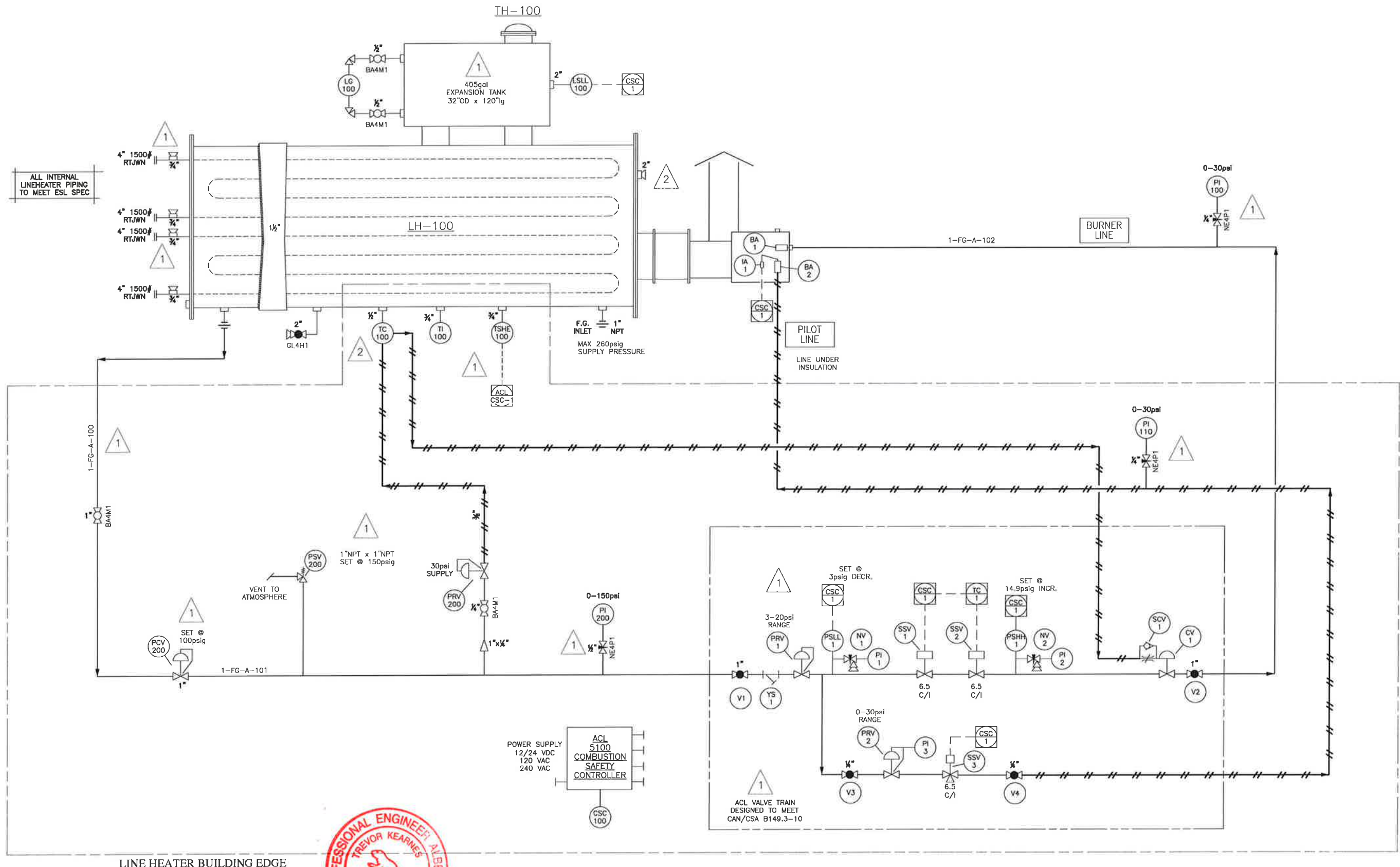
**MEASMT. DATA**

| IM&T Equipment (REF. SPM 05) | Min. Man. Specified Dimensions | Dimensions As Found | Linial# | Pressure#  | Test Bench# |
|------------------------------|--------------------------------|---------------------|---------|------------|-------------|
| Disc Ht.                     | Step                           | Disc Ht.            | Step    | Disc Ht.   | Step        |
| Nozzle Ht.                   | Step                           | Nozzle Ht.          | Step    | Nozzle Ht. | Step        |

**Set Point Definition:** Tolerance:  Air  Nitrogen  H2O  Air / H2O  Lock Nut Secured  
 Set Pressure Change:  Yes  No  New Spring  Non Code Repair QR018B Item #:  Ring Pin Torqued  
 Pressure: 150 1034 kpag Capacity: 582 SCEM/AIR QR018C Item #:  Lift Lever Assy Secured

**TEST DATA**  
 Cold Diff. Set: psig Reseat: kpag Service Interval: Months Date: \_\_\_\_\_  
 Bellows Test @: psig Blowdown: kpag Ring Setting: Upper: \_\_\_\_\_ Lower: \_\_\_\_\_  
 Back Press. Test: psig Blowdown: kpag  Ends Covered  Appearance  Packing Slip Tested By: \_\_\_\_\_  
 Leakage Rate: BPM  Painting  Tagging EDM Final Inspection: 5

| Size | Ident | Spec | No. | FLUID | FROM | TO  | CODE     | PIPE SCH        | C.A. inches     | PIPE MATERIAL (smls) | DESIGN       |          |          | TEST PRESS. (psi) | OPERATING    |           | INSUL.      |           | X RAY (%) | STRESS RELIEF | HARDNESS TESTING (%) | ASME FLUID SERVICE CATEGORY | RADIOGRAPHY CATEGORY | NOTES | P&ID NO.       | REV |  |
|------|-------|------|-----|-------|------|-----|----------|-----------------|-----------------|----------------------|--------------|----------|----------|-------------------|--------------|-----------|-------------|-----------|-----------|---------------|----------------------|-----------------------------|----------------------|-------|----------------|-----|--|
|      |       |      |     |       |      |     |          |                 |                 |                      | PRESS. (psi) | TEMP (F) | MDMT (F) |                   | PRESS. (psi) | TEMP. (F) | THK. inches | HEAT TRA. |           |               |                      |                             |                      |       |                |     |  |
| 1    | -     | FG   | -   | A     | -    | 100 | FUEL GAS | LH-100          | PCV-200         | ASME B31.3           | XS           | 0.0625"  | A 106 B  | 260               | 200          | -20       | 390         | -         | -         | -             | -                    | -                           | -                    | 2, 4  | EV-11001-F-001 | 0   |  |
| 1    | -     | FG   | -   | A     | -    | 101 | FUEL GAS | PCV-200         | ACL VALVE TRAIN | ASME B31.3           | XS           | 0.0625"  | A 106 B  | 150               | 200          | -20       | 225         | -         | -         | -             | -                    | -                           | -                    | 2, 4  | EV-11001-F-001 | 0   |  |
| 1    | -     | FG   | -   | A     | -    | 102 | FUEL GAS | ACL VALVE TRAIN | FIRETUBE BURNER | ASME B31.3           | XS           | 0.0625"  | A 106 B  | 150               | 200          | -20       | 225         | -         | -         | -             | -                    | -                           | -                    | 2, 4  | EV-11001-F-001 | 0   |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |
|      |       |      |     |       |      |     |          |                 |                 |                      |              |          |          |                   |              |           |             |           |           |               |                      |                             |                      |       |                |     |  |



  
 Apr 5/11  
 Piping only

| REV | REVISION                         | BY  | APPR | d/m/y    |
|-----|----------------------------------|-----|------|----------|
| 3   | ISSUED FOR P.ENG STAMP           | MEW |      | 17/03/11 |
| 2   | REVISED AS PER CUSTOMER MARK-UPS | MEW |      | 15/03/11 |
| 1   | REVISED AS PER CUSTOMER MARK-UPS | MEW |      | 14/03/11 |
| 0   | ISSUED FOR CONSTRUCTION          | MEW |      | 17/01/11 |
| A   | ISSUED FOR APPROVAL              | TY  |      | 11/01/11 |

  
 info@evolutionequipment.com  
 www.evolutionequipment.com

| DATE                  | CLIENT  |
|-----------------------|---|
| 04/01/11              | ARC PETROLEUM INC. c/o<br>XXL ENGINEERING LTD.                                    |
| DESIGNED BY<br>M.E.W. | DAWSON LSD: 16-13-79-15 W6M   |
| DRAWN BY<br>TY        | TITLE<br>MECHANICAL FLOW DIAGRAM<br>2MM BTU/HR<br>SOUR SERVICE LINEHEATER PACKAGE |
| CHECKED BY            |   |
| APPROVED BY           | JOB #: EV-11001<br>REF NO.: PNID<br>DRAWING: FLOW DIAGRAM                         |
| SCALE<br>N.T.S.       | SHEET NO.: 1 OF 2<br>DRAWING NO.: EV-11001-F-001<br>REV. NO.: 3                   |

