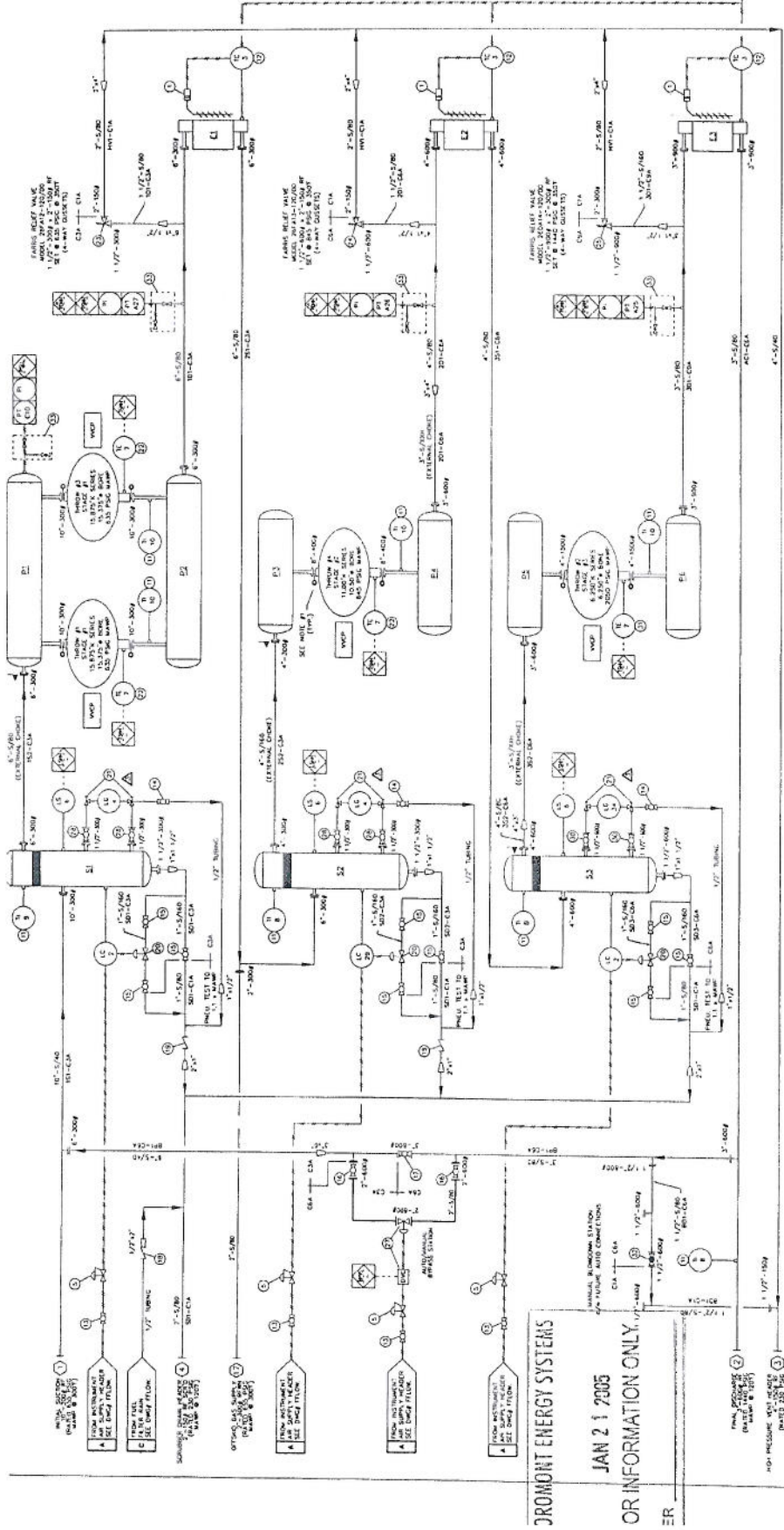


NOT TO BE REPRODUCED OR DISTRIBUTED WITHOUT THE PRIOR WRITTEN CONSENT OF TOROMONT ENERGY SYSTEMS INC.

