



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	145	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.794	0.774
Cyl BHP per Stage	65.2	74.1
Specific Gravity	1.0449	1.0559
Ratio of Sp Ht (N)	1.1737	1.1727
Comp Suct (Zs)	0.9920	0.9773
Comp Disch (Zd)	0.9852	0.9535
Pres Suct Line, kPag	<u>50.00</u>	N/A
Pres Suct Flg, kPag	50.00	342.56
Pres Disch Flg, kPag	357.81	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	3.138	4.192
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	28.76	293.02
Temp Suct Intl, °F	110	126
Suct Zsph	0.9922	0.9780
Pres Disch Intl, kPag	428.56	1934.81
Temp Disch Intl, °F	246	288
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	55.9/56.7	44.9/45.3
Disch Event HE/CE, ms	4.7/5.5	3.7/4.4
Suct Pseudo-Q HE/CE	10.4/10.0	12.1/11.3
Gas Rod Ld Comp, %	26.3	44.7
Gas Rod Ld Tens, %	28.1	45.9
Gas Rod Ld Total, %	28.4	47.4
Xhd Pin Deg/%RvrsI	160/67.4	157/74.3
Cyl Flow Calc, MMSCFD	0.794	0.774
Cyl BHP	65.2	74.1

Step: C1.L0 - Step Description



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Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	170	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.987	0.967
Cyl BHP per Stage	77.2	86.3
Specific Gravity	1.0482	1.0569
Ratio of Sp Ht (N)	1.1741	1.1739
Comp Suct (Zs)	0.9905	0.9749
Comp Disch (Zd)	0.9832	0.9511
Pres Suct Line, kPag	75.00	N/A
Pres Suct Flg, kPag	75.00	387.93
Pres Disch Flg, kPag	404.45	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.950	3.797
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	49.94	333.02
Temp Suct Intl, °F	110	125
Suct Zsph	0.9908	0.9757
Pres Disch Intl, kPag	483.62	1938.20
Temp Disch Intl, °F	240	278
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	59.1/59.8	50.7/51.1
Disch Event HE/CE, ms	5.0/5.8	4.1/4.8
Suct Pseudo-Q HE/CE	10.4/10.1	12.3/11.3
Gas Rod Ld Comp, %	28.5	43.8
Gas Rod Ld Tens, %	30.5	44.8
Gas Rod Ld Total, %	30.8	46.4
Xhd Pin Deg/%RvrsI	160/68.2	157/75.1
Cyl Flow Calc, MMSCFD	0.987	0.967
Cyl BHP	77.2	86.3

Step: C1.L0 - Step Description



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Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	192	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.181	1.161
Cyl BHP per Stage	88.8	97.0
Specific Gravity	1.0506	1.0578
Ratio of Sp Ht (N)	1.1745	1.1751
Comp Suct (Zs)	0.9891	0.9726
Comp Disch (Zd)	0.9811	0.9489
Pres Suct Line, kPag	100.00	N/A
Pres Suct Flg, kPag	100.00	433.12
Pres Disch Flg, kPag	450.82	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.809	3.472
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	71.11	372.83
Temp Suct Intl, °F	110	125
Suct Zsph	0.9894	0.9733
Pres Disch Intl, kPag	538.33	1941.34
Temp Disch Intl, °F	235	269
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	61.5/62.2	55.5/55.9
Disch Event HE/CE, ms	5.3/6.1	4.4/5.2
Suct Pseudo-Q HE/CE	10.5/10.1	12.4/11.4
Gas Rod Ld Comp, %	30.7	42.8
Gas Rod Ld Tens, %	32.8	43.7
Gas Rod Ld Total, %	33.2	45.3
Xhd Pin Deg/%RvrsI	159/69.0	157/75.8
Cyl Flow Calc, MMSCFD	1.181	1.161
Cyl BHP	88.8	97.0

