

DRAWING NO. B5418-040 REVISION AS BUILT PAGE
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CUSTOMER RENAISSANCE ENERGY LTD. CUSTOMER REF. 3878-05
AGENT BOWER DAMBERGER ROLSETH ENG. JOB NO. B5418-04
PROJECT DEHYDRATOR PACKAGE OFFER NO. C06169
PREPARED BY ERIC ALLISON, P.ENG. DATE 93 11 04 CHECKED
BY ESA
TYPE MAJOR EQUIPMENT DATE ISSUED/REVISED* 1994
07 08

MARK / QTY. / DESCRIPTION

DEHYDRATOR PACKAGE
WITH FUEL GAS CONTACTOR
STOCK #8

B-100	1	BUILDING (SUBJOB -86) - self framing building - 12'0" wide x 30'0" long x 10'6" eave height - shed roof type - 22 gauge walls and roof prepainted Surf White with Slate Blue trim (trim = roof, window trim and doors) - roof and walls insulated with 2 1/2" thick fibreglass c/w 6 mil vapour barrier - roof and walls lined with 24 gauge aluminum - (1) - 3' x 7' all metal insulated door c/w: - lockset, checkchain, weatherstripping - aluminum thresholds - 2' x 2' IWG window double glazed - panic hardware - hydraulic door closure (heavy duty) - reinforced canopies over door - (1) - 6' x 7' all metal double swing door c/w: - lockset, checkchain, weatherstripping - aluminum thresholds - panic hardware - hydraulic door closure (heavy duty)
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- reinforced canopies over door
- (2) - 12" x 24" adjustable wall louvres
c/w manual controls and birdscreen
- (2) - 32" x 36" horizontal sliding
windows, double glazed c/w screen
- removable wall and roof panels
contactors/meter run)
- (1) wall mounted explosion prof exhaust
fan,
6 ACPH, 110/220/1/60 Hz, mounted high
- building drawing with P.Eng. stamp
required

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MARK	/	QTY.	/	DESCRIPTION
S-100		1		STRUCTURAL STEEL SKID (SUBJOB -10) - 12'0" wide x 35'0" long - W10 @ 22 lbs/ft main members - 3/16" thick checkerplate floor - checkerplate perimeter to be stitch welded - checkerplate seams to be seal welded - 2" threaded floor drain piped to skid edge c/w 12" x 12" x 6" deep sump c/w DB grating
BH-100		1		CATALYTIC STYLE BUILDING HEATER (NATURAL GAS) - Catadyne Model BX24x24 Series "X" explosion proof heater - Duty Rating: 22,500 BTU/hr infra-red gas heater - SSOV, TCV, PRV's - personnel protection grill - 110 VAC start - vent hood and piping to skid edge
P-500		1		GLYCOL CIRCULATING PUMP - Kimray 21015PV glycol pump - 66 to 210 gph maximum - 300 to 1500 psi operating pressure
P-510		1		GLYCOL CIRCULATING PUMP - Union Model SX-3 (5/8") - 1 1/2 HP, 460/3/60 explosion proof (1.15 SF) - 42 USgph at 253 RPM
P-510		1		OIL-AIR PULSATION DAMPNER - one quart capacity - EPR bladder
H-800		1		PRESSON MODEL GR-750 GLYCOL REBOILER (SUBJOB -60) - 750,000 BTU's/hr (based on 10,000 - Reboiler: 36" O.D. x 14'0" long

- Accumulator: 24" O.D. x 14'0" long
- Accumulator Coil: 1" NPS x 50 turns
- Stripper Size: 14" O.D. x 10'0" long
(with CS pall rings)
- External Gas Stripping Column: 10
3/4" O.D. x 5'0" high
- Firetube: 12 3/4" O.D. (5 piece
mitre)
- Flamecell: 27" O.D. x 4" thick
(aluminum) (non-removable)
- Smokestack: 12 3/4" O.D. x 16'0" long
- Burner: Eclipse
- Insulation: 1 1/2" AF-530 fibreglass
- U-tube type relief

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MARK	/	QTY.	/	DESCRIPTION
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M-910 1 CHARCOAL FILTER