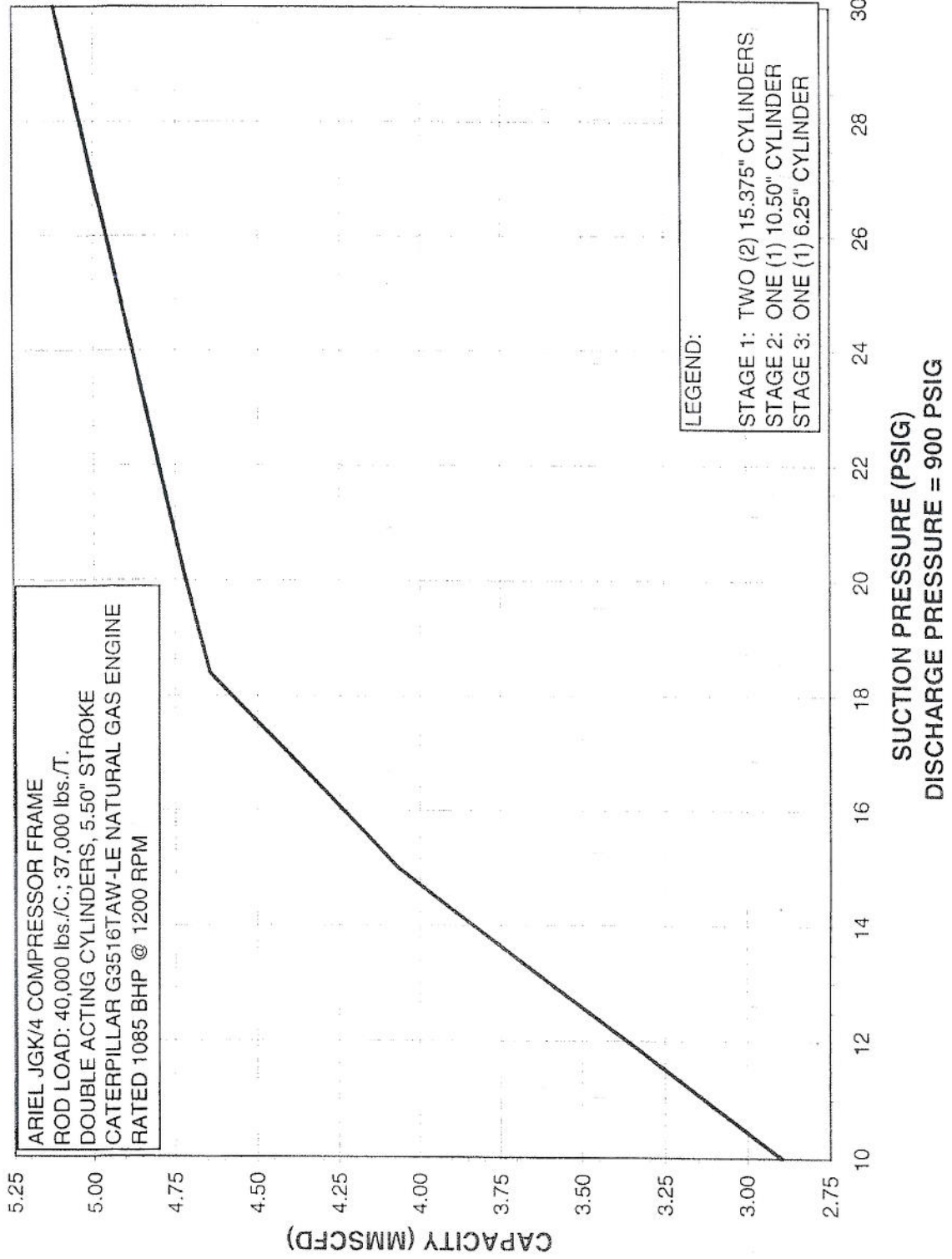


TOROMONT ENERGY SYSTEMS  
 JAN 21 2005  
 OR INFORMATION ONLY

<b>MATERIAL SELECTIONS:</b> OVERALL UNIT: 100% R-20-T-3A 7"MM ONLY COMPRESSOR: HIGH DUCK NON-LEAKING DESIGN PIPE: 100% 304 - 812 1/4" COMPRESSOR ALLOWANCE PIPE: SWEETEST PIPING & VESSELS AFTER SECTION SCREEN VESSELS: 100% 304 - 812 1/4" COMPRESSOR ALLOWANCE Gaskets: ES&B 80-40 in GASKETS & COMPRESSOR FRAME LUBES: 300 EPDM-CRACKED OIL / WATER SOLUTION IN CASE & MULTIGRADE JACKET WATER SYSTEMS ON SEPARATE SHEET PROVIDED # IN DRAWING	<b>SYMBOLS:</b> SWEEP: SWEEPING ACTION NOTE #1: 1/2" 5/8" 304 SS NOTE #2: 1/2" 5/8" 304 SS NOTE #3: 1/2" 5/8" 304 SS NOTE #4: 1/2" 5/8" 304 SS NOTE #5: 1/2" 5/8" 304 SS NOTE #6: 1/2" 5/8" 304 SS	<b>DESIGN INFORMATION:</b> COMP. FRAME: 304 SS FRONT: 304 SS PANEL: 304 SS COILER: 304 SS CYLINDERS: 304 SS BASES: 304 SS BASES: 304 SS BASES: 304 SS BASES: 304 SS BASES: 304 SS	<b>LEGEND:</b> PROCESS: [Symbol] UTILITY: [Symbol] PNEUMATIC TUBING: [Symbol] ELECTRIC WIRING: [Symbol] SPACER: [Symbol] SPECTACLE BAND: [Symbol] SCREEN (ECC. STRAIN): [Symbol]	<b>CONNECTIONS:</b> PANEL CONNECTION - PNEUMATIC: [Symbol] PANEL CONNECTION - ELECTRIC: [Symbol] PANEL ALARM / SIGNALING: [Symbol] LOCAL MOUNTED INSTRUMENT: [Symbol] FIELD MOUNTED INSTRUMENT: [Symbol] PNEUMATIC TO ELECTRIC: [Symbol] ELECTRIC CONNECTION: [Symbol]	<b>REVISIONS:</b> NO. DATE DESCRIPTION 1 07/2004 2 10/2004 3 10/2004 4 10/2004 5 10/2004
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PROJECT: SWEET PROCESS GAS  
 SCALE: AS SHOWN  
 DATE: 07/2004  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]  
 TOROMONT ENERGY SYSTEMS INC.  
 10000 17<sup>th</sup> AVENUE, S.W. CALGARY, ALBERTA, CANADA  
 TEL: 403.242.2500  
 FAX: 403.242.2501  
 WWW: WWW.TOROMONT.COM

