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Date: 9 August 2023

Company:

Attention:

Ph #.

Fax #.:

E-mail:

Re.: (2) 30"OD x 10'-0"s/s x 720psig. Sweet, 3-Ph. Separator Packages.  
(1) one left and (1) right style.

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**(2) TWO ONLY FSR INC. SEPARATOR PACKAGES**  
**(3-PHASE DESIGN - DRESSED 3-PHASE)**  
**COMPLETE AS FOLLOW**

**INLET SEPARATOR (V-300)**

**DESIGN CONDITIONS**

720 psig maximum allowable working pressure (M.A.W.P.) @ 130°F

1/16" corrosion allowance

Service - Sweet

-20°F minimum design metal temperature (M.D.M.T.)

**SIZE**

30" O.D. x 10'-0" Seam/Seam

**FEATURES**

- Vertical three (3) phase style.
- ASME constructed with Alberta registration.
- Inlet diverter & float baffle.
- 4" thick x 9 lbs./cu.ft. density 316L SST mistex c/w carbon steel grid supports.
- Support skirt.

### NOZZLES

N1	Inlet	1	3"	CL 300 ANSI RFWN flange
N2	Gas Outlet	1	3"	CL 300 ANSI RFWN flange
N3	HC Outlet	1	2"	CL 300 ANSI RFWN flange
N4	Water Outlet	1	2"	CL 300 ANSI RFWN flange
N5	Drain	1	2"	CL 300 ANSI RFWN flange
N6	Pressure Safety Valve	1	2"	CL 300 ANSI RFWN flange

C1	HC Level Control	1	2"	CL 3,000 T.O.L.
C2	Water Level Control	1	2"	CL 3,000 T.O.L.
C3 A/B	HC Level Gauge	2	3/4"	CL 3,000 T.O.L.'s
C4 A/B	Water Level Gauge	2	3/4"	CL 3,000 T.O.L.'s
C5	Pressure Indicator	1	3/4"	CL 3,000 T.O.L.
C6	Temperature Indicator	1	3/4"	CL 3,000 T.O.L.
C7	High Level Shut-Down	1	2"	CL 3,000 T.O.L.
C8	Low Level Shut-Down	1	2"	CL 3,000 T.O.L.
C9 A/B	Inspection	2	2"	CL 3,000 T.O.L. c/w plug

### **FUEL GAS SCRUBBER (V-008)**

#### DESIGN CONDITIONS

250 psig M.A.W.P. @ 250°F  
1/16" corrosion allowance  
Service - Sweet  
-20°F M.D.M.T.

#### SIZE

8-5/8" O.D. x 2'-6" Seam/Base Plate

#### FEATURES

- Vertical two (2) phase style.
- ASME constructed with Alberta registration.
- Inlet diverter.

### NOZZLES

C1	Inlet	1	1"	CL 3,000 T.O.L.
C2	Gas Outlet	1	2"	CL 3,000 T.O.L.
C3	Drain	1	3/4"	CL 3,000 T.O.L.

## **INSTRUMENTATION**

<b>BPCV-1007</b>	<b>1</b>	<b>3" 300#RF CVS Series E CONTROL VALVE</b> c/w Equal%, LCC Body, NACE. c/w CVS Series 667-45 ATO/Fail CLOSE Actuator, 10-30 psi Bench Set, 1-1/2" Travel
<b>FE-1006</b>	<b>1</b>	<b>CANALTA DUAL CHAMBER (SENIOR) METER RUN ORIFICE FITTING:</b> 330RFDC40SAW00WF_ABA9-FF-CB-N-0 DUAL CHAMBER W/ RUN, 3" 600, SCH40, 3PC NACE(CS Trim), Grease Seat, 600 WxF AGA 2000 Ed., A216WCB, LEFT HAND Orif Plt: 3" x 1/8", 1.500, 316 K-Style 316 SS, HNBR, 80D Pipe: Cold Drawn, A106B / A105, OAL: 72" AGA 2000 Upstream: 300RF, Downstream: 300RF Contour Flow Cond.: RF, 0.75 Beta Outlets: 1"TOL, 0.75"TOL Includes Hydro Test, MTR's, Canalta Inspection Canalta Standard Paint