- Peco Model 11-2-720 activated carbon filter
- approximate size: 8 5/8" O.D. x 48 1/2" high
- rated capacity is 1.5 gpm
- initial charge of elements

M-920	1	GLYCOL PARTICULATE FILTER (SWEET)
		- Oberg 900 Series (Model 900-25)
		- aluminum body/SS screen
		- 10 micron nominal
		- 1" ORB fitting/1" MNPT conversion fitting
		- maximum flow is 15 gpm

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E-100          1      GAS/GLYCOL EXCHANGER (SUB JOB -70)
                  - Size: 10 3/4" O.D. x 6 5/8" O.D. x
                    10'0" long
                  - Design: T/S: 1415 psig @ 150/-20` F
                           MDMT
                           S/S: 1415 psig @ 150/-20` F
                           MDMT
                  - C.A.: 1/16" T.S.
                  - Radiography: 10%
                  - downstream end flanged
                  - Material:      Pipe: SA-106-B
                                   Nozzle: SA-105

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E-100 1 AIR/GLYCOL HEX (SUBJOB -71)
 - 8 - 5' sections of Trane No. 32
 fintube
 - 2 rows, 1 pass; 4 tubes/row
 - located I/S the building below the
 reboiler

LCC-301	1	GLYCOL ACCUMULATOR BOTTLE (SUBJOB -22)
		- 8 5/8" O.D. x 1'4" S/S x 1350 psi
		- 2" NPT 3000# coupling (LC)
		- 2 - 3/4" NPT couplings (LG)
		- 3 - 1" NPT 3000# couplings (inlet,

- outlet, vent)
- full radiography per RT-1
- 1/16" corrosion allowance

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MARK / QTY. / DESCRIPTION

C-300 1 GLYCOL CONTACTOR (SUB JOB -20)
- Size: 36" O.D. x 29'0" S/S
- Design: 1415 psig @ 150/-20` F MDMT
- C.A.: 1/16"
- Radiography: full per RT-1

Vessel Specifics:

- Service: Sweet
- Separator Section: 5'0", 2 phase c/w inlet deflector, float shield, 6 pass, 1" sch 80 glycol coil, 6" thick 316 SS demister with CS supports
- Contactor Section: ten (10) welded bubble cap trays at 24" spacing, 6" thick 316 SS demister with CS supports
- full diameter skirt and base plate
- caged ladder
- lift lugs
- registered and inspected for use in Alberta

Material:

Shell: 36" O.D. x 1 1/2" thick SA-516-70N
Heads: 36" O.D. 2:1 S.E. SA-516-70N
Nozzles: SA-105
Pipe: SA-106-B
Bolting: SA-193-B7/SA-194-2H
Gaskets: 1/8" thick spiral wound 304 SS

Nozzles:

Inlet: 6" 600# RFWN nozzle
Gas Out: 6" 600# RFWN nozzle
Drain: 1 - 1" NPT 6000# FS coupling
Liquid Out: 1 - 1" NPT 6000# FS coupling
LC: 1 - 2" NPT 6000# FS coupling
LG: 4 - 3/4" NPT 6000# FS couplings

TI: 1 - 3/4" NPT 6000# FS coupling
PI: 1 - 3/4" NPT 6000# FS coupling
PSV: 1 - 1 1/2" NPT 6000# FS coupling
LSDH (future): 2 - 1" NPT 6000# FS
couplings
Glycol Connection: 3 - 1" NPT 600# RFWN
nozzles
Inspection: 2 - 2" NPT 6000# FS
couplings
Tray Drains: 10 - 3/4" NPT 6000# FS
couplings with

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MARK / QTY. / DESCRIPTION

C-310 1 GLYCOL CONTACTOR (SUB JOB -20)
- Size: 16" O.D. x 28'0" S/S
- Design: 655 psig @ 150/-20` F MDMT
- C.A.: 1/16"
- Radiography: full per RT-1

Vessel Specifics:

- Service: Sweet
- Separator Section: 5'0", 2 phase c/w inlet deflector, float shield, 6 pass, 1" sch 80 glycol coil, 6" thick 316 SS demister with CS supports
- Contactor Section: ten (10) welded bubble cap trays at 24" spacing, 6" thick 316 SS demister with CS supports
- full diameter skirt and base plate
- caged ladder
- lift lugs
- registered and inspected for use in Alberta

Material:

Shell: 16" O.D. x .5" thick SA-106-B
Heads: 16" O.D. 2:1 S.E. SA-516-70N
Nozzles: SA-105
Pipe: SA-106-B
Bolting: SA-193-B7/SA-194-2H
Gaskets: 1/8" thick spiral wound 304 SS

Nozzles:

Inlet: 3" 300# RFWN nozzle
Gas Out: 2" 300# RFWN nozzle
Drain: 1 - 1" NPT 6000# FS coupling
Liquid Out: 1 - 1" NPT 6000# FS coupling
LC: 1 - 2" NPT 6000# FS coupling
LG: 2 - 3/4" NPT 6000# FS couplings
TI: 1 - 3/4" NPT 6000# FS coupling

PI: 1 - 3/4" NPT 6000# FS coupling
PSV: 1 - 1" NPT 6000# FS coupling
LSDH (future): 1 - 1" NPT 6000# FS
coupling
Glycol Connection: 1 - 1" NPT 600# RFWN
nozzle
Inspection: 2 - 2" NPT 6000# FS
couplings
Tray Drains: 10 - 3/4" NPT 6000# FS
couplings with

TYPE _____ FLOW _____ DATE ISSUED/REVISED*
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MARK	/	QTY.	/	DESCRIPTION
FE-300		1		6" SCH 80 GOVERNMENT APPROVED METER RUN - 6" 600# ANSI RF Daniel Senior fitting - built to AGA Fig 3C - standard service - 10% radiography - one 3/4" and one 1" connections on downstream (6000# FS half couplings) - downstream end flanged - Buna seal ring - one orifice plate bored to 2 1/2" diameter - Materials: SA-105N, SA-106B, B7/2H
FE-310 (R3)		1		2" SCH 40 GOVERNMENT APPROVED METER RUN - 2" 150# ANSI RF Daniel Senior fitting - built to AGA Fig 3C - standard service - 10% radiography - one 3/4" connection on downstream (6000# FS half couplings) - downstream end flanged - Buna seal ring - one orifice plate bored to 5/8" diameter - Materials: SA-105N, SA-106B, B7/2H - meter run received from Renaissance Energy and reconditioned by Daniel Canada
FR/PR/TR-300		1		BARTON 202E THREE PEN FLOW RECORDER - 0 to 100" water column - 0 to 1500 psi static element - 0 to 150°F thermal system - Wilson battery operated chart drive - disposable pens
FR/PR-310		1		BARTON 202E TWO PEN FLOW RECORDER - 0 to 100" water column - 0 to 250 psi static element - Wilson battery operated chart drive - disposable pens

5VM	2	AGCO 5 VALVE MANIFOLDS (CARBON STEEL)
DP-200A/B	2	KIMRAY DRIP PITS (MODEL DP-200)

TYPE _____ LEVEL _____ DATE ISSUED/REVISED*
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MARK	/	QTY.	/	DESCRIPTION
LC-300		1		2" NPT FISHER 2660A-266T LEVEL CONTROLLER - 3 to 15 psi snap acting - 1 7/8" x 12" PCV displacer
LC-310		2		2" NPT FISHER 2660-266T LEVEL CONTROLLERS
LC-311				- 3 to 15 psi throttle acting - 1 7/8" x 12" PCV displacer - LC-311 mounted in an external cage
(LCC-301)				
LCV-300		3		1" NPT FISHER 357 CONTROL VALVES
LCV-310				- fail closed
LCV-311				- WCC body - 1/4" MF plug (equal %) - size 40 actuator, 3 to 15 psi air to open - maximum shutoff pressure is 4000 psig
LG-300		3		JERGUSON 15-T-20 TRANSPARENT GAUGE GLASS ASSEMBLIES
LG-310				- 7 7/8" visible glass (1500 psig @
100`F)				
LG-311				- set of 146 gauge valves
(R3)				
LG-800		1		JERGUSON TUBULAR LEVEL GAUGE ASSEMBLY - set of 1/2" NPT Model 170 gauge cocks - 5/8" Red-Line glass - angle iron glass protectors