**BOWER DAMBERGER ROLSETH ENGINEERING LTD.**  
 Quotation #Q140668 Option A







TITLE:  
 PROCESS BILL OF MATERIALS  
 CATERPILLAR 3516 TAW-LE  
 ARIEL JGK/4-3  
 AIR-X-HEMPHILL 156EH-112-22

DATE:	09/20/04	BY:	VS	DATE RELEASED:	01/20/05	RELEASED BY:	MA
STEP #:	410	UNIT #:	31218	DRAWING #:	31218-BOMP	REV.:	3

ITEM	PART #	DESCRIPTION	QTY
1	12C155	ACTUATOR, GARZO, 501-12-630-SUR-0 (c/w Cooler)	3
2	88A729	CONTROLLER, LEVEL, NORRISEAL 1001A, RIGHT MOUNT, 2"-MNPT, C/W VERTICAL DISPLACER	2
3	11A466	CONTROLLER, TEMPERATURE, KIMRAY, T12, 0.5"-FNPT	3
4	71TL	GAUGE, LEVEL, DANIEL, 71TL, 0.5"-FNPT, 800PSIG, CARBON STEEL	2
5	67CFR/0-35	REGULATOR, PRESSURE, FISHER, 67CFR-362, 0.5"-FNPT, 0-35 PSIG, 150 PSIG MAX SUPPLY, SILVER SPRING, AL BODY	5
6	11A915	SWITCH, LEVEL, NORRISEAL, 1005E, 2" MNPT, ELEC.	3
7	NPN	THERMOCOUPLE, TYPE 'K', THERMOKINETICS, K-250-316-008.0-B-80X99, 0.25" O.D. X 8.0" LG. PROBE, 316SS, UNGROUNDED JUNCTION, 40' CAPILLARY	4
8	88A185	THERMOMETER, TREND, 0.5"-MNPT, 0-250 F, 3" FACE, 0.250" OD, 4.0" PROBE, DUAL SCALE (Shipped Loose)	3
9	88A767	THERMOMETER, TREND, 0.5"-MNPT, -40-120 F, 3" FACE, 0.250" OD, 4.0" PROBE, DUAL SCALE (Shipped Loose)	1
10	88A037	THERMOMETER, TREND, 0.5"-MNPT, 3" FACE, 4" PROBE, 50-500 Deg. F, 0.250" OD, DUAL SCALE (Shipped Loose)	4
11	37D002	THERMOWELL, 0.5"-FNPT x 0.75"-MNPT, 4.0" DEPTH, 0.260" BORE, 304 SS	8
12	88E007	THERMOWELL, 304SS, 0.5" x 1" x 12" LG., 0.385" BORE	3
13	M11S-25	VALVE, BALL, MERIDIAN, M11S-25, 0.25"-FNPT, 1000 PSIG @ 150 F, ASTM A351CF8M BODY & BALL, 316SS STEM	5
14	88E075	VALVE, BALL, NUTRON, T3-R05S30B, 0.5"-FNPT, 3000 PSIG @ 120 F, REGULAR PORT, ASTM A105	3
15	88E073	VALVE, BALL, NUTRON, T3-R10S30B, 1"-FNPT-3000 PSIG @ 120 F, REGULAR PORT, ASTM A105	9
16	NPN	VALVE, BALL, NUTRON, T3-R20R06B, 2"-600# RF, REGULAR PORT, ASTM A105	2
17	NPN	VALVE, BALL, NUTRON, T3-R30R06B, 3"-600# RF, REGULAR PORT, ASTM A105	1
18	11A874	VALVE, CHECK, IN-LINE, DURABLA BSS-8003, 0.5"-FNPT x 1"-MNPT, 2500 PSIG CWP, 303 SS, NACE MR01-75	1
19	88A307	VALVE, CHECK, SWING, WHEATLEY, 1"-FNPT, 2160 PSIG, ASTM A216, NACE MR01-7	2