<b>HLSD-1010</b>	<b>1</b>	<b>EOB FGSO2A12F FUEL GAS SHUT-OFF VALVE</b> 2" MNPT x 1" FNPT end connection Forged steel body 250 psig M.A.W.P. 2"φ x 12" long PVC float
<b>LC-1000/1</b>	<b>2</b>	<b>FISHER L2 LIQUID LEVEL CONTROLLER</b> 2"NPT end connection Snap acting control mode - Direct control action 1-7/8"φ x 12" long PVC displacer 6 to 30 psig output signal
<b>LCV-1000/1</b>	<b>2</b>	<b>KIMRAY MODEL 2150 SMT PO MOTOR VALVE</b> 2" NPT end connections Steel body construction S.S. Internals, 2" Inner valve 2,000 psig MAWP Air to Open / Fail Closed
<b>LG-1000</b>	<b>1</b>	<b>JERGUSON 15T20 TRANSPARENT LEVEL GAUGE</b> 1/2"FNPT end connections 7-7/8" visible glass 12-7/8" min. vessel centre Max.1500 Psi @100°F c/w: 146 gauge valve set 1/2"NPT gauge and drain 3/4"NPT vessel connection Max.1500 Psi @400°F Teflon Packing
<b>LG-1001</b>	<b>1</b>	<b>JERGUSON 15R20 REFLEX LEVEL GAUGE</b> 1/2"FNPT end connections 7-7/8" visible glass 12-7/8" min. vessel centre Max.2500 Psi @100°F c/w: 146 gauge valve set 1/2"NPT gauge and drain 3/4"NPT vessel connection Max.1500 Psi @400°F Teflon Packing
<b>LSHH-1003</b>	<b>1</b>	<b>SOR 1530 PNEUMATIC LEVEL SWITCH</b> 2" NPT, Std. service 1/4" FNPT pilot connection 316 SS float, 303 SS body Snap, direct action, 1,500 psig MAWP
<b>PI-1003</b>	<b>1</b>	<b>WGI or WIKA MODEL 233.54 LIQUID FILLED PRESSURE GAUGE</b> 4"φ dial (liquid filled) Stainless steel case and internals 1/2" MNPT bottom connection 0 to 1000 psig range (dual scale)
<b>PI-1010</b>	<b>1</b>	<b>WGI or WIKA PRESSURE GAUGE</b> Model 233.53 liquid filled 2 1/2" diameter face x 1/4" NPT bottom connection Stainless steel case and internals 0 to 200 psig range - Dual scale

<b>PRV-1010</b>	<b>1</b>	<b>WELLMARK MODEL 2002PR PRESSURE REDUCING REGULATOR</b> 1" FNPT end connections Steel body Maximum 2,000 psig Inlet pressure 3/16"ϕ orifice 70 <u>to</u> 150 psig spring range
<b>PRV-1000/1/3</b>	<b>3</b>	<b>CVS-67CFRPM-224 INSTRUMENT GAS REGULATOR</b> 1/4" FNPT connections <u>Standard</u> service construction 250 psig M.A.W.P. Internal filter 0 <u>to</u> 35 psig spring range
<b>PRV-1002</b>	<b>1</b>	<b>CVS-67CFRPM-224 INSTRUMENT GAS REGULATOR</b> 1/4" FNPT connections <u>Standard</u> service construction 250 psig M.A.W.P. Internal filter 0 <u>to</u> 60 psig spring range
<b>PSV-1010</b>	<b>1</b>	<b>ACCUSEAL MODEL ASV10 PRESSURE RELIEF VALVE</b> 1" MNPT inlet x 1" FNPT outlet <u>Sweet</u> service construction 0.212 sq. in. orifice ("E" designation) 150 psig set pressure

<b>TI/TW-1000</b>	<b>1</b>	<b>WGI or TREND MODEL 33060 TEMPERATURE INDICATOR</b> 1/2" MNPT back connection 3"φ dial with a 6" stem length 0 to 250°F range (dual scale) 1/2" FNPT x 3/4" MNPT x 6" length 304 SST thermowell
<b>TI/TW-1006</b>	<b>1</b>	<b>WGI or TREND MODEL 33060 TEMPERATURE INDICATOR</b> 1/2" MNPT back connection 3"φ dial with a 3" stem length 0 to 250°F range (dual scale) 1/2" FNPT x 3/4" MNPT x 3" length 304 SST thermowell