Step: C1.L0 - Step Description



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Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	212	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.376	1.357
Cyl BHP per Stage	100.1	106.3
Specific Gravity	1.0525	1.0585
Ratio of Sp Ht (N)	1.1750	1.1763
Comp Suct (Zs)	0.9877	0.9702
Comp Disch (Zd)	0.9791	0.9468
Pres Suct Line, kPag	125.00	N/A
Pres Suct Flg, kPag	125.00	478.12
Pres Disch Flg, kPag	496.92	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.699	3.199
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	92.27	412.44
Temp Suct Intl, °F	109	125
Suct Zsph	0.9880	0.9710
Pres Disch Intl, kPag	592.73	1944.27
Temp Disch Intl, °F	232	261
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	63.4/64.1	59.6/59.9
Disch Event HE/CE, ms	5.5/6.3	4.8/5.6
Suct Pseudo-Q HE/CE	10.5/10.1	12.4/11.4
Gas Rod Ld Comp, %	32.9	41.9
Gas Rod Ld Tens, %	35.1	42.7
Gas Rod Ld Total, %	35.6	44.3
Xhd Pin Deg/%Rvrsl	159/70.0	157/76.4
Cyl Flow Calc, MMSCFD	1.376	1.357
Cyl BHP	100.1	106.3

Step: C1.L0 - Step Description



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Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	231	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.572	1.554
Cyl BHP per Stage	111.1	114.4
Specific Gravity	1.0540	1.0591
Ratio of Sp Ht (N)	1.1754	1.1774
Comp Suct (Zs)	0.9863	0.9678
Comp Disch (Zd)	0.9771	0.9448
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	522.93
Pres Disch Flg, kPag	542.78	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.610	2.966
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.42	451.87
Temp Suct Intl, °F	109	125
Suct Zsph	0.9866	0.9686
Pres Disch Intl, kPag	646.86	1947.03
Temp Disch Intl, °F	228	253
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	65.0/65.6	63.2/63.4
Disch Event HE/CE, ms	5.6/6.5	5.2/6.0
Suct Pseudo-Q HE/CE	10.5/10.2	12.5/11.5
Gas Rod Ld Comp, %	35.1	40.9
Gas Rod Ld Tens, %	37.4	41.6
Gas Rod Ld Total, %	37.9	43.2
Xhd Pin Deg/%Rvrsl	159/71.2	158/77.0
Cyl Flow Calc, MMSCFD	1.572	1.554
Cyl BHP	111.1	114.4

Step: C1.L0 - Step Description



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Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	131	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.718	0.698
Cyl BHP per Stage	63.2	62.2
Specific Gravity	1.0449	1.0569
Ratio of Sp Ht (N)	1.1730	1.1739
Comp Suct (Zs)	0.9920	0.9749
Comp Disch (Zd)	0.9845	0.9511
Pres Suct Line, kPag	<u>50.00</u>	N/A
Pres Suct Flg, kPag	50.00	387.95
Pres Disch Flg, kPag	403.19	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	3.453	3.797
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	28.77	333.04
Temp Suct Intl, °F	111	125
Suct Zsph	0.9922	0.9757
Pres Disch Intl, kPag	480.04	1938.19
Temp Disch Intl, °F	256	277
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	50.4/51.3	23.0/51.1
Disch Event HE/CE, ms	4.3/5.0	2.7/4.8
Suct Pseudo-Q HE/CE	10.3/10.0	9.7/11.3
Gas Rod Ld Comp, %	29.6	43.8
Gas Rod Ld Tens, %	31.7	44.8
Gas Rod Ld Total, %	32.1	46.4
Xhd Pin Deg/%Rvrsl	159/67.4	155/74.9
Cyl Flow Calc, MMSCFD	0.718	0.698
Cyl BHP	63.2	62.2

Step: C1.L1 - Step Description



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Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	157	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.912	0.892
Cyl BHP per Stage	76.1	74.5
Specific Gravity	1.0482	1.0577
Ratio of Sp Ht (N)	1.1735	1.1751
Comp Suct (Zs)	0.9905	0.9726
Comp Disch (Zd)	0.9824	0.9490
Pres Suct Line, kPag	75.00	N/A
Pres Suct Flg, kPag	75.00	431.73
Pres Disch Flg, kPag	448.25	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	3.209	3.481
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	49.96	371.61
Temp Suct Intl, °F	110	125
Suct Zsph	0.9908	0.9734
Pres Disch Intl, kPag	533.39	1941.24
Temp Disch Intl, °F	249	269
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	54.6/55.4	30.6/55.7
Disch Event HE/CE, ms	4.6/5.4	3.2/5.2
Suct Pseudo-Q HE/CE	10.4/10.1	10.9/11.4
Gas Rod Ld Comp, %	31.8	42.9
Gas Rod Ld Tens, %	34.0	43.8
Gas Rod Ld Total, %	34.4	45.4
Xhd Pin Deg/%RvrsI	159/68.3	155/75.5
Cyl Flow Calc, MMSCFD	0.912	0.892
Cyl BHP	76.1	74.5