THIS DESIGN IS THE PROPERTY OF EVOLUTION PRODUCTION EQUIPMENT LTD. AND IS SUBJECT TO AUTHORIZED USE

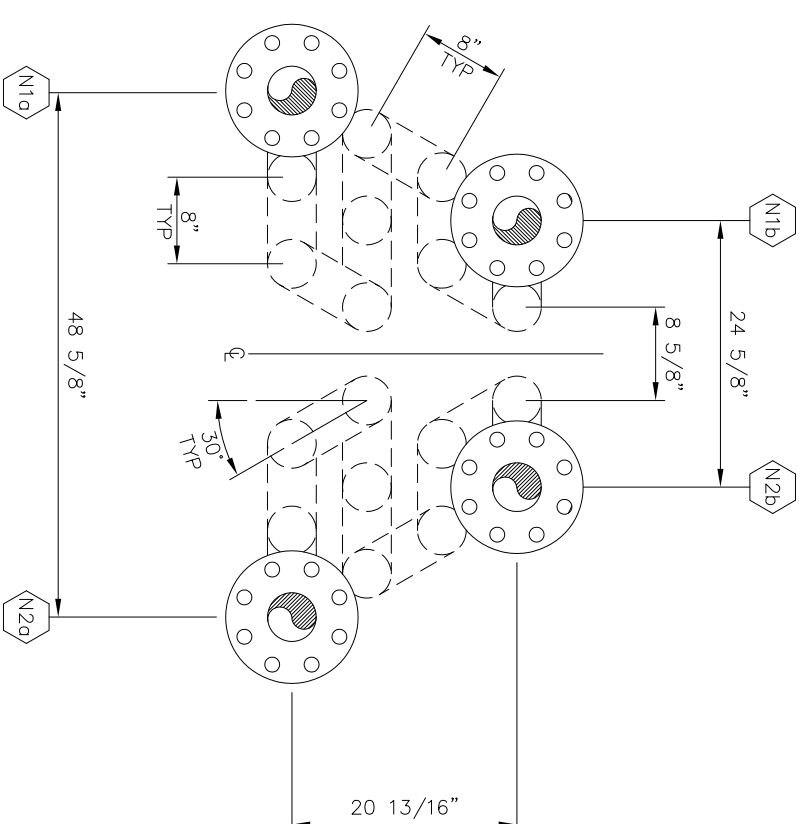


CONNECTION SCHEDULE

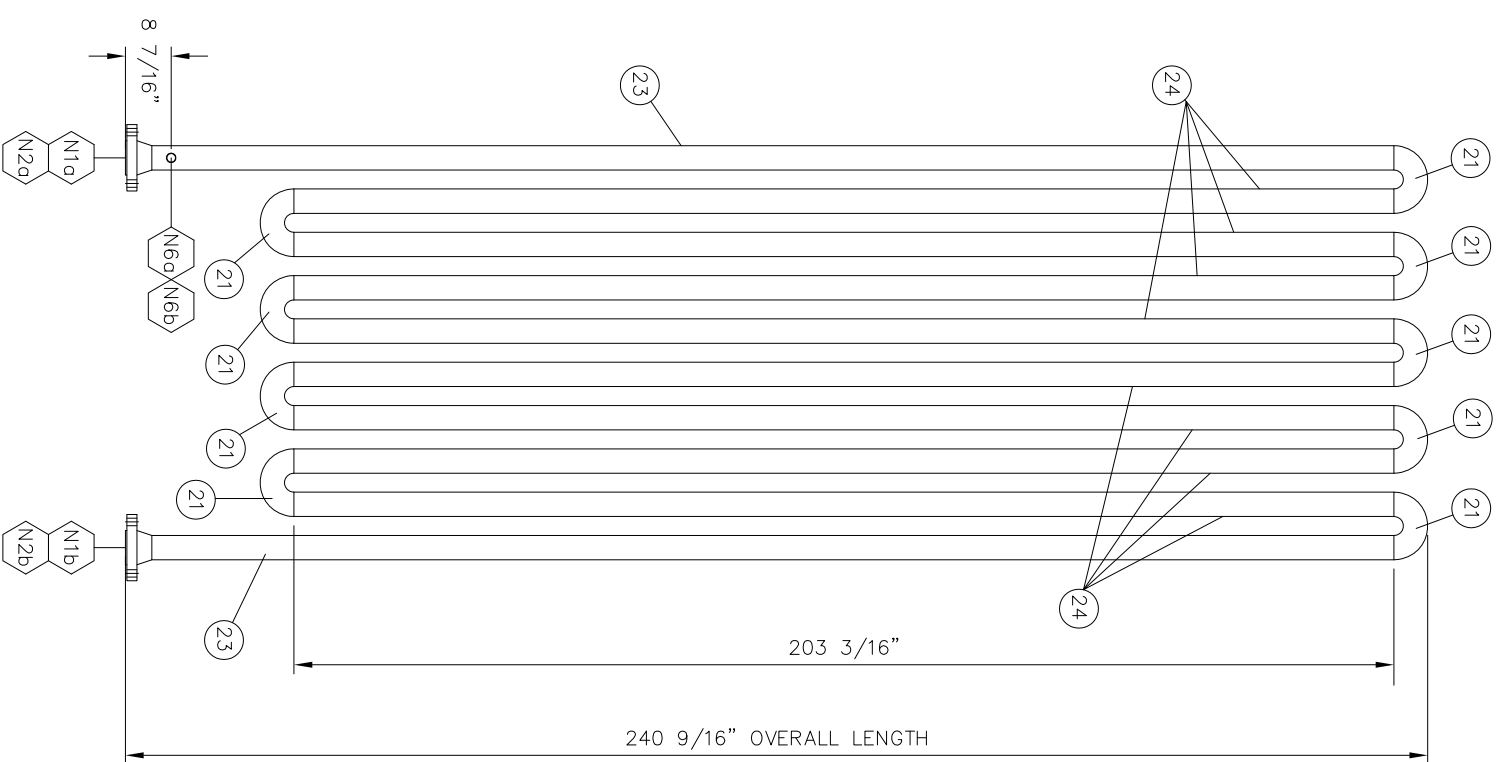
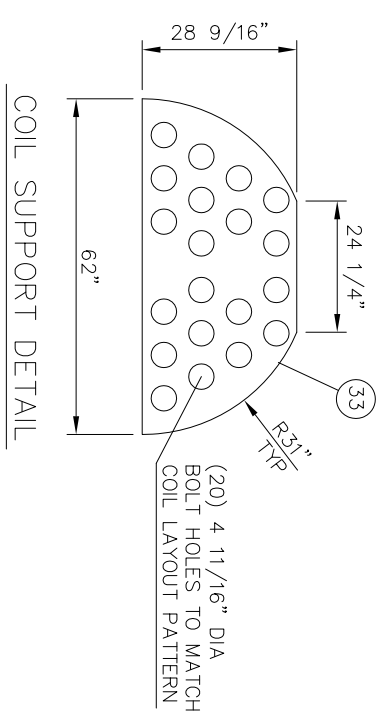
| MARK  | SIZE | SCH | CLASS  | TYPE  | SERVICE      | WELD | A    | B | C | MIN | D | MIN | ITEM NO'S   |
|-------|------|-----|--------|-------|--------------|------|------|---|---|-----|---|-----|-------------|
| N1a/b | 4"   | 160 | 1500   | RTJWN | PREHEAT COIL | 1, 2 | -    | - | - | -   | - | -   | 10,21,23,24 |
| N2a/b | 4"   | 160 | 1500   | RTJWN | RE-HEAT COIL | 1, 2 | -    | - | - | -   | - | -   | 10,21,23,24 |
| C6a/b | 1/2" | NPT | CL6000 | TOL   | TI           | 5    | 3/8" | - | - | -   | - | -   | 17          |

BILL OF MATERIALS

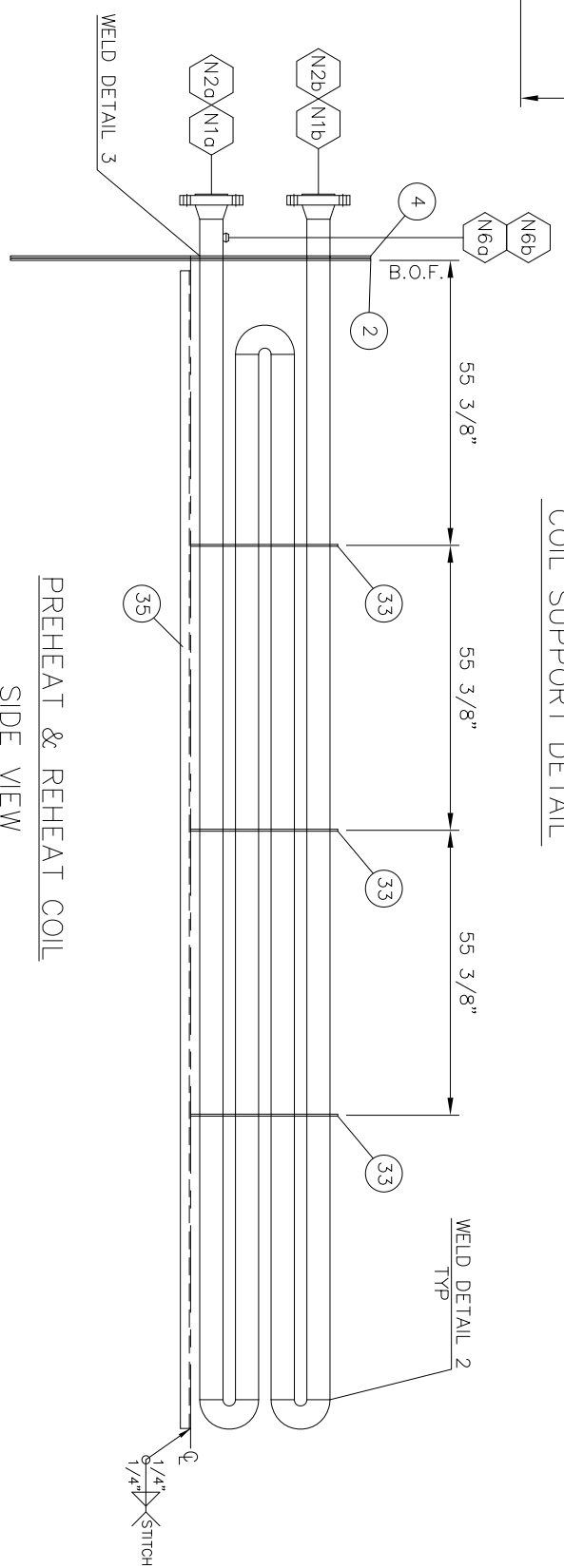
| ITEM | QTY | DESCRIPTION   | MATERIAL                   |
|------|-----|---|----------------------------|
| 2    | 2   | MATING FLANGE PLATE - 70" OD x 66" ID x 3/8" THK (PER DETAIL) | SA-36                      |
| 4    | 1   | BLIND FLANGE PLATE - 70" OD x 3/8" THK N1-N2(PER DEATAIL)     | SA-36                      |
| 10   | 4   | FLANGE - 4" CL1500 RTJWN c/w SCH.160 BORE                     | N1a/b,N2a/b<br>SA-350-LF2  |
| 17   | 2   | TOL - 3/4" NPT CL6000   | C6a/b<br>SA-105N           |
| 21   | 36  | RETURN BEND - 4" SCH.160 SR 180°                              | N1a/b,N2a/b<br>SA-420-WPL6 |
| 23   | 4   | PIPE - 4" SCH.160 (.531") x 229 7/16"                         | N1a/b,N2a/b<br>SA-333 GR.6 |
| 24   | 16  | PIPE - 4" SCH.160 (.531") x 203 3/16"                         | N1a/b,N2a/b<br>SA-333 GR.6 |
| 33   | 3   | PLATE - 3/8" THK x 28 3/16" x 62" WD                          | COIL SUPPORTS<br>SA-36     |



10 PASS PREHEAT & REHEAT  
HEATER COIL LAYOUT PATTERN



10 PASS PREHEAT & REHEAT  
HEATER COIL STRETCH OUT



DESIGN NOTES

DESIGN & FABRICATE TO: ASME B31.3, 2010 EDITION  
 DESIGN PRESSURE: 3212 PSI  
 MAXIMUM DESIGN METAL TEMPERATURE: 200° F  
 MINIMUM DESIGN METAL TEMPERATURE: -20° F  
 IMPACT TESTS: EXEMPT PER TABLE 323.2.2 - COLUMN A  
 RADIOGRAPHY: 100% OF TOTAL WELDS  
 POST WELD HEAT TREATMENT: 1150° F ± 50° F FOR 1 HOUR MIN.  
 HYDROSTATIC TEST TEMPERATURE: 4818 PSIG  
 CORROSION ALLOWANCE: (INTERNAL) 1/8"  
 CORROSION ALLOWANCE: (EXTERNAL) ATMOSPHERE  
 HEATING SURFACE: 223.82 FT2 (PER 10 PASS COIL)  
 PREHEAT: 50° F

PANAX OIL & GAS INC.

3730 - 69 AVENUE  
 EDMONTON, AB T6B 2V2  
 TELEPHONE: (780) 413-6656 FAX: (780) 468-5784

| REF DWG:    | BDD-400A REV.1 | CRN: | P9417.213 |
|-------------|----------------|------|-----------|
| DATE:       | 01-07-2011     |      |           |
| BDD NO.:    | --             |      |           |
| JOB NO.:    | --             |      |           |
| SCALE:      | NTS            |      |           |
| DRAWN BY:   | TC             |      |           |
| CHECKED BY: | BT             |      |           |
| APP BY:     |                |      |           |
| DWG NO.:    | SHEET 2 OF 4   |      |           |
| REV.:       | BDD-401        |      |           |

| NO. | DATE     | REVISION                    | BY | APP |
|-----|----------|-----------------------------|----|-----|
| B   | 01-12-11 | REVISED PER CLIENT MARK-UPS | TC | BT  |
| A   | 01-07-11 | ISSUED FOR APPROVAL         | TC | BT  |