### **MANUAL VALVES**

BA-025 NO	04	1/4"	FNPT	CL.2,000 F.P. 2-pc.ball valve, C&C 2000PSI BVSF,SST.
BA-050 YES	01	1/2"	FNPT	CL.2,000 F.P. 2-pc.ball valve, C&C 2000PSI BVBU,
BA-051 Yes	06	1/2"	FNPT	CL.2,000 F.P. 2-pc.ball valve, C&C 2000PSI BVSF,SST.
BA-075 yes	04	3/4"	FNPT	CL.2,000 F.P. 2-pc.ball valve, C&C 2000PSI BVBU,
BA-100 yes	03	1"	FNPT	CL.2,000 F.P. 2-pc.ball valve, C&C 2000PSI BVBU,
BA-101 regul	01	1"	FNPT	3,000# R.P. ball valve, Nutron, CS BODY.
BA-200 yes	15	2"	FNPT	CL.2,000 F.P. 2-pc.ball valve, C&C 2000PSI BVBU,
BAF-203 yes	03	2"	RF	CL.300 R.P. ball valve, FORCE BU ,
NV-025 yes	01	1/4"	NPT	6,000# FxF Needle Valve, PANAM PNV-H-S-4-FF
NV-050 yes	03	1/2"	NPT	6,000# FxF Needle Valves, PANAM PNV-H-S-8-FF
CH-050 yes	01	1/2"	FNPT	CL. 800 check valve,
CH-100 yes	02	1"	FNPT	CL. 800 check valve,
CH-200 yes	03	2"	FNPT	CL. 800 swing check valve, C&C, 2000PSI
CHF-303 yes	01	3"	CL.300	RF swing check valve, Crane 2131A300C159XU
GL-100 yes	01	1"	FNPT	CL 800 PANAM globe valve,
YS-200 yes	03	2"	NPT	Y-strainer, Alta Model YS-600

### **STRUCTURAL STEEL SKID**

8'-0" wide x 14'-0" long

- W8 x 18 main members.
- C6 x 8.2 cross members.
- 3/16" checker plate floor within the building perimeter.
- Lift points are located at each end of the skid base.
- Underside of the building floor to be insulated w/ 2"th spray on Urethane.

## **SELF FRAMING METAL BUILDING**

Size: 8'-0" wide x 14'-0" long x 8'-6"/9'-2" low/high eave building with shed style roof  
Exterior: 22 gauge prepainted Stone Grey (QC 8305). Trim Exterior Gold (QC 8276)  
Interior: R12 fiberglass wall insulation and R20 roof c/w a 4 mil vapour barrier and a 24 gauge fluted white aluminum liner.  
Door(s): One (1) 3'-0" x 7'-0" insulated steel door c/w panic hardware, lockset, check chain, threshold and weather-strip.  
Window(s): One (1) 32" x 36" double glazed horizontal sliding window c/w screen.  
Ventilation: Two (2) 12" x 12" louvered vents c/w slide closure and screen.  
Other: Roof Ice Racks

H-400 **THERMON Cata-Dyne Heater 24 x 24** flameless infra-red natural gas heater

- 12 volt DC starting element.
- Protective grill.
- Temperature control valve.
- Safety shut-off valve.
- Pressure regulators.
- 30'-0" long cable leads.
- Conduit hook-up to EPB standards.

## **MATERIAL SPECIFICATIONS**

### **INLET SEPARATOR (V-300)**

<u>Item</u>	<u>Material</u>	<u>Schedule / Thickness / Rating</u>
Shell	SA-516 Gr. 70N.	0.625"PL.
Heads	SA-516 Gr. 70N	2:1 S.E., 0.750"th.(0.687" min.)
Skirt	SA-36 / 44W	30" OD x 3/8"pl.
Internals	SA-36 / 44W	1/4"
Nozzles	SA-105 N	CL 300 RF
Weld Fittings	SA-234 WPB	2" Sch. 160

### **FUEL GAS SCRUBBER (V-008)**

<u>Item</u>	<u>Material</u>	<u>Schedule / Thickness / Rating</u>
Shell	SA-106 Grd. B Smls.	8" Sch. Std.
Heads	SA-234 WPB	8" Sch. Std. Weld Cap
Base Plate	SA-516 Grd. 70	5/8"
Thredolets	SA-105 N	CL 3,000 FS

## **PIPING MATERIAL**

<u>Threaded</u>	<u>CL 150 &amp; CL 300</u>
Pipe	SA-106 Grd. B Smls. (Sch. XH)
Nipples	SA-106 Grd. B Smls. (Sch. XH)
Fittings	SA-105 (CL 3,000 FS)
Corrosion Allowance	None

Welded	<u>CL 300</u>	<u>CL.600</u>
Pipe	SA-106B (2" XH, 3" STD.)	SA-106B (2" & 3" XH)
Weld Fittings	SA-234 WPB (As per Pipe)	
Flanges	SA-105 N (RF)	
T.O.L.'s	SA-105 (CL 3,000 FS)	
Gaskets	1/8" Flex. - 316 SST	
Bolting	SA-193 B7/ SA-194 2H	
Corrosion Allowance	1/16"	

#### Instrument Tubing (Hy-Lok)

	<u>FR/PR/TR (Process)</u>	<u>Instruments</u>	<u>Vents</u>
Size (W.T.)	1/2" (0.035")	3/8" (0.035")	3/8" (0.035")
Fitting Material	CS Zinc plated	CS Zinc plated	CS Zinc plated
Ferrules Material	316 SST	316 SST	316 SST
Tubing Material	316 SST	316 SST	316 SST
Tubing Clips		C.S., Cad. Plated <u>and/or</u> Plastic	

