#50, 805 - 5th AVE SW, Calgary AB. T2P 0N6 Phone (403) 213 5520 Fax (403) 718 0438

# Project Data List Rev 0
# Work Orders: 11604-001
# P&ID: 11604-001-P-000 Rev 0

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**Project Coordinator: Lexi Tole**

**Sales Rep : House Account**

**Quote Reference**: N/A

**Client: NWP Industries LP**

**Customer P.O.:** N/A

**Technical Contact: Spencer Wiley**
Email: spencer.wiley@nwp.ca
Phone: (403) 227-8341

**Commercial Contact: Jason Greene**
Email: jgreene@terravestindustries.com
Phone: (403) 539-8316

**STOCK - 3.0 MM BTU Line Heater Package, Sour Service, New**

## GENERAL DESCRIPTION

| Quantity | Description |
|---|---|
| 1 | **3.0 MM BTU Line Heater Package, Sour Service, New** |

(1) 4” Sch XH 900# RF Process Coil

- Skidded, Insulated with Instrument Enclosure
- W/ Instrumentation, Burner, Fire Tube, and Stack
- Ex Works: Innisfail, Alberta
- GST Extra to all prices

## 1.0 LINEHEATER BATH AND FIRETUBE

### 1.1 GENERAL DESCRIPTION

Tag #: H-100

- 72” OD x 24’-0” Long
- Horizontal Design
- Shell: 1/4” thick, A36 plate
- End Plates: 3/8” thick, A36 plate
- One 24” Sch 10, 0.250” wall, SA-53-ERW removable non code firetube, Flux Rate: 10,500 BTU/ft2
- Rated at 3,000,000 BTU / Hr
- One 24” Ø x 0.250” wall removable firetube stack
- 24” Ø x 120” Surge Tank c/w Thief Hatch (TH-100), Wenco, 16 oz pressure, 0.4 oz vacuum
- Two Support Saddles

## 2.0 COIL

One (1) 4” Sch XH, SA106-B, **26 pass** single process coil with Class 900 RF flanged outer ends, **1557 PSIG @ -20° to 200° F**, 100% Radiography, Post Weld Heat Treat, 1/8” C.A., constructed in accordance with ASME B31.3 Normal Fluid Service.
CRN: Alberta, British Columbia, Saskatchewan

**Note:** Based on space constraints the above process coil utilizes *short radius* 90 degree elbows and / or 180 degree return bends.

Flanges and pipe which exit the heater shell will be of SA-333 Gr 6 SMLS and SA-350-LF2 CL 1 material (“low temp”)

Heater is packaged in accordance with ASME Section VIII / B31.3

## 3.0 PIPING

- Fuel Gas Preheat Lines – 1” Sch 160, SA-106-B/A333 Gr 6 SMLS, 6000# fittings
- Fuel Gas Thread Piping – 1” NPT Sch 80, SA-106-B, 3000# fittings

## 4.0 INSTRUMENTATION

| Tag # | Quantity | Description |
|---|---|---|
| **BE 100** | **(1)** | **Burner – Clear Rush**<br>-Flame Arrested Burner,<br>-Model FA-2X32-FT-FB-H<br>-3,000,000 BTU/HR (net)<br>Construction to fit a 24” fire tube c/w<br>(2) 32” Flame Cell Elements<br>(2) ACL M200 Mixer<br>(2) ACL B20016 Venturi Barrel |