Step: C1.L1 - Step Description



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Remarks:

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Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	180	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.108	1.088
Cyl BHP per Stage	88.3	85.4
Specific Gravity	1.0506	1.0585
Ratio of Sp Ht (N)	1.1740	1.1762
Comp Suct (Zs)	0.9891	0.9703
Comp Disch (Zd)	0.9804	0.9469
Pres Suct Line, kPag	100.00	N/A
Pres Suct Flg, kPag	100.00	475.40
Pres Disch Flg, kPag	493.09	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	3.027	3.214
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	71.13	410.05
Temp Suct Intl, °F	110	125
Suct Zsph	0.9894	0.9711
Pres Disch Intl, kPag	586.44	1944.10
Temp Disch Intl, °F	243	261
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	57.7/58.4	37.1/59.7
Disch Event HE/CE, ms	4.9/5.6	3.7/5.6
Suct Pseudo-Q HE/CE	10.4/10.1	11.7/11.4
Gas Rod Ld Comp, %	33.9	41.9
Gas Rod Ld Tens, %	36.2	42.7
Gas Rod Ld Total, %	36.7	44.3
Xhd Pin Deg/%RvrsI	159/69.3	156/76.1
Cyl Flow Calc, MMSCFD	1.108	1.088
Cyl BHP	88.3	85.4

Step: C1.L1 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary

Quote: 1006-130 Rev 2

Remarks:

Customer: PetroBakken

Inquiry: Northridge 0689-001A

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	201	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.305	1.285
Cyl BHP per Stage	100.1	95.0
Specific Gravity	1.0525	1.0591
Ratio of Sp Ht (N)	1.1745	1.1773
Comp Suct (Zs)	0.9877	0.9680
Comp Disch (Zd)	0.9784	0.9449
Pres Suct Line, kPag	125.00	N/A
Pres Suct Flg, kPag	125.00	518.92
Pres Disch Flg, kPag	537.72	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.885	2.986
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	92.29	448.33
Temp Suct Intl, °F	110	125
Suct Zsph	0.9881	0.9688
Pres Disch Intl, kPag	639.22	1946.79
Temp Disch Intl, °F	238	254
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	60.1/60.8	42.7/63.1
Disch Event HE/CE, ms	5.1/5.9	4.2/5.9
Suct Pseudo-Q HE/CE	10.5/10.1	12.1/11.5
Gas Rod Ld Comp, %	36.0	41.0
Gas Rod Ld Tens, %	38.4	41.7
Gas Rod Ld Total, %	38.9	43.3
Xhd Pin Deg/%RvrsI	159/70.4	157/76.6
Cyl Flow Calc, MMSCFD	1.305	1.285
Cyl BHP	100.1	95.0

Step: C1.L1 - Step Description



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	221	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.503	1.484
Cyl BHP per Stage	111.6	103.4
Specific Gravity	1.0540	1.0596
Ratio of Sp Ht (N)	1.1750	1.1783
Comp Suct (Zs)	0.9863	0.9657
Comp Disch (Zd)	0.9764	0.9430
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	562.26
Pres Disch Flg, kPag	582.11	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.771	2.788
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.44	486.44
Temp Suct Intl, °F	110	124
Suct Zsph	0.9867	0.9665
Pres Disch Intl, kPag	691.72	1949.33
Temp Disch Intl, °F	235	247
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	0.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	22.70	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	62.1/62.8	47.6/66.1
Disch Event HE/CE, ms	5.3/6.1	4.5/6.3
Suct Pseudo-Q HE/CE	10.5/10.2	12.4/11.5
Gas Rod Ld Comp, %	38.1	40.1
Gas Rod Ld Tens, %	40.6	40.6
Gas Rod Ld Total, %	41.1	42.3
Xhd Pin Deg/%RvrsI	159/71.8	159/77.1
Cyl Flow Calc, MMSCFD	1.503	1.484
Cyl BHP	111.6	103.4

Step: C1.L1 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary

Quote: 1006-130 Rev 2

Remarks:

Customer: PetroBakken

Inquiry: Northridge 0689-001A

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	126	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.684	0.668
Cyl BHP per Stage	53.7	66.6
Specific Gravity	1.0449	1.0552
Ratio of Sp Ht (N)	1.1742	1.1720
Comp Suct (Zs)	0.9920	0.9787
Comp Disch (Zd)	0.9857	0.9548
Pres Suct Line, kPag	<u>50.00</u>	N/A
Pres Suct Flg, kPag	50.00	317.22
Pres Disch Flg, kPag	332.47	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.962	4.450
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	28.75	270.67
Temp Suct Intl, °F	110	126
Suct Zsph	0.9922	0.9793
Pres Disch Intl, kPag	399.79	1932.81
Temp Disch Intl, °F	240	294
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	37.4/59.7	41.1/41.6
Disch Event HE/CE, ms	3.9/5.8	3.4/4.0
Suct Pseudo-Q HE/CE	9.8/10.0	11.8/11.2
Gas Rod Ld Comp, %	24.4	45.2
Gas Rod Ld Tens, %	26.1	46.5
Gas Rod Ld Total, %	26.4	48.0
Xhd Pin Deg/%RvrsI	159/67.4	158/73.9
Cyl Flow Calc, MMSCFD	0.684	0.668
Cyl BHP	53.7	66.6

Step: C1.L2 - Step Description



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	150	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.868	0.852
Cyl BHP per Stage	64.9	79.2
Specific Gravity	1.0482	1.0563
Ratio of Sp Ht (N)	1.1745	1.1732
Comp Suct (Zs)	0.9905	0.9764
Comp Disch (Zd)	0.9837	0.9525
Pres Suct Line, kPag	75.00	N/A
Pres Suct Flg, kPag	75.00	360.82
Pres Disch Flg, kPag	377.34	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.789	4.024
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	49.93	309.12
Temp Suct Intl, °F	110	126
Suct Zsph	0.9908	0.9771
Pres Disch Intl, kPag	452.77	1936.21
Temp Disch Intl, °F	234	283
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	42.1/62.6	47.4/47.8
Disch Event HE/CE, ms	4.3/6.1	3.9/4.5
Suct Pseudo-Q HE/CE	10.1/10.1	12.2/11.3
Gas Rod Ld Comp, %	26.5	44.3
Gas Rod Ld Tens, %	28.3	45.5
Gas Rod Ld Total, %	28.6	47.0
Xhd Pin Deg/%Rvrsl	158/68.0	157/74.6
Cyl Flow Calc, MMSCFD	0.868	0.852
Cyl BHP	64.9	79.2

Step: C1.L2 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	172	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.053	1.037
Cyl BHP per Stage	75.7	90.4
Specific Gravity	1.0506	1.0573
Ratio of Sp Ht (N)	1.1749	1.1744
Comp Suct (Zs)	0.9891	0.9741
Comp Disch (Zd)	0.9817	0.9503
Pres Suct Line, kPag	100.00	N/A
Pres Suct Flg, kPag	100.00	404.28
Pres Disch Flg, kPag	421.98	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.660	3.673
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	71.10	347.42
Temp Suct Intl, °F	109	125
Suct Zsph	0.9894	0.9748
Pres Disch Intl, kPag	505.47	1939.36
Temp Disch Intl, °F	230	274
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	45.7/64.8	52.5/52.9
Disch Event HE/CE, ms	4.5/6.4	4.3/4.9
Suct Pseudo-Q HE/CE	10.3/10.1	12.4/11.4
Gas Rod Ld Comp, %	28.6	43.4
Gas Rod Ld Tens, %	30.5	44.4
Gas Rod Ld Total, %	30.9	46.0
Xhd Pin Deg/%Rvrsl	159/68.7	157/75.3
Cyl Flow Calc, MMSCFD	1.053	1.037
Cyl BHP	75.7	90.4

Step: C1.L2 - Step Description



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	192	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.240	1.224
Cyl BHP per Stage	86.2	100.1
Specific Gravity	1.0525	1.0580
Ratio of Sp Ht (N)	1.1753	1.1755
Comp Suct (Zs)	0.9877	0.9718
Comp Disch (Zd)	0.9797	0.9482
Pres Suct Line, kPag	125.00	N/A
Pres Suct Flg, kPag	125.00	447.59
Pres Disch Flg, kPag	466.39	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.559	3.379
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