10(X2) PASS HEATER COIL  
 SOUR SERVICE LINE HEATER

3212 PSIG AT -20 / 200° F

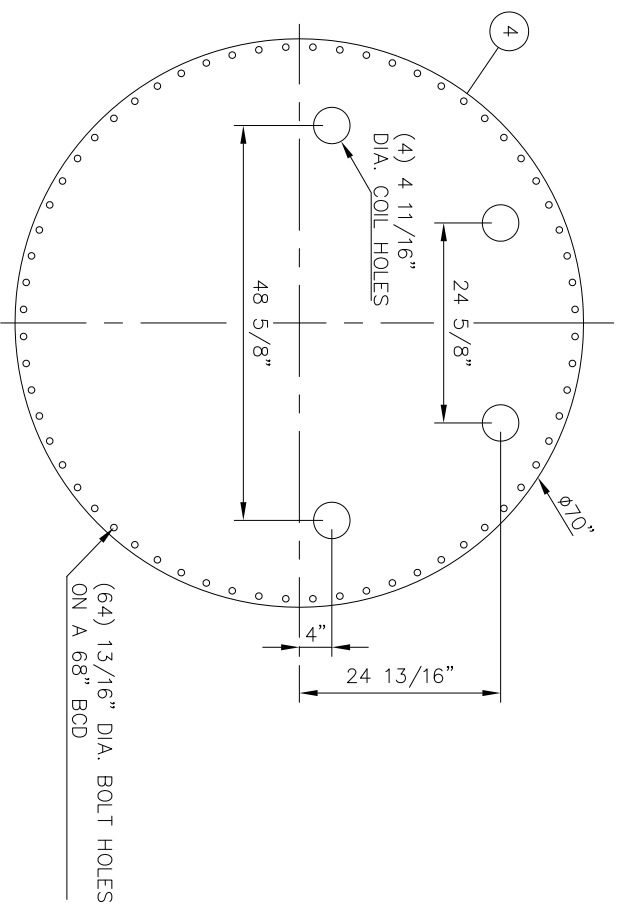
DWG NO.: SHEET 2 OF 4  
 BDD-401

REV. B

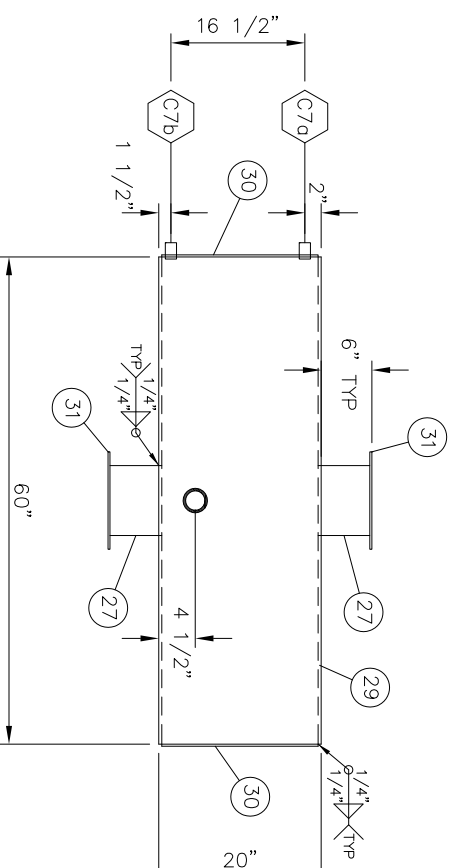


**BILL OF MATERIALS**

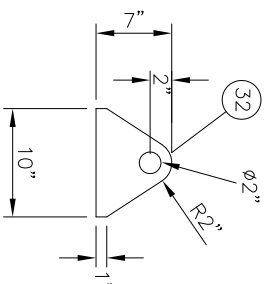
| ITEM | QTY | DESCRIPTION   | MATERIAL    |
|------|-----|---|-------------|
| 1    | 1   | SHELL PLATE - 66" OD x 1/4" THK x 20'-0" LG                   | SA-36       |
| 2    | 2   | MATING FLANGE PLATE - 70" OD x 66" ID x 3/8" THK (PER DETAIL) | SA-36       |
| 3    | 1   | BLIND FLANGE PLATE - 70" OD x 3/8" THK FT(PER DETAIL)         | SA-36       |
| 4    | 1   | BLIND FLANGE PLATE - 70" OD x 3/8" THK N1-N2(PER DETAIL)      | SA-36       |
| 5    | 2   | BASE PLATE - 3/8" THK x 58" x 12" WD                          | SA-36       |
| 6    | 4   | SADDLE SIDE PLATE - 1/4" THK x 36 7/8" x 12" WD               | SA-36       |
| 7    | 2   | SADDLE FACE PLATE - 1/4" THK x 36 7/8" x 58" WD TRIM TO SUIT  | SA-36       |
| 10   | 4   | FLANGE - 4" CL1500 RTJWN c/w SCH.160 BORE                     | SA-350-LF2  |
| 12   | 3   | CPLG - 1/2" NPT CL3000 FULL                                   | SA-105N     |
| 13   | 1   | CPLG - 3/4" NPT CL3000 FULL                                   | SA-105N     |
| 14   | 3   | CPLG - 1" NPT CL3000 FULL                                     | SA-105N     |
| 15   | 2   | CPLG - 2" NPT CL3000 FULL                                     | SA-105N     |
| 17   | 2   | TOL - 1/2" NPT CL6000   | SA-105N     |
| 20   | 2   | ELBOW - 1" SCH.40 LR 90 BW                                    | SA-234-WPB  |
| 21   | 36  | RETURN BEND - 4" SCH.160 SR 180°                              | SA-420-WPL6 |
| 23   | 4   | PIPE - 4" SCH.160 (.531") x 229 7/16"                         | SA-333 GR.6 |
| 24   | 16  | PIPE - 4" SCH.160 (.531") x 203 3/16"                         | SA-333 GR.6 |
| 26   | 1   | PIPE - 1" SCH.40 (.179") x 213" LG                            | SA-105N     |
| 27   | 2   | PIPE - 8" SCH.STD (.322") x 7 1/2" LG                         | SA-53-ERW   |
| 28   | 1   | PIPE - 8" SCH.STD (.322") x 6 1/2" LG                         | SA-53-ERW   |
| 29   | 1   | PIPE - 20" SCH.STD (.375") x 60" LG                           | SA-106B     |
| 30   | 2   | PLATE - 1/4" THK x 19 1/4" OD                                 | SA-36       |
| 31   | 3   | PLATE - 1/4" THK x 12" OD x 8 5/8" ID                         | SA-36       |
| 32   | 2   | PLATE - 3/8" THK x 7" x 10" WD                                | SA-36       |
| 33   | 3   | PLATE - 3/8" THK x 28 3/16" x 62" WD                          | SA-36       |
| 34   | 2   | ANGLE - 2" x 2" x 1/4" THK x 8" LG                            | 44W         |
| 35   | 2   | ANGLE - 2" x 2" x 1/4" THK x 225" LG                          | 44W         |
| 36   | 1   | PANAX OIL & GAS STANDARD NAMEPLATE & BRACKET ASSEMBLY         | 304SS/SA-36 |



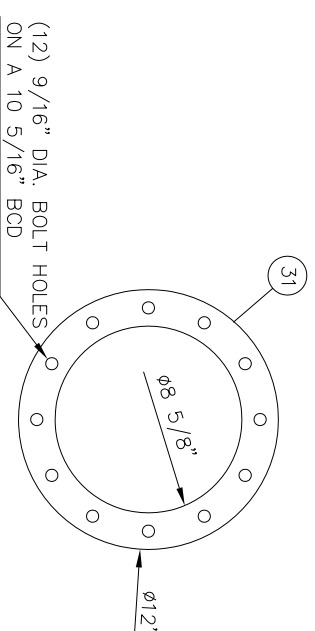
COIL (N1/N2) BLIND FLANGE DETAIL



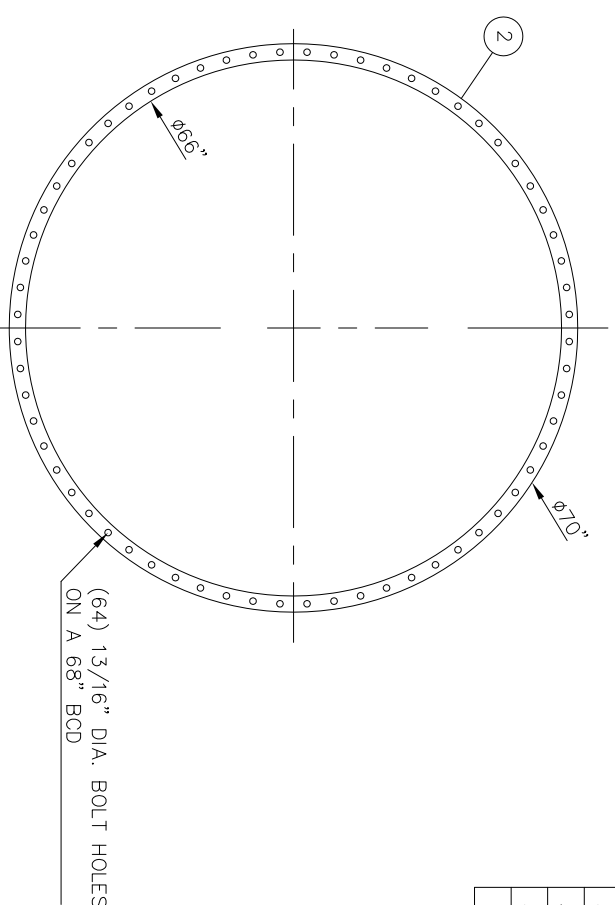
EXPANSION TANK DETAIL



LIFT LUG DETAIL



EXPANSION TANK MATING FLANGE DETAIL



MATING FLANGE DETAIL

| NO. | DATE     | REVISION                    | BY | APP |
|-----|----------|-----------------------------|----|-----|
| B   | 01-12-11 | REVISED PER CLIENT MARK-UPS | TC | BT  |
| A   | 01-07-11 | ISSUED FOR APPROVAL         | TC | BT  |

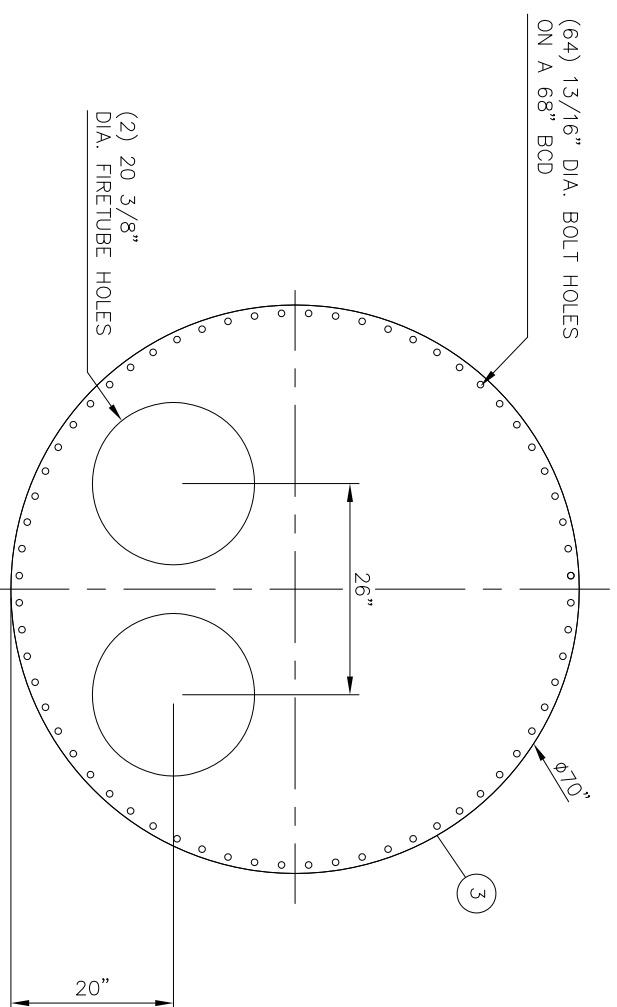
|   |                               |
|---|-------------------------------|
| <p align="center"><b>PANAX OIL &amp; GAS INC.</b></p> <p align="center">3730 - 69 AVENUE<br/>EDMONTON, AB T6B 2V2<br/>TELEPHONE: (780) 413-6656 FAX: (780) 468-5784</p> |                               |
| REF DWG:  | BDD-400A REV.1 CRN: P9417.213 |
| DATE:   | 01-07-2011                    |
| BDD NO.:  | --                            |
| JOB NO.:  | --                            |
| SCALE:  | 3212 PSIG AT -20 / 200° F     |
| DRAWN BY:   | TC                            |
| CHECKED BY:   | BT                            |
| APP BY:   | BT                            |

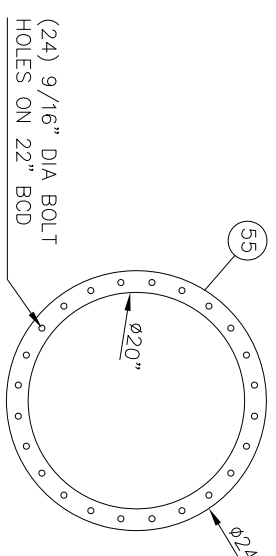
|                          |              |
|--------------------------|--------------|
| 2.0MM BTU/HR             | SHEET 3 OF 4 |
| SOUR SERVICE LINE HEATER | REV. B       |
| DWG NO.: BDD-401         |              |

**BILL OF MATERIALS**

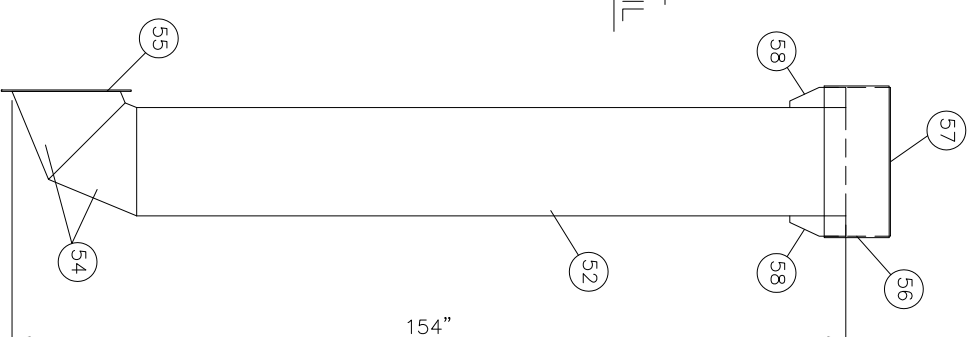
| ITEM | QTY | DESCRIPTION   | MATERIAL  |
|------|-----|---|-----------|
| 50   | 1   | PIPE - 20" SCH.20 (.375") x 226 1/8" LG                   | SA-53-ERW |
| 51   | 1   | PIPE - 20" SCH.20 (.375") x 203 1/8" LG                   | SA-53-ERW |
| 52   | 1   | PIPE - 20" SCH.20 (.375") x 132" LG                       | SA-53-ERW |
| 53   | 5   | PIPE - 20" SCH.20 (.375") x 20" x 14 3/16" WD             | SA-53-ERW |
| 54   | 2   | PIPE - 20" SCH.20 (.375") x 20" x 17 5/8" WD              | SA-53-ERW |
| 55   | 2   | PLATE - 1/4" THK x 24" OD x 20" ID FT/STACK MATING FLANGE | SA-36     |
| 56   | 1   | PLATE - 1/4" THK x 87 3/16" x 12" WD ROLL TO 28" OD       | SA-36     |
| 57   | 1   | PLATE - 1/4" THK x 27 1/2" OD STACK CAP                   | SA-36     |
| 58   | 4   | PLATE - 1/4" THK x 10 3/8" x 3 3/4" WD CAP SUPP.          | SA-36     |



