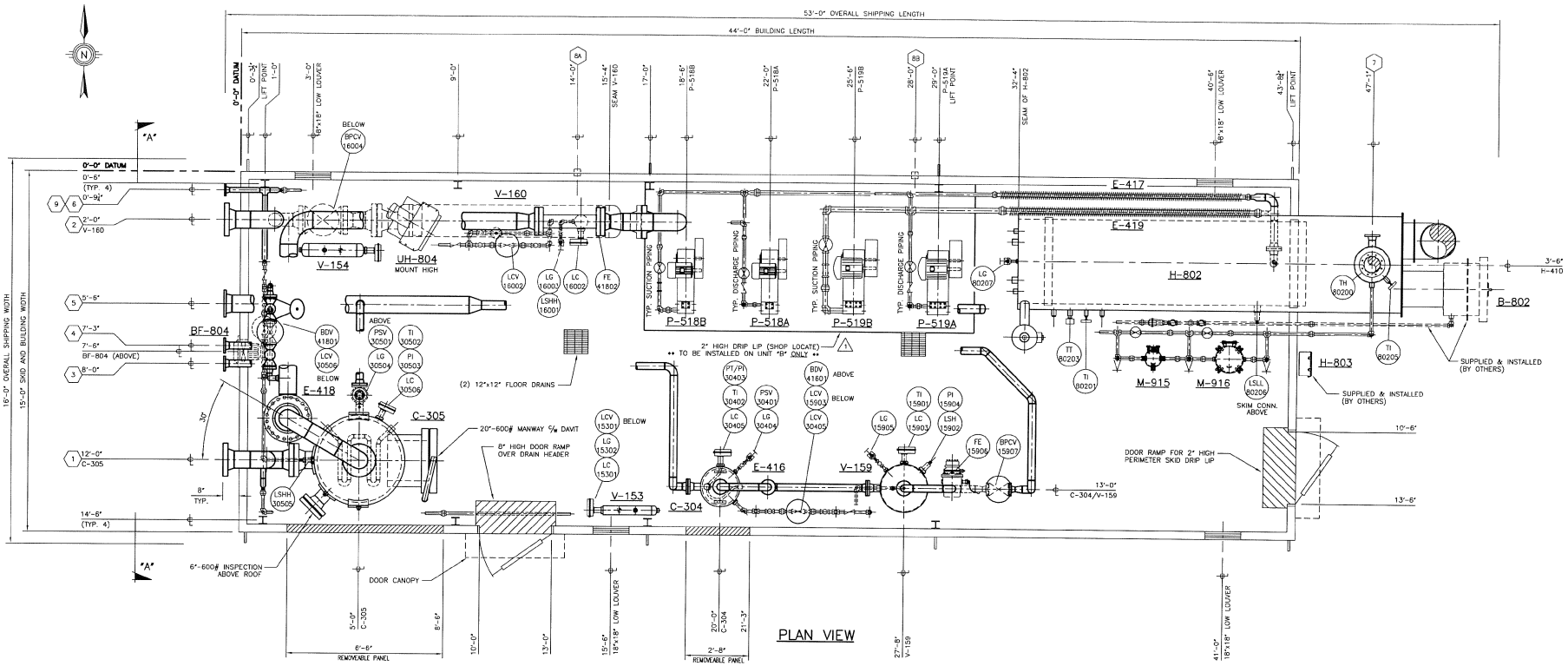

	600# (SWEET)	150# (SWEET)	GLYCOL PIPING
DESIGN CONDITIONS:			
D.P. & TEMP.	1415 PSIG @ -20/130°F	200 PSIG @ -20/150°F	1415/200 PSIG @ -20/130°F
BW C.A.	1/16"	1/16"	-
NPT/SW C.A.	1/16"	1/16"	0"
RADIOGRAPHY	10% TO ASME B31.3	10% TO ASME B31.3	NONE
P.W.H.T.	NONE	NONE	NONE
• HYDROTEST	1.5 TIMES D.P.	1.5 TIMES D.P.	1.5 TIMES D.P.
PIPING:			
••• BW PIPING	3" SCH. 40, SA-106-B 2",4",6",8",12" SCH. 80, SA-106-B	2" - 10" SCH. 40, SA-106-B -	- -
NPT PIPING	≤ 1½" SCH. 160 SA-106-B	≤ 2" SCH. XH SA-106-B	≤ 2" SCH. XH SA-106-B
SW PIPING	-	-	≤ 2" SCH. XH SA-106-B
INSTRUMENT TUBING	⅜" O.D. 316SS (0.035")	⅜" O.D. 316SS (0.035")	⅜" O.D. 316SS (0.035")
PROCESS TUBING	⅜" O.D. 316SS (0.035")	⅜" O.D. 316SS (0.035")	⅜" O.D. 316SS (0.035")
FITTINGS:			
BW FITTINGS	3" SCH. 40, SA-234-WPB 2",4",6",8",12" SCH. 80, SA-234-WPB	2" - 10" SCH. 40, SA-234-WPB -	- -
NPT/SW FITTINGS	≤ 1½" 3000# SA-105N	≤ 2" 3000# SA-105N	≤ 2" 3000# SA-105N
FLANGES	RFWN BORE TO PIPE, SA-105N	RFWN BORE TO PIPE, SA-105N	-
GASKETS	304SS x ⅛" THK. FLEXITALLIC	304SS x ⅛" THK. FLEXITALLIC	-
BOLTING	SA-193-B7/SA-194-2H	SA-193-B7/SA-194-2H	-
PUMP/L.G. NIPPLES	SCH. 160, SA-106-B	SCH. 160, SA-106-B	SCH. 160, SA-106-B
INSTR. TUBING FITTINGS	316SS SWAGELOK	316SS SWAGELOK	316SS SWAGELOK
PROCESS TUBING FITTINGS	316SS SWAGELOK	316SS SWAGELOK	316SS SWAGELOK

•LOW PRESSURE NPT/SW PIPING IS AIR TESTED AT 100 PSIG.
••PIPE SCHEDULE IS SELECTED BASED ON PRESSURE AND CORROSION LIMITS.
•••ALLOW 1/16" GAP IN SOCKET WELDING.

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE MECHANICAL FLOWSHEET.
2. PROCESS PIPING TO BE DESIGNED TO ASME B31.3 2004 EDITION.
3. PRESSURE VESSELS ARE TO BE REGISTERED IN ALBERTA, BRITISH COLUMBIA & SASKATCHEWAN.
4. VESSELS AND PIPING TO BE INSULATED AS PER FLOWSHEET AND/OR FABRICATION DRAWINGS.
5. PAINTING: SURFACE PREPARATION: COMMERCIAL SANDBLAST TO SSPC-SP6.
   PRIMER: 1½ CLOVERDALE #T-101 GREY OVERALL.
   FINISH PAINT: 1½ CLOVERDALE #20-F-34 (SERIES #111) WARM GREY MARINE ENAMEL.
   COLOR CODED PIPING IN ACCORDANCE WITH FORT ENERGY PAINTING SPECIFICATION
6. ALL ELEVATIONS SHOWN ARE FROM TOP OF MAIN SKID MEMBERS. DEPTH OF SKID IS 1'-0¼".
7. ALL SKID EDGE CONNECTIONS TO BE HELD AT DIMENSIONS AND ELEVATIONS SHOWN FOR CUSTOMER TIE-INS.
8. SKID IS DESIGNED FOR A EIGHT (8) POINT LIFT.
9. BLEED TYPE INSTRUMENTS AND METER RUN MANIFOLD ARE INDIVIDUALLY VENTED 0/S BUILDING. REGULATOR BONNETS, INSTRUMENT CASES AND CONTROL VALVE ACTUATORS ARE NOT VENTED.
10. 1"# INSTRUMENT AIR HEADER AS SHOWN. SHOP TO RUN AS REQUIRED WITH ¼"# TAKE-OFFS 5/8 ISOLATION NEEDLE VALVE, 67 CFR REGULATOR, AND TUBING TO COMPLETE.
11. REMOVE ALL FLOATS/DISPLACERS FROM ALL LEVEL CONTROLLERS AND SWITCHES. TAG AND CRATE FOR SHIPPING.
12. ALL P.I. AND T.I. LOCATIONS ARE PROVIDED WITH SS TAGS FOR FIELD RE-INSTALLATION.
13. PROTECT ALL OPENINGS FOR SHIPPING.
14. ESTIMATED SHIPPING WEIGHT (LESS T-305/304): 56,000 lbs.
    WEIGHT OF C-305: 38,500 lbs.
    WEIGHT OF C-304: 6,800 lbs.
15. PAPER COPIES: ONE (1) OPERATING MANUALS AND ONE (1) QUALITY CONTROL DATA BOOKS ARE PROVIDED.
16. CD COPIES: ONE (1) OPERATING MANUALS AND ONE (1) QUALITY CONTROL DATA BOOKS ARE PROVIDED.