TOROMONT		TOROMONT ENERGY SYSTEMS		TITLE: PROCESS BILL OF MATERIALS CATERPILLAR 3516 TAW-LE ARIEL JGK/4-3 AIR-X-HEMPHILL 156EH-112-22		
DATE:	09/20/04	BY:	VS	DATE RELEASED:	01/20/05	
STEP #:	410	UNIT #:	31218	DRAWING #:	31218-BOMP	
					RELEASED BY:	<i>MD</i>
					REV.:	3
ITEM	PART #	DESCRIPTION				QTY
20	88A908	VALVE, CONTROL, NORRISEAL 2275, 1"-FNPT, SIZE 9 ACTUATOR, 3/8" TRIM, 6-30 PSIG SIGNAL, FAIL CLOSED, NACE MR-01-75				3
21	18F009	VALVE, GAUGE, DANIEL, 1S, 0.5"-FNPT x 0.75"-MNPT, 3470 PSIG @ 300 F, 1 SET, CARBON STEEL				3
22	NPN	THERMOWELL, 0.5" FNPT X 0.5" MNPT, 6.0" DEPTH, 0.260" BORE, 316 SS				3
23	NPN	VALVE, RELIEF, FARRIS, 26FA12-120, 1 1/2"-300# RF x 2"-150# RF, SET AT 635 PSIG @ 350 F				1
24	NPN	VALVE, RELIEF, FARRIS, 26FA13-120, 1 1/2"-600# RF x 2"-150# RF, SET AT 845 PSIG @ 350 F				1
25	NPN	VALVE, RELIEF, FARRIS, 26DA14-120, 1 1/2"-900# RF x 2"-300# RF, SET AT 1440 PSIG @ 350 F				1
26	-	-				-
27	NPN	VALVE, BYPASS CONTROL, FISHER D4, 2" 600# RF, 3/4" M-FORM TRIM, INTEGRAL SIZE 40 ACTUATOR, FAIL OPEN, 0-33 PSI SIGNAL, C/W FISHER FILEDVUE DVC6010HC DIGITAL VALVE POSITIONER, 4-20mA, 2-WAY HART COMMUNICATION				1
28	88E304	VALVE, BALL, NUTRON, T3-R15R03B, 1 1/2"-300# RF, REGULAR PORT, ASTM A105				4
29	88A739	CONTROLLER, LEVEL, NORRISEAL 1001A, LEFT MOUNT, 2"-MNPT, CW VERTICAL DISPLACER				1
30	NPN	VALVE, BALL, NUTRON, T3-R15R06B, 1 1/2"-600# RF, REGULAR PORT, ASTM A105				2
31	NPN	THERMOWELL, 0.5"-FNPT x 0.5"-MNPT, 4.0" DEPTH, 0.260" BORE, 304 SS				1
32	NPN	VALVE, GLOBE, NAVCO, 1 1/2"- 600# RF, 5A-GLR15R06A1219				1
33	NPN	VALVE, NEEDLE, SWAGELOK, MODEL SS-1VS4, 304 SS				8
34	NPN	GAUGE, LEVEL, DANIEL, 71TL, 0.5"-FNPT, 2050PSIG, CARBON STEEL				1
NO.	REVISION				DATE	BY
0	ISSUED FOR APPROVAL				09/20/04	VS
1	ISSUED FOR CONSTRUCTION				10/06/04	MD
2	CHANGED LEVEL GAUGES TO TL STYLE				11/30/04	MD
3	AS BUILT				01/17/05	MD





Company: BDR Engineering  
 Quote:  
 7.4. Remarks:

### Ariel Performance

Customer:  
 Inquiry:  
 Project:



#### Compressor Data:

Elevation,ft:	2500.0	Barmtr,psia:	13.400	Ambient,°F:	<u>110.00</u>
Frame:	JGK/4	Stroke, in:	5.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1200	Rated BHP:	2540.0	Rated PS FPM:	1100.0
Calc RPM:	1200.0	Calc BHP:	709	Calc PS FPM:	1100.0

#### Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516-LE
BHP:	1085
Avail:	1030 (55)