	11-1/2RJ	7-3/8RJ
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	92.26	385.57
Temp Suct Intl, °F	109	125
Suct Zsph	0.9880	0.9726
Pres Disch Intl, kPag	557.91	1942.30
Temp Disch Intl, °F	226	266
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	48.5/66.5	56.9/57.2
Disch Event HE/CE, ms	4.8/6.6	4.6/5.4
Suct Pseudo-Q HE/CE	10.4/10.1	12.4/11.4
Gas Rod Ld Comp, %	30.7	42.5
Gas Rod Ld Tens, %	32.7	43.4
Gas Rod Ld Total, %	33.1	45.0
Xhd Pin Deg/%RvrsI	159/69.6	157/76.0
Cyl Flow Calc, MMSCFD	1.240	1.224
Cyl BHP	86.2	100.1

Step: C1.L2 - Step Description



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbF:	42000	Max RL Tens,lbF:	21000	Max RL Comp,lbF:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	211	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.428	1.412
Cyl BHP per Stage	96.4	108.7
Specific Gravity	1.0540	1.0587
Ratio of Sp Ht (N)	1.1758	1.1766
Comp Suct (Zs)	0.9863	0.9695
Comp Disch (Zd)	0.9778	0.9462
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	490.75
Pres Disch Flg, kPag	510.60	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.478	3.129
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.41	423.56
Temp Suct Intl, °F	109	125
Suct Zsph	0.9866	0.9703
Pres Disch Intl, kPag	610.11	1945.07
Temp Disch Intl, °F	223	258
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	0.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	19.38
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	50.7/67.9	60.7/61.0
Disch Event HE/CE, ms	5.0/6.8	4.9/5.7
Suct Pseudo-Q HE/CE	10.5/10.2	12.5/11.4
Gas Rod Ld Comp, %	32.7	41.6
Gas Rod Ld Tens, %	34.8	42.4
Gas Rod Ld Total, %	35.3	44.0
Xhd Pin Deg/%RvrsI	159/70.6	158/76.6
Cyl Flow Calc, MMSCFD	1.428	1.412
Cyl BHP	96.4	108.7

Step: C1.L2 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	134	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.776	0.760
Cyl BHP per Stage	62.0	66.3
Specific Gravity	1.0482	1.0572
Ratio of Sp Ht (N)	1.1739	1.1743
Comp Suct (Zs)	0.9905	0.9742
Comp Disch (Zd)	0.9829	0.9504
Pres Suct Line, kPag	75.00	N/A
Pres Suct Flg, kPag	75.00	401.95
Pres Disch Flg, kPag	418.47	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	3.033	3.690
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	49.95	345.37
Temp Suct Intl, °F	110	125
Suct Zsph	0.9908	0.9749
Pres Disch Intl, kPag	499.55	1939.20
Temp Disch Intl, °F	243	274
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	35.3/58.4	25.5/52.6
Disch Event HE/CE, ms	3.7/5.6	2.9/4.9
Suct Pseudo-Q HE/CE	9.6/10.1	10.2/11.4
Gas Rod Ld Comp, %	29.6	43.5
Gas Rod Ld Tens, %	31.6	44.5
Gas Rod Ld Total, %	32.0	46.1
Xhd Pin Deg/%RvrsI	158/68.0	155/75.1
Cyl Flow Calc, MMSCFD	0.776	0.760
Cyl BHP	62.0	66.3

Step: C1.L3 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	157	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.963	0.947
Cyl BHP per Stage	73.5	77.7
Specific Gravity	1.0506	1.0580
Ratio of Sp Ht (N)	1.1744	1.1754
Comp Suct (Zs)	0.9891	0.9720
Comp Disch (Zd)	0.9809	0.9484
Pres Suct Line, kPag	100.00	N/A
Pres Suct Flg, kPag	100.00	444.05
Pres Disch Flg, kPag	461.75	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.865	3.401
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	71.12	382.46
Temp Suct Intl, °F	110	125
Suct Zsph	0.9894	0.9727
Pres Disch Intl, kPag	550.78	1942.07
Temp Disch Intl, °F	237	266
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	39.9/61.2	32.5/56.9
Disch Event HE/CE, ms	4.1/6.0	3.4/5.4
Suct Pseudo-Q HE/CE	10.0/10.1	11.2/11.4
Gas Rod Ld Comp, %	31.6	42.6
Gas Rod Ld Tens, %	33.7	43.5
Gas Rod Ld Total, %	34.1	45.1
Xhd Pin Deg/%Rvrsl	158/68.9	156/75.7
Cyl Flow Calc, MMSCFD	0.963	0.947
Cyl BHP	73.5	77.7

