

PLOT 08 May, 2015 - 10:50am - sjohnsen THE INFORMATION CONTAINED HEREIN IS THE CONFIDENTIAL PROPERTY OF ENERFLEX, LTD. AND IS NOT FOR PUBLICATION, AND NO PART THEREOF SHALL BE COPIED OR COMMUNICATED TO A THIRD PARTY WITHOUT AUTHORIZATION FROM ENERFLEX, LTD.

**PROJECT DESCRIPTION**

ONE (1) DRU OFF-GAS COMPRESSOR PACKAGE  
 FOR: MEG ENERGY  
 LOCATION NAME: HI-Q FIELD DEMO PILOT, BRUDERHEIM, AB  
 LSD: SE 1/4-34-055-20 W4M

**FABRICATED BY:**

ENERFLEX LTD.  
 CALGARY, ALBERTA, CANADA

**TANK CAPACITIES**

GLYCOL (CLOW) EXPANSION TANK: 20 US GALLONS  
 GLYCOL STORAGE TANK: 260 US GALLONS  
 WASTE OIL STORAGE TANK: 260 US GALLONS

**POWER REQUIREMENTS**

COMPRESSOR MOTOR (5KM-1401) VOL: 4000 VAC/3PH/60HZ 700 HP  
 SUCTION FILTER DRAIN PUMP MOTOR (5PM-1101) VOL: 575 VAC/3PH/60HZ 1.5 HP  
 BUILDING HEATER (5BH-2101 A/B) VOL: 575 VAC/3PH/60HZ 10 KW  
 BUILDING FAN MOTOR (5BFM-2104) VOL: 120 VAC/1PH/60HZ 0.25 HP  
 GLYCOL CIRCULATION PUMP MOTOR (5PM-6101) VOL: 575 VAC/3PH/60HZ 5 HP  
 COOLER MOTOR (5EM-2101) VOL: 575VAC/3PH/60HZ 25 HP  
 IMMERSION HEATER (5HTR-1201) VOL: 575 VAC/3PH/60HZ 3KW  
 CONTROL PANEL: VOL: 120 VAC AMPS: NOM: 5  
 FIRE DETECTION: VOL: 24 VDC AMPS: NOM: 5  
 GAS DETECTION: VOL: 24 VDC AMPS: NOM: 5  
 INT. LIGHTS: VOL: 347 VAC AMPS: NOM: 1.7  
 EXT. LIGHTS: VOL: 347 VAC AMPS: NOM: 0.8  
 RECEPTACLES: VOL: 120 VAC AMPS: NOM: 30

**SYSTEM CONSUMABLES**

COMPRESSOR LUBE OIL: EFX S5-150, 135 US GALLONS  
 GLYCOL: 50% ETHYLENE INHIBITED GLYCOL/WATER SOLUTION, 46 US GALLONS  
 INSTRUMENT AIR: 300 SCFD

**DESIGN SPECIFICATION:**

ENERFLEX LTD. (EFX) SCOPE OF SUPPLY ON THIS PROJECT CONSISTS OF ONE SCREW SKIDDED GAS COMPRESSOR PACKAGE.

PACKAGE CONSISTS OF ONE (1) TECO 700HP EMD DRIVING A FRICK SGC-2821, ONE STAGE, DRU OFF-GAS COMPRESSOR.

PRIMER (VESSELS, PIPING, STRUCTURAL) -FIN-1A, CLOVERDALE 703 SERIES, ECOPRIME WATER-BASED PRIMER, GREY  
 PAINT (VESSELS, PIPING, STRUCTURAL) -FIN-1A, CLOVERDALE 703 SERIES, ECOLOGIC WATER-BASED INDUSTRIAL ENAMEL, F-34 WARM GREY  
 PROCESS PIPING (SWEET): -10% RADIOGRAPHIC TESTING  
 -1/16" CORROSION ALLOWANCE  
 -NO PWHT  
 -SSPC-SP3  
 -NO PICKLING  
 FLARE HEADER PIPING (SOUR): -100% RADIOGRAPHIC TESTING  
 -1/8" CORROSION ALLOWANCE  
 -PWHT  
 -SSPC SP3  
 -NO PICKLING  
 VESSELS: -5% RADIOGRAPHIC TESTING - RT2  
 -UT ON ALL CAT. 'D' WELDS  
 -1/16" CORROSION ALLOWANCE  
 -NO PWHT  
 -SSPC-SP3  
 -NO PICKLING