#### Services

##### Stage Data:

	#1	---	#2	#3
Flow Req'd, MMSCFD	5.000	---	5.000	5.000
Flow Calc, MMSCFD	2.895	---	2.895	2.884
Cyl HP per Stage	270.0	---	212.2	202.6
Specific Gravity	0.5700	---	0.5700	0.5698
Ratio of Sp Ht (N)	1.2784	---	1.2707	1.2821
Comp Suct (Zs)	0.9966	---	0.9909	0.9741
Comp Disch (Zd)	0.9964	---	0.9917	0.9803
Pres Suct Line, psig	10.00	---	N/A	N/A
Pres Suct Flg, psig	10.00	---	91.61	303.05
Pres Disch Flg, psig	94.00	---	308.43	910.00
Pres Disch Line, psig	N/A	---	N/A	900.00
Pres Ratio F/F	4.590	---	3.065	2.918
Temp Suct, °F	60.00	---	130.00	130.00
Temp Clr Disch, °F	130.00	---	130.00	130.00

##### Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	15-7/8K	15-7/8K	11K	6-1/4K
Cyl Bore, in	15.375	15.375	10.500	6.250
Cyl RDP (API), psig	577.3	577.3	768.2	1863.6
Cyl MAWP, psig	635.0	635.0	845.0	2050.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1406.2	1406.2	649.5	222.4
Pres Suct Intl, psig	8.63	8.63	86.79	288.19
Temp Suct Intl, °F	72	72	137	136
Suct Zsph	0.9969	0.9969	0.9913	0.9751
Pres Disch Intl, psig	98.59	98.59	321.01	964.52
Temp Disch Intl, °F	298	298	312	311
HE Suct Gas Vel, FPM	8358	8358	7893	8168
HE Disch Gas Vel, FPM	7103	7103	6902	8716
HE Spcrrs Used/Max	0/6	0/6	0/4	0/2
HE Vol Pkt Avail, %	0.98+51.99	0.98+51.99	0.94+47.66	0.65+39.93
Vol Pkt Used, %	0.00 (V)	0.00 (V)	43.00 (V)	82.00 (V)
HE Min Clr, %	19.50	19.50	21.41	17.41
HE Total Clr, %	20.48	20.48	42.85	50.81
CE Suct Gas Vel, FPM	8217	8217	7607	7332
CE Disch Gas Vel, FPM	6983	6983	6651	7824
CE Spcrrs Used/Max	0/6	0/6	0/4	0/2
CE Min Clr, %	20.21	20.21	19.86	21.02
CE Total Clr, %	20.21	20.21	19.86	21.02
Suct Vol Eff HE/CE, %	45.5/46.1	45.5/46.1	33.8/65.6	28.9/66.6
Disch Event HE/CE, ms	5.6/6.7	5.6/6.7	5.6/9.4	5.3/9.9
Suct Pseudo-Q HE/CE	5.2/5.1	5.2/5.1	4.1/4.2	4.9/4.5
Gas Rod Ld Comp, lbf	16740 C	16740 C	20578 C	21786 C
Gas Rod Ld Tens, lbf	16383 T	16383 T	19250 T	17610 T
Gas Rod Ld Total, lbf	33123	33123	39828	39396
Xhd Pin Deg/%Rvrrs lbf	155/70.4	155/70.4	172/88.9	150/95.4
Flow Calc, MMSCFD	1.448	1.448	2.895	2.884
Cyl HP	135.0	135.0	212.2	202.6



Company: BDR Engineering

Quote:

7.4. Remarks:

## Ariel Performance

Customer:

Inquiry:

Project:



## Compressor Data:

Elevation,ft:	2500.0	Barmtr,psia:	13.400	Ambient,°F:	<u>110.00</u>
Frame:	JGK/4	Stroke, in:	5.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1200	Rated BHP:	2540.0	Rated PS FPM:	1100.0
Calc RPM:	1200.0	Calc BHP:	936	Calc PS FPM:	1100.0

## Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516-LE
BHP:	1085
Avail:	1030 (55)

## Services

## Stage Data:

	#1	#2	#3
Flow Req'd, MMSCFD	5.000	5.000	5.000
Flow Calc, MMSCFD	4.069	4.069	4.061
Cyl HP per Stage	343.3	288.9	279.3
Specific Gravity	0.5700	0.5700	0.5699
Ratio of Sp Ht (N)	1.2809	1.2715	1.2828
Comp Suct (Zs)	0.9959	0.9903	0.9735
Comp Disch (Zd)	0.9956	0.9911	0.9796
Pres Suct Line, psig	15.00	N/A	N/A
Pres Suct Flg, psig	15.00	98.15	311.19
Pres Disch Flg, psig	100.86	316.93	910.00
Pres Disch Line, psig	N/A	N/A	900.00
Pres Ratio F/F	4.023	2.961	2.845
Temp Suct, °F	60.00	130.00	130.00
Temp Clr Disch, °F	130.00	130.00	130.00

## Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	15-7/8K	15-7/8K	11K	6-1/4K
Cyl Bore, in	15.375	15.375	10.500	6.250
Cyl RDP (API), psig	577.3	577.3	768.2	1863.6
Cyl MAWP, psig	635.0	635.0	845.0	2050.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1406.2	1406.2	649.5	222.4
Pres Suct Intl, psig	13.33	13.33	93.02	295.93
Temp Suct Intl, °F	71	71	137	136
Suct Zsph	0.9962	0.9962	0.9907	0.9744
Pres Disch Intl, psig	105.89	105.89	329.94	964.85
Temp Disch Intl, °F	277	277	307	308
HE Suct Gas Vel, FPM	8358	8358	7893	8168
HE Disch Gas Vel, FPM	7103	7103	6902	8716
HE Spcrrs Used/Max	0/6	0/6	0/4	0/2
HE Vol Pkt Avail, %	0.98+51.99	0.98+51.99	0.94+47.66	0.65+39.93
Vol Pkt Used, %	0.00 (V)	0.00 (V)	0.00 (V)	21.00 (V)
HE Min Clr, %	19.50	19.50	21.41	17.41
HE Total Clr, %	20.48	20.48	22.36	26.45
CE Suct Gas Vel, FPM	8217	8217	7607	7332
CE Disch Gas Vel, FPM	6983	6983	6651	7824
CE Spcrrs Used/Max	0/6	0/6	0/4	0/2
CE Min Clr, %	20.21	20.21	19.86	21.02
CE Total Clr, %	20.21	20.21	19.86	21.02
Suct Vol Eff HE/CE, %	52.7/53.2	52.7/53.2	63.6/66.9	61.0/67.6
Disch Event HE/CE, ms	6.4/7.6	6.4/7.6	8.1/9.7	8.1/10.0
Suct Pseudo-Q HE/CE	5.3/5.1	5.3/5.1	4.5/4.2	5.6/4.6
Gas Rod Ld Comp, lbf	17237 C	17237 C	20832 C	21583 C
Gas Rod Ld Tens, lbf	16842 T	16842 T	19455 T	17382 T
Gas Rod Ld Total, lbf	34079	34079	40287	38965
Xhd Pin Deg/%RvrsI bff	156/72.8	156/72.8	168/89.2	162/96.0
Flow Calc, MMSCFD	2.035	2.035	4.069	4.061
Cyl HP	171.7	171.7	288.9	279.3





Company: BDR Engineering

Quote:

7.4. Remarks:

## Ariel Performance

Customer:

Inquiry:

Project:



## Compressor Data:

Elevation, ft:	2500.0	Barmtr, psia:	13.400	Ambient, °F:	<u>110.00</u>
Frame:	JGK/4	Stroke, in:	5.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1200	Rated BHP:	2540.0	Rated PS FPM:	1100.0
Calc RPM:	1200.0	Calc BHP:	1029	Calc PS FPM:	1100.0

## Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516-LE
BHP:	1085
Avail:	1030 (55)

## Services

## Stage Data:

	#1	---	#2	#3
Flow Req'd, MMSCFD	5.000	---	5.000	5.000
Flow Calc, MMSCFD	4.646	---	4.646	4.639
Cyl HP per Stage	385.8	---	310.7	308.7
Specific Gravity	0.5700	---	0.5700	0.5699
Ratio of Sp Ht (N)	1.2814	---	1.2730	1.2839
Comp Suct (Zs)	0.9954	---	0.9894	0.9726
Comp Disch (Zd)	0.9950	---	0.9902	0.9785
Pres Suct Line, psig	18.40	---	N/A	N/A
Pres Suct Flg, psig	18.40	---	109.14	322.35
Pres Disch Flg, psig	112.06	---	328.32	910.00
Pres Disch Line, psig	N/A	---	N/A	900.00
Pres Ratio F/F	3.945	---	2.789	2.750
Temp Suct, °F	60.00	---	130.00	130.00
Temp Clr Disch, °F	130.00	---	130.00	130.00

## Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	15-7/8K	15-7/8K	11K	6-1/4K
Cyl Bore, in	15.375	15.375	10.500	6.250
Cyl RDP (API), psig	577.3	577.3	768.2	1863.6
Cyl MAWP, psig	635.0	635.0	845.0	2050.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1406.2	1406.2	649.5	222.4
Pres Suct Intl, psig	16.53	16.53	103.49	306.55
Temp Suct Intl, °F	71	71	137	136
Suct Zsph	0.9957	0.9957	0.9898	0.9736
Pres Disch Intl, psig	117.61	117.61	341.96	965.30
Temp Disch Intl, °F	274	274	298	303
HE Suct Gas Vel, FPM	8358	8358	7893	8168
HE Disch Gas Vel, FPM	7103	7103	6902	8716
HE Spcrrs Used/Max	0/6	0/6	0/4	0/2
HE Vol Pkt Avail, %	0.98+51.99	0.98+51.99	0.94+47.66	0.65+39.93
Vol Pkt Used, %	0.00 (V)	0.00 (V)	0.00 (V)	0.00 (V)
HE Min Clr, %	19.50	19.50	21.41	17.41
HE Total Clr, %	20.48	20.48	22.36	18.06
CE Suct Gas Vel, FPM	8217	8217	7607	7332
CE Disch Gas Vel, FPM	6983	6983	6651	7824
CE Spcrrs Used/Max	0/6	0/6	0/4	0/2
CE Min Clr, %	20.21	20.21	19.86	21.02
CE Total Clr, %	20.21	20.21	19.86	21.02
Suct Vol Eff HE/CE, %	53.7/54.2	53.7/54.2	66.2/69.3	72.4/68.9
Disch Event HE/CE, ms	6.5/7.8	6.5/7.8	8.5/10.1	9.0/10.3
Suct Pseudo-Q HE/CE	5.3/5.1	5.3/5.1	4.5/4.2	5.7/4.6
Gas Rod Ld Comp, lbf	18830 C	18830 C	20999 C	21304 C
Gas Rod Ld Tens, lbf	18387 T	18387 T	19551 T	17069 T
Gas Rod Ld Total, lbf	37217	37217	40550	38373
Xhd Pin Deg/%Rvrs lbf	155/75.4	155/75.4	168/91.8	162/91.9
Flow Calc, MMSCFD	2.323	2.323	4.646	4.639
Cyl HP	192.9	192.9	310.7	308.7



Company: BDR Engineering  
 Quote:  
 Remarks:

### Ariel Performance

Customer:  
 Inquiry:  
 Project:



7.4.

#### Compressor Data:

Elevation,ft:	2500.0	Barmtr,psia:	13.400	Ambient,°F:	<u>110.00</u>
Frame:	JGK/4	Stroke, in:	5.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1200	Rated BHP:	2540.0	Rated PS FPM:	1100.0
Calc RPM:	1200.0	Calc BHP:	1030	Calc PS FPM:	1100.0

#### Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516-LE
BHP:	1085
Avail:	1030 (55)

#### Services

##### Stage Data:

	#1	---	#2	#3
Flow Req'd, MMSCFD	5.000	---	5.000	5.000
Flow Calc, MMSCFD	4.719	---	4.719	4.714
Cyl HP per Stage	381.0	---	314.6	310.4
Specific Gravity	0.5700	---	0.5700	0.5700
Ratio of Sp Ht (N)	1.2821	---	1.2731	1.2842
Comp Suct (Zs)	0.9952	---	0.9892	0.9724
Comp Disch (Zd)	0.9948	---	0.9900	0.9782
Pres Suct Line, psig	20.00	---	N/A	N/A
Pres Suct Flg, psig	20.00	---	110.83	325.87
Pres Disch Flg, psig	113.84	---	331.94	910.00
Pres Disch Line, psig	N/A	---	N/A	900.00
Pres Ratio F/F	3.810	---	2.780	2.722
Temp Suct, °F	60.00	---	130.00	130.00
Temp Clr Disch, °F	130.00	---	130.00	130.00

##### Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	15-7/8K	15-7/8K	11K	6-1/4K
Cyl Bore, in	15.375	15.375	10.500	6.250
Cyl RDP (API), psig	577.3	577.3	768.2	1863.6
Cyl MAWP, psig	635.0	635.0	845.0	2050.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1406.2	1406.2	649.5	222.4
Pres Suct Intl, psig	18.03	18.03	105.10	309.90
Temp Suct Intl, °F	71	71	137	136
Suct Zsph	0.9955	0.9955	0.9897	0.9733
Pres Disch Intl, psig	119.52	119.52	345.73	965.44
Temp Disch Intl, °F	269	269	297	301
HE Suct Gas Vel, FPM	8358	8358	7893	8168
HE Disch Gas Vel, FPM	7103	7103	6902	8716
HE Spcrrs Used/Max	0/6	0/6	0/4	0/2
HE Vol Pkt Avail, %	0.98+51.99	0.98+51.99	0.94+47.66	0.65+39.93
Vol Pkt Used, %	7.48 (V)	7.48 (V)	0.00 (V)	0.00 (V)
HE Min Clr, %	19.50	19.50	21.41	17.41
HE Total Clr, %	24.37	24.37	22.36	18.06
CE Suct Gas Vel, FPM	8217	8217	7607	7332
CE Disch Gas Vel, FPM	6983	6983	6651	7824
CE Spcrrs Used/Max	0/6	0/6	0/4	0/2
CE Min Clr, %	20.21	20.21	19.86	21.02
CE Total Clr, %	20.21	20.21	19.86	21.02
Suct Vol Eff HE/CE, %	48.4/55.9	48.4/55.9	66.4/69.4	72.7/69.3
Disch Event HE/CE, ms	6.2/8.1	6.2/8.1	8.5/10.1	9.0/10.3
Suct Pseudo-Q HE/CE	5.3/5.1	5.3/5.1	4.5/4.2	5.7/4.6
Gas Rod Ld Comp, lbf	18910 C	18910 C	21192 C	21216 C
Gas Rod Ld Tens, lbf	18455 T	18455 T	19726 T	16970 T
Gas Rod Ld Total, lbf	37365	37365	40918	38186
Xhd Pin Deg/%Rvrrs lbf	155/77.0	155/77.0	169/92.4	162/92.0
Flow Calc, MMSCFD	2.360	2.360	4.719	4.714
Cyl HP	190.5	190.5	314.6	310.4