| | | |
|---|---|---|
| | | ACL 1500 Ignitor rod 2' Pilot/flame rod<br>-ACL-ON2x20024-NWP-SS High Efficiency burner nozzle. |
| **BMS-100** | **(1)** | **Burner Ignition Controller** - ACL Model CSC400<br>ACL-CSC400-S - ACL CSC400 12/24 VDC Controller Silver Version includes Modbus Communication, Individual Shutdown Inputs, Three Thermocouple Inputs, Dual 4-20mA Inputs, Dual Burner Controls.<br>Ignition Module not included.<br>ACL-IGN400-PM ACL Ignition module-1 Try 12VDC, 5 sec trial for Ignition. Flame Signal Display. CAN/CSA C22.2 No. 60730-2-5-14 with wiring harness<br>ACL-CSET Ignition cable set with connectors. 10' ignition and 10' ground pwire sleeved in 6.5' non metallic flex |
| **TE/TW-101** | **(1)** | ACL-DUALTYPE K-TC ACL Dual type K thermocouple - 1/2" NPT - 8.5" insertion length with explosion proof head<br>ACL-1" NPT TW ACL 1" Thermowell only - SS - 1" NPT - 8.5" insertion length |
| **LG 100** | **(1)** | **Level Gauge - Plainsman**<br>Rate/Indicator Gauge Plainsman 16" Oal 1/2" Npt Conn's. Rate & Height Indication, Pressure Rating 140 PSI |
| **LSLL 100** | **(1)** | **Level Switch – SOR**<br>Level Switch Sor 1-1/2" NPT<br>Model 1510B-G5A-C-W9-ES-CS-CV<br>Manual Check and Low Power Option<br>Suitable For Class I, Groups C & D;<br>Divisions 1 & 2 With CS Option |
| **PI 102** | **(1)** | **Pressure Gauge –Wika (PI-352898)**<br>2-1/2" F 1/4"<br>BM 0-200 psi<br>Brass Internals |
| **PI 103** | **(1)** | **Pressure Gauge – Wika Model 233.53**<br>Liquid Filled, Dual Scale<br>2-1/2” Face x 1/4” MNPT bottom mount end connection<br>Stainless Steel Construction<br>0 to 15 PSIG |
| **PI 104** | **(1)** | **Pressure Gauge –Wika Model 233.53**<br>PRESSURE GAUGE WIKA 2-1/2" FACE 1/4" 0-1500 PSI DUAL SCALE Stainless Steel Model 233.53 CENTER BOTTOM MOUNT |
| **PRV 100** | **(1)** | **Pressure Regulator – Fisher** |

| | | |
|---|---|---|
| | | Model 67CFR **c/w PI-100**<br>Pressure Filter / Regulator,<br>1/4" NPT, 250 PSIG MAWP,<br>0-35 PSIG Spring, Std trim<br>0-60 PSI Pressure Indicator |
| **PRV 101** | **(1)** | **Pressure Regulator – Fisher**<br>Model 67CFR **c/w PI-101**<br>Pressure Filter / Regulator,<br>1/4" NPT, 250 PSIG MAWP,<br>0-125 PSIG Spring, Std trim<br>0-160 PSI Pressure Indicator |
| **PRV 103** | **(1)** | **Instrument Gas Regulator – Fisher**<br>Model 627 Regulator<br>1" FNPT connections<br>70 to 150 PSI spring range<br>1/8" orifice,nylon disk<br>2000 PSI Max. Inlet Pressure |
| **PSV-100** | **(1)** | **Relief Valve – Taylor**<br>Model 8200, 1" x 1" NPT<br>Set @ 130 PSI, "D" Orifice<br>STD trim |
| **SC-100/101** | **(2)** | **Speed Control Valve (OR EQUIVALENT)**<br>SMC Model AS4000-N02<br>¼" NPT, ¼" Port<br>Maximum Operating Pressure 1MPa |
| **SG-100** | **(1)** | **Peep Site Glass - Zirco**<br>2" NPT, SG-275585 |
| **TI 100** | **(1)** | **Temperature Gauge - Trend**<br>Model 33060 Temperature Gauge,<br>1/2" NPT Back Mount connection, 0-250PSI F dual scale<br>3" dial, 6" stem c/w 304 SS thermowell |
| **TW 102** | **(1)** | 1/2" FNPT x 1" MNPT x 6" "U" dimension length<br>304SS thermowell |
| **UY 102** | **(1)** | **Solenoid Valve - ASCO Model EF8320G202-24**<br>Solenoid ASCO 3-way 1/4" SS N/C 11.6 Watts 24V |