TIE-IN SCHEDULE

1. 8"-600# ANSI RF, H.P. GAS INLET, T.O.P. @ ELEV. 8'-8"
2. 8"-600# ANSI RF, H.P. GAS OUTLET, T.O.P. @ ELEV. 8'-8"
3. 3"-150# ANSI RF, FUEL GAS INLET, B.O.P. @ ELEV. 9'-0"
4. 3"-150# ANSI RF, FUEL GAS OUTLET, B.O.P. @ ELEV. 9'-0"
5. 8"-150# ANSI RF, HP FLARE HEADER, B.O.P. @ ELEV. 9'-0"
6. 2"-150# ANSI RF, DRAIN HEADER, ℄ @ ELEV. 0'-6"
7. 3"-150# ANSI RF, H-802 STEAM OUTLET, ℄ @ ELEV. 23'-7"
8. 2"-3000# NPT, SKID DRAIN ℄ @ 4" BELOW TOP OF SKID
9. 1"-3000# NPT, INSTRUMENT AIR SUPPLY, B.O.P. @ ELEV. 9'-0"

TWO (2) UNIT'S REQUIRED

DWG.	DESCRIPTION	REV.	DATE	REV. BY	APP'D PROD. EQ'PT.	APP'D CUST.	DESCRIPTION
		1	2006 09-18	KRT			ADDED PUMP DRIP LIP (UNIT "B" ONLY)
B-2006-7589-50B	BILL OF MATERIALS	0	2006 05-24	KRT	ME		ISSUED FOR CONSTRUCTION
D-2006-7589-50F-001/2	MECHANICAL FLOWSHEET	A	2006 03-28	KRT	ME		ISSUED FOR APPROVAL

REFERENCE DRAWINGS — REVISIONS

DRAWN	KRT
DATE	2006-03-21
SCALE	½"=1'-0"
CHK'D	KEW

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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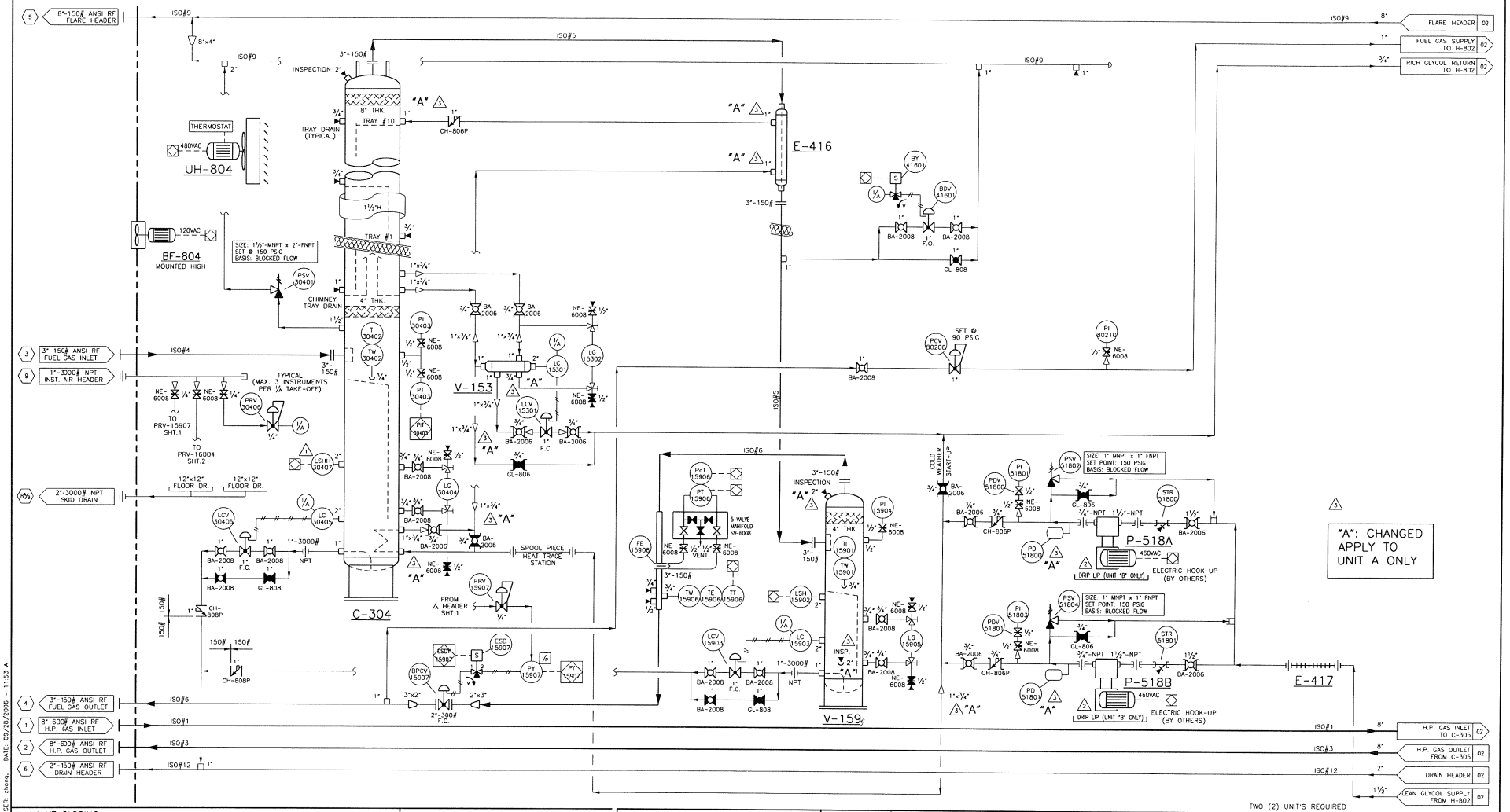
LAYOUT / ASSEMBLY
SWEET GLYCOL DEHYDRATION PACKAGE
42" I.D. CONTACTOR W/ 1,250,000 BTU/HR REBOILER
LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION — LSD: 11-17-63-06 W5M & 07-25-62-06 W5M
CUSTOMER: FORT ENERGY 5/6 BDR ENGINEERING LTD.
DWG/SHOP ORDER: D-2006-7589-50A-001/001 — REV: 1

UH-804	BF-804	C-304	E-416	V-153	V-159	P-518A/B	E-417
BUILDING HEATER	EXHAUST FAN	GLYCOL CONTACTOR	GAS/GLYCOL HEAT EXCHANGER	GLYCOL LEVEL CAGE	FUEL GAS SCRUBBER	GLYCOL PUMPS	AIR/GLYCOL HEAT EXCHANGER
(1) RUFFNECK FX416-480,360-20-D 10kW (68,250 BTU/HR) 5/8" 1/4 HP, 480VAC/3PH/60HZ, XP MOTOR XF-311 X.P. THERMOSTAT	ONE WALL MOUNTED TOTAL 12 ACPH 1/4 HP 120V/1PH/60HZ, XP MOTOR	20" O.D. x 30'-0" 5/8 200 PSIG D.P. @ -29/150°F + 1/16" C.A. (10) TRAYS @ 24" SPACING 5/8" 2-PHASE x 5'-0" INTEGRAL SCRUBBER	3 1/2" O.D. x 41 1/2" O.D. x 10'-0" LG. 200 PSIG D.P. @ -29/150°F + 1/16" C.A.	41 1/2" O.D. x 2'-0" 5/8 200 PSIG D.P. @ -29/150°F + 1/16" C.A. (5) CONNECTIONS HORIZONTAL	24" O.D. x 5'-0" 5/8 200 PSIG D.P. @ -29/150°F + 1/16" C.A. 2-PHASE, VERTICAL	(2) UNION SX-3 SIMPLEX PUMP 200 PSIG D.P. @ 0.65 USGPM 5/8" 1 HP 460VAC/3PH/60HZ 3/4"Ø PLUNGERS @ 160 RPM TEXP, CLASS 1, DIV. 1	1 1/2" x 10'-0" LG. 1-PASS SCH. 40 FINTUBE



VALVE TAGGING

GA-818

VALVE TYPE — SUFFIX: END CONNECTION, TRIM, PRESSURE RATING

VALVE TYPES: BA = BALL; GA = GATE; GL = GLOBE; CH = CHECK; NE = NEEDLE; BB = GAUGE (BLOCK & BLEED); BV = BUTTERFLY; SV = SPECIALTY

PRESSURE RATINGS: 1 = 150# ANSI; 3 = 300# ANSI; 6 = 600# ANSI; 8 = 800# API; 9 = 900# ANSI; 15 = 1500# ANSI/1500# API; 20 = 2000 WOG[1]; 25 = 2500# ANSI/2500# API; 30 = 3000 WOG[1]; 40 = 4000 WOG[1]; 60 = 6000 WOG[1]

[1]WOG PRESSURE RATINGS ONLY APPLY TO THREADED AND SOCKET-WELDED BALL VALVES.