TYPE _____ PRESSURE _____ DATE ISSUED/REVISED*
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MARK	/	QTY.	/	DESCRIPTION
PSV-300		1		CONSOLIDATED 1997C RELIEF VALVE - 1 1/2" FNPT x 2" FNPT - plain cap, standard trim - carbon steel spring - 0.442 in ² orifice - set at 1415 psig (maximum 1500 psig)
PSV-310 PSV-510		2		CONSOLIDATED 1990C RELIEF VALVES - 1" MNPT x 1" FNPT - plain cap, standard trim - carbon steel spring - 0.110 in ² orifice - set at 655 psig
PSV-311		1		1" CONSOLIDATED 1993 RELIEF VALVE - 1" x 1 1/2" NPT - plain cap, standard trim - 0.196 in ² orifice - set at 150 psig
PSV-900		1		CONSOLIDATED 1990C RELIEF VALVE - 1" MNPT x 1" FNPT - plain cap, standard trim - carbon steel spring - 0.110 in ² orifice - set at 25 psig - common relief valve across the filters
PDI-910 (R1)		2		2 1/2" ORANGE RESEARCH 1201PG-1A-2.5L DIFFERENTIAL PDI-920 PRESSURE GAUGES - 0 to 30 psi/kPa - aluminum body/SS internal
PI-800 PI-801 PI-802		3		2 1/2" WIKA 111.10 DRY PRESSURE GAUGES - range 0 to 210 kPa (dual scale) (PI-800) - range 0 to 100 kPa (dual scale) (PI-801/802) - 1/4" NPT bottom connection, brass bourdon/tube

PI-310	2	4" WIKA 233.54 LIQUID FILLED PRESSURE GAUGES
PI-510		<ul style="list-style-type: none"> - range 0 to 5000 kPa (dual scale) - 1/2" NPT bottom connection, 316 SS bourdon tube/socket
PI-300	1	4" WIKA 233.54 LIQUID FILLED PRESSURE GAUGE
		<ul style="list-style-type: none"> - range 0 to 10,000 kPa (dual scale) - 1/2" NPT bottom connection, 316 SS bourdon tube/socket

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MARK	/	QTY.	/	DESCRIPTION
PRV-300		1		1" NPT FISHER TYPE 627 PRESSURE REGULATOR - steel body, SS trim, nylon disc - 70 to 150 psi spring range - 1/4" orifice - 48,300 scfh based on 750 psi in/125 psi out
PRV-800		1		1" NPT FISHER TYPE 627 PRESSURE REGULATOR - steel body, SS trim - 5 to 20 psi range - 1/4" orifice
PRV-801 PRV-802		2		1/4" NPT FISHER 67 PRESSURE REGULATORS - standard body/trim - 0 to 20 psig range
I/G		6		1/4" NPT FISHER 67AFR PRESSURE REGULATORS - standard body/trim - 0 to 35 psig range
PSDL-800		1		TELEMATIC DUAL SNAP SERIES 6900 PRESSURE SWITCH - Model 6900GE12 - 30 VDC, SPDT, 5 AMP, explosion proof switch - set at 5 psig falling
TWV-800		1		AMOT 4057 THREE WAY SWITCHING VALVE - Model 4057D-025-H-2
BDV-300 BDV-310		2		1" NPT FISHER 357 CONTROL VALVES - WCC body, 1/4" microform trim - size 40 actuator - 6 to 30 psig, air to close - fail open
SOV-300 SOV-310		2		ASCO 8320G200 THREE WAY SOLENOID VALVES - 24 VDC