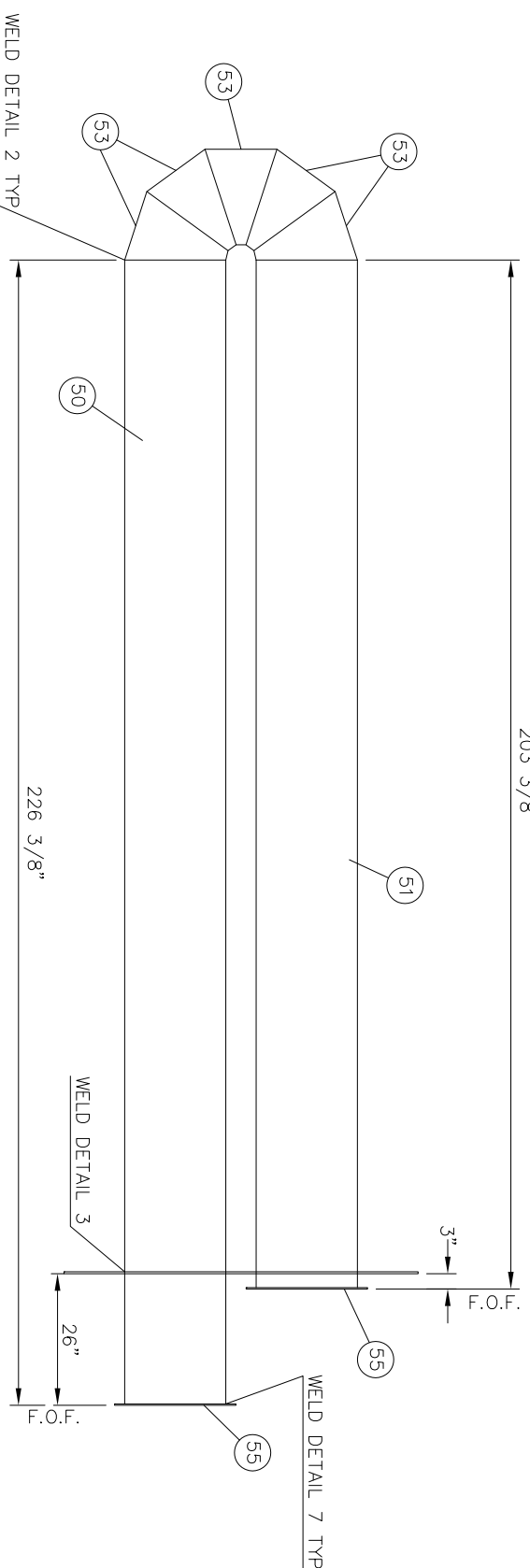
FIRETUBE BLIND FLANGE DETAIL



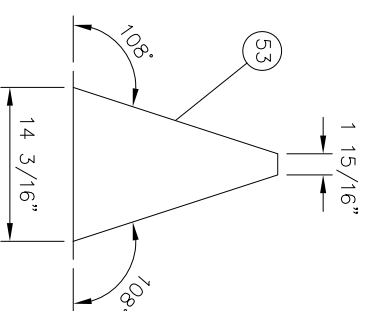
FIRETUBE & STACK MATING FLANGE DETAIL



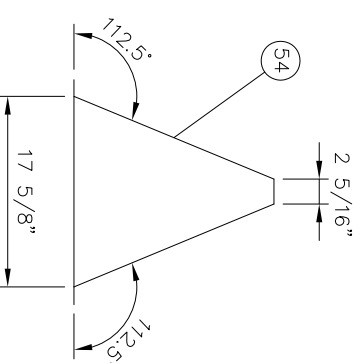
STACK DETAIL



FIRETUBE DETAIL



FIRETUBE MITRE DETAIL



STACK MITRE DETAIL

**DESIGN NOTE**  
 PWHT FIRETUBE @ 1150° F ± 50° F FOR 1 HOUR MIN.

| NO. | DATE     | REVISION                    | BY | APP |
|-----|----------|-----------------------------|----|-----|
| B   | 01-12-11 | REVISED PER CLIENT MARK-UPS | TC | BT  |
| A   | 01-07-11 | ISSUED FOR APPROVAL         | TC | BT  |

|                                 |                      |
|---------------------------------|----------------------|
| <b>PANAX OIL &amp; GAS INC.</b> |                      |
| 3730 - 69 AVENUE                | EDMONTON, AB T6B 2V2 |
| TELEPHONE: (780) 413-6656       | FAX: (780) 468-5784  |
| REF DWG: BDD-400A REV.1         | CRN: P9417.213       |
| DATE: 01-07-2011                |                      |
| BDD NO.: --                     |                      |
| JOB NO.: --                     |                      |
| SCALE: NTS                      |                      |
| DRAWN BY: TC                    |                      |
| CHECKED BY: BT                  |                      |
| APP BY:                         |                      |

|                         |                |
|-------------------------|----------------|
| REF DWG: BDD-400A REV.1 | CRN: P9417.213 |
| DATE: 01-07-2011        |                |
| BDD NO.: --             |                |
| JOB NO.: --             |                |
| SCALE: NTS              |                |
| DRAWN BY: TC            |                |
| CHECKED BY: BT          |                |
| APP BY:                 |                |

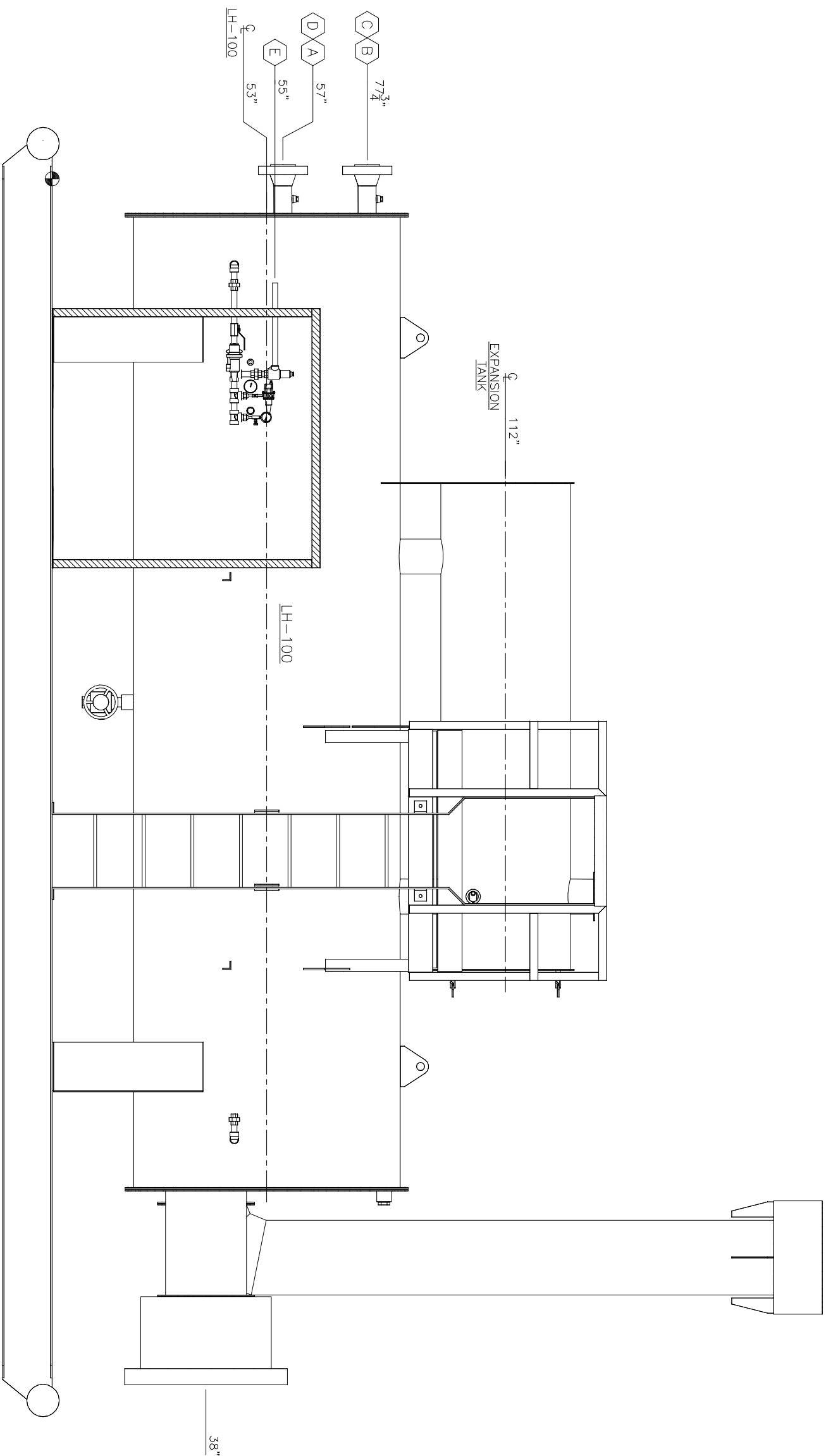
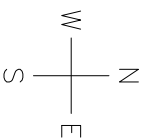
|                       |        |
|-----------------------|--------|
| DWG NO.: SHEET 4 OF 4 | REV. B |
| BDD-401               |        |

SOUR SERVICE LINE HEATER

20" FIRETUBE DETAILS

2.0MM BTU/HR





| TAG # | SIZE           | DESCRIPTION  | ELEVATION      | PROJECTION |
|-------|----------------|--------------|----------------|------------|
| A     | 4" 1500# RTJWN | PREHEAT COIL | 4'-9" FTOS     | 6" FSE     |
| B     | 4" 1500# RTJWN | PREHEAT COIL | 6'-5 1/4" FTOS | 6" FSE     |
| C     | 4" 1500# RTJWN | RE-HEAT COIL | 6'-5 1/4" FTOS | 6" FSE     |
| D     | 4" 1500# RTJWN | RE-HEAT COIL | 4'-9" FTOS     | 6" FSE     |
| E     | 1"             | PSY-100 VENT | 4'-7" FTOS     | -          |

**NOTES:**

1. ORDINATE DIMENSIONS ARE FROM DATUM
2. ELEVATION MEASUREMENTS ARE FROM TOP OF SKID (FTOS).  
- TO GET A BOTTOM OF SKID MEASUREMENT (FBOS)  
ADD 12 1/2" TO THE ELEVATIONS LISTED.
3. PROJECTION MEASUREMENTS ARE FROM SKID EDGE. (FSE)