TRIM: 0 = STANDARD; 1 = SOUR; 2 = SOUR LOW TEMPERATURE; 3 = LOW TEMPERATURE; 4 = HIGH TEMPERATURE

END CONN.: C = RF; 6 = RTJ; 5 = SW; 7 = NPT x SW; 8 = NPT; 9 = MNPT x FNPT

SUFFIX: F = FULL PORT; S = SWING CHECK; P = PISTON CHECK

NOTES:

1. * ITEMS SUPPLIED BY EQUIPMENT VENDOR.
2. ** ITEMS SUPPLIED & INSTALLED BY CUSTOMER.
3. *** DENOTES TURBINE METERS REQUIRING A MIN. STRAIGHT PIPE LENGTH OF 10Ø UPSTREAM & 5Ø DOWNSTREAM.

GENERAL LEGEND:

1. DENOTES PNEUMATIC TIE-IN.
2. DENOTES PNEUMATIC COMPRESSOR PANEL TIE-IN.
3. DENOTES CAPILLARY TIE-IN.
4. DENOTES ELECTRICAL TIE-IN (BY OTHERS).
5. DENOTES ELECTRICAL JUNCTION BOX TIE-IN.
6. DENOTES LOCAL PLC TIE-IN (BY OTHERS).
7. DENOTES LOCAL ELECTRICAL PANEL TIE-IN.
8. DENOTES FIELD MOUNTED INSTRUMENT.
9. DENOTES LOCAL PANEL INSTRUMENT.
10. DENOTES LOCAL PANEL INSTRUMENT (MOUNTED INSIDE PANEL).

DWG.	DESCRIPTION
D-2006-7589-50B	BILL OF MATERIALS
D-2006-7589-50A-001	LAYOUT/ASSEMBLY

REFERENCE DRAWINGS

REV	DATE	REV. BY	CHK'D BY	APPD BY	DESCRIPTION
3	2006-09-29	JZ			AS BUILT (UNIT A ONLY)
2	2006-09-14	KRT	ME		ADDED PUMP DRIP LIP (UNIT "B" ONLY)
1	2006-06-02	KRT	ME		ADDED LSHH-30407 @ C-304
0	2006-03-24	KRT	ME		ISSUED FOR CONSTRUCTION
A	2006-03-28	KRT			ISSUED FOR APPROVAL

REVISIONS

DRAWN	KRT
DATE	2006-03-20
SCALE	NTS
CHK'D	KEW

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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MECHANICAL FLOWSHEET
SWEET GLYCOL DEHYDRATION PACKAGE
42" I.D. CONTACTOR W/ 1,250,000 BTU/HR REBOILER

LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION — LSD: 11-17-63-06 W5M & 07-25-62-06 W5M

CUSTOMER: FORT ENERGY 5/6 BDR ENGINEERING LTD.

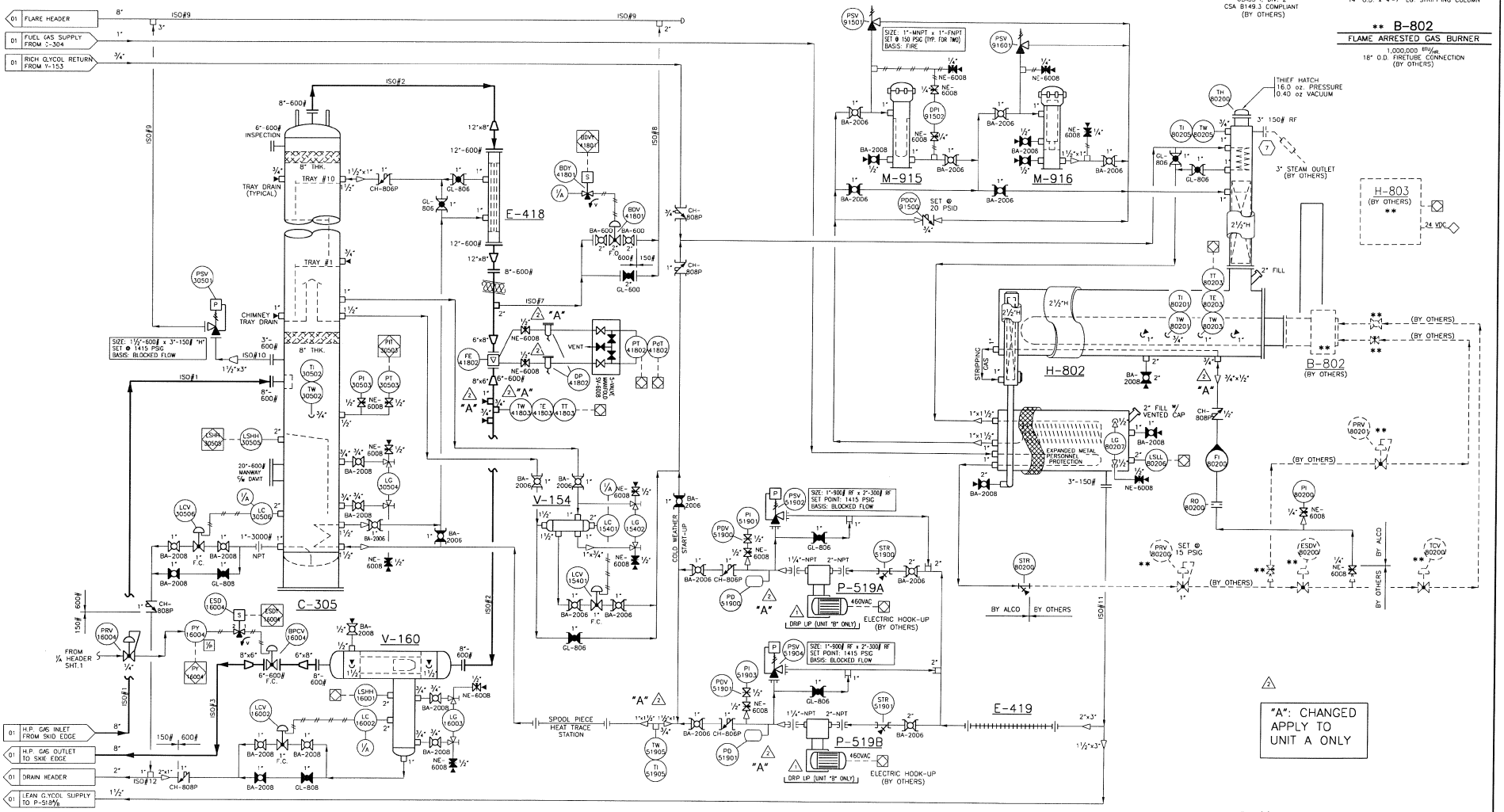
DWG/SHOP ORDER: D-2006-7589-50F-001/002 — REV. 3

D-02005-12931-50F-001

D-2006-7589-50F-001.dwg, USER: zhang, DATE: 09/28/2006 - 11:53 A

C-305	E-418	V-160	V-154	P-519A/B	E-419	M-915	M-916	** H-803	H-802
GLYCOL CONTACTOR	GAS/GLYCOL HEAT EXCHANGER	HORIZONTAL RECYCLE SEPARATOR	GLYCOL LEVEL CAGE	GLYCOL PUMPS	AIR/GLYCOL HEAT EXCHANGER	GLYCOL PARTICULATE FILTER	GLYCOL CHARCOAL FILTER	BURNER CONTROL PANEL	GLYCOL RECONCENTRATOR
42" I.D. x 34'-0" 5/8 1415 PSIG D.P. @ -20/150°F + 1/16" C.A. (10) TRAYS @ 24" SPACING 5/8 2-PHASE x 7'-6" INTEGRAL SCRUBBER	11-96 NEN (TEMA 'C') T.S.: 1415 PSIG D.P. @ -20/482°F + 1/16" C.A. S.S.: 1415 PSIG D.P. @ -29/500°F + 1/16" C.A. DESIGN DUTY: 136,998 BTU/HR.	16" O.D. x 10'-0" 1/2 1415 PSIG D.P. @ -20/150°F + 1/16" C.A. 5/8 6 5/8" O.D. x 1'-6" LG. BOOT HORIZONTAL 2-PHASE	6 5/8" O.D. x 2'-0" 5/8 1415 PSIG D.P. @ -29/150°F + 1/16" C.A. (5) CONNECTIONS HORIZONTAL	(2) UNION DX-5 DUPLEX PUMP 1400 PSIG D.P. @ 5.65 USGPM 5/8 7.5 HP 460VAC/3PH/60HZ. 1 1/8 PLUNGERS @ 307 RPM TEXP, CLASS 1, DIV. 1	2" x 10'-0" LG. 1-PASS SCH. 40 FINTUBE	8 5/8" O.D. x 3'-9" HIGH 150 PSIG D.P. @ -29/500°F + 1/16" C.A. 10 MICRON NOMINAL BAG ELEMENT SWING BOLT CLOSURE	14" O.D. x 3'-9" HIGH 150 PSIG D.P. @ -29/500°F + 1/16" C.A. (2) CHARCOAL ELEMENTS SWING BOLT CLOSURE	ZIRCO ACL-5000 SPARK GENERATED IGNITOR AUTO/MANUAL RE-LIGHT FLAME FAIL SHUTDOWN REMOTE START/STOP/STATUS CLASS 1, DIV. 2 CSA B149.3 COMPLIANT (BY OTHERS)	48" O.D. x 16'-0" LG REBOILER 42" O.D. x 12'-0" LG SURGE TANK 18" O.D. FIRETUBE 18" O.D. x 18'-0" HIGH STACK 18" O.D. x 12'-6" LG STILL COLUMN 14" O.D. x 4'-7" LG. STRIPPING COLUMN