### **TESTING - RADIOGRAPHY - P.W.H.T.**

#### Pressure Testing

Inlet Separator (V-300)	As per ASME Section VIII - Division 1 latest edition, UG-99(b) (i.e. 936 psig)
Pressure Piping	As per ASME B31.3, latest edition, Paragraph 345.4.2(a) (i.e. 375 psig for CL 150 ANSI piping and 1080 psig for CL 300 ANSI piping).
Fuel Gas Scrubber (V-008)	As per ASME Section VIII - Division 1 latest edition, UG-99(b) (i.e. 375 psig)
Instrument Tubing	Will be air / soap tested to normal operating pressure.
Instrument Operational Test	All instruments will be subjected to an operational test to ensure proper functioning.
Charted Hydrotest	Is not included.

#### Radiography

Inlet Separator (V-300)	As per ASME Section VIII - Division 1, latest edition, UW-11(a)5(b) (i.e. RT-2 radiography)
Fuel Gas Scrubber (V-008)	As per ASME Section VIII - Division 1, latest edition, UW-11(c) (i.e. None)
Welded Pressure Piping	As per ASME B31.3, latest edition, Paragraph 341.4.1(b)(1) (i.e. 5%)



### Post Weld Heat Treatment

Inlet Separator (V-300)	None
Welded Pressure Piping	None
Fuel Gas Scrubber (V-008)	None

### Ultrasonic Testing

Inlet Separator (V-300)	None
Fuel Gas Scrubber (V-008)	None
Welded Pressure Piping	None

### Magnetic Particle Inspection

Inlet Separator (V-300)	None
Fuel Gas Scrubber (V-008)	None
Welded Pressure Piping	None

### Hardness Tests

Inlet Separator (V-300)	None
Fuel Gas Scrubber (V-008)	None
Welded Pressure Piping	None

## **PAINTING AND SURFACE PREPARATION**

	<u>Structural &amp; Pipe Supports</u>	<u>Piping</u>	<u>Vessel</u>
Surface Preparation	SSPC-SP#6	SSPC-SP#6	SSPC-SP#6
Primer	One (1) Coat Fast Dry Primer	One (1) Coat Fast Dry Primer	One (1) Coat Fast Dry Primer
Finish Paint	One (1) Coat Warm Grey Enamel	One (1) Coat Warm Grey Enamel	One (1) Coat Warm Grey Enamel

### Notes

Surface preparation and paint as listed will be applied to external surfaces of equipment only.

The underside of the structural skid is excluded from this specification.

Equipment mounted on skids prior to surface preparation and painting will be painted where is (i.e. Under vessel base plates, etc. will not be painted).

## **PACKAGING**

- FGS drain connected to main drain w/ check valve downstream of the ball valve.
- FGS drain is to be re-connected to drain line.
- The water and condensate phase is to be re-connected to gas outlet line.
- Meter proves included on both liquid lines downstream of liquid dumps.
- By-passes quoted around turbine meters only.
- Instruments that continually exhaust supply gas will be individually vented to atmosphere outside of building.
- Regulator bonnets and actuator diaphragms will not be vented.
- The PSV(s) will be piped to atmosphere outside of building at eave height.
- All lines above NPS 2 are welded construction.
- All welded and threaded piping will be securely supported on structural steel pipe supports.
- Instrument tubing will be supported along the building wall with clips.
- The packaged unit is dismantled only to the extent required for shipping.

## **DRAWINGS**

Drawings of computer generated drawings (Separator, P&ID, Skid and General Arrangement) will be provided.

All drawings are prepared utilizing in house design, fabrication and quality control standards.

## **DATA MANUALS**

One (1) Data Manual containing copies of the following:

Information supplied to FSR for the purchased components, instruments and manual valves.

Copies of the AB-25, AB-83 forms, name plate facsimile, NDE reports, MTR's and QC travel sheet.

One (1) set of "As-Built" drawings.

Loading in buyers responsibility - outside picker must be hired

Nisku, Alberta

## **NOTES:**

1. Only two packages are offered at this price and delivery time, if more packages are needed we will calculate current price and delivery, please advise.

## DELIVERY

**Shop Drawings:** Vessel, P&ID, General Arrangement, Structural Skid ( 5 ) in five working days from date of order, for your review and approval/files.

**Separator Package:** Approx. **in (3) three weeks** from receipt of approved for construction drawings.  
All long delivery items are released for purchase with your order.  
Above delivery is based on material availability remaining the same as at quotation time.