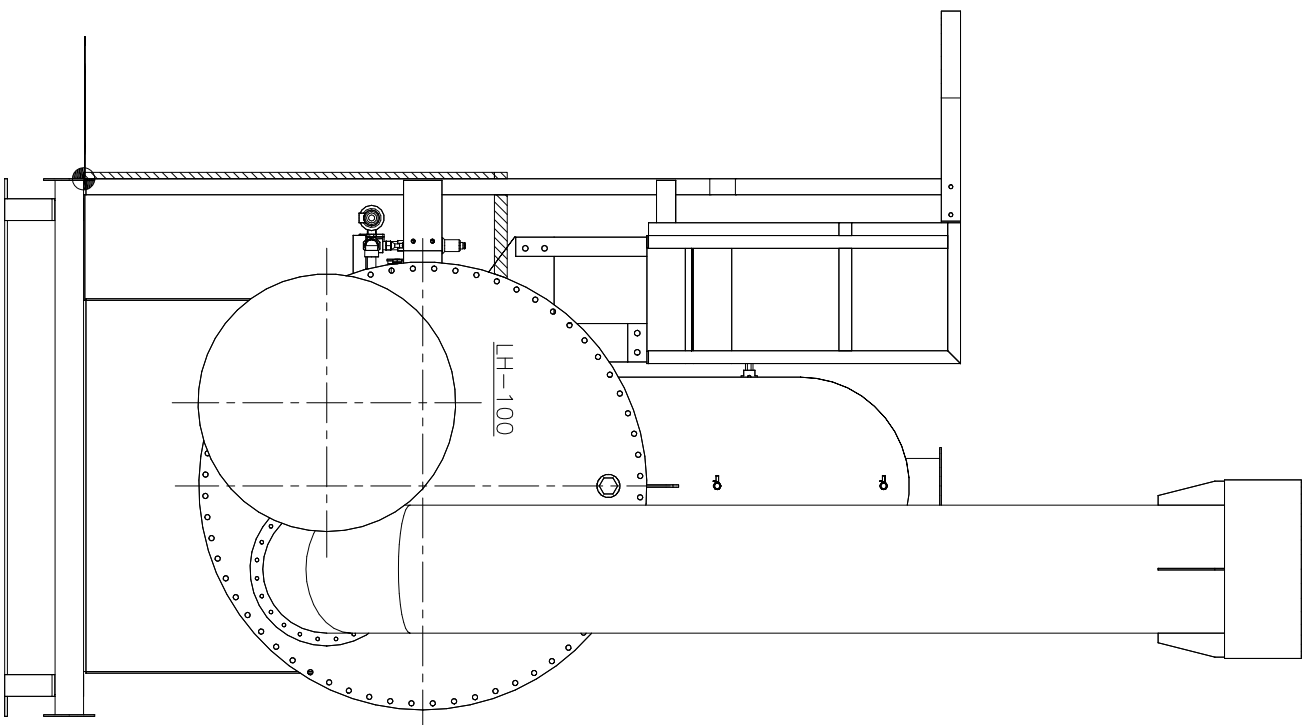
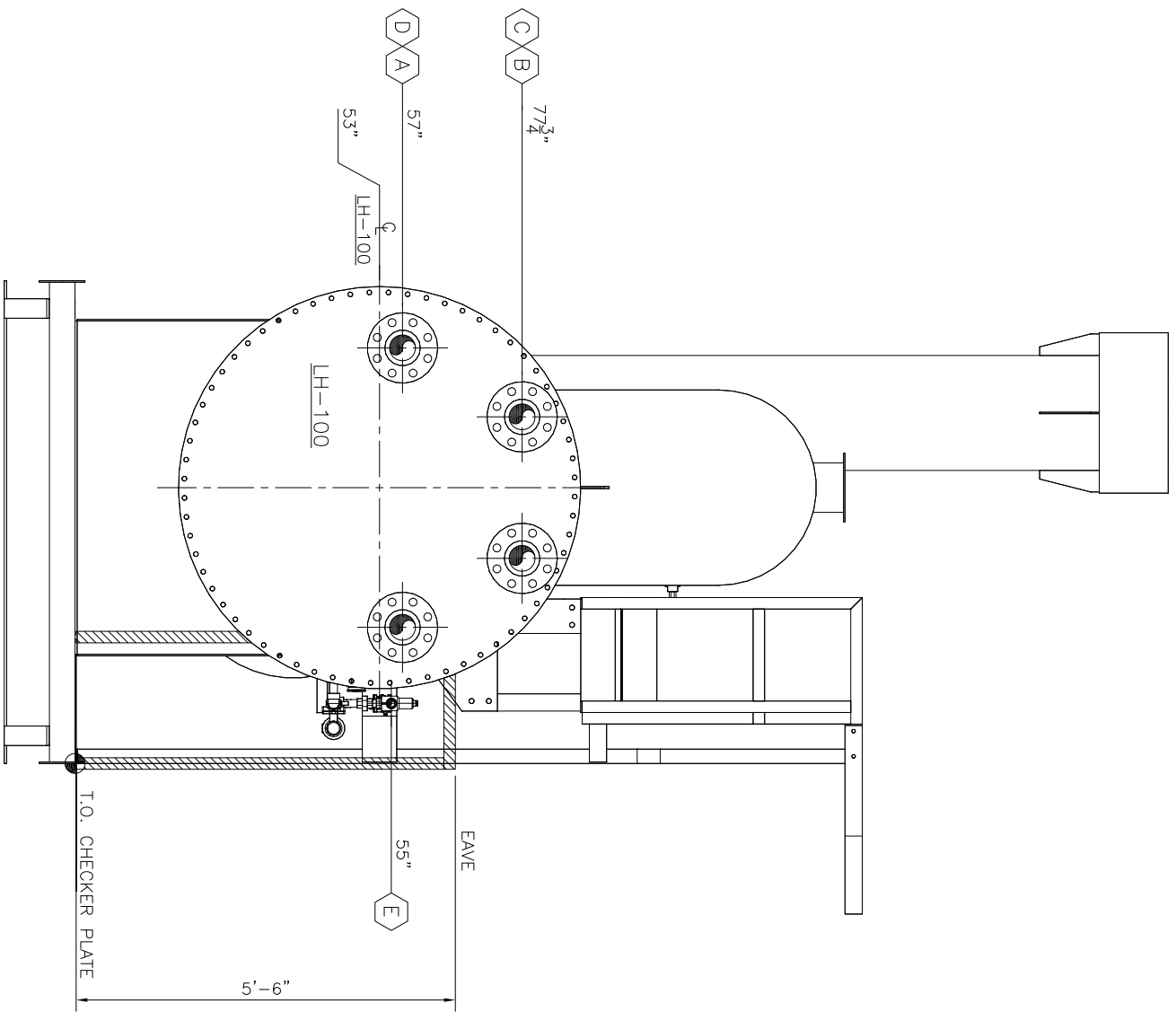
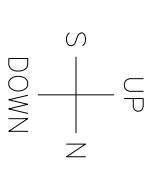
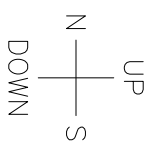
**SHIPPING DIMENSIONS:**

WIDTH: XX'-XX"  
LENGTH: XX'-XX"  
HEIGHT: XX'-XX"  
PACKAGE WEIGHT: lbs

| REV | ISSUED FOR APPROVAL                             | REVISION | BY  | APPR | d/m/y    |
|-----|---|----------|-----|------|----------|
| 1   | REVISED AS PER CHANGES TO THE LINEHEATER VESSEL |          | MEW |      | 17/03/11 |
| 0   | ISSUED FOR CONSTRUCTION                         |          | MEW |      | 17/01/11 |
| A   | ISSUED FOR APPROVAL                             |          | TY  |      | 11/01/11 |



| DATE        | 10/01/11 | CLIENT      | ARC PETROLEUM INC. c/o<br>XXL ENGINEERING LTD. |
|-------------|----------|-------------|--|
| DESIGNED BY | M.E.W.   | TITLE       | DAWSON LSD: 16-13-79-15 W6M                    |
| DRAWN BY    | TY       |             | LAYOUT - ELEVATION VIEW                        |
| CHECKED BY  |          |             | 2MM BTU/HR                                     |
| APPROVED BY |          |             | SOUR SERVICE LINEHEATER PACKAGE                |
| SCALE       | 1:30     | JOB #       | EV-11001                                       |
|             |          | SHEET NO.   | 2 OF 4   |
|             |          | REF. NO.    | LAYOUT   |
|             |          | DRAWING NO. | EV-11001-L-001                                 |
|             |          | DRAWING     | ELEVATION VIEW                                 |
|             |          | REV. NO.    | 1  |



| TAG # | SIZE           | DESCRIPTION  | ELEVATION      | PROJECTION |
|-------|----------------|--------------|----------------|------------|
| A     | 4" 1500# RTJWN | PREHEAT COIL | 4'-9" FTOS     | 6" FSE     |
| B     | 4" 1500# RTJWN | PREHEAT COIL | 6'-5 3/4" FTOS | 6" FSE     |
| C     | 4" 1500# RTJWN | RE-HEAT COIL | 6'-5 3/4" FTOS | 6" FSE     |
| D     | 4" 1500# RTJWN | RE-HEAT COIL | 4'-9" FTOS     | 6" FSE     |
| E     | 1"             | PSY-100 VENT | 4'-7" FTOS     | -          |

**NOTES:**

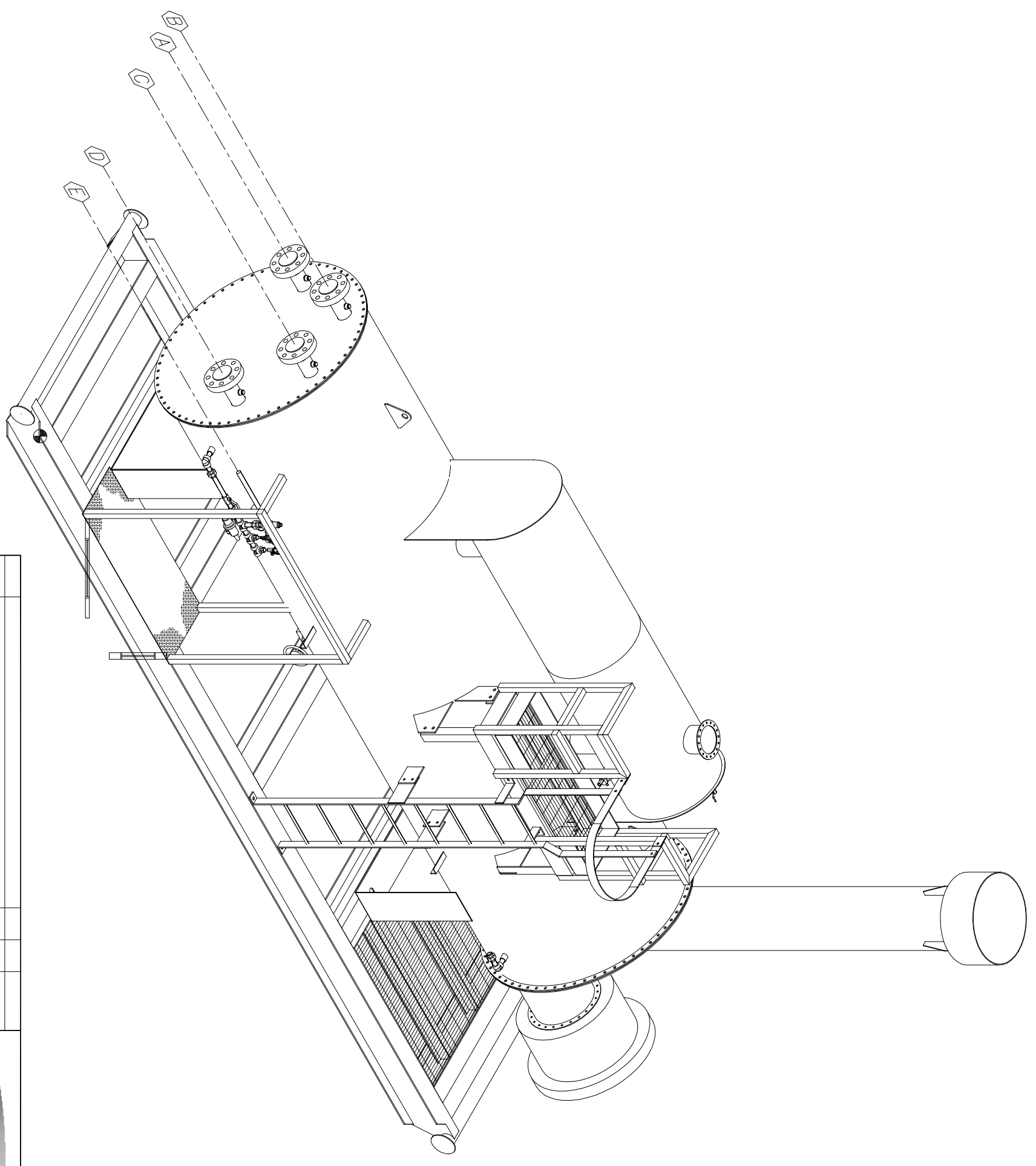
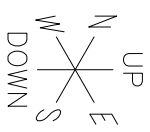
1. ORDINATE DIMENSIONS ARE FROM DATUM
2. ELEVATION MEASUREMENTS ARE FROM TOP OF SKID (FTOS) - TO GET A BOTTOM OF SKID MEASUREMENT (FBOS) ADD 12 3/4" TO THE ELEVATIONS LISTED.
3. PROJECTION MEASUREMENTS ARE FROM SKID EDGE. (FSE)

SHIPPING DIMENSIONS:  
 WIDTH: XX'-XX"  
 LENGTH: XX'-XX"  
 HEIGHT: XX'-XX"  
 PACKAGE WEIGHT: lbs

| REV | DESCRIPTION                                     | BY  | APPR | DATE     |
|-----|---|-----|------|----------|
| 1   | REVISED AS PER CHANGES TO THE LINEHEATER VESSEL | MEW |      | 17/03/11 |
| 0   | ISSUED FOR CONSTRUCTION                         | MEW |      | 17/01/11 |
| A   | ISSUED FOR APPROVAL                             | TY  |      | 11/01/11 |
| REV | REVISION  |     |      | d/m/y    |



| DATE                | CLIENT   |
|---------------------|--|
| 10/01/11            | ARC PETROLEUM INC. c/o<br>XXL ENGINEERING LTD. |
| DESIGNED BY: M.E.W. | DAWSON LSD: 16-13-79-15 W6M                    |
| DRAWN BY: TY        | TITLE: LAYOUT - SIDE VIEWS                     |
| CHECKED BY:         | 2MM BTU/HR<br>SOUR SERVICE LINEHEATER PACKAGE  |
| APPROVED BY:        | REF. NO.: LAYOUT                               |
| SCALE: 1:30         | DRAWING NO.: EV-11001-L-001                    |
| SHEET NO. 3 OF 4    | JOB #: EV-11001                                |
|                     | DRAWING: LAYOUT                                |
|                     | DRAWING: SIDE VIEWS                            |
|                     | REV. NO. 1                                     |