** B-802
FLAME ARRESTED GAS BURNER
1,000,000 BTU/HR.
18" O.D. FIRETUBE CONNECTION
(BY OTHERS)



TWO (2) UNIT'S REQUIRED

VALVE TAGGING

GA-818

VALVE TYPE — SUFFIX — END CONNECTION — TRIM — PRESSURE RATING

VALVE TYPES: BA = BALL; GA = GATE; GL = GLOBE; CH = CHECK; NE = NEEDLE; BB = GAUGE (BLOCK W/ BLEED); BV = BUTTERFLY; SV = SPECIALTY

PRESSURE RATINGS: 1 = 150# ANSI; 3 = 300# ANSI; 6 = 600# ANSI; 8 = 800# API; 9 = 900# ANSI; 15 = 1500# ANSI/1500# API; 20 = 2000 WOG[1]; 25 = 2500# ANSI/2500# API; 30 = 3000 WOG[1]; 40 = 4000 WOG[1]; 60 = 6000 WOG[1]

[1]WOG PRESSURE RATINGS ONLY APPLY TO THREADED AND SOCKET-WELDED BALL VALVES.

END CONN.: G = RF; 1 = RTJ; 6 = SW; 7 = NPT x SW; 8 = NPT; 9 = MNPT x FNPT

TRIM: C = STANDARD; 1 = SOUR; 2 = SOUR LOW TEMPERATURE; 3 = LOW TEMPERATURE; 4 = HIGH TEMPERATURE

SUFFIX: F = FULL PORT; S = SWING CHECK; P = PISTON CHECK

NOTES:

1. * ITEMS SUPPLIED BY EQUIPMENT VENDOR.
2. ** ITEMS SUPPLIED & INSTALLED BY CUSTOMER.
3. *** DENOTES TURBINE METERS REQUIRING A MIN. STRAIGHT PIPE LENGTH OF 10Ø UPSTREAM & 5Ø DOWNSTREAM.

GENERAL LEGEND:

1. DENOTES PNEUMATIC TIE-IN.
2. DENOTES PNEUMATIC COMPRESSOR PANEL TIE-IN.
3. DENOTES CAPILLARY TIE-IN.
4. DENOTES ELECTRICAL TIE-IN (BY OTHERS).
5. DENOTES ELECTRICAL JUNCTION BOX TIE-IN.
6. DENOTES LOCAL PLC TIE-IN (BY OTHERS).
7. DENOTES LOCAL ELECTRICAL PANEL TIE-IN.
8. DENOTES FIELD MOUNTED INSTRUMENT.
9. DENOTES LOCAL PANEL INSTRUMENT.
10. DENOTES LOCAL PANEL INSTRUMENT. (MOUNTED INSIDE PANEL)

DWG.	DESCRIPTION
B-2006-7589-50B	BILL OF MATERIALS
D-2006-7589-50A-001	LAYOUT/ASSEMBLY

REFERENCE DRAWINGS

REV.	DATE	REV. BY	DRAWN BY	CHK'D BY	APPV'D BY	DESCRIPTION
2	2006 (9-28)	JZ				AS BUILT (UNIT A ONLY)
1	2006 (9-11)	KRT	ME			ADDED PUMP DRIP LIP (UNIT "B" ONLY)
0	2006 (2-1)	KRT	ME			ISSUED FOR CONSTRUCTION
A	2006 (2-28)	KRT				ISSUED FOR APPROVAL

REVISIONS

DRAWN	KRT
DATE	2006-03-20
SCALE	NTS
CHK'D	KEW

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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MECHANICAL FLOWSHEET
SWEET GLYCOL DEHYDRATION PACKAGE
42" I.D. CONTACTOR W/ 1,250,000 BTU/HR REBOILER

LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION — LSD: 11-17-63-06 W5M & 07-25-62-06 W5M

CUSTOMER: FORT ENERGY C/O BDR ENGINEERING LTD.

DWG/SHOP ORDER: D-2006-7589-50F-002/002 — REV. 2

D-02005-12931-50F-001

D-2006-7589-50F-002.dwg, USER: zhang, DATE: 09/28/2006 - 1:18 P

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	C-304	1	GLYCOL CONTACTOR: 20" O.D. x 30'-0" s/s; 200 PSIG D.P. @ -20/150ºF;			3260	3,260								D-2006-7589-02-001
			1/16" C.A.; c/w (10) BUBBLE CAP TRAYS @ 24" SPACING; 5'-0" x 2-PHASE												
			INTEGRAL SCRUBBER												
	C-305	1	GLYCOL CONTACTOR: 42" I.D. x 34'-0" s/s; 1415 PSIG D.P. @ -20/130ºF;			35700	35,700								D-2006-7589-01-001
			1/16" C.A.; c/w (10) BUBBLE CAP TRAYS @ 24" SPACING; 7'-6" x 2-PHASE												
			INTEGRAL SCRUBBER												
	H-802	1	GLYCOL RECONCENTRATOR: 48" O.D. x 16'-0" LG. REBOILER; 42" O.D. x 12'-0"			10250	10,250								D-2006-7589-05-001
			LG. SURGE TANK; 18" O.D. FIRETUBE; 18" O.D. x 18'-0" HIGH STACK;												
			18" O.D. x 12'-6" HIGH STILL COLUMN; 14" O.D. x 4'-7" LG. STRIPPING COLUMN;												
	H-803	1	ZIRCO ACL-5000 BURNER CONTROL PANEL: CSA-APPROVED FOR B149.3 &			20	20								
			FOR CL.1, DIV.2 AREA; FLAME ROD IGNITOR ASSEMBLY; INSTALLATION KIT;												
			24VDC POWER SUPPLY; REQ'D LENGTH FOR INSTALLATION IN B-802												
			(SUPPLIED AND INSTALLED BY CUSTOMER)												
	B-802	1	FLAME ARRESTED GAS BURNER: 1,000,000 BTU/HR DUTY			350	350								
			STACK HEIGHT: 14'-0", FIRETUBE: 6'-0" 'U'-TUBE (12'-0" TOTAL), 2500' SITE ELEV.												
			(SUPPLIED AND INSTALLED BY CUSTOMER)												
	E-416	1	GAS/GLYCOL EXCHANGER: 3 1/2" O.D. x 4 1/2" O.D. x 10'-0" LG.; 200 PSIG D.P.			215	215								MR'D 7589-50-1
			@ -20/150ºF + 1/16" C.A.												(USE (1) STOCK 7483-12)
															(USE (1) STOCK 7554-6)
	E-417	1	AIR/GLYCOL EXCHANGER: 1 1/2" SCH. 40 FINTUBE x 10'-0" LG.; 1-PASS;			72	72								
			200ºF OUTLET TEMPERATURE												
	E-418	1	GAS/GLYCOL HEAT EXCHANGER: 11-96 NEN TEMA 'C'			2010	2,010								D-2006-7589-03-001
			S.S.: 1415 PSIG D.P. @ -20/250ºF + 1/16" C.A.												
			T.S.: 1415 PSIG D.P. @ -20/148ºF + 1/16" C.A.												
			DESIGN DUTY: 136,998 BTU/HR.												
	E-419	1	AIR/GLYCOL EXCHANGER: 2" SCH. 40 FINTUBE x 10'-0" LG.; 1-PASS;			87	87								
			200ºF OUTLET TEMPERATURE												
			ESTIMATED SHIPPING WEIGHT:	100,940 Lbs.			51,964								

REVISIONS

REV.	DATE	REV. BY
0	May. 26, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
DATE:	May. 17, 2006
CHK'D	
CHK'D	
APP'D:	

ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-001/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	V-160	1	HORIZONTAL RECYCLE SEPARATOR: 16" O.D. x 11'-0" F/F,			2250	2,250								D-2006-7589-10-001
			1415 PSIG D.P. @ -20/130ºF + 1/16" C.A., 2-PHASE, c/w 6 5/8" O.D x 1'-6" BOOT												
	V-159	1	FUEL GAS SCRUBBER: 24" O.D. x 5'-0" s/s; 200 PSIG @ -20/150ºF; 1/16" C.A.;			1230	1,230								D-2006-7589-11-001
			2-PHASE VERTICAL												
	V-153	1	HORIZONTAL LEVEL CONTROL CAGE: 4 1/2" O.D. x 2'-0" S/S;			40	40								MR'D 7589-50-1
			200 PSIG D.P. @ -20/150ºF; 1/16" C.A.;												(USE STOCK 7548-05)
			FOR LC-15301												
	V-154	1	HORIZONTAL LEVEL CONTROL CAGE: 6 5/8" O.D. x 2'-0" S/S;			82	82								C-2006-7589-09-001
			1415 PSIG D.P. @ -20/150ºF; 1/16" C.A.;												
			FOR LC-15401												
	M-915	1	GLYCOL PARTICULATE FILTER: 8 5/8" O.D. x 3'-9" LG., 150 PSIG D.P. @ -20/200ºF, 1/16" C.A.,			230	230								D-2006-7589-06-001
			1"-NPT INLET/OUTLET CONN'S, SWING BOLT TOP CLOSURE, c/w FILTER BASKET SIZE 2; 316 SS, O-RING												
			(1) POROUS MEDIA HIGH EFFICIENCY #HEBFPP10P BAG FILTER (10 MICRON RATING)												
	M-916	1	GLYCOL CHARCOAL FILTER: 14" O.D. x 3'-9" LG., 150 PSIG D.P. @ -20/200ºF, 1/16" C.A.,			450	450								D-2006-7589-07-001
			1"-NPT INLET & 1 1/2"-NPT OUTLET CONN'S, SWING BOLT TOP CLOSURE. c/w												
			(2) POROUS MEDIA #FA6036AACE CHARCOAL ELEMENTS												
	P-518A	2	UNION SX-3 SIMPLEX PLUNGER GLYCOL PUMP: 3/4" PLUNGER, 2 1/4" STROKE			352	704								MR'D 7589-50-2
	P-518B		1 1/2"-FNPT SUCTION, 3/4"-FNPT DISCHARGE, NPSHR 1.5 PSI, COLMONOY COATED												
			C.S. PLUNGERS, 17-4 PH VALVES/SEATS, ARAMIND FIBER PACKING												
			RATED FOR 0.65 USGPM @ 200 PSIG DISCHARGE, MAX OPERATING PRESSURE 3000 PSIG												
			TOP MOTOR MOUNT V-BELT DRIVEN FOR 160 RPM w/ TECO-WESTINGHOUSE												
			1 HP 1200 RPM, 3PH/60HZ/460 VAC, TEXP INVERTER DUTY ELECTRIC MOTOR, 1.15 SF(1.0 ON VFD)												
	P-519A	2	UNION DX-5 DUPLEX PLUNGER GLYCOL PUMP: 1 1/8" PLUNGER, 2 1/4" STROKE			726	1,452								MR'D 7589-50-2
	P-519B		2"-FNPT SUCTION, 1 1/4"-FNPT DISCHARGE, NPSHR 2.25 PSI, COLMONOY COATED												
			C.S. PLUNGERS, 17-4 PH VALVES/SEATS, ARAMIND FIBER PACKING												
			RATED FOR 5.65 USGPM @ 1400 PSIG DISCHARGE, MAX OPERATING PRESSURE 1400 PSIG												
			TOP MOTOR MOUNT V-BELT DRIVEN FOR 307 RPM w/ TECO-WESTINGHOUSE												
			7.5 HP 1800 RPM, 3PH/60HZ/460 VAC, TEXP INVERTER DUTY ELECTRIC MOTOR, 1.15 SF(1.0 ON VFD)												
			TOTAL PAGE WEIGHT (Lbs.):				6,438								

REVISIONS		
REV.	DATE	REV. BY
0	May. 26, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
DATE:	May. 17, 2006
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ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-002/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	UH-804	1	RUFFNECK FX416-480360-20-D ELECTRIC BUILDING HEATER:			150	150								
			68,250 BTU/HR (20 Kw), X.P., 1/4 HP 480V/3PH/60Hz X.P. ELECTRIC MOTOR												
			c/w RUFFNECK XT-311 X.P. THERMOSTAT & BUILT-IN DISCONNECT SWITCH												
	SKID	1	15'-0" x 44'-0" LG. - W12@26# STRUCTURAL STEEL SKID:			20970	20,970								D-2006-7589-08-001
			(8) POINT LIFT, 3/16" THK. CHK. PLATE FLOORING												
	BLDG	1	15'-0" x 44'-0" x 11'-6" MIN. EAVE GABLE TYPE PRE-PAINTED BUILDING:			9600	9,600								B-2006-7589-50-001
	BF-804		c/w (2) 3'x7" DOORS, PANIC HARDWARE, CHECK CHAIN, LOCK SET,												
			(4) 18"x18" LOUVRES, R12 (3 1/2" THK.) INSULATION w/ 6 MIL. VAPOUR BARRIER,												
			22 Ga. STEEL EXTERIOR, 24 Ga.WHITE FLUTED ALUMINUM INTERIOR LINER,												
			REMOVABLE PANELS, EAVES TROUGHS, DOWN SPOUTS, ICE RACKS, DOOR CANOPYS												
			c/w (1) EXHAUST FAN: 12 ACPH, 1/4 H.P. 1/60/120 VAC X.P. MOTOR												
			TOTAL PAGE WEIGHT (Lbs.):				30,720								

REVISIONS		
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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. | LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M | DWG/SHOP ORDER: **B-2006-7589-50B-003/014** | REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
1	BDV-41801	1	2"-600# ANSI RF FISHER D4 CONTROL VALVE & ACTUATOR: 1/2" DIA. PORT,	**SA-352 LCC**		75	75								
			VARIABLE TRIM, FAIL OPEN, FLOW DOWN, 1415 PSIG SHUTOFF,												
			STANDARD MATERIALS, ACTUATOR SIZE 40												
1	BDV-41601	1	1" NPT FISHER D2 CONTROL VALVE AND ACTUATOR: 1/4" DIA. PORT,	**SA-352 LCC**		17	17								
			VARIABLE TRIM, FAIL OPEN, FLOW DOWN, 2250 PSIG SHUTOFF,												
			STANDARD MATERIALS												
1	BVY-41801	2	1/4" NPT ASCO EF8320G202 SOLENOID VALVE: 24V DC, CLASS I, DIV. I, XP,	**S-303 SS**		5	10								
	BVY-41601		UNIVERSAL 3-WAY OPERATION, 115 PSIG MWP, STD. MATL'S												
	BPCV-15907	1	2"-300# RF FISHER 667-ET-40 CONTROL VALVE AND ACTUATOR:			135	135								MR'D 7589-50-7
	PY-15907		2 5/16" FULL PORT, EQUAL PERCENTAGE CAGE GUIDE, FAIL CLOSED,												
	ESD-15907		BENCHSET @ 6-30 PSIG FOR 1415 PSIG SHUTOFF, SWEET I/A, STD MATL'S												
	PRV-15907		c/w FISHER DVC6010HC POSITIONER, 4-20 mA 2-WAY DIGITAL HART SIGNALS,												
			6-30 PSIG OUTPUT, CSA, XP, CLASS 1, DIV.1, GROUPS B/C/D												
			w/ 1/4"-NPT FISHER 67 CFR REGULATOR: 5-35 PSIG SPRING RANGE, STD MATL'S												
			w/ 1/4" NPT ASCO EF8320G202 SOLENOID VALVE: 24V DC, CLASS I, DIV. I, XP,												
			UNIVERSAL 3-WAY OPERATION, 115 PSIG MWP, STD. MATL'S												
	BPCV-16004	1	6"-600# RF FISHER 667-ET-70 CONTROL VALVE AND ACTUATOR:			715	715								MR'D 7589-50-6
	PY-16004		7" FULL PORT, EQUAL PERCENTAGE CAGE GUIDE, FAIL CLOSED,												
	ESD-16004		BENCHSET @ 14-30 PSIG FOR 200 PSIG SHUTOFF, SWEET I/A, STD MATL'S												
	PRV-16004		c/w FISHER DVC6010HC POSITIONER, 4-20 mA 2-WAY DIGITAL HART SIGNALS,												
			14-30 PSIG OUTPUT, CSA, XP, CLASS 1, DIV.1, GROUPS B/C/D												
			w/ 1/4"-NPT FISHER 67 CFR REGULATOR: 5-35 PSIG SPRING RANGE, STD MATL'S												
			w/ 1/4" NPT ASCO EF8320G202 SOLENOID VALVE: 24V DC, CLASS I, DIV. I, XP,												
			UNIVERSAL 3-WAY OPERATION, 115 PSIG MWP, STD. MATL'S												
	DP-41802	2	KIMRAY DP-200 HIGH PRESSURE DRIP POT: 2000 PSIG MWP, STD MATL'S			5	10								
	DPI-91502	1	MIDWEST MODEL #120AA DIFFERENTIAL PRESSURE INDICATOR, 6000 PSIG			1.5	2								
			MWP, 0-30 PSID, DUAL SCALE, STD MATL'S												
			TOTAL PAGE WEIGHT (Lbs.):				964								