**DESIGN CRITERIA & APPLICABLE CODES**

SITE ELEVATION: 3000 FT ABOVE MEAN SEA LEVEL  
 BAROMETRIC PRESSURE: 13.2 PSIA  
 AMBIENT TEMPERATURE: 90°F  
 PROCESS INLET: DESIGN 230 PSIG @ 300°F  
 PROCESS FINAL DISCHARGE: DESIGN 230 PSIG @ 300°F  
 INSTRUMENT AIR: MINIMUM PRESSURE 90 PSIG  
 MAXIMUM PRESSURE 150 PSIG  
 APPLICABLE CODE: QUALITY FILTERED/DRY, 50°F MAXIMUM DEW POINT  
 CODE PIPING B31.3 - 2012  
 NON-CODE PIPING EFX C01, 1mm (0.039") CA  
 VESSEL ASME SECTION VIII, DIV 1  
 EXCHANGER ASME SECTION VIII, DIV 1  
 STRUCTURAL CWB  
 ELECTRICAL CEC 2012  
 REGISTRATION: VESSEL AB  
 MISCELLANEOUS: GASKETS CG TYPE, SPIRAL WOUND, GRAPHITE FILLED, 316SS  
 BOLTING STUDS - SA-193-B7, NUTS - SA-194-2H  
 PROCESS PIPE CARBON STEEL  
 UTILITY PIPE CARBON STEEL  
 FLANGES RAISED FACE (UNLESS OTHERWISE NOTED)  
 ELECTRICAL: RIGID ALUMINUM CONDUIT  
 SUITABLE FOR USE IN: CLASS I, DIV. 2, GROUP D & CLASS I, ZONE 2, GROUP IIA

**FINAL AS BUILT**  
 NAME S.JOHNSEN DATE MAY 05/15

|                           |             |                              |    |   |  |   |  |       |
|---------------------------|-------------|------------------------------|----|---|--|---|--|-------|
| DATE FEB 13/14            |             | SCALE NTS                    |    | MEG ENERGY  |  | <b>ENERFLEX</b><br>Calgary, Alberta, Canada | P & I DIAGRAM<br>PROJECT DESCRIPTION<br>& OVERVIEW |       |
| DRAWN BY A. TRAN          |             | CHECKED BY N. REZAEYAN       |    | APPROVED BY B. LANGER                                       |  |   |  |       |
| PROJECT MANAGER B. LANGER |             | PROJECT ENGINEER N. REZAEYAN |    | 1500 BPD H1-Q FD PILOT<br>DRU OFF-GAS COMPRESSOR<br>5K-1401 |  | DWG NO E001123-01-099                       | SHT 1  | REV 2 |
| CUST PO -                 |             | APEGA PERMIT No: P8651       |    | OPER CODE 490 511 591                                       |  |   |  |       |
| REV                       | DESCRIPTION | DATE                         | BY | APR   |  |   |  |       |