- NOTES:
1. ORDINATE DIMENSIONS ARE FROM DATUM .
  2. ELEVATION MEASUREMENTS ARE FROM TOP OF SKID (FTOS).  
- TO GET A BOTTOM OF SKID MEASUREMENT (FBOS)  
- ADD 12 $\frac{3}{8}$ " TO THE ELEVATIONS LISTED.
  3. PROJECTION MEASUREMENTS ARE FROM SKID EDGE. (FSE)

SHIPPING DIMENSIONS:  
 WIDTH: XX'-XX"  
 LENGTH: XX'-XX"  
 HEIGHT: XX'-XX"  
 PACKAGE WEIGHT: lbs

| TAG # | SIZE           | DESCRIPTION  | ELEVATION                 | PROJECTION |
|-------|----------------|--------------|---------------------------|------------|
| A     | 4" 1500# RTJWN | PREHEAT COIL | 4'-9" FTOS                | 6" FSE     |
| B     | 4" 1500# RTJWN | PREHEAT COIL | 6'-5 $\frac{1}{2}$ " FTOS | 6" FSE     |
| C     | 4" 1500# RTJWN | RE-HEAT COIL | 6'-5 $\frac{1}{2}$ " FTOS | 6" FSE     |
| D     | 4" 1500# RTJWN | RE-HEAT COIL | 4'-9" FTOS                | 6" FSE     |
| E     | 1"             | PSV-100 VENT | 4'-7" FTOS                | -          |

| REV | ISSUED FOR APPROVAL                             | REVISION | BY  | APPR | d/m/y    |
|-----|---|----------|-----|------|----------|
| 1   | REVISED AS PER CHANGES TO THE LINEHEATER VESSEL |          | MEW |      | 17/03/11 |
| 0   | ISSUED FOR CONSTRUCTION                         |          | MEW |      | 17/01/11 |
| A   | ISSUED FOR APPROVAL                             |          | TY  |      | 11/01/11 |

**Evolution**  
PRODUCTION EQUIPMENT LTD.

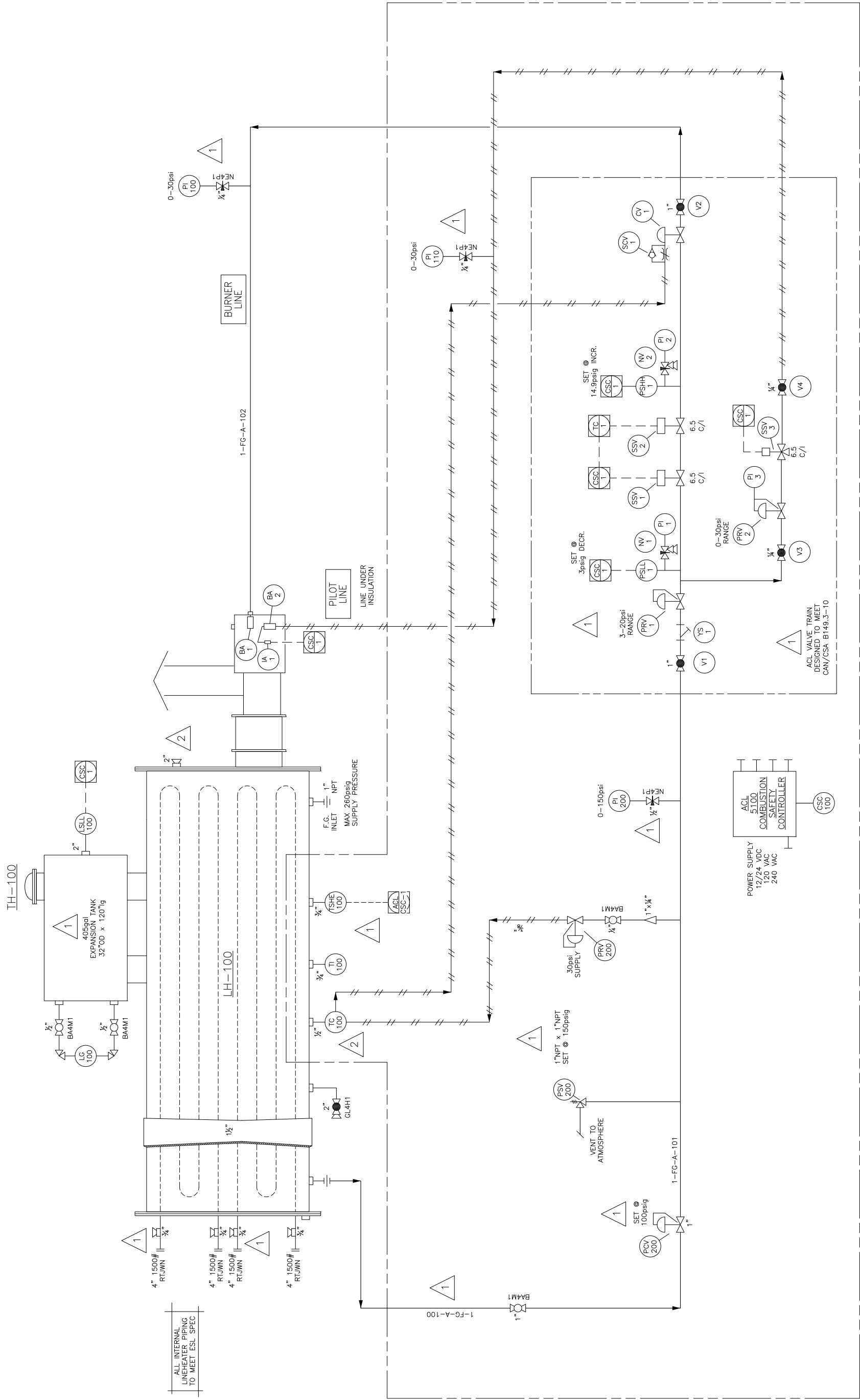
info@evolutionequipment.com  
www.evolutionequipment.com

|             |          |             |  |
|-------------|----------|-------------|--|
| DATE        | 10/01/11 | CLIENT      | ARC PETROLEUM INC. c/o<br>XXL ENGINEERING LTD. |
| DESIGNED BY | M.E.W.   | TITLE       | DAWSON LSD: 16-13-79-15 W6M                    |
| DRAWN BY    | TY       |             | LAYOUT - SW ISOMETRIC VIEW                     |
| CHECKED BY  |          |             | 2MM BTU/HR                                     |
| APPROVED BY |          |             | SOUR SERVICE LINEHEATER PACKAGE                |
| SCALE       | 1:35     | JOB #       | EV-11001                                       |
|             |          | SHEET NO.   | 4 OF 4   |
|             |          | REF. NO.    | LAYOUT   |
|             |          | DRAWING NO. | EV-11001-L-001                                 |
|             |          | DRAWING     | S.W. ISOMETRIC                                 |
|             |          | REV. NO.    | 1  |









ALL INTERNAL  
LINE HEATER PIPING  
TO MEET ESL SPEC

LINE HEATER BUILDING EDGE

| REV | REVISION                         | BY  | APPR | d/m/y    |
|-----|----------------------------------|-----|------|----------|
| 3   | ISSUED FOR P-ENG STAMP           | MEW |      | 17/03/11 |
| 2   | REVISED AS PER CUSTOMER MARK-UPS | MEW |      | 15/03/11 |
| 1   | REVISED AS PER CUSTOMER MARK-UPS | MEW |      | 14/03/11 |
| 0   | ISSUED FOR CONSTRUCTION          | MEW |      | 17/01/11 |
| A   | ISSUED FOR APPROVAL              | TY  |      | 11/01/11 |
| REV |                                  |     |      |          |



info@evolutionequipment.com  
www.evolutionequipment.com

| DATE        | CLIENT                 | CLIENT                          |
|-------------|------------------------|---------------------------------|
| 04/01/11    | ARC PETROLEUM INC. c/o | XXL ENGINEERING LTD.            |
| DESIGNED BY | M.E.W.                 | DAWSON LSD: 16-13-79-15 W6M     |
| DRAWN BY    | TY                     | TITLE                           |
| CHECKED BY  |                        | MECHANICAL FLOW DIAGRAM         |
| APPROVED BY |                        | 2MM BTU/HR                      |
| SCALE       | N.T.S.                 | SOUR SERVICE LINEHEATER PACKAGE |
| JOB #       | EV-11001               | REF. NO.:                       |
| SHEET NO.   | 1 OF 2                 | DRAWING NO.                     |
| REV. NO.    |                        | PNID                            |
|             |                        | EV-11001-F-001                  |

THIS DESIGN IS THE PROPERTY OF EVOLUTION PRODUCTION EQUIPMENT LTD. AND IS SUBJECT TO AUTHORIZED USE.

**BILL OF MATERIALS**

| TAG              | QTY | MAKE               | DESCRIPTION  |
|------------------|-----|--------------------|--|
| PSV-200          | 1   | TAYLOR             | PRESSURE SAFETY VALVE, MODEL 8200-1, 1" NPT INLET x 1" NPT OUTLET, STD. PRESSURE SERVICE TRIM, WCB BODY, SET@150psig, 1.25MM CAPACITY  |
| LSLL-100         | 1   | SOR                | MODEL 1510B-G2A-C-W9-ES-CS-CV, ELECTRIC LEVEL SWITCH, 2" NPT CONNECTION, STEM, 6" EXTENSION-ES-1500 (SS FLOAT) STD. SERVICE  |
| PCV-200          | 1   | FISHER             | 627 PRESSURE REGULATOR, 1" FNPT CONNECTIONS, WCB BODY, SST TRIM, NITRILE DISC, 75-150psig S.R., 1/4" ORIFICE, STD. SERVICE, 1500psig MAMP  |
| PRV-200          | 1   | FISHER             | 67CFR-362 INSTRUMENT GAS REGULATOR, 1/2" FNPT CONNECTIONS, STANDARD SERVICE TRIM, 0 TO 35psig SPRING RANGE, 250psig MAMP   |
| TC-100           | 1   | KIMRAY             | T 12T TEMPERATURE CONTROLLER, INDIRECT THROTTLING, CAT. No.: HAI, TEMP. RANGE -30F to 750F MAX   |
| TSHE-100         | 1   | TELEMATIC CONTROLS | CCS 6900TE-14 TEMPERATURE SWITCH, 1/2" MNPT CONNECTION, XPROOF, 300°F MAX PROBE TEMP., 80°F-205°F ON INCR, 60°F-198°F ON DECR. TEMP.   |
| TI-100           | 1   | WIKA               | TEMPERATURE INDICATOR, 1/2" BCM x 3" FACE x 6" STEM, 0 TO 250°F TEMP. RANGE, DUAL SCALE, c/w 1/2" FNPT x 3/4" MNPT x 6" U" DIMENSION LENGTH, 316SST THERMOWELL   |
| PI-100<br>PI-110 | 2   | WIKA               | PRESSURE GAUGE, LF, 1/4" NPT BTM x 2 1/2" FACE, 0-30psig RANGE, DUAL SCALE, STD. SERVICE   |
| PI-200           | 1   | WIKA               | PRESSURE GAUGE, LF, 1/2" NPT BTM x 4" FACE, 0-150psig RANGE, DUAL SCALE, MOUNTED ON FUEL GAS LINE, STD. SERVICE  |
| LG-100           | 1   | ZIMCO              | LEVEL GAUGE, QUES-TEC SIGHT GLASS, (1) ONE 1/2" NPT x 3/8" TUBE GLASS, ITC VALVE c/w INTERNAL BALL CHECK AND ACRYLIC SIGHT GLASS c/w GAUGE GLASS GAURDS  |
| CSC-100          | 1   | ACL                | 5100 COMBUSTION SAFETY CONTROLLER, 12/24 VDC c/w MOUNTING HARDWARE ACL M-50 PILOT MIXER AND NOZZLE, 10'-0" HIGH VOLTAGE GROUND WIRE, 6'-6" NONMETALLIC FLEX W/ CONNECTORS, IGNITOR FLAME/ROD c/w MOUNTING HARDWARE, SPEED CONTROL VALVE, 1/2" CONDUIT SEALS, FLAME CURRENT TEST LEADS, OPERATIONS MANUALS, NIOXXLE B10016 VENTURI BARREL, M100 MIXER |

