



### Ariel Performance

Company: Tormont Process Systems  
 Quote: 31262, Q141088  
 Remarks: 10 - 1000psig

Customer: Paramount  
 Inquiry: Brad Macson  
 Project: CBM



#### Compressor Data:

Elevation,ft: 4000.0  
 Frame: JGC/4  
 Max RL Tot, lbf: 114000  
 Rated RPM: 1000  
 Calc RPM: 1000.0

Barmtr,psia: 12.670  
 Stroke, in: 6.50  
 Max RL Tens, lbf: 57000  
 Rated BHP: 4140.0  
 Calc BHP: 1594

Ambient, °F: 100.00  
 Rod Dia, in: 2.500  
 Max RL Comp, lbf: 60000  
 Rated PS FPM: 1083.3  
 Calc PS FPM: 1083.3

#### Driver Data:

Type: Nat. Gas  
 Mfg: Caterpillar  
 Model: G3606LE L  
 BHP: 1775 (1669)  
 Avail: 1594 (75)

#### Services

##### Stage Data:

Flow Req'd, MMSCFD  
 Flow Calc, MMSCFD  
 Cyl HP per Stage  
 Specific Gravity  
 Ratio of Sp Ht (N)  
 Comp Suct (Zs)  
 Comp Disch (Zd)  
 Pres Suct Line, psig  
 Pres Suct Flg, psig  
 Pres Disch Flg, psig  
 Pres Disch Line, psig  
 Pres Ratio F/F  
 Temp Suct, °F  
 Temp Clr Disch, °F

#### Gathering

#1	#2	#3	#4
6.000	6.000	6.000	6.000
5.758	5.758	5.758	5.744
343.2	412.1	410.3	390.2
0.5751	0.5751	0.5751	0.5750
1.3005	1.2785	1.2818	1.2937
0.9974	0.9964	0.9899	0.9718
0.9972	0.9967	0.9916	0.9808
<u>5.00</u>	N/A	N/A	N/A
<u>4.50</u>	29.60	107.11	344.26
31.07	<u>111.18</u>	351.78	1010.13
N/A	N/A	N/A	1000.00
2.547	2.930	3.043	2.866
40.00	120.00	120.00	120.00
120.00	120.00	120.00	120.00

#### Cylinder Data:

Cyl Model  
 Cyl Bore, in  
 RDP (API), psig  
 MAWP, psig  
 Cyl Action  
 Cyl Disp, CFM  
 Pres Suct Intl, psig  
 Temp Suct Intl, °F  
 Suct Zsph  
 Pres Disch Intl, psig  
 Temp Disch Intl, °F  
 HE Suct Gas Vel, FPM  
 HE Disch Gas Vel, FPM  
 HE Spcra Used/Max  
 HE Vol Pkt Avail, %  
 Vol Pkt Used, %  
 HE Min Clr, %  
 HE Total Clr, %  
 CE Suct Gas Vel, FPM  
 CE Disch Gas Vel, FPM  
 CE Spcra Used/Max  
 CE Min Clr, %  
 CE Total Clr, %  
 Suct Vol Eff HE/CE, %  
 Disch Event HE/CE, ms  
 Suct Pseudo-Q HE/CE  
 Gas Rod Ld Comp, lbf  
 Gas Rod Ld Tens, lbf  
 Gas Rod Ld Total, lbf  
 Xhd Pin Deg/%Rvrs lbf  
 Flow Calc, MMSCFD  
 Cyl HP

Throw 3	Throw 4	Throw 4.7	Throw 2.1
26-1/2C	20-1/8C	12-1/2C	7-1/4C
26.500	19.625	12.000	6.750
205.0	313.6	727.3	2181.8
230.0	345.0	800.0	2400.0
DBL	DBL	DBL	DBL
4130.9	2257.2	832.4	250.7
2.70	27.16	102.30	327.11
52	131	128	126
0.9976	0.9966	0.9905	0.9729
35.04	117.25	364.17	1060.54
205	304	303	301
10888	8689	7309	8288
9620	7598	6392	8011
0/0	0/0	0/4	0/4
0.79+47.37	<u>0.75+46.18</u>	0.72+38.57	0.69+41.88
0.00 (V)	<u>9.00 (V)</u>	4.00 (V)	0.00 (V)
11.32	15.45	18.18	15.55
12.11	20.35	20.44	16.24
10791	8548	6992	7151
9534	7474	6115	6912
0/0	0/0	0/4	0/4
11.42	15.84	19.55	19.33
11.42	15.84	19.55	19.33
81.0/81.8	66.9/72.7	65.4/66.7	73.6/69.8
12.2/14.0	10.0/12.2	9.8/11.5	10.8/12.2
7.7/7.5	5.5/5.3	3.9/3.6	6.5/4.9
17863 C	27401 C	30156 C	28032 C
17658 T	26658 T	27794 T	20906 T
35521	54059	57950	48938
160/75.6	168/85.0	180/92.3	162/93.1
5.758	5.758	5.758	5.744
343.2	412.1	410.3	390.2