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**TUBING SPECIFICATIONS**

| PROCESS TUBING       |   | UTILITY TUBING       |   |
|----------------------|---|----------------------|---|
| TUBING SPECIFICATION | ENERFLEX: G-S04-CSZ-CS-S16-375                  | TUBING SPECIFICATION | ENERFLEX: G-S04-CSZ-CS-S16-375                  |
| TUBING MATERIAL      | 304SS   | TUBING MATERIAL      | 304SS   |
| FITTING MATERIAL     | ZINC PLATED CARBON STEEL C/W<br>SS BACK FERRULE | FITTING MATERIAL     | ZINC PLATED CARBON STEEL C/W<br>SS BACK FERRULE |
| OUTSIDE DIAMETER     | MINIMUM WALL THICKNESS                          | OUTSIDE DIAMETER     | MINIMUM WALL THICKNESS                          |
| 1/4"                 | 0.035"  | 1/4"                 | 0.035"  |
| 3/8"                 | 0.035"  | 3/8"                 | 0.035"  |
| 1/2"                 | 0.049"  | 1/2"                 | 0.049"  |
| -                    | -   | 3/4"                 | 0.065"  |
| -                    | -   | 1"                   | 0.083"  |

**SMALL BORE NPT & SW PIPING & FITTINGS**

**PROCESS & SCREW PIPING SPECIFICATIONS**

| SWEET SERVICE (-20-650°F, 1/16"CA) |        |         |             |                 |               |
|------------------------------------|--------|---------|-------------|-----------------|---------------|
| EFX PIPE SPECIFICATION             | PIPING |         |             | FITTINGS        |               |
|                                    | NPT    | 160     | SW          | NPT & THREDOLET | SW & SOCKOLET |
| C11                                | 150#   | 1/2"    | 1/2"-1 1/2" | XS              | 1/2"-2" 3000# |
|                                    |        | 3/4"-2" | 2"          | STD             |               |
|                                    |        |         |             |                 |               |
|                                    |        |         |             |                 |               |
|                                    |        |         |             |                 |               |

**UTILITY PIPING SPECIFICATIONS**

| SMALL BORE NPT & SW PIPING & FITTINGS<br>LOW PRESSURE UTILITY SERVICE |           |             |     |                 |               |
|---|-----------|-------------|-----|-----------------|---------------|
| EFX PIPE SPECIFICATION  | PIPING    |             |     | FITTINGS        |               |
|   | NPT       | 160         | SW  | NPT & THREDOLET | SW & SOCKOLET |
| C01 NON-CODE  | 1/2"-3/4" | 1/2"-1 1/2" | XS  | 1/2"-2" 3000#   | 1/2"-2" 3000# |
|   | 1"-2"     | 2"          | STD |                 |               |
|   |           |             |     |                 |               |
|   |           |             |     |                 |               |

**FINAL AS BUILT**  
NAME S.JOHNSEN DATE MAY 05/15

|     |                         |           |    |     |                           |                              |   |  |  |                       |
|-----|-------------------------|-----------|----|-----|---------------------------|------------------------------|---|--|--|-----------------------|
| 2   | AS BUILT                | MAY 05/15 | SJ | NR  | DATE FEB 12/14            | SCALE NTS                    | MEG ENERGY<br>1500 BPD HI-Q FD PILOT<br>DRU OFF-GAS COMPRESSOR<br>5K-1401 | <b>ENERFLEX</b><br>Calgary, Alberta,<br>Canada | P & I DIAGRAM<br>PROJECT DESCRIPTION<br>& OVERVIEW |                       |
| 1   | ISSUED FOR CONSTRUCTION | JAN 13/15 | TR | NR  | DRAWN BY A. TRAN          | CHECKED BY N. REZAEYAN       |   |  |  | APPROVED BY B. LANGER |
| 0   | ISSUED FOR CONSTRUCTION | NOV 27/14 | SJ | NR  | PROJECT MANAGER B. LANGER | PROJECT ENGINEER N. REZAEYAN |   |  |  |                       |
| B   | ISSUED FOR APPROVAL     | OCT 09/14 | TW | NR  | CUST PO -                 |                              |   |  |  |                       |
| A   | ISSUED FOR APPROVAL     | JUL 14/14 | SJ | NR  | APEGA PERMIT No: P8651    | OPER CODE 490 511 591        | WORK ORDER E001123-01   | DWG NO E001123-01-099                          | SHT 2  | REV 2                 |
| REV | DESCRIPTION             | DATE      | BY | APR |                           |                              |   |  |  |                       |