REVISIONS

REV.	DATE	REV. BY
0	May. 26, 2006	KRT
1	Aug. 1, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

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NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
DATE:	May. 17, 2006
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ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-004/014** REV. 1

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	ESDV-80200	2	BURNER FUEL GAS CONTROL VALVES:												
	TCV-80200		**(SUPPLIED AND INSTALLED BY CUSTOMER)**												
	FE-15906	1	3"-150# ANSI RF DANIEL SENIOR "FLANGEWELD" METER RUN:			210	210								B-2006-7589-04-001
			SCH.40, (1) 1/8" THK. 304SS ORIFICE PLATE c/w 1 7/8" DIA. BORE, SEAL RING,												
			AGA THIRD EDITION (1991), AGA FIGURE #2-7 (SWEET SERVICE)												
	FE-41802	1	6"-600# ANSI RF V-CONE MODEL #VW06FF16N-B METER: 2'-7" LG.			120	120								MR'D 7589-50-3
			SA106-B TUBE MATL'S; ANSI B16.5 FLANGES (SA-105), 316 SS												
			CONE & SUPPORT; 1/2"-NPT PRESSURE PORTS												
	FI-80200	1	1/2" NPT HEDLAND H671A-100 IN-LINE FLOW METER: 10-100 SCFM,			2	2								MR'D 7589-50-5
			-20/240°F, ANODIZED ALUMINUM BODY, STD MATL'S (SWEET SERVICE)												
	LC-16002	1	2" NPT SOR 1530B-G2A-CJO-PS PNEUMATIC LEVEL SWITCH;			17	17								
			1500 PSIG MWP; STD MAT'L; SWEET I/A												
	LC-30405	3	2" NPT FISHER FS L2-XB SNAP ACTING LIQUID LEVEL CONTROLLER,			17	51								
	LC-30506		3750 PSIG MWP, DIRECT 0-35 PSIG OUTPUT, c/w 1 7/8" x 12" LG VERTICAL												
	LC-15903		PVC DISPLACER, -20/175°F, STANDARD MATERIALS												
	LC-15301	2	2" NPT FISHER L2 THROTTLING LIQUID LEVEL CONTROLLER,			17	34								
	LC-15401		6-30 PSIG DIRECT PROPORTIONAL OUTPUT, c/w 1 7/8" x 12" LG HORIZONTAL												
			PVC DISPLACER, -20/175°F, STANDARD MATERIALS												
			TOTAL PAGE WEIGHT (Lbs.):				434								

REVISIONS		
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0	May. 26, 2006	KRT

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-005/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	LCV-16002	1	1" NPT FISHER D2 CONTROL VALVE AND ACTUATOR: 1/4" DIA. PORT,			17	17								
			FAIL CLOSED, 0-35 PSIG, 4000 PSIG SHUTOFF, STANDARD MATERIALS												
	LCV-30405	3	1" NPT FISHER D2 CONTROL VALVE AND ACTUATOR: 1/4" DIA. PORT,			17	51								
	LCV-30506		FAIL CLOSED, 0-35 PSIG, 4000 PSIG SHUTOFF, STANDARD MATERIALS												
	LCV-15903														
	LCV-15301	2	1" NPT FISHER D4 LEVEL CONTROL VALVE AND ACTUATOR, 1/4" DIA. PORT,			64	128								
	LCV-15401		EQUAL PERCENTAGE TRIM, FAIL CLOSED, FLOW UP, BENCHSET AT 6-30												
			PSIG, 1415 PSIG SHUT-OFF REQUIRED, STD. MATL'S												
	LG-15905	6	PENBERTHY 1RL4 REFLEX LEVEL GAUGE: 2175 PSIG @ 100°F;			8.5	51								
	LG-15302		6 3/4" VISIBLE LENGTH; STD MATL'S												
	LG-15402														
	LG-16003														
	LG-30404														
	LG-30504														
	LG-80207	1	5/8" TUBULAR RED-LINE GAUGE GLASS ASSEMBLY: STD MATL'S			2	2								
	127	1	(2) 1/2" NPT PENBERTHY N7A GAUGE COCKS: 165 PSIG @ 300°F;			3.0	3								
			STD MATL'S (FOR LG-80207)												
	130	6	(2) 3/4" NPT PENBERTHY 330J GAUGE COCKS: 4000 PSIG @ 100°F;			2.0	12								
			STD MATL'S (FOR LG-15905/15302/15402/16003/30404/30504)												
1	LSHH-16001	4 ~~3~~	2" NPT SOR 1510B-G2A-C-W9-ES-CS ELECTRIC LEVEL SWITCH: 1500 PSIG			2	8								
	LSH-15902		MWP, -40/400°F, S.S. BODY, 24VDC, X.P., CLASS I DIV I, CSA APPROVED,												
	LSHH-30505		STANDARD MATERIALS												
	LSHH-30407														
	LSLL-80206	1	2" NPT SOR 1510C-G2A-W9-ES-CS ELECTRIC LEVEL SWITCH: 1500 PSIG			2	2								
			MWP, -40/400°F, S.S. BODY, 24VDC, X.P., CLASS I DIV I, CSA APPROVED,												
			STANDARD MATERIALS												
			TOTAL PAGE WEIGHT (Lbs.):				274								

REVISIONS

REV.	DATE	REV. BY
0	May. 26, 2006	KRT
1	Jun. 2, 2006	KRT

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-006/014** REV. 1

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	PCV-80208	1	1" NPT FISHER 630 REGULATOR: CAST IRON BODY, 46-95 PSIG			10	10								
			OUTLET PRESSURE RANGE, SET AT 90 PSIG, 1/4" DIA PORT,												
			1500 PSIG MWP, STD MATL'S												
	PRV-80200	2	BURNER FUEL GAS REGULATOR VALVES:												
	PRV-80201		**(SUPPLIED AND INSTALLED BY CUSTOMER)**												
	PRV-30406	8	1/4" NPT FISHER 67 CFR REGULATOR: 5-35 PSIG SPRING RANGE;			2	12								
			STD MATL'S												
	PSV-30501	1	1 1/2"-600# RF x 3"-150# RF FARRIS PILOT OPERATED RELIEF VALVE:			75	75								
			MODEL 38HC13-120, 0.785 sq.in. "H" ORIFICE, SET @ 1415 PSIG,												
			STD MATL'S (GAS SERVICE)												
2	PSV-30401	1	1 1/2" MNPT x 2" FNPT MERCER 8100 SERIES RELIEF VALVE:	**SA-216-WCB**		12	12								
			0.472 sq.in. ORIFICE; SET AT 150 PSIG; STD MATL'S (GAS SERVICE)												
2,1	PSV-91501	2	1" MNPT x 1" FNPT MERCER 9100 SERIES RELIEF VALVE:	**SA-216-WCB**		12	24								
	PSV-91601		0.212 sq.in."E" ORIFICE, SET AT 150 PSIG, STD MATL'S (GLYCOL LIQUID SERVICE)												
	PSV-51902	2	1"-900# RF x 2"-300# RF FARRIS PILOT OPERATED RELIEF VALVE:			49	98								
	PSV-51904		MODEL 38DC14L-120, 0.011 sq.in. "D" ORIFICE, SET @ 1415 PSIG,												
			STD MATL'S (GLYCOL LIQUID SERVICE)												
2,1	PSV-51802	2	1" MNPT x 1" FNPT MERCER 9100 SERIES RELIEF VALVE:	**SA-216-WCB**		12	24								
	PSV-51804		0.122 sq.in."D" ORIFICE, SET AT 150 PSIG, STD MATL'S (GLYCOL LIQUID SERVICE)												
			TOTAL PAGE WEIGHT (Lbs.):				255								

REVISIONS		
REV.	DATE	REV. BY
0	May. 26, 2006	KRT
1	Jun. 7, 2006	KRT
2	Aug. 1, 2006	KRT

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SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-007/014** REV. 2