## 5.0 VALVE TRAIN

| Tag # | Quantity | Description |
|---|---|---|
| **BF025G** | **(4)** | **¼" Ball Valve, NEO 2500**, Two-Piece Full Bore, SS,<br>2000 PSI WOG, Lockable Handle<br>CSA 3.16 Certified |
| **BF100G** | **(2)** | **1" Ball Valve, NEO 2500**, Two-Piece Full Bore, SS, 2000 |

| | | |
|---|---|---|
| | | PSI WOG, Lockable Handle<br>CSA 3.16 Certified |
| **NM025G** | **(2)** | **Huber Magnum**, ¼" Needle Valve<br>6000#, Model # MF25SS<br>¼" M x ¼" F STRAIGHT, 316SS BODY |
| **PI 300/302** | **(2)** | **Pressure Gauges - Wika Model 233.53**<br>2-1/2" Dial, SS<br>¼" NPT, 0 - 30 PSI<br>Liquid Filled/ Dual Scale<br>Center Back Mount |
| **PSHH 300** | **(1)** | **High Fuel Pressure Shutdown Switch**<br>CCS Dual Snap Model 6900GZE12<br>1/2" NPT, SS CONSTRUCTION, CSA APPROVED<br>SET @ 11.25 PSI Rising<br>CALIBRATION CERTIFICATE IS REQUIRED |
| **PSLL 300** | **(1)** | **Low Fuel Pressure Shutdown Switch**<br>CCS Dual Snap Model 6900GZE12<br>1/2" NPT, SS CONSTRUCTION, CSA APPROVED<br>SET @ 4.5 PSI Falling<br>CALIBRATION CERTIFICATE IS REQUIRED |
| **PRV 300** | **(1)** | **Main Regulator - Fisher 627R**<br>Maximum Inlet Pressure 250 PSI<br>Outlet Pressure Range 5 to 20 PSI Spring Range<br>1" FNPT / Orifice Size ½"<br>¾" Tapped Bonnet<br>Body Material: Ductile Iron<br>Spring Case Material: Aluminum<br>Nitrile Disk<br>Set @ 9 PSI |
| **PRV 301** | **(1)** | **Pilot Regulator – Fisher 67CFR**<br>¼" NPT Tapped-Bonnet **c/w PI-301**<br>Maximum Inlet Pressure 250 PSIG<br>Outlet Pressure Range 0-35 PSIG / c/w gauge<br>Adjustable spring range, 5 micron filter<br>Adjustable screw with closing cap<br>Temperature Range: -40 to 180 Deg F |
| **SOV-EY 300** | **(1)** | **Fossil Main Gas Safety Valve**, Pneumatic Actuator<br>Fossil Series 1" ESD 24 VDC<br>Series 88 – Explosion Proof Class 1 Div 1 – Fail Closed<br>P/N: 9650-0240-2006-1112-0022<br>Connection: 1" NPT Cv:34<br>Body Type: 3 Piece Design, Reduced Port<br>Body Material: CF8M<br>Ball & Trim: 316SS<br>Seats: PTFE<br>End Connection NPT<br>Actuator: Rack and Pinion Spring Return<br>Actuator Min Air Pressure: 70PSIG |

Actuator Max Air Pressure: 120 PSIG
Limit Switch: 2 SPDT switches with Beacon Indicator,
Classified, Class 1, Div 1
Solenoid: ASCO 8551 Series 24 VDC (9.6 watts),
Hazardous Area Classified, Class 1, Div 1
Approvals:
CSA 6.5-2000/ANSI Z21.21–Automatic Valves for Gas Appliances
CGA 3.9-M94 Automatic Safety Shut-Off Gas Valves
CSA C/I – Commercial/Industrial
API 604 4th Edition Firesafe
Temperature Range -49 – 122 Deg.F