Step: C1.L3 - Step Description



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	178	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.152	1.136
Cyl BHP per Stage	84.6	87.8
Specific Gravity	1.0525	1.0586
Ratio of Sp Ht (N)	1.1749	1.1765
Comp Suct (Zs)	0.9877	0.9698
Comp Disch (Zd)	0.9790	0.9464
Pres Suct Line, kPag	125.00	N/A
Pres Suct Flg, kPag	125.00	486.05
Pres Disch Flg, kPag	504.85	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.735	3.155
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	92.28	419.42
Temp Suct Intl, °F	110	125
Suct Zsph	0.9880	0.9705
Pres Disch Intl, kPag	601.77	1944.77
Temp Disch Intl, °F	233	259
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	43.5/63.4	38.5/60.6
Disch Event HE/CE, ms	4.4/6.2	3.9/5.6
Suct Pseudo-Q HE/CE	10.2/10.1	11.8/11.4
Gas Rod Ld Comp, %	33.5	41.7
Gas Rod Ld Tens, %	35.7	42.5
Gas Rod Ld Total, %	36.2	44.1
Xhd Pin Deg/%RvrsI	158/69.9	156/76.2
Cyl Flow Calc, MMSCFD	1.152	1.136
Cyl BHP	84.6	87.8

Step: C1.L3 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary

Quote: 1006-130 Rev 2

Remarks:

Customer: PetroBakken

Inquiry: Northridge 0689-001A

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	198	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.342	1.326
Cyl BHP per Stage	95.4	96.8
Specific Gravity	1.0540	1.0592
Ratio of Sp Ht (N)	1.1754	1.1775
Comp Suct (Zs)	0.9863	0.9676
Comp Disch (Zd)	0.9771	0.9445
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	527.91
Pres Disch Flg, kPag	547.76	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.630	2.942
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.43	456.24
Temp Suct Intl, °F	109	125
Suct Zsph	0.9866	0.9683
Pres Disch Intl, kPag	652.54	1947.33
Temp Disch Intl, °F	229	252
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	46.4/65.2	43.8/63.8
Disch Event HE/CE, ms	4.6/6.4	4.3/6.0
Suct Pseudo-Q HE/CE	10.4/10.2	12.2/11.5
Gas Rod Ld Comp, %	35.5	40.8
Gas Rod Ld Tens, %	37.8	41.5
Gas Rod Ld Total, %	38.3	43.1
Xhd Pin Deg/%RvrsI	158/71.0	157/76.7
Cyl Flow Calc, MMSCFD	1.342	1.326
Cyl BHP	95.4	96.8

Step: C1.L3 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	166	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.069	1.053
Cyl BHP per Stage	82.4	77.2
Specific Gravity	1.0525	1.0591
Ratio of Sp Ht (N)	1.1745	1.1774
Comp Suct (Zs)	0.9877	0.9678
Comp Disch (Zd)	0.9783	0.9448
Pres Suct Line, kPag	125.00	N/A
Pres Suct Flg, kPag	125.00	522.81
Pres Disch Flg, kPag	541.62	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.903	2.967
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	92.29	451.76
Temp Suct Intl, °F	110	125
Suct Zsph	0.9881	0.9686
Pres Disch Intl, kPag	643.66	1947.02
Temp Disch Intl, °F	239	253
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	50.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	45.20
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	38.8/60.5	23.2/63.4
Disch Event HE/CE, ms	4.0/5.9	3.1/6.0
Suct Pseudo-Q HE/CE	10.0/10.1	9.9/11.5
Gas Rod Ld Comp, %	36.3	40.9
Gas Rod Ld Tens, %	38.7	41.6
Gas Rod Ld Total, %	39.2	43.2
Xhd Pin Deg/%Rvrsl	157/70.2	155/76.3
Cyl Flow Calc, MMSCFD	1.069	1.053
Cyl BHP	82.4	77.2