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	PI-30503	3	NUOVA FIMA MGS18/3A-4-21 PRESSURE GAUGE: 4" DIAL, 1/2" NPT LOWER MOUNT,			1.5	5								
	PI-51901		LIQUID FILLED, 0-1500 PSIG PRESSURE RANGE, STD MATL'S												
	PI-51903														
	PI-51801	4	NUOVA FIMA MGS10/3A-4-14 PRESSURE GAUGE: 4" DIAL, 1/2" NPT LOWER MOUNT,			1.5	6								
	PI-51803		LIQUID FILLED, 0-200 PSIG PRESSURE RANGE, DUAL SCALE, STD MATL'S												
	PI-30403														
	PI-15904														
	PI-80210	1	NUOVA FIMA MGS18/3A-4-13 PRESSURE GAUGE: 4" DIAL, 1/2" NPT LOWER MOUNT,			3	3								
			LIQUID FILLED, 0-160 PSIG PRESSURE RANGE, STD MATL'S												
	PI-80200	1	NUOVA FIMA MGS10/3A-2-10 PRESSURE GAUGE: 2 1/2" DIAL, 1/4" NPT LOWER MOUNT,			1.5	2								
			LIQUID FILLED, 0-30 PSIG PRESSURE RANGE, STD MATL'S												
	PDCV-91500	1	3/4" NPT PARKER CP-750 SPRING LOADED CHECK VALVE: 20 PSIG			8	8								
			CRACKING PRESSURE, STD MATL'S												
	PD-51801	2	3/4" FNPT OIL/AIR BIH60-2.9-100-3 PULSATION DAMPNER; 1.0 L PRE-CHARGED			7	14								
	PD-51800		TO 60 PSIG; 2000 PSIG MWP; C.S. SHELL												
	PD-51901	2	3/4" FNPT OIL/AIR BIH60-2.9-100-3 PULSATION DAMPNER; 1.0 L PRE-CHARGED			7	14								
	PD-51900		TO 780 PSIG; 2000 PSIG MWP; C.S. SHELL												
	PDV-51801	4	1/2" NPT x 1/2" NPT MURPHY PD8184 IN-LINE PULSATION DAMPNER;			1	4								
	PDV-51800		5000 PSIG MAWP;STD MATL'S												
	PDV-51901														
	PDV-51900														
			TOTAL PAGE WEIGHT (Lbs.):				55								

REVISIONS		
REV.	DATE	REV. BY
0	May. 26, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
DATE:	May. 17, 2006
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ALCO GAS & OIL
PRODUCTION EQUIPMENT LTD.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-008/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	PT-30403	1	FISHER ROSEMOUNT SMART GAUGE PRESSURE TRANSMITTER:			4	4								
			MODEL 3051TG3A2B21AB4C6, CALIBRATE 0-200 PSIG, NON-INDICATING,												
			4-20 mA OUTPUT, 800 PSIG MAWP, NICKEL PLATED C.S. FLANGES, CLASS I DIV I, XP												
			c/w 2" PIPE MOUNTING BRACKET												
	PT-30503	1	FISHER ROSEMOUNT SMART GAUGE PRESSURE TRANSMITTER:			4	4								
			MODEL 3051TG4A2B21AB4C6, CALIBRATE 0-1415 PSIG, NON-INDICATING,												
			4-20 mA OUTPUT, 4000 PSIG MAWP, NICKEL PLATED C.S. FLANGES, CLASS I DIV I, XP												
			c/w 2" PIPE MOUNTING BRACKET												
	PT-15906	1	FISHER ROSEMOUNT SMART GAUGE PRESSURE TRANSMITTER:			4	4								
			MODEL 3051TG3A2B21AB4C6, CALIBRATE 0-200 PSIG, NON-INDICATING,												
			4-20 mA OUTPUT, 800 PSIG MAWP, NICKEL PLATED C.S. FLANGES, CLASS I DIV I, XP												
			c/w 2" PIPE MOUNTING BRACKET												
	PT-41802	1	FISHER ROSEMOUNT SMART GAUGE PRESSURE TRANSMITTER:			4	4								
			MODEL 3051TG4A2B21AB4C6, CALIBRATE 0-1415 PSIG, NON-INDICATING,												
			4-20 mA OUTPUT, 4000 PSIG MAWP, NICKEL PLATED C.S. FLANGES, CLASS I DIV I, XP												
			c/w 2" PIPE MOUNTING BRACKET												
	PdT-15906	2	FISHER ROSEMOUNT SMART DIFFERENTIAL PRESSURE TRANSMITTER:			4	8								
	PdT-41802		MODEL 3051CD2A52A1AB1C6, CALIBRATE 0-100" W.C., NON-INDICATING,												
			4-20 mA OUTPUT, NICKEL PLATED C.S. FLANGES, CLASS I DIV I, XP												
			c/w 2" PIPE MOUNTING BRACKET												
			TOTAL PAGE WEIGHT (Lbs.):				24								

REVISIONS		
REV.	DATE	REV. BY
0	May. 26, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

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BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

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ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-009/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	RO-80200	1	1/2" ORIFICE UNION c/w 19/64" ORIFICE, C.S.			5	5								
	TH-80200	1	SENTINEL 8-8A THIEF HATCH; 16 oz. PRESSURE; 0.40 oz. VACUUM RELIEF;			25	25								
			GASKETS AND BOLTING; STD MATL'S												
	TT-80203	1	ROSEMOUNT SMART TEMPERATURE TRANSMITTER: MODEL			5	5								
	TE-80203		3144PD1A1K6, CALIBRATE 0-500°F, NON-INDICATING, 4-20mA OUTPUT,												
	TW-80203		CLASS I DIV I, XP c/w ROSEMOUNT RTD TEMPERATURE SENSOR MODEL												
1			0068N21N00A105T10E6, c/w **1"-NPT 316SS THERMOWELL** (10 1/2" "U"-LENGTH)												
	TT-15906	1	ROSEMOUNT SMART TEMPERATURE TRANSMITTER: MODEL			5	5								
	TE-15906		3144PD1A1K6, CALIBRATE 0-250°F, NON-INDICATING, 4-20mA OUTPUT,												
	TW-15906		CLASS I DIV I, XP c/w ROSEMOUNT RTD TEMPERATURE SENSOR MODEL												
			0068N21N00A025T34E6, c/w 3/4"-NPT 316SS THERMOWELL (2 1/2" "U"-LENGTH)												
	TT-41803	1	ROSEMOUNT SMART TEMPERATURE TRANSMITTER: MODEL			5	5								
	TE-41803		3144PD1A1K6, CALIBRATE 0-250°F, NON-INDICATING, 4-20mA OUTPUT,												
	TW-41803		CLASS I DIV I, XP c/w ROSEMOUNT RTD TEMPERATURE SENSOR MODEL												
			0068N21N00A045T34E6, c/w 3/4"-NPT 316SS THERMOWELL (4 1/2" "U"-LENGTH)												
	TI-30502	3	GAUGETECH BIMETAL "GT-5 SERIES" THERMOMETER: 5" DIAL,			1.5	5								
	TI-30402		CENTER BACK MOUNT, TYPE 304SS, DUAL SCALE, 0-250ºF RANGE,												
	TI-15901		1/2" NPT CONNECTION w/ 9" LG. STEM												
	TI-51905	1	GAUGETECH BIMETAL "GT-5 SERIES" THERMOMETER: 5" DIAL,			2	2								
			CENTER BACK MOUNT, TYPE 304SS, DUAL SCALE, 50-500ºF RANGE,												
			1/2" NPT CONNECTION w/ 4" LG. STEM												
	TI-80201	2	GAUGETECH BIMETAL "GT-5 SERIES" THERMOMETER: 5" DIAL,			2	4								
	TI-80205		CENTER BACK MOUNT, TYPE 304SS, DUAL SCALE, 50-500ºF RANGE,												
			1/2" NPT CONNECTION w/ 9" LG. STEM												
			TOTAL PAGE WEIGHT (Lbs.):				56								

REVISIONS

REV.	DATE	REV. BY
0	May. 26, 2006	KRT
1	Jul. 20, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
DATE:	May. 17, 2006
CHK'D	KEW
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APP'D:	

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-010/014** REV. 1

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	TW-51905	1	1/2" x 3/4" NPT x 4" LG. 304SS THERMOWELL (2 1/2" 'U' LENGTH)			2	2								
	TW-30502	5	1/2" x 3/4" NPT x 9" LG. 304SS THERMOWELL (7 1/2" 'U' LENGTH)			2	10								
	TW-30402														
	TW-15901														
	TW-80201														
	TW-80205														
			TOTAL PAGE WEIGHT (Lbs.):				12								

