



# Measurement Error Report

Pretoria Energy Company (Chittering) Ltd

MER\_CAD\_221\_22 Chittering BNEF

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## 1 Revision Control

Rev	Issue date	Description	Prep.	App.
1	24/10/2022	Issued for comment	LJ	WD

## 2 Executive Summary

<b>Site Name</b>	Chittering BNEF
<b>DNO</b>	Cadent Gas Limited
<b>LDZ</b>	East Anglia
<b>Error Start Date</b>	Circa 2014
<b>(Or) Last Good Date</b>	
<b>Error Corrected Date</b>	30 <sup>th</sup> March 2021
<b>Size of Error (over or under read)</b>	18,450 Sm <sup>3</sup> under-registration (approximately 0.199 GWh)
<b>Error Description</b>	Unaccredited previous calibration produced unsuitable correction factors on calibration certificate that were highlighted following most recent calibration
<b>Methodology</b>	Recalculation of flow readings using corrected correction factors.
<b>Meter Type</b>	Rotary positive displacement meter
<b>MER Unique Reference Number</b>	-
<b>Cadent Internal Reference</b>	MER/CAD/221/22

### 3 Error Description

Chittering has one 3" Elster RVG series rotary positive displacement meter stream for measurement of gas produced from Chittering bio methane facility and entry into the Local Distribution Zone.

Volume pulse output meters (such as turbine, ultrasonic meters and rotary) use a correction factor to correct for errors in the meter output determined during calibration. This is implemented in the flow computer using piecewise linear interpolation of data in a lookup table of flowrates and corresponding correction factors.

Following calibration of the rotary meter (Serial No. 7514102) in May 2014 the flow computer data was updated to match the Elster Calibration Certificate No. 53137.

As part of a metering audit finding Cadent instructed the operators of Chittering BNEF, Pretoria Energy to recalibrate the rotary meter at an ISO 10725 accredited facility due to the original calibration facility not holding accreditation. The meter was removed and replaced with another rotary meter on 30<sup>th</sup> March 2021. A recalibration of the original rotary meter was conducted in March 2022. On review of the recalibration (Certificate no. 1254) it was identified that there were differences in the calibration performance.

Table 1 compares the previous and most current calibration errors from the certificates. Table 2 demonstrates the shift in calibration errors from the calibrations.

Reference Flowrate (m <sup>3</sup> /h)	Error %	
	2014 Calibration Cert No.53137	2022 Calibration Cert No.1254
160	0.245	-0.13
112	-0.21	-0.20
64	0.20	-0.07
40	-0.2	-0.04
16	-0.26	-0.15
8	-0.33	-0.52

*Table 1 – Current and Previous Calibration Certificate Error Values*

Reference Flowrate (m <sup>3</sup> /h)	Meter Shift ΔError (%)
160	-0.375
112	0.010
64	-0.270
40	0.160
16	0.110
8	-0.487

*Table 2 – Meter Shift Between Calibrations*

## 4 Methodology

3 minutely reported RbD data from Marquis was supplied for the period from 30<sup>th</sup> March 2019 to 30<sup>th</sup> March 2021. The corrected correction factors were calculated on a 3-minutely basis based on the measured flowrate and K-factor data over the error period. Two sets of Standard volume daily totals were calculated: one using the erroneous correction factors and another using the corrected correction factors, the error being the difference between the two.

## 5 Error Quantification

The majority of the flow for the period mentioned in Section 4 resides in the region of the second highest meter shift, between 112 and 160 m<sup>3</sup>/h. As such, the majority of this period contains daily errors above the reconciliation threshold ( $<\pm 0.1\%$  of daily volume). The total reconcilable error is estimated to be an under-registration of 18,450 Sm<sup>3</sup>. The error should be corrected using the daily correction factors in Appendix A. The date the error started cannot be determined and so the daily correction factors in Appendix A were halved.

## 6 Learning

It is recommended that meter calibrations are conducted at an ISO 10725 accredited facility, witnessed to ensure the calibration is carried out correctly and the data validated and presented on the certificate. Where this is not feasible, the data should be verified before it is implemented on site. Where a meter is recalibrated, the data should also be compared to the previous calibration data.

## 7 References

MARQUIS data files

Gemini Daily Data

DNV & Elster Calibration Certificates

MER\_CAD\_221\_22\_Chittering\_Process\_Data.xlsx - Calculation Data spreadsheet

MER\_CAD\_221\_22\_Chittering\_Data\_Summary R1.xlsx - Calculation Data spreadsheet

## 8 Appendix A – Daily Correction Factors

The error should be corrected using the Daily Correction Factors applied to the Gemini Daily Volume as detailed below.