**SY100** **(1)** **Y STRAINER 1" - 3000 ALTA**
Model YS 3000
1/32 Perf 304SS Strainer
ASTM A105N Body
½" Drain Connection

**TCV 300** **(1)** **Fisher Pneumatic Temperature Control Valve**
Fisher Model 119
1" NPT – 9/16" Port
5-35 PSI Range
Cast Iron Body
150 PSI MAWP
STD Service

**EY 301** **(1)** **ASCO 2-Way Solenoid**
¼" NPT Pilot Solenoid
Model HV426716002
130 PSIG Maximum Operating Pressure Differential
1/4" NPT SST Body
24VDC Coil, CSA Approved Explosion Proof
ANSI Z21.21 & CSA C/I 6.5 Certification
10.6 Watts

## 6.0 FUEL GAS SYSTEM

**V-100** **(1)** **Vertical Fuel Gas Scrubber**
-8" X 30" 285 PSI c/w Alberta, BC and Saskatchewan registration,
-1" NPT inlet, 2" NPT outlet, 1" NPT drain
-Note: Scrubber mounted inside enclosure

**HLSD-100** **(1)** **High level shut off** – PVC float construction

## 7.0 MANUAL VALVES (supplied by NWP)

| | | |
|---|---|---|
| **BR025** | **(2)** | Ball Valve Barstock **HAITIMA** 1/4" 2000 WOG Thrd A105 Body, RP, 304SS Ball & Stem, NACE MR0175, GF PTFE Seats & Packing. |
| **BR050** | **(1)** | Ball Valve **Balon** 1/2" 3M CS RP 2 piece, BB 316 Trim Nylon Seat,NACE |
| **BR100** | **(3)** | Ball Valve NAVCO S20 1" 2M FP Thrd CF8M SS Body NACE Trim, 2PC |
| **BR200** | **(1)** | Ball Valve Barstock **HAITIMA** 2" 2000 WOG Thrd A105 Body, RP, 304SS |

| | | |
|---|---|---|
| | | Ball & Stem, NACE MR0175, GF PTFE Seats & Packing |
| **NM025** | **(3)** | Needle Valve A/G 1/4" NPT 6000 M X F STRAIGHT 316 SS BODY MODEL H1VES-22-SG (NE-100786) |

## 8.0 PACKAGE MATERIALS

| | |
|---|---|
| **Coil** | |
| **Pipe:** | SA 333 Gr6 SMLS / SA-106-B |
| **Flanges:** | SA 350 LF2 CL1 |
| **Fittings:** | SA 420 WPL6 / SA-234-WPB |
| **Weld Piping** | |
| **Pipe:** | SA 106-B SMLS / SA 333 Gr6 SMLS |
| **Flanges:** | SA105 / SA 350 LF2 CL 1 |
| **Fittings:** | SA-234-WPB / SA 420 WPL6 |
| **Weld Fittings:** | SA-234-WPB / SA 420 WPL6 |
| **Threadolets and Couplings:** | SA-105 / SA 350 LF2 |
| **Gaskets:** | 1/8-inch, 316 S.S. RF |
| **Firetube** | SA 53 ERW Sch 10, 0.250" |
| **Threaded Piping** | |
| **Pipe Fuel gas:** | SA-106-B / SA 333 Gr6 SMLS Sch. 80 / 160 SMLS |
| **Threaded Fittings:** | SA-105-N / SA 350 LF 2 CL 1, 3000# |
| **Fuel Gas Preheat Line** | |
| **Pipe:** | SA-106-B / SA 333 Gr6 SMLS Sch 160 |
| **Fittings:** | SA-105-N, 6000#, Socket weld |
| **Tubing:** | ASTM A269 / ASME SA213 316 SS – 0.035” / 0.049” |
| **Fittings:** | 316 SS - Swagelok |
| **Ferrules:** | 316 SS |