(V) <sup>1/2</sup> volume pocket

SRT UP FOR THIS CURVE TOM

*[Handwritten signature]*

1.5%IT 1.4%IT 1.2%IT 1.2%IT & ADDED V/IT



### Ariel Performance

Company: Torront Process Systems  
 Quote: 31262, Q141088  
 Remarks: 10 - 1000psig

Customer: Paramount  
 Inquiry: Brad Macson  
 Project: CBM



#### Compressor Data:

Elevation,ft: 4000.0 Barmtr,psia: 12.670 Ambient,°F: 100.00  
 Frame: JGC/4 Stroke, in: 6.50 Rod Dia, in: 2.500  
 Max RL Tot, lbf: 114000 Max RL Tens, lbf: 57000 Max RL Comp, lbf: 60000  
 Rated RPM: 1000 Rated BHP: 4140.0 Rated PS FPM: 1083.3  
 Calc RPM: 1000.0 Calc BHP: 1600 Calc PS FPM: 1083.3

#### Driver Data:

Type: Nat. Gas  
 Mfg: Caterpillar  
 Model: G3606LE L  
 BHP: 1775 (1669)  
 Avail: 1594 (75)

#### Services

#### Gathering

##### Stage Data:

	#1	#2	#3	#4
Flow Req'd, MMSCFD	6.000	6.000	6.000	6.000
Flow Calc, MMSCFD	6.201	6.201	6.201	6.194
Cyl HP per Stage	395.2	374.2	393.1	399.5
Specific Gravity	0.5750	0.5750	0.5750	0.5750
Ratio of Sp Ht (N)	1.2997	1.2821	1.2848	1.2953
Comp Suct (Zs)	0.9966	0.9950	0.9882	0.9704
Comp Disch (Zd)	0.9964	0.9952	0.9897	0.9791
Pres Suct Line, psig	10.00	N/A	N/A	N/A
Pres Suct Flg, psig	9.50	46.10	128.75	362.87
Pres Disch Flg, psig	47.87	133.35	370.83	1010.13
Pres Disch Line, psig	N/A	N/A	N/A	1000.00
Pres Ratio F/F	2.731	2.485	2.712	2.724
Temp Suct, °F	40.00	120.00	120.00	120.00
Temp Clr Disch, °F	120.00	120.00	120.00	120.00

##### Cylinder Data:

##### Throw 3

##### Throw 4

##### Throw 1

##### Throw 2

	Throw 3	Throw 4	Throw 1	Throw 2
Cyl Model	26-1/2C	20-1/8C	12-1/2C	7-1/4C
Cyl Bore, in	26.500	19.625	12.000	6.750
I RDP (API), psig	205.0	313.6	727.3	2181.8
yl MAWP, psig	230.0	345.0	800.0	2400.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	4130.9	2257.2	832.4	250.7
Pres Suct Intl, psig	7.17	42.70	123.06	344.79
Temp Suct Intl, °F	53	129	127	126
Suct Zsph	0.9969	0.9953	0.9887	0.9715
Pres Disch Intl, psig	53.29	<u>140.78</u> ✓	384.22	1061.17
Temp Disch Intl, °F	216	<u>277</u> ✓	285	293
HE Suct Gas Vel, FPM	10888	8689	7309	8288
HE Disch Gas Vel, FPM	9620	7598	6392	8011
HE Spcrs Used/Max	0/0	0/0	0/4	0/4
HE Vol Pkt Avail, %	0.79+47.37	0.75+46.18	0.72+38.57	0.69+41.88
Vol Pkt Used, %	43.95 (V)	<u>100.00 (V)</u>	50.00 (V)	0.00 (V)
HE Min Clr, %	11.32	15.45	18.18	15.55
HE Total Clr, %	32.93	62.37	38.18	16.24
CE Suct Gas Vel, FPM	10791	8548	6992	7151
CE Disch Gas Vel, FPM	9534	7474	6115	6912
CE Spcrs Used/Max	0/0	0/0	0/4	0/4
CE Min Clr, %	11.42	15.84	19.55	19.33
CE Total Clr, %	11.42	15.84	19.55	19.33
Suct Vol Eff HE/CE, %	55.7/80.3	30.5/77.6	49.6/71.0	75.1/71.6
Disch Event HE/CE, ms	9.3/13.5	7.0/13.7	8.8/12.5	11.2/12.7
Suct Pseudo-Q HE/CE	7.7/7.5	4.9/5.4	3.9/3.6	6.5/4.9
Gas Rod Ld Comp, lbf	25483 C	29896 C	30178 C	27507 C
Gas Rod Ld Tens, lbf	25158 T	28958 T	27615 T	20295 T
Gas Rod Ld Total, lbf	50641	58854	57793	47802
Xhd Pin Deg/%RvrsI lbf	174/85.9	179/95.8	180/70.3	161/92.1
ow Calc, MMSCFD	6.201	6.201	6.201	6.194
yl HP	395.2	374.2	393.1	399.5