| TAG      | QTY | MAKE   | DESCRIPTION   |
|----------|-----|--|---|
| CSC-1    | 1   | ACL-5100 or ACL-5500   | COMBUSTION SAFETY CONTROLLER CSA C22.2 No. 199-M89 APPROVED CLASS 1 DIV 2   |
| PSHH-1   | 1   | UNITED ELECTRIC, UE-12SHSN9B   | (3-50psi) HIGH PRESSURE SHUT DOWN SWITCH, ELECTRIC, DRY CONTACTS, SWITCH TO BE CERTIFIED FOR APPROPRIATE ELECTRICAL AREA CLASS. |
| PSLL-1   | 1   | UNITED ELECTRIC, UE-12SHSN9A   | (1-15psi) LOW PRESSURE SHUT DOWN SWITCH, ELECTRIC, DRY CONTACTS, SWITCH TO BE CERTIFIED FOR APPROPRIATE ELECTRICAL AREA CLASS.  |
| V-1/2    | 2   | 1" NPT MANUAL SHUTOFF VALVE,   | SOFT SEAT EMICO 720 SERIES UL/ULC OR EQUIVALENT   |
| V-3/4    | 2   | 3/4" NPT MANUAL SHUTOFF VALVE,   | SOFT SEAT EMICO 720 SERIES UL/ULC OR EQUIVALENT   |
| NV-1/2   | 2   | 1/2" MULTI PORT NEEDLE VALVE   |   |
| YS-1     | 1   | 1" Y-STRAINER  |   |
| PI-1/2/3 | 3   | WIKA 0-30 1/4" BM 2 1/2"   | LIQUID FILLED GAUGE OR EQUAL  |
| PRV-1    | 1   | 1" PRESSURE REGULATOR SELF OPERATED POSITIVE SHUTOFF FISHER 627 OR EQUAL 1/2" YELLOW ORIFICE                   |   |
| PRV-2    | 1   | 1/4" PILOT GAS REGULATOR FISHER 67CFR OR EQUAL   |   |
| SSV-1/2  | 2   | 1" NPT CERTIFIED GAS SAFETY SHUT OFF VALVE CSA 6.5-2005 C/I OR EQUIVALENT                                      |   |
| SSV-3    | 1   | CERTIFIED PILOT GAS SAFETY SHUT OFF VALVE CSA 6.5-2005 C/I OR EQUIVALENT                                       |   |
| BA-1     | 1   | ACL-HE-ON SERIES HIGH EFFICIENCY BURNER ASSY. DESIGN PRESSURE FROM 1 PSI TO 14 PSI. FIXED ORIFICE LIMITS BTU/H |   |
| BA-2     | 1   | ACL-M50 PILOT ASSEMBLY. FIXED ORIFICE LIMITS BTU TO UNDER 20,000.  |   |
| LSLL-1   | 1   | FIELD SELECTION OF SUITABLE LOW LEVEL SWITCH IS ALLOWED  |   |
| IA-1     | 1   | ACL-IGNITOR ASSEMBLY   |   |
| CV-1     | 1   | 1" FISHER 119 OR EQUIVALENT FOR SLOW OPENING OPERATION   |   |
| SCV-1    | 1   | SPEED CONTROL VALVE  |   |

| TAG                    | QTY | MAKE                              | DESCRIPTION  |
|------------------------|-----|-----------------------------------|--|
| TH-100                 | 1   | ENARDO 330-AL THIEF HATCH (ZIRCO) | SIZE: 8" THIEF HATCH<br>PRESSURE: 16.0 OZ (16 OZ GALVANIZED WIRE PRESSURE SPRING)<br>VACUUM: 0.4 OZ<br>BUNA PRESSURE AND VACUUM GASKETS<br>GALVANIZED STEEL PRESSURE AND VACUUM SPRINGS c/w BASE GASKET  |
| BL-100                 | 1   | FLAME ARRESTOR                    | MODEL: FAH32/18-20A2<br>TWO PIECE ALUMINUM CONSTRUCTION RATED FOR 2.0MM BTU/HR TO FIT A 20" FIRETUBE<br>c/w (1) 1/2" ELECTRICAL CONNECTION (1) ACL-M200 MIXER (1) ACL-B20016 VENTURI BARREL (1) ACL-ON20018 HIGH EFFICIENCY BURNER NOZZLE  |
| LH-100                 | 1   | 2MM BTU/HR LINEHEATER             | SIZE: 66" O.D. x 20'-0" S/S<br>c/w 10 PASSES OF 4" 1500# SCH.160 RTJWN PREHEAT COIL<br>DESIGN PRESSURE: 3212 psig<br>DESIGN TEMPERATURE: 200°F<br>MDMT: -20°F<br>PWHT: 1150F ± 50F FOR 1 HOUR MINIMUM<br>CORROSION ALLOWANCE: 1/8"<br>RADIOGRAPHY: 100%<br>c/w 405gal EXPANSION TANK (32" O.D. x 120"lg) |
| 2-PIECE BURNER HOUSING | 1   | BL-100                            | FLAME ARRESTOR   |

GENERAL NOTES:  
 1. QUANTITIES IN B.O.M. ARE FOR (1) UNIT.  
 2. ALL PIPING TO BE IN ACCORDANCE WITH THE LATEST EDITION OF ASME B31.3 PRESSURE PIPING CODE.  
 3. VESSEL TO BE FABRICATED TO THE LATEST EDITION OF ASME SECTION VIII, DIVISION 1 PRESSURE VESSELS.  
 4. SPEC 'ES' SOCKETWELD PIPING: 3/4"-1 1/2" = SCH XXS  
 2"-3" = SCH 160  
 4" = SCH 160min (CALC WT & MDMT)  
 6" = SCH XXSmin (CALC WT & MDMT)  
 SCRD/SW (ASTM A333 Gr.6 SMLS)  
 BW/RTJ (ASTM A333 Gr.6 SMLS)  
 4" = SCH 160min BW/RTJ (ASTM A333 Gr.6 SMLS)  
 6" = SCH XXSmin BW/RTJ (ASTM A333 Gr.6 SMLS)  
 5. ALL FORGED STEEL FITTINGS TO BE: SA-105N, 3000# (min) RATING.  
 FUEL GAS COIL TO BE: SA-105N, 3000# (min) RATING.  
 ALL WELDED FITTINGS TO BE: SA-234-WPB NORMALIZED  
 6. SPEC 'ESL' TUBING: 1/4"-3/8" = 0.035" (min) ASTM A269 TP316/316L SMLS, FULLY ANNEALED  
 1/2" = 0.049" (min) ASTM A269 TP316/316L SMLS, FULLY ANNEALED  
 ALL TUBING FITTINGS: ASTM A182 F316/316L SWAGELOK  
 SPEC 'A' THREADED PIPING: 1/2"-2" = SCH 60  
 2"-10" = SCH 40  
 12" = STD  
 8. ALL FORGED STEEL FITTINGS TO BE: SA-105N, 3000# (min) RATING (SPEC 'A').  
 9. PAINTING SPEC:  
 EXTERNAL SURFACE PREPARATION: SSPO-SP-6 (COMMERCIAL SAND BLAST) - (PIPING, HEATER SKID, BODY & STACK)  
 EXTERNAL PRIMER: ONE (1) SHOP COAT OF COVERDALE FAST DRY PRIMER 5 mils  
 VESSEL EXTERNAL FINISH PAINT: TWO (2) SHOP COATS OF COVERDALE GREY ENAMEL (HIGH HEAT STACK & L.H. BODY SKID FLOOR/STRUCTURAL STEEL)  
 PIPING EXTERNAL FINISH: TWO (2) SHOP COATS OF COVERDALE BLACK ENAMEL  
 INTERNAL SURFACE PREPARATION: NA  
 INTERNAL COATING OF VESSEL: NA  
 PROTECT ALL OPENINGS FOR SHIPMENT.  
 11. BOLTING TO BE SA-193-B7M STUDS w/ SA-194-2HM NUTS c/w 316SS FLEXITALLIC GASKET.  
 12. BUILDING SIZE: 5'-4" LG x 2'-0" WIDE.  
 BUILDING TYPE: FOAM PANEL, BOX STYLE/SIDE MOUNTED ENCLOSURE  
 ROOF TYPE: SHED  
 WALL HEIGHTS: 5'-6" EAVE  
 EXTERIOR: 22 GAUGE GALVALUME PRE-PAINTED SURF WHITE (QC 8316)  
 INTERIOR: 22 GAUGE GALVALUME PRE-PAINTED WHITE  
 DOORS & TRIM PRE-PAINTED ROYAL BLUE (QC 8790)  
 DOORS: ONE (1) 2'-6"x5'-4" DOUBLE DOOR WITH PANIC HARDWARE, CHECK CHAIN, WHITECOMB DOOR LATCH WEATHER STRIP, SPRING LOADED BARREL BOLT.  
 VENTILATION: ONE (1) 4" ROUND VENT.  
 13. PACKAGE IS HYDRO TESTED @ 1.5 TIMES MAMP FOR ONE (1) HOUR AT ROOM TEMPERATURE.  
 14. VESSEL SHELL COVERED WITH 1 1/2" MINERAL WOOL HOT INSULATION, 0.20 STUCCO EMBOSSED ALUMINUM COVERING WITH 'STEEL BANDING (HEADS NOT INCLUDED)  
 15. ALL INSTRUMENTS TO BE VENTED TO ATMOSPHERE.  
 16. ALL PIPE, VALVES AND FITTINGS IN SOUR PROCESS LINES, EXCEPT INSTRUMENT AIR, TO BE NACE/ISO, LATEST EDITION ACCEPTABLE.  
 17. ALL PIPING TO MEET ARC RESOURCES SPEC 'ES' AND 'A' PIPING SPECIFICATIONS.  
 18. RUN INSTRUMENT TUBING UNDER LINE HEATER INSULATION WHERE POSSIBLE.  
 19. ELECTRICAL INSTALLED BY 3RD PARTY CONTRACTOR.  
 20. 5-PIECE MITRE FIRETUBE TO BE STRESS RELIEVED  
 21. ACL BURNER TO BE PRE-WIRED  
 22. ENGINEER STAMPED DRAWINGS ON FUEL TRAIN

**VALVE TRAIN BOM (by OTHERS)**

| TAG      | QTY | DESCRIPTION  |
|----------|-----|--|
| CSC-1    | 1   | ACL-5100 or ACL-5500 COMBUSTION SAFETY CONTROLLER CSA C22.2 No. 199-M89 APPROVED CLASS 1 DIV 2   |
| PSHH-1   | 1   | UNITED ELECTRIC, UE-12SHSN9B (3-50psi) HIGH PRESSURE SHUT DOWN SWITCH, ELECTRIC, DRY CONTACTS, SWITCH TO BE CERTIFIED FOR APPROPRIATE ELECTRICAL AREA CLASS. |
| PSLL-1   | 1   | UNITED ELECTRIC, UE-12SHSN9A (1-15psi) LOW PRESSURE SHUT DOWN SWITCH, ELECTRIC, DRY CONTACTS, SWITCH TO BE CERTIFIED FOR APPROPRIATE ELECTRICAL AREA CLASS.  |
| V-1/2    | 2   | 1" NPT MANUAL SHUTOFF VALVE, SOFT SEAT EMICO 720 SERIES UL/ULC OR EQUIVALENT   |
| V-3/4    | 2   | 3/4" NPT MANUAL SHUTOFF VALVE, SOFT SEAT EMICO 720 SERIES UL/ULC OR EQUIVALENT   |
| NV-1/2   | 2   | 1/2" MULTI PORT NEEDLE VALVE   |
| YS-1     | 1   | 1" Y-STRAINER  |
| PI-1/2/3 | 3   | WIKA 0-30 1/4" BM 2 1/2"   |
| PRV-1    | 1   | 1" PRESSURE REGULATOR SELF OPERATED POSITIVE SHUTOFF FISHER 627 OR EQUAL 1/2" YELLOW ORIFICE   |
| PRV-2    | 1   | 1/4" PILOT GAS REGULATOR FISHER 67CFR OR EQUAL   |
| SSV-1/2  | 2   | 1" NPT CERTIFIED GAS SAFETY SHUT OFF VALVE CSA 6.5-2005 C/I OR EQUIVALENT  |
| SSV-3    | 1   | CERTIFIED PILOT GAS SAFETY SHUT OFF VALVE CSA 6.5-2005 C/I OR EQUIVALENT   |
| BA-1     | 1   | ACL-HE-ON SERIES HIGH EFFICIENCY BURNER ASSY. DESIGN PRESSURE FROM 1 PSI TO 14 PSI. FIXED ORIFICE LIMITS BTU/H   |
| BA-2     | 1   | ACL-M50 PILOT ASSEMBLY. FIXED ORIFICE LIMITS BTU TO UNDER 20,000.  |
| LSLL-1   | 1   | FIELD SELECTION OF SUITABLE LOW LEVEL SWITCH IS ALLOWED  |
| IA-1     | 1   | ACL-IGNITOR ASSEMBLY   |
| CV-1     | 1   | 1" FISHER 119 OR EQUIVALENT FOR SLOW OPENING OPERATION   |
| SCV-1    | 1   | SPEED CONTROL VALVE  |

| TAG      | QTY | DESCRIPTION  |
|----------|-----|--|
| 17/03/11 | MEW | ISSUED FOR P-ENG STAMP                                 |
| 15/03/11 | MEW | ADDED 'ESL' SPEC FOR HEATER COILS, & CUSTOMER MARK-UPS |
| 14/03/11 | MEW | REVISED AS PER CUSTOMER MARK-UPS                       |
| 17/01/11 | MEW | ISSUED FOR CONSTRUCTION                                |
| 11/01/11 | TY  | ISSUED FOR APPROVAL                                    |
| REV      | BY  | REVISION   |

| VALVE NUMBER | QTY. | MANUFACTURER | DESCRIPTION                           |
|--------------|------|--------------|---------------------------------------|
| 1"BA4M1      | 1    | WKM          | 1" NPT WOG 3000# REG. PORT BALL VALVE |
| 1/2"BA4M1    | 2    | WKM          | 1/2" NPT WOG 3000# R.P. BALL VALVE    |
| 1/4"BA4M1    | 1    | WKM          | 1/4" NPT WOG 3000# R.P. BALL VALVE    |
| 1/4"NE4P1    | 1    | CENTURY      | 1/2" NPT 6000# C.S. FxF NEEDLE VALVE  |
| 1/4"NE4P1    | 3    | CENTURY      | 1/4" NPT 6000# C.S. FxF NEEDLE VALVE  |
| 2"GL4H1      | 1    | VELAN        | 2" CL. 800# GLOBE VALVE               |