Step: C1.L4 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	186	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.261	1.245
Cyl BHP per Stage	93.7	86.5
Specific Gravity	1.0540	1.0596
Ratio of Sp Ht (N)	1.1750	1.1784
Comp Suct (Zs)	0.9863	0.9657
Comp Disch (Zd)	0.9764	0.9430
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	563.40
Pres Disch Flg, kPag	583.24	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.776	2.784
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.44	487.44
Temp Suct Intl, °F	110	124
Suct Zsph	0.9867	0.9665
Pres Disch Intl, kPag	693.01	1949.40
Temp Disch Intl, °F	235	246
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	25.00 (V)	50.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	37.02	45.20
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	42.3/62.7	29.5/66.2
Disch Event HE/CE, ms	4.3/6.1	3.5/6.3
Suct Pseudo-Q HE/CE	10.2/10.2	10.9/11.5
Gas Rod Ld Comp, %	38.2	40.1
Gas Rod Ld Tens, %	40.6	40.6
Gas Rod Ld Total, %	41.2	42.2
Xhd Pin Deg/%RvrsI	157/71.4	157/76.8
Cyl Flow Calc, MMSCFD	1.261	1.245
Cyl BHP	93.7	86.5

Step: C1.L4 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary

Quote: 1006-130 Rev 2

Remarks:

Customer: PetroBakken

Inquiry: Northridge 0689-001A

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	138	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	0.840	0.827
Cyl BHP per Stage	61.5	70.5
Specific Gravity	1.0506	1.0575
Ratio of Sp Ht (N)	1.1747	1.1747
Comp Suct (Zs)	0.9891	0.9734
Comp Disch (Zd)	0.9814	0.9497
Pres Suct Line, kPag	100.00	N/A
Pres Suct Flg, kPag	100.00	417.01
Pres Disch Flg, kPag	434.71	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.726	3.581
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

Throw 1

Throw 2

Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	71.11	358.64
Temp Suct Intl, °F	110	125
Suct Zsph	0.9894	0.9741
Pres Disch Intl, kPag	519.98	1940.25
Temp Disch Intl, °F	232	271
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	50.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	51.33	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	24.7/63.6	28.2/54.2
Disch Event HE/CE, ms	3.2/6.2	3.1/5.1
Suct Pseudo-Q HE/CE	8.5/10.1	10.6/11.4
Gas Rod Ld Comp, %	29.5	43.2
Gas Rod Ld Tens, %	31.5	44.1
Gas Rod Ld Total, %	31.9	45.7
Xhd Pin Deg/%RvrsI	157/68.6	155/75.3
Cyl Flow Calc, MMSCFD	0.840	0.827
Cyl BHP	61.5	70.5

Step: C1.L5 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	159	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.022	1.008
Cyl BHP per Stage	72.0	81.1
Specific Gravity	1.0525	1.0582
Ratio of Sp Ht (N)	1.1752	1.1757
Comp Suct (Zs)	0.9877	0.9713
Comp Disch (Zd)	0.9795	0.9477
Pres Suct Line, kPag	125.00	N/A
Pres Suct Flg, kPag	125.00	457.70
Pres Disch Flg, kPag	476.51	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.605	3.317
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	92.27	394.47
Temp Suct Intl, °F	109	125
Suct Zsph	0.9880	0.9720
Pres Disch Intl, kPag	569.45	1942.97
Temp Disch Intl, °F	228	264
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	50.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	51.33	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	29.2/65.7	34.6/58.2
Disch Event HE/CE, ms	3.6/6.5	3.5/5.5
Suct Pseudo-Q HE/CE	9.1/10.1	11.4/11.4
Gas Rod Ld Comp, %	31.4	42.3
Gas Rod Ld Tens, %	33.5	43.2
Gas Rod Ld Total, %	33.9	44.7
Xhd Pin Deg/%Rvrsl	158/69.4	155/75.9
Cyl Flow Calc, MMSCFD	1.022	1.008
Cyl BHP	72.0	81.1

Step: C1.L5 - Step Description



Ariel Performance



7.6.6.1

Company: Compass Compression - Calgary
Quote: 1006-130 Rev 2
Remarks:

Customer: PetroBakken
Inquiry: Northridge 0689-001A
Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	179	Calc PS FPM	1050.0

Driver Data:

Type: Electric
Mfg: Teco
Model:
BHP: 250
Avail: 250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.205	1.192
Cyl BHP per Stage	82.2	90.6
Specific Gravity	1.0540	1.0588
Ratio of Sp Ht (N)	1.1757	1.1768
Comp Suct (Zs)	0.9863	0.9691
Comp Disch (Zd)	0.9776	0.9459
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	498.29
Pres Disch Flg, kPag	518.14	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.509	3.090
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.41	430.19
Temp Suct Intl, °F	109	125
Suct Zsph	0.9866	0.9699
Pres Disch Intl, kPag	618.73	1945.54
Temp Disch Intl, °F	224	257
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	50.00 (V)	25.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	51.33	32.29
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	32.9/67.3	40.1/61.6
Disch Event HE/CE, ms	3.9/6.7	4.0/5.8
Suct Pseudo-Q HE/CE	9.5/10.2	12.0/11.5
Gas Rod Ld Comp, %	33.3	41.5
Gas Rod Ld Tens, %	35.4	42.2
Gas Rod Ld Total, %	35.9	43.8
Xhd Pin Deg/%Rvrsl	157/70.4	156/76.4
Cyl Flow Calc, MMSCFD	1.205	1.192
Cyl BHP	82.2	90.6

Step: C1.L5 - Step Description



Ariel Performance



Company: Compass Compression - Calgary

Customer: PetroBakken

Quote: 1006-130 Rev 2

Inquiry: Northridge 0689-001A

7.6.6.1

Remarks:

Project: C547

Compressor Data:

Elevat'n,ft:	2045.00	Barmtr,kPaa:	93.963	Ambient,°F:	95.00
Frame:	JGJ/2	Stroke,in:	3.50	Rod Dia,in:	1.500
Max RL Tot,lbf:	42000	Max RL Tens,lbf:	21000	Max RL Comp,lbf:	23000
Rated RPM:	1800	Rated BHP:	620.0	Rated PS FPM:	1050.0
Calc RPM:	1800.0	Calc BHP:	165	Calc PS FPM	1050.0

Driver Data:

Type:	Electric
Mfg:	Teco
Model:	
BHP:	250
Avail:	250 (0)

Service

Stage Data

	1	2
Flow Req'd, MMSCFD	1.400	
Flow Calc, MMSCFD	1.110	1.096
Cyl BHP per Stage	79.2	79.4
Specific Gravity	1.0540	1.0593
Ratio of Sp Ht (N)	1.1753	1.1776
Comp Suct (Zs)	0.9863	0.9673
Comp Disch (Zd)	0.9770	0.9444
Pres Suct Line, kPag	150.00	N/A
Pres Suct Flg, kPag	150.00	532.01
Pres Disch Flg, kPag	551.86	1735.88
Pres Disch Line, kPag	N/A	1700.00
Pres Ratio F/F	2.647	2.923
Temp Suct, °F	104.00	120.00
Temp Clr Disch, °F	120.00	120.00

Cylinder Data

	Throw 1	Throw 2
Cyl Model	11-1/2RJ	7-3/8RJ
Cyl Bore,in	11.500	7.375
Cyl RDP (API),kPag	3134.0	7114.1
Cyl MAWP,kPag	3447.4	7825.6
Cyl Action	DBL	DBL
Cyl Disp, CFM	750.9	305.0
Pres Suct Intl, kPag	113.43	459.85
Temp Suct Intl, °F	109	125
Suct Zsph	0.9866	0.9681
Pres Disch Intl, kPag	657.21	1947.57
Temp Disch Intl, °F	230	251
HE Suct Gas Vel, FPM	10113	8986
HE Disch Gas Vel, FPM	9633	8180
HE Spcrs Used/Max	0/2	0/2
HE Vol Pkt Avail, %	1.24+57.26	1.11+51.64
HE Vol Pkt Used, %	50.00 (V)	50.00 (V)
HE Min Clr, %	21.46	18.28
HE Total Clr, %	51.33	45.20
CE Suct Gas Vel, FPM	9941	8614
CE Disch Gas Vel, FPM	9469	7841
CE Spcrs Used/Max	0/2	0/2
CE Min Clr, %	22.22	19.21
CE Total Clr, %	22.22	19.21
Suct Vol Eff HE/CE, %	27.5/64.9	24.7/64.1
Disch Event HE/CE, ms	3.5/6.4	3.1/6.1
Suct Pseudo-Q HE/CE	8.9/10.2	10.1/11.5
Gas Rod Ld Comp, %	35.8	40.7
Gas Rod Ld Tens, %	38.1	41.4
Gas Rod Ld Total, %	38.7	43.0
Xhd Pin Deg/%Rvrsl	156/70.7	155/76.4
Cyl Flow Calc, MMSCFD	1.110	1.096
Cyl BHP	79.2	79.4

Step: C1.L6 - Step Description