## Ariel Performance



Company: Tormont Process Systems  
 Quote: 31262, Q141088  
 Remarks: 7.4.3 15 - 1000psig

Customer: Paramount  
 Inquiry: Brad Macson  
 Project: CBM



### Compressor Data:

Elevation,ft:	<u>4000.0</u>	Barmtr,psia:	12.670	Ambient,°F:	100.00
Frame:	JGC/4	Stroke, in:	6.50	Rod Dia, in:	2.500
Max RL Tot, lbf:	114000	Max RL Tens, lbf:	57000	Max RL Comp, lbf:	60000
Rated RPM:	1000	Rated BHP:	4140.0	Rated PS FPM:	1083.3
Calc RPM:	1000.0	Calc BHP:	<u>1600</u>	Calc PS FPM:	1083.3

### Driver Data:

Type: Nat. Gas  
 Mfg: Caterpillar  
 Model: G3606LE L  
 BHP: 1775 (1669)  
 Avail: 1594 (75)

### Services

#### Stage Data:

	#1	#2	#3	#4
Flow Req'd, MMSCFD	6.000	6.000	6.000	6.000
Flow Calc, MMSCFD	6.553	6.553	6.553	6.550
Cyl HP per Stage	388.0	420.4	391.4	362.2
Specific Gravity	0.5750	0.5750	0.5750	0.5749
Ratio of Sp Ht (N)	1.3012	1.2815	1.2871	1.2997
Comp Suct (Zs)	0.9959	0.9943	0.9858	0.9663
Comp Disch (Zd)	0.9956	0.9947	0.9876	0.9744
Pres Suct Line, psig	15.00	N/A	N/A	N/A
Pres Suct Flg, psig	14.50	54.13	158.14	418.03
Pres Disch Flg, psig	56.18	163.14	426.38	1010.13
Pres Disch Line, psig	N/A	N/A	N/A	1000.00
Pres Ratio F/F	2.534	2.632	2.570	2.375
Temp Suct, °F	40.00	120.00	120.00	120.00
Temp Clr Disch, °F	120.00	120.00	120.00	120.00

#### Cylinder Data:

	Throw 3	Throw 4	Throw 1	Throw 2
Cyl Model	26-1/2C	20-1/8C	12-1/2C	7-1/4C
Cyl Bore, in	26.500	19.625	12.000	6.750
RDP (API), psig	205.0	313.6	727.3	2181.8
Cyl MAWP, psig	230.0	345.0	800.0	2400.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	4130.9	2257.2	832.4	250.7
Pres Suct Intl, psig	11.64	50.27	151.25	397.19
Temp Suct Intl, °F	52	130	127	125
Suct Zsph	0.9962	0.9947	0.9864	0.9675
Pres Disch Intl, psig	62.45	171.98	441.90	1062.96
Temp Disch Intl, °F	205	287	277	271
HE Suct Gas Vel, FPM	10888	8689	7309	8288
HE Disch Gas Vel, FPM	9620	7598	6392	8011
HE Spcrrs Used/Max	0/0	0/0	0/4	0/4
HE Vol Pkt Avail, %	0.79+47.37	0.75+46.18	0.72+38.57	0.69+41.88
Vol Pkt Used, %	94.71 (V)	100.00 (V)	100.00 (V)	50.00 (V)
HE Min Clr, %	11.32	15.45	18.18	15.55
HE Total Clr, %	56.97	62.37	57.47	37.18
CE Suct Gas Vel, FPM	10791	8548	6992	7151
CE Disch Gas Vel, FPM	9534	7474	6115	6912
CE Spcrrs Used/Max	0/0	0/0	0/4	0/4
CE Min Clr, %	11.42	15.84	19.55	19.33
CE Total Clr, %	11.42	15.84	19.55	19.33
Suct Vol Eff HE/CE, %	35.3/81.9	24.6/76.0	32.8/72.9	59.9/76.1
Disch Event HE/CE, ms	7.5/14.0	6.2/13.2	7.2/13.0	10.5/13.8
Suct Pseudo-Q HE/CE	7.1/7.5	4.5/5.4	3.6/3.6	6.6/4.9
Gas Rod Ld Comp, lbf	28098 C	37086 C	33658 C	25950 C
Gas Rod Ld Tens, lbf	27704 T	35948 T	30664 T	18482 T
Gas Rod Ld Total, lbf	55802	73034	64322	44432
Xhd Pin Deg/%RvrsI lbf	179/91.8	173/86.4	169/63.7	159/75.3
Flow Calc, MMSCFD	6.553	6.553	6.553	6.550
Cyl HP	388.0	420.4	391.4	362.2