## 9.0 TESTING / POST WELD HEAT TREAT (PWHT)

| | | |
|---|---|---|
| **Hydro-Testing:** | Coils: | Tested to 1.5 times MAWP |
| | Pressure Piping: | As per B31.3 |
| **Testing:** | Firetube / Shell: | Pneumatic Air Test |
| | Instrumentation: | Subjected to an operational test to ensure proper functioning (excluding electrical) |
| | Instrument Supply Lines: | As per ABSA AB-522 |
| | Process Tubing Lines: | As per B31.3 |
| **Radiography:** | Coil: | 100% Radiography |
| | Weld Piping: | N/A |
| | Firetube: | None |
| | Threaded Piping: | None |
| | Fuel Gas Piping: | None |
| **PWHT:** | Process Coil: | Yes |
| | Buttweld Weld Piping: | N/A |
| **Ultrasonic Test:** | Process Coil Return Bends: | UT Baseline |
| **Hardness Test:** | | None |

**MPI Inspections:** Skid Lift Lugs: 100%

## 10.0 SKID / ENCLSOURE

| | | |
|---|---|---|
| **SK-100** | **(1)** | **Skid**<br>7' - 8'' W x 30'-6'' L<br>Main skid members 12" @ 26# Wide Flange Beam<br>Skid extended at coil end approx. 3' with (2) 4" @ 13# cross members for future piping / choke support. |
| **E-100** | **(1)** | **Foam Panel Enclosure**<br>24" W x 84" L x 80'' H<br>1-1/2" polyurethane foam panel (R12)<br>Galvalume Interior / Galvalume Exterior<br>(2) 8"x8" Adjustable Louvers<br>One double foam panel door c/w whitcomb latch, barrel bolt, check chain and weather strip |

## 11.0 PAINT

- SSPC-SP 6-63 Commercial Blast, DTM (Direct to Metal) Polyurethane Enamel 2 - 3 mils DFT
- Bath, Skid, Piping, Pipe Supports: Warm Grey
- Fire tube Stack: High Heat Black.

## 12.0 INSULATION

- Heater shell, no ends, is insulated with 1-1/2" Fiber Glass (Microflex) Insulation with 0.020 stucco embossed aluminum outer cladding held with stainless steel banding. Expansion tank not insulated.

## 13.0 ELECTRICAL

- Wire of ACL Burner Management System to skid edge junction box.
  All wiring Class 1, Div. 1

## 14.0 PROGRESS PAYMENTS

The following Progress Payment Schedule shall apply to this order:

- N/A

## 15.0 DOCUMENTATION

- Two Equipment Manuals (Documents per Document Index) on Flash Drive are supplied**. Hard copies are available at $500 per copy.**

- P&ID, skid and general arrangement drawings (with one revision) are included. Extra charges apply for additional changes and revisions at $95.00 per hour.

- Documentation as per NWP Standard Document Index & marked-up client supplied VDDR (to be agreed upon)
    - This includes MTR's for the following applicable components: Vessel(s), bridle(s) and welded spool components.

## 16.0 ADDITIONAL NOTES

- No choke or coil tie in piping has been allowed for.
- Packages will be dismantled only to the extent required for shipping.
- All instrumentation has been quoted for sweet fuel gas.
- Heater Stack to be shipped loose with unit.
- No Process Performance Guarantee is included or should be inferred.
- NWP reviews all specifications provided to us. NWP, however, cannot accept responsibility for any omissions made in our quotations which are not in compliance. We require that customers review the quotation for compliance to their specifications and request a revision for any errors / omissions which may have been made.
- Engineering review is not done at time of quotation. If material and / or specifications change due to engineering review, price adjustment will apply.

## 17.0 SHIP LOOSE MATERIALS

- Smoke stack c/w gasket and bolt up
- (1) 2" Vent header extension
- (2) ¾" Vent line extension for PRV-300 and PRV-103
- (1) 1" Vent line extension for PSV-100 c/w yellow jacket rain cap
- 1" Burner line c/w pilot tubing c/w manual valves and pressure gauges
- (1) 3/8" Vent line extension for Pilot Regulator PRV-301