TYPE _____ TEMPERATURE _____ DATE ISSUED/REVISED*
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MARK	/	QTY.	/	DESCRIPTION
TC-800 TSDH-800		2		KIMRAY T12-DA BASE ASSEMBLIES - stainless steel separable socket (SS-12-SS)
TCV-800 SDV-800		2		1" NPT FISHER 119 CONTROL VALVES - cast iron bodies
SDFE-800		1		KIMRAY HT-12-PG FLAME FAILURE SHUTDOWN
TI-300 TI-310		2		3" TREND MODEL 33 BIMETAL THERMOMETERS - -40 to 120` F (dual scale) - 6" stem length (1/2" back connection) - 3/4" x 1/2" x 6" long 316 SS thermowell
TI-800		1		3" TREND MODEL 33 BIMETAL THERMOMETER - 50 to 500` F (dual scale) - 6" stem length (1/2" back connection) - 3/4" x 1/2" x 6" long 316 SS thermowell
TI-311		1		3" TREND MODEL 33 BIMETAL THERMOMETERS - -40 to 120` F (dual scale) - 2 1/2" stem length (1/2" back connection) - 3/4" x 1/2" x 2 1/2" long 316 SS thermowell

TYPE MANUAL VALVES DATE ISSUED/REVISED*
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MARK	/	QTY.	/	DESCRIPTION
BA-050		1		1/2" NPT BALL VALVE
BA-100		19		1" NPT BALL VALVES
BAS-050		1		1/2" SW BALL VALVE
BAS-100 (R3)		17		1" SW BALL VALVES
BAS-150		5		1 1/2" SW BALL VALVES
BAF-203 (R3)		1		2" 300# RF RP BALL VALVE
BAF-206		1		2" 600# RF RF BALL VALVE
CHS-100 (R3)		4		1" SW CHECK VALVES
CH-025		1		1/4" NPT CHECK VALVE (NUPRO S-4CP2-1)
CH-100 (R3)		3		1" NPT CHECK VALVES
GL-100		4		1" NPT GLOBE VALVES
GLS-100		1		1" SW GLOBE VALVE
NV-025		17		1/4" NPT NEEDLE VALVES (AGCO H7VC-2)
NV-050 (R3)		11		1/2" NPT NEEDLE VALVES 9AGCO H7VC-4Q)
YSH-100 PSI)		1		1" NPT "Y" STRAINER (600 ANSI, 1500
YSL-150		2		1 1/2" LP "Y" STRAINERS (100 PSI)

VALVE MANUFACTURERS: (ALL VALVES FOR SWEET SERVICE)

BALL VALVES

(FLANGED)	:	NUTRON
(THREADED)	:	NUTRON (3000#)
(SOCKETWELD)	:	WORCESTER (2500# MINIMUM)
CHECK VALVES		
(FLANGED)	:	WHEATLEY/STREAMFLO/BONNEY FORGE/VELAN
(WAFER)	:	WHEATLEY/STREAMFLO
(SW/THREADED)	:	BONNEY
FORGE/VELAN/CRANE/DSI/N.H./NEWCO		(800 ANSI)
GATE/GLOBE VALVES	:	BONNEY
FORGE/VELAN/CRANE/DSI/N.H./NEWCO		(800 ANSI)
NEEDLE VALVES	:	AGCO

TYPE	PIPING SPECIFICATIONS	DATE ISSUED/REVISED*
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PIPING MATERIAL

150# ANSI

600# ANSI

WELDED

2" - 10 " sch 40

2" - 10" sch 80

Piping	A-106-B smls
Flanges	A-105
Fittings	A-234-WPB
Boltings	B7 studs, 2H nuts
Gaskets	T304SS flexitallic

A-106-B smls
A-105
A-234-WPB
B7 studs, 2H nuts
T304SS flexitallic

THREADED

Pipes	A-106B sch 80
Fittings	3000# F.S. A-105
Nipples	sch 80 A-106 smls

A-106B sch 80
3000# F.S. A-105
sch 80 A-106B smls

RADIOGRAPHY

2" and larger	150# ANSI	600# ANSI
butt welded	10% RT	10% RT

GLYCOL PIPING

- all high pressure (600 ANSI) glycol piping to be of socketweld construction
- all low pressure (150 ANSI) glycol piping to be of socketweld construction with the exception of drain lines downstream of block valve which can be threaded

TYPE _____ PIPING SPECIFICATIONS _____ DATE ISSUED/REVISED*
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PRESSURE TESTING

HYDROTEST: All butt welded piping to be hydrotested to 1.5 times the design pressure for a minimum duration of four (4) hours.