REVISIONS		
REV.	DATE	REV. BY
0	May. 26, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-011/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
1	BA-600	2	2"-600# RF BALL VALVE: 1480 PSIG @ 100°F;	**SA-216-WCB**		37	74								
			REGULAR PORT; STD MATL'S												
1	BA-2008	4	1/2" NPT BALL VALVE: 2000 PSIG @ 100°F,	**A-351-CF8M**		2.2	9								
			REGULAR PORT; STD MATL'S												
1	BA-2008	8	3/4" NPT BALL VALVE: 2000 PSIG @ 100°F,	**A-351-CF8M**		2.4	19								
			REGULAR PORT; STD MATL'S												
1	BA-2008	17	1" NPT BALL VALVE: 2000 PSIG @ 100°F,	**A-351-CF8M**		4.4	75								
			REGULAR PORT; STD MATL'S												
1	BA-2008	2	2" NPT BALL VALVE: 2000 PSIG @ 100°F,	**A-351-CF8M**		17.5	35								
			REGULAR PORT; STD MATL'S												
1	BA-2006	2	2" SW WORCESTER 4446RV-SW 3-PIECE BALL VALVE:	**A-351-CF8M**		15	30								
			1480 PSIG @ 100°F, REGULAR PORT; STD MATL'S												
1	BA-2006	2	1 1/2" SW WORCESTER 4446RV-SW 3-PIECE BALL VALVE:	**A-351-CF8M**		7.5	15								
			1480 PSIG @ 100°F, REGULAR PORT; STD MATL'S												
1	BA-2006	15	1" SW WORCESTER 4446RV-SW 3-PIECE BALL VALVE:	**A-351-CF8M**		5	75								
			1480 PSIG @ 100°F, REGULAR PORT; STD MATL'S												
1	BA-2006	9	3/4" SW WORCESTER 4446RV-SW 3-PIECE BALL VALVE:	**A-351-CF8M**		4	36								
			1480 PSIG @ 100°F, REGULAR PORT; STD MATL'S												
1	CH-806P	4	3/4" SW PISTON CHECK VALVE: CLASS 800; 1975 PSIG @ 100ºF	**SA-105**		3	12								
			REGULAR PORT; STD MATL'S												
1	CH-806P	4	1" SW PISTON CHECK VALVE: CLASS 800; 1975 PSIG @ 100ºF	**SA-105**		5.7	23								
			REGULAR PORT; STD MATL'S												
1	CH-808P	4	1" NPT PISTON CHECK VALVE: CLASS 800; 1975 PSIG @ 100ºF	**SA-105**		5.7	23								
			REGULAR PORT; STD MATL'S												
1	CH-808P	1	1/2" NPT SWING PISTON VALVE: CLASS 800; 1975 PSIG @ 100ºF	**SA-105**		2.3	2								
			REGULAR PORT; STD MATL'S												
			TOTAL PAGE WEIGHT (Lbs.):				428								

REVISIONS

REV.	DATE	REV. BY
0	May. 26, 2006	KRT
1	Aug. 1, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. | LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M | DWG/SHOP ORDER: **B-2006-7589-50B-012/014** | REV. 1

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
	GL-600	1	2"-600# RF GLOBE VALVE; 1480 PSIG @ 100ºF;			91	91								
			REGULAR PORT; STD MATL'S												
	GL-808	5	1" NPT GLOBE VALVE: CLASS 800; 1975 PSIG @ 100ºF			8.6	43								
			REGULAR PORT; STD MATL'S												
	GL-806	3	3/4" SW GLOBE VALVE: CLASS 800; 1975 PSIG @ 100ºF			4.6	14								
			REGULAR PORT; STD MATL'S												
	GL-806	7	1" SW GLOBE VALVE: CLASS 800; 1975 PSIG @ 100ºF			8.6	60								
			REGULAR PORT; STD MATL'S												
	NE-6008	15	1/4" NPT PANAM PNV-H-C-4-FF NEEDLE VALVE: A-105 BODY; STD TRIM			1.3	20								
	NE-6008	26	1/2" NPT PANAM PNV-H-C-8-FF NEEDLE VALVE: A-105 BODY; STD TRIM			1.3	34								
	SV-6008	2	1/2" NPT PANAM 5TIC-5 5-VALVE MANIFOLD: A-105 BODY;			6	12								
			6000 PSIG @ 100°F; STD MATL'S												
	STR-51900	2	2" SW Y-STRAINER: 1480 PSIG @ 100ºF; 1/32" PERFORATED SCREEN;			18	36								
	STR-51901		STD MATL'S												
	STR-51800	2	1 1/2" SW Y-STRAINER: 1480 PSIG @ 100ºF; 1/32" PERFORATED SCREEN;			10	20								
	STR-51801		STD MATL'S												
	STR-80200	1	1" NPT Y-STRAINER: 300 PSIG @ 100ºF; 1/32" PERFORATED SCREEN;			4.5	5								
			C.I.; STD MATL'S												
			TOTAL PAGE WEIGHT (Lbs.):				334								

REVISIONS		
REV.	DATE	REV. BY
0	May. 26, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

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BILL OF MATERIALS

SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-013/014** REV. 0

REV. NO.	ITEM	QTY	DESCRIPTION	MATERIAL	NOTE	UNIT WEIGHT	TOTAL WEIGHT	WHSE	SUPPLIER	DEL'Y DATE	P.O. NUMBER	P.O. DATE	UNIT PRICE	TOTAL PRICE	REMARKS
			***** ADDITIONAL ITEMS TO COMPLETE ASSEMBLY *****												
	627	1 LOT	2" & UNDER SCH. XH SML'S PIPE TO COMPLETE ASSEMBLY	SA-106-B	1		150								
	628	1 LOT	2" & UNDER SCH. 160 SML'S PIPE TO COMPLETE ASSEMBLY	SA-106-B	1		25								
	629	1 LOT	2" & UNDER NPT/SW 3000# FITTINGS TO COMPLETE ASSEMBLY	SA-105	1		100								
1	632	1 LOT	**3/8" O.D. TUBING TO COMPLETE ASSEMBLY**	316SS	1		50								
	633	1 LOT	SWAGELOK TUBE FITTINGS TO COMPLETE ASSEMBLY	316SS	1		50								
	637	2	1"-900# ANSI RF SW FLANGE, SCH.80 BORE	SA-105N	1	7.5	15								(2@PSV-51902/4)
	638	2	1/8" THK FLEXITALLIC GASKET (FOR 1 "-900# RF)	304SS		2	4								(2@PSV-51902/4)
	639	8	7/8" DIA x 4 3/4" LG. STUDS c/w (2) HEX NUTS EACH (1"-900# RF) 4@6 lbs.	SA-193-B7/SA-194-2H	1	1.5	12								(8@PSV-51902/4)
	641	2	2"-300# ANSI RF SW FLANGE, SCH.80 BORE	SA-105N	1	7	14								(2@PSV-51902/4)
	642	2	1/8" THK FLEXITALLIC GASKET (FOR 2"-300# RF)	304SS		2	4								(2@PSV-51902/4)
	643	16	5/8" DIA x 3 1/2" LG. STUDS c/w (2) HEX NUTS EACH (2"-300# RF) 8@4.0 lbs.	SA-193-B7/SA-194-2H	1	0.375	6								(16@PSV-51902/4)
			***** PIPING ISOMETRICS TO COMPLETE ASSEMBLY *****												
	ISO #1	1	H.P. GAS INLET @ C-305			405	405								B-2006-7589-50S-001
	ISO #2	1	H.P. GAS OUTLET FROM C-305 TO V-160			3575	3,575								B-2006-7589-50S-002
	ISO #3	1	H.P. GAS OUTLET FROM V-160 TO SKID EDGE			765	765								B-2006-7589-50S-003
	ISO #4	1	FUEL GAS INLET @ C-304			235	235								B-2006-7589-50S-004
	ISO #5	1	FUEL GAS OUTLET FROM C-304 TO V-159			235	235								B-2006-7589-50S-005
	ISO #6	1	FUEL GAS OUTLET FROM V-159 TO SKID EDGE			435	435								B-2006-7589-50S-006
	ISO #7	1	BDV-41801 TO FLARE HEADER			85	85								B-2006-7589-50S-007
	ISO #8	1	BDV-41801 TO FLARE HEADER			65	65								B-2006-7589-50S-008
	ISO #9	1	FLARE HEADER			610	610								B-2006-7589-50S-009
	ISO #10	1	FLARE HEADER @ PSV-30501			50	50								B-2006-7589-50S-010
	ISO #11	1	LEAN GLYCOL OUTLET FROM H-802 TO E-417/419			45	45								B-2006-7589-50S-011
	ISO #12	1	DRAIN HEADER			65	65								B-2006-7589-50S-012
			TOTAL PAGE WEIGHT (Lbs.):				7,000								

REVISIONS

REV.	DATE	REV. BY
0	May. 26, 2006	KRT
1	Jun. 6, 2006	KRT

NOTES: *** SEE NOTE COLUMN FOR APPLICATION NUMBERS ***

1. MATERIAL TO MEET THE NOTES AND REQUIREMENTS AS OUTLINED ON THE LAYOUT DRAWING.

BOM_Hookup.xlt (rev.1g), Printed: 9/29/2006

NOTE: TWO (2) UNIT'S REQUIRED.

BY:	KRT
DATE:	May. 17, 2006
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CHK'D	ME
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SWEET GLYCOL DEHYDRATION PACKAGE - 42" I.D. CONTACTOR w/ 1,250,000 BTU/HR REBOILER

CUSTOMER: FORT ENERGY c/o BDR ENGINEERING LTD. LOCATION: CLEARWATER & SANDHILLS GAS PLANT EXPANSION

L.S.D.: 11-17-63-06 W5M & 07-25-62-06 W5M DWG/SHOP ORDER: **B-2006-7589-50B-014/014** REV. 1