Company: BDR Engineering

Quote:

7.4. Remarks:

## Ariel Performance

Customer:

Inquiry:

Project:



## Compressor Data:

Elevation,ft:	2500.0	Barmtr,psia:	13.400	Ambient,°F:	<u>110.00</u>
Frame:	JGK/4	Stroke, in:	5.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1200	Rated BHP:	2540.0	Rated PS FPM:	1100.0
Calc RPM:	1200.0	Calc BHP:	1030	Calc PS FPM:	1100.0

## Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516-LE
BHP:	1085
Avail:	1030 (55)

## Services

## Stage Data:

	#1	---	#2	#3
Flow Req'd, MMSCFD	5.000	---	5.000	5.000
Flow Calc, MMSCFD	5.124	---	5.124	5.124
Cyl HP per Stage	351.6	---	335.8	318.4
Specific Gravity	0.5700	---	0.5700	0.5700
Ratio of Sp Ht (N)	1.2857	---	1.2738	1.2858
Comp Suct (Zs)	0.9938	---	0.9884	0.9708
Comp Disch (Zd)	0.9932	---	0.9893	0.9765
Pres Suct Line, psig	30.00	---	N/A	N/A
Pres Suct Flg, psig	30.00	---	120.06	345.02
Pres Disch Flg, psig	123.65	---	351.64	910.00
Pres Disch Line, psig	N/A	---	N/A	900.00
Pres Ratio F/F	3.158	---	2.735	2.576
Temp Suct, °F	60.00	---	130.00	130.00
Temp Clr Disch, °F	130.00	---	130.00	130.00

## Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	15-7/8K	15-7/8K	11K	6-1/4K
Cyl Bore, in	15.375	15.375	10.500	6.250
Cyl RDP (API), psig	577.3	577.3	768.2	1863.6
Cyl MAWP, psig	635.0	635.0	845.0	2050.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1406.2	1406.2	649.5	222.4
Pres Suct Intl, psig	27.43	27.43	113.90	328.10
Temp Suct Intl, °F	69	69	137	135
Suct Zsph	0.9942	0.9942	0.9889	0.9717
Pres Disch Intl, psig	130.03	130.03	366.28	966.18
Temp Disch Intl, °F	239	239	295	292
HE Suct Gas Vel, FPM	8358	8358	7893	8168
HE Disch Gas Vel, FPM	7103	7103	6902	8716
HE Spcrrs Used/Max	0/6	0/6	0/4	0/2
HE Vol Pkt Avail, %	0.98+51.99	0.98+51.99	0.94+47.66	0.65+39.93
Vol Pkt Used, %	55.80 (V)	55.80 (V)	0.00 (V)	0.00 (V)
HE Min Clr, %	19.50	19.50	21.41	17.41
HE Total Clr, %	49.49	49.49	22.36	18.06
CE Suct Gas Vel, FPM	8217	8217	7607	7332
CE Disch Gas Vel, FPM	6983	6983	6651	7824
CE Spcrrs Used/Max	0/6	0/6	0/4	0/2
CE Min Clr, %	20.21	20.21	19.86	21.02
CE Total Clr, %	20.21	20.21	19.86	21.02
Suct Vol Eff HE/CE, %	22.8/64.3	22.8/64.3	67.0/70.0	74.5/71.4
Disch Event HE/CE, ms	4.6/9.3	4.6/9.3	8.6/10.3	9.4/10.7
Suct Pseudo-Q HE/CE	4.2/5.2	4.2/5.2	4.5/4.2	5.7/4.6
Gas Rod Ld Comp, lbf	19146 C	19146 C	22237 C	20737 C
Gas Rod Ld Tens, lbf	18629 T	18629 T	20677 T	16433 T
Gas Rod Ld Total, lbf	37775	37775	42914	37170
Xhd Pin Deg/%Rvrs/ lbf	155/81.1	155/81.1	169/95.9	161/93.0
Flow Calc, MMSCFD	2.562	2.562	5.124	5.124
I HP	175.8	175.8	335.8	318.4