PNEUMATIC: All 1 1/2" NPS and smaller low pressure glycol piping, fuel gas piping and instrument tubing to be air and soap bubble tested to 100 psig.

INSTRUMENT TUBING AND TUBING FITTINGS

- process tubing will be 3/8" O.D. x .035" W.T. cadmium plated
- pneumatic instrument tubing will be 1/4" O.D. x 0.35" W.T. cadmium plated
- Swagelok cadmium plated

TYPE PAINTING SPECIFICATIONS DATE ISSUED/REVISED*
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PAINTING SPECIFICATIONS

EQUIPMENT		SURFACE PREPARATION	PRIMER	PRIMER
STRUCTURAL STEEL		MECHANICAL CLEAN	VALSPAR	
ZINC	N/A	SSPC-SP2	CHROMATE	
VESSELS		COMMERCIAL GREY	VALSPAR	
ZINC	N/A	SANDBLAST	CHROMATE	
		SSPC-SP6		
PIPING		COMMERCIAL GREY	VALSPAR	
ZINC	N/A	CHROMATE	SANDBLAST	
		SSPC-SP6		

FINISH COAT (1 COAT)

VALSPAR (no exceptions)

VESSEL/STRUCTURES
 VALSPAR

COLOUR

VALVE BODIES/HANDLES	WARM GREY	20-F-34
TOWERS, EXCHANGERS, CONDENSERS	WARM GREY	20-F-34
SEPARATORS, REBOILERS	WARM GREY	20-F-34
ROTATING EQUIPMENT	WARM GREY	20-F-34
SMOKESTACKS	HIGH HEAT GREY	37-F-4
PLATFORMS, WALKWAYS, HANDRAILS, GRATING	GLOSS BLACK	20-J-5
SKID FLOOR	GLOSS BLACK	20-J-5

PIPING

SWEET PROCESS GAS	WARM GREY	20-F-34
SWEET FUEL GAS	YELLOW	20-Y-5
SOUR PROCESS/FUEL GAS	ORANGE	20-Y-5
INSTRUMENT AIR	WHITE	20-W-11
GLYCOL: RICH	FOREST GREEN	20-G-7
LEAN	SEACREST GREEN	20-G-2
CLEAN OIL/CONDENSATE	GLOSS BLACK	20-J-5
OIL EMULSION	CHESTNUT BROWN	20-D-6
AMINE: RICH	PURPLE	20-B-17

	LEAN	BRILLANT BLUE	20-B-11
WATER		SKY BLUE	20-B-12
METHANOL		ACCENT RED	20-R-3

TYPE _____ CLARIFICATIONS _____ DATE ISSUED/REVISED* _____
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- 1) Venting of instruments and controls are limited to those venting instrument gas during normal operations and which are provided with threaded vent ports only. Venting due to over pressure and/or diaphragm breakage are not included.
- 2) Four (4) PRESSON Standard Maintenance Manuals have been included which consist of the following:
 - Equipment/Instrumentation List
 - Manufacturer's Product Literature
 - General Arrangement Drawing (As-Built)
 - Process and Instrument Drawing (As-Built)
- 3) Four (4) PRESSON standard Quality Control Manuals have been included which consist of the following:
 - Vessel Data Reports
 - Piping Data Reports
 - Travel Sheets
 - Testing and NDE Reports

Note: Material test reports for all pressure parts are kept on file at PRESSON for five (5) years. These reports are available; but are not normally included in the Q.C. manuals.
- 4) The following has not been included:
 - transportation, offloading and re-assembly
 - start-up assistance
 - electrical work
 - dish type chimney tray
 - PSV on discharge of Kimray pumps (not required)
- 5) A Kimray 21015PV pump is included as requested, however, the required circulation rate of glycol using the worst conditions of 15.5 MMscf/d, 800 psi and 300°F, yields a flowrate of 304 USgph (utilizing 3 gallon TEG/H₂O). The maximum capacity of a 21015PV pump is 210 gph.