VALVE LEGEND  
 VALVE SIZE: 2" BA 1 D 1S  
 VALVE TYPE: BALL(RP)=BA  
 END CONNECTION: BALL(RP)=BA  
 NEEDLE=NE  
 GLOBE=GB  
 Y STRAINER=Y  
 FULL BODY CHECK=C  
 SOCKETWELDED=5  
 SW/SCR'D=6  
 TUBING=7  
 THREADED/SOCKET WELDED CLASS:  
 CLASS 1500=H  
 CLASS 1500=J  
 CLASS 2500=K  
 VALVE LEGEND  
 SWEET PROCESS=1  
 NORMAL TEMP, SOUR PROCESS=1S  
 LOW TEMP, SWEET PROCESS = 2  
 LOW TEMP, SOUR PROCESS = 2S  
 ANSL CLASS  
 1500# =A  
 3000# =B  
 4000# =C  
 6000# =D  
 9000# =E  
 15000# =F  
 25000# =G  
 WOG=WORKING PRESSURE  
 WOG=L  
 WOG=M  
 WOG=N  
 WOG=P  
 WOG=Q  
 TUBING RATING=R  
 250 WOG=S

**Evolution**  
 PRODUCTION EQUIPMENT LTD.  
 info@evolutionequipment.com  
 www.evolutionequipment.com

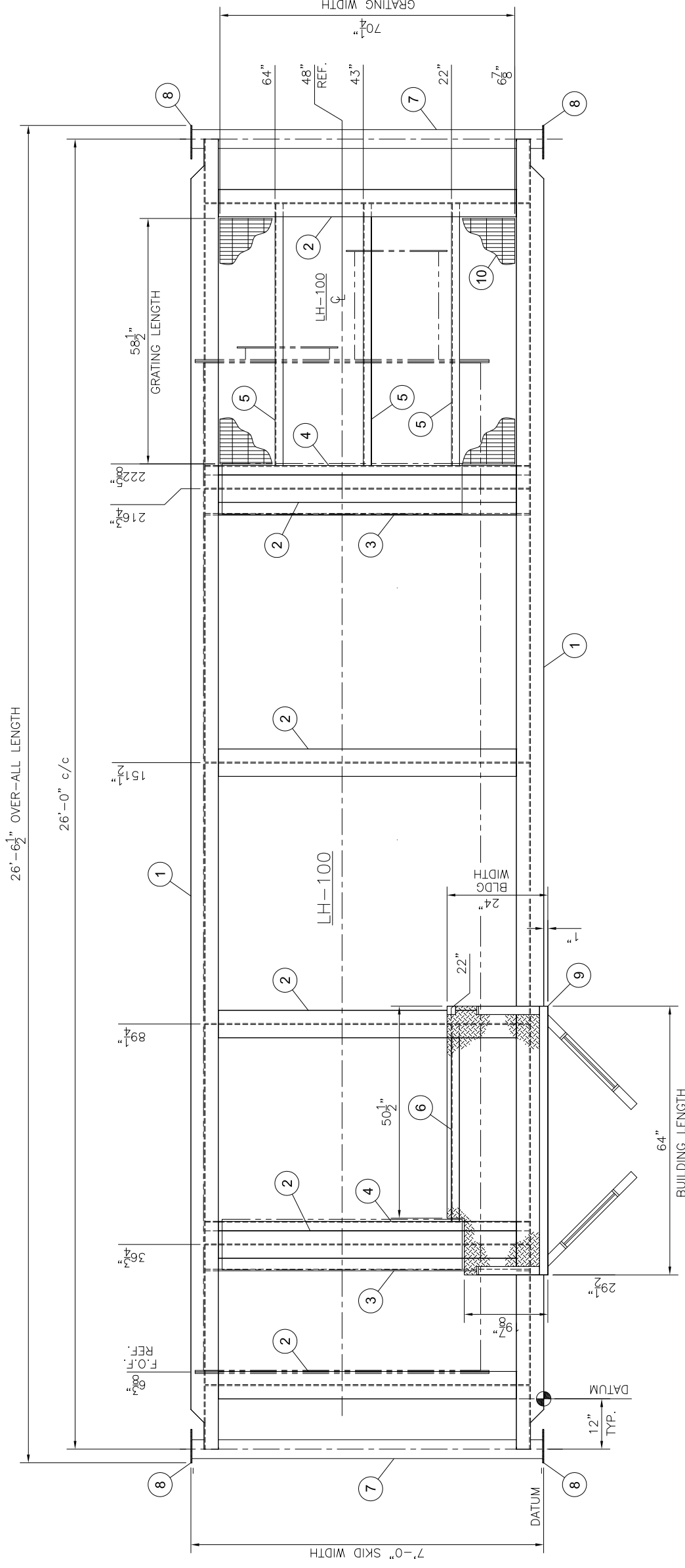
DATE: 04/01/11  
 DESIGNED BY: M.E.W.  
 DRAWN BY: TY  
 CHECKED BY:  
 APPROVED BY:  
 SCALE: N.T.S.  
 CLIENT: ARC PETROLEUM INC. c/o  
 XXL ENGINEERING LTD.  
 DAWSON LSD: 16-13-79-15 W6M  
 TITLE: BILL OF MATERIALS - FLOW DIAGRAM  
 2MM BTU/HR  
 SOUR SERVICE LINEHEATER PACKAGE  
 JOB #: EV-11001  
 SHEET NO.: 2 OF 2  
 DRAWING NO.: EV-11001-F-001  
 REV. NO.: 3

| VALVE NUMBER | QTY. | MANUFACTURER | DESCRIPTION                           |
|--------------|------|--------------|---------------------------------------|
| 1"BA4M1      | 1    | WKM          | 1" NPT WOG 3000# REG. PORT BALL VALVE |
| 1/2"BA4M1    | 2    | WKM          | 1/2" NPT WOG 3000# R.P. BALL VALVE    |
| 1/4"BA4M1    | 1    | WKM          | 1/4" NPT WOG 3000# R.P. BALL VALVE    |
| 1/4"NE4P1    | 1    | CENTURY      | 1/2" NPT 6000# C.S. FxF NEEDLE VALVE  |
| 1/4"NE4P1    | 3    | CENTURY      | 1/4" NPT 6000# C.S. FxF NEEDLE VALVE  |
| 2"GL4H1      | 1    | VELAN        | 2" CL. 800# GLOBE VALVE               |

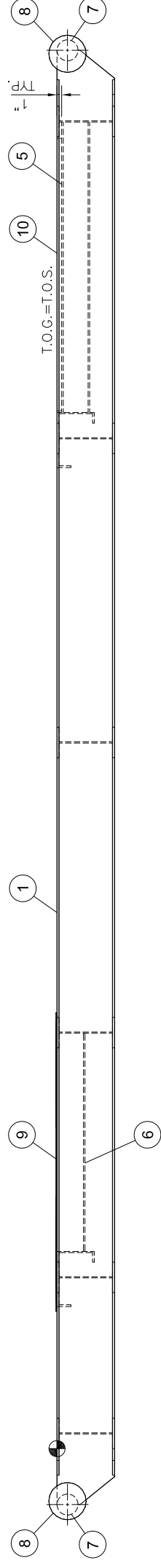
THIS DESIGN IS THE PROPERTY OF EVOLUTION PRODUCTION EQUIPMENT LTD. AND IS SUBJECT TO AUTHORIZED USE

**BILL OF MATERIALS**

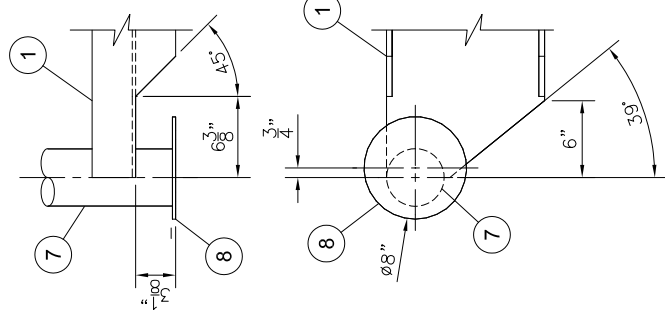
| MARK | QTY.  | DESCRIPTION                       | LENGTH                  |
|------|-------|-----------------------------------|-------------------------|
| 1    | 2     | W12 x 30#                         | 26'-0" (312")           |
| 2    | 6     | W12 x 30#                         | 6'-5 1/4" (77 1/4")     |
| 3    | 2     | ANGLE, 3"x3"x3/8"                 | 6'-5 1/4" (77 1/4")     |
| 4    | 2     | C8 x 11.5#                        | 6'-5 1/4" (77 1/4")     |
| 5    | 3     | C6 x 8.2#                         | 5'-2 3/4" (62 3/4")     |
| 6    | 1     | C6 x 8.2#                         | 3'-10 1/8" (46 1/8")    |
| 7    | 2     | PIPE, 4" SCH.80 SMLS PBE          | 6'-11 1/2" (83 1/2")    |
| 8    | 4     | PLATE, 1/4" THK x 8"φ             |                         |
| 9    | SQ.FT | CHKR PLATE, 3/16" THK x 24" x 64" | 10.67                   |
| 10   | SQ.FT | SERRATED GRATING, 1" THK x 3/16"  | 58 1/2" LG x 70 1/4" WD |
|      |       |                                   | WEIGHT:                 |
|      |       |                                   | 3900 lbs.               |



PLAN  
LADDER & PLATFORM NOT SHOWN FOR CLARITY



ELEVATION



ROLL END DETAIL  
1 : 15  
(4) REQ'D

- NOTES:
- 1) ALL SHARP EDGES MUST BE DEBURRED AND/OR ROUNDED.
  - 2) DIMENSIONS MAY VARY ±1/8".
  - 3) ALL STEEL SPECIFICATION MINIMUM SA-36 / 44W.
  - 4) ORDINATE DIMENSIONS ARE FROM DATUM

| REV | DESCRIPTION             | BY  | DATE     |
|-----|-------------------------|-----|----------|
| 1   | CORRECTED CUSTOMER NAME | MEW | 18/03/11 |
| 0   | ISSUED FOR CONSTRUCTION | MEW | 17/01/11 |
| A   | ISSUED FOR APPROVAL     | TY  | 10/01/11 |

| DATE     | DESIGNED BY | DRAWN BY | CHECKED BY | APPROVED BY | SCALE |
|----------|-------------|----------|------------|-------------|-------|
| 10/01/11 | TY          | TY       | TY         | TY          | 1:30  |

| CLIENT  | TITLE  | JOB #    | REF. NO. | DRAWING NO.    | REV. NO. |
|---|--|----------|----------|----------------|----------|
| ARC PETROLEUM INC. c/o<br>XXL ENGINEERING LTD.<br>DAWSON LSD: 16-13-79-15 W6M | STRUCTURAL STEEL LAYOUT<br>2MM BTU/HR<br>SOUR SERVICE LINEHEATER PACKAGE | EV-11001 | SKID     | EV-11001-S-001 | 1        |

| DATE     | BY | REVISION |
|----------|----|----------|
| 10/01/11 | TY | 1 OF 1   |



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