### Ariel Performance

Company: Tormont Process Systems  
 Quote: 31262, Q141088  
 Remarks: 5 - 1000psig

Customer: Paramount  
 Inquiry: Brad Macson  
 Project: CBM



7.4.3

#### Compressor Data:

Elevation,ft:	<u>4000.0</u>	Barmtr,psia:	12.670	Ambient,°F:	100.00
Frame:	JGC/4	Stroke, in:	6.50	Rod Dia, in:	2.500
Max RL Tot, lbf:	114000	Max RL Tens, lbf:	57000	Max RL Comp, lbf:	60000
Rated RPM:	1000	Rated BHP:	4140.0	Rated PS FPM:	1083.3
Calc RPM:	1000.0	Calc BHP:	1594	Calc PS FPM:	1083.3

#### Driver Data:

Type: Nat. Gas  
 Mfg: Caterpillar  
 Model: G3606LE L  
 BHP: 1775 (1669)  
 Avail: 1594 (75)

#### Services

#### Gathering

Stage Data:	#1	#2	#3	#4
Flow Req'd, MMSCFD	6.000	6.000	6.000	6.000
Flow Calc, MMSCFD	5.758	5.758	5.758	5.744
Cyl HP per Stage	343.2	412.1	410.3	390.2
Specific Gravity	0.5751	0.5751	0.5751	0.5750
Ratio of Sp Ht (N)	1.3006	1.2785	1.2816	1.2937
Comp Suct (Zs)	0.9974	0.9964	0.9899	0.9718
Comp Disch (Zd)	0.9972	0.9967	0.9916	0.9808
Pres Suct Line, psig	<u>5.00</u>	N/A	N/A	N/A
Pres Suct Flg, psig	4.50	29.60	107.11	344.26
Pres Disch Flg, psig	31.07	111.18	351.78	1010.13
Pres Disch Line, psig	N/A	N/A	N/A	1000.00
Pres Ratio F/F	2.547	2.930	3.043	2.866
Temp Suct, °F	40.00	120.00	120.00	120.00
Temp Cir Disch, °F	120.00	120.00	120.00	120.00
<b>Cylinder Data:</b>	<b>Throw 3</b>	<b>Throw 4</b>	<b>Throw 1</b>	<b>Throw 2</b>
Cyl Model	26-1/2C	20-1/8C	12-1/2C	7-1/4C
Cyl Bore, in	26.500	19.625	12.000	6.750
RDP (API), psig	205.0	313.6	727.3	2181.8
MAWP, psig	230.0	345.0	800.0	2400.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	4130.9	2257.2	832.4	250.7
Pres Suct Intl, psig	2.70	27.16	102.30	327.11
Temp Suct Intl, °F	52	131	128	126
Suct Zsph	0.9976	0.9966	0.9905	0.9729
Pres Disch Intl, psig	35.04	117.25	364.17	1060.54
Temp Disch Intl, °F	205	304	303	301
HE Suct Gas Vel, FPM	10888	8689	7309	8288
HE Disch Gas Vel, FPM	9620	7598	6392	8011
HE Spcra Used/Max	0/0	0/0	0/4	0/4
HE Vol Pkt Avail, %	0.79+47.37	0.75+46.18	0.72+38.57	0.69+41.88
Vol Pkt Used, %	0.00 (V)	9.00 (V)	4.00 (V)	0.00 (V)
HE Min Clr, %	11.32	15.45	18.18	15.55
HE Total Clr, %	12.11	20.35	20.44	16.24
CE Suct Gas Vel, FPM	10791	8548	6992	7151
CE Disch Gas Vel, FPM	9534	7474	6115	6912
CE Spcra Used/Max	0/0	0/0	0/4	0/4
CE Min Clr, %	11.42	15.84	19.55	19.33
CE Total Clr, %	11.42	15.84	19.55	19.33
Suct Vol Eff HE/CE, %	81.0/81.8	66.9/72.7	65.4/66.7	73.6/69.8
Disch Event HE/CE, ms	12.2/14.0	10.0/12.2	9.8/11.5	10.8/12.2
Suct Pseudo-Q HE/CE	7.7/7.5	5.5/5.3	3.9/3.6	6.5/4.9
Gas Rod Ld Comp, lbf	17863 C	27401 C	30156 C	28032 C
Gas Rod Ld Tens, lbf	17658 T	26658 T	27794 T	20906 T
Gas Rod Ld Total, lbf	35521	54059	57950	48938
Xhd Pin Deg/%Rvrs lbf	160/75.6	168/85.0	180/92.3	162/93.1
w Calc, MMSCFD	5.758	5.758	5.758	5.744
yl HP	343.2	412.1	410.3	390.2



# Gas Analysis Data

Company: Torront Process Systems  
 Quote: 31262, Q141088  
 Remarks: 7.4.3 10 - 1000psig

Customer: Paramount  
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 Project: CBM



Services Gas Model	Gathering Hall						Final Dropout	Final Vapor
	# 1	# 2	# 3	# 4	# 4	# 4		
Stage	Vapor	Vapor	Vapor	Dropout	Vapor			
Suction Press, psig	4.500	29.596	107.108		344.263			
Disch Press, psig	31.065	111.179	351.784		1010.127		1010.127	
Suction Temp, °F	40.000	120.000	120.000		120.000		120.000	
Disch Temp, °F	205.222	304.386	303.361		301.093		120.000	
Flow, MMSCFD	5.758	5.758	5.758	0.014	5.744	0.018	5.726	
Flow, lb/h	10529.5	10529.5	10529.5	26.8	10502.7	35.2	10467.0	
Flow, GPM				0.054		0.070		
Dropout, %				0.235		0.309		
Specific Gravity	0.5751	0.5751	0.5751		0.5750		0.5748	
Ratio of Sp Ht (N)	1.3005	1.2785	1.2818		1.2937			
Comp Suct (Zs)	0.9974	0.9964	0.9899		0.9718		0.9282	
Comp Disch (Zd)	0.9972	0.9967	0.9916		0.9808			
Mole Weight	16.66	16.66	16.66		16.65		16.65	
Density, lb/ft <sup>3</sup>	0.052	0.111	0.319		0.972		2.949	
Density @ Std, lb/ft <sup>3</sup>	0.044	0.044	0.044		0.044		0.044	
Speed of Sound, ft/s	N/A	N/A	N/A		N/A		N/A	
Pseudo-Pc, psig	N/A	N/A	N/A		N/A		N/A	
Pseudo-Tc, °F	N/A	N/A	N/A		N/A		N/A	
Cp, BTU/lb-°F	N/A	N/A	N/A		N/A		N/A	
Viscosity, lb/ft-s	N/A	N/A	N/A		N/A		N/A	
Thermal Cond., btu/ft-h-°F	N/A	N/A	N/A		N/A		N/A	
Heat Load, BTU/h	N/A	N/A	N/A		N/A		N/A	
Humidity	100.00							
METHANE	94.68398	94.68398	94.68398		94.90740		95.20205	
ETHANE	0.42695	0.42695	0.42695		0.42796		0.42929	
PROPANE	0.01986	0.01986	0.01986		0.01991		0.01997	
ISOBUTANE								
N-BUTANE								
ISOPENTANE								
N-PENTANE								
N-HEXANE								
N-HEPTANE								
CARBON DIOXIDE	0.23830	0.23830	0.23830		0.23886		0.23960	
HYDROGEN SULFIDE								
NITROGEN	3.91207	3.91207	3.91207		3.92130		3.93347	
WATER	0.70892	0.70892	0.70892	100.00000	0.47461	100.00000	0.16563	
HELIUM	0.00993	0.00993	0.00993		0.00995		0.00998	