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
30-Mar-19	0.0223	1.000603
31-Mar-19	0.0169	1.000589
01-Apr-19	0.0237	1.000764
02-Apr-19	0.0233	1.000891
03-Apr-19	0.0259	1.000943
04-Apr-19	0.0197	1.000698
05-Apr-19	0.0263	1.000829
06-Apr-19	0.0232	1.000000
07-Apr-19	0.0226	1.000554
08-Apr-19	0.0258	1.000735
09-Apr-19	0.0254	1.000770
10-Apr-19	0.0274	1.000956
11-Apr-19	0.0270	1.000919
12-Apr-19	0.0269	1.000958
13-Apr-19	0.0275	1.000968
14-Apr-19	0.0246	1.000999
15-Apr-19	0.0258	1.000687
16-Apr-19	0.0268	1.000876
17-Apr-19	0.0269	1.000939
18-Apr-19	0.0256	1.000795
19-Apr-19	0.0229	1.000616
20-Apr-19	0.0231	1.000769
21-Apr-19	0.0240	1.000658
22-Apr-19	0.0233	1.000703
23-Apr-19	0.0262	1.000930
24-Apr-19	0.0230	1.000834
25-Apr-19	0.0263	1.000811
26-Apr-19	0.0231	1.000519
27-Apr-19	0.0213	1.000726
28-Apr-19	0.0218	1.000000
29-Apr-19	0.0234	1.000644
30-Apr-19	0.0261	1.000864
01-May-19	0.0263	1.000866
02-May-19	0.0275	1.000984
03-May-19	0.0248	1.000565
04-May-19	0.0228	1.000000
05-May-19	0.0253	1.000596

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
06-May-19	0.0236	1.000000
07-May-19	0.0223	1.000000
08-May-19	0.0246	1.000510
09-May-19	0.0268	1.000970
10-May-19	0.0262	1.000904
11-May-19	0.0271	1.000898
12-May-19	0.0263	1.000818
13-May-19	0.0252	1.000574
14-May-19	0.0257	1.000683
15-May-19	0.0257	1.000704
16-May-19	0.0263	1.000788
17-May-19	0.0268	1.000878
18-May-19	0.0196	1.000839
19-May-19	0.0267	1.000872
20-May-19	0.0257	1.000933
21-May-19	0.0244	1.000507
22-May-19	0.0230	1.000000
23-May-19	0.0238	1.000000
24-May-19	0.0228	1.000000
25-May-19	0.0226	1.000000
26-May-19	0.0221	1.000000
27-May-19	0.0216	1.000510
28-May-19	0.0210	1.000000
29-May-19	0.0234	1.000636
30-May-19	0.0212	1.000000
31-May-19	0.0199	1.000000
01-Jun-19	0.0194	1.000000
02-Jun-19	0.0194	1.000000
03-Jun-19	0.0224	1.000515
04-Jun-19	0.0199	1.000000
05-Jun-19	0.0203	1.000000
06-Jun-19	0.0183	1.000000
07-Jun-19	0.0223	1.000000
08-Jun-19	0.0206	1.000000
09-Jun-19	0.0191	1.000000
10-Jun-19	0.0224	1.000000
11-Jun-19	0.0214	1.000000

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
12-Jun-19	0.0189	1.000502
13-Jun-19	0.0183	1.000589
14-Jun-19	0.0183	1.000565
15-Jun-19	0.0186	1.000539
16-Jun-19	0.0183	1.000570
17-Jun-19	0.0173	1.000694
18-Jun-19	0.0128	1.001127
19-Jun-19	0.0133	1.001155
20-Jun-19	0.0121	1.001116
21-Jun-19	0.0127	1.001129
22-Jun-19	0.0120	1.001078
23-Jun-19	0.0126	1.001156
24-Jun-19	0.0127	1.001177
25-Jun-19	0.0124	1.001179
26-Jun-19	0.0123	1.001151
27-Jun-19	0.0110	1.000635
28-Jun-19	0.0117	1.000959
29-Jun-19	0.0112	1.000719
30-Jun-19	0.0119	1.001059
01-Jul-19	0.0114	1.000802
02-Jul-19	0.0116	1.000747
03-Jul-19	0.0112	1.000719
04-Jul-19	0.0100	1.000000
05-Jul-19	0.0085	1.000000
06-Jul-19	0.0099	1.000000
07-Jul-19	0.0092	1.000000
08-Jul-19	0.0070	0.999244
09-Jul-19	0.0067	0.999261
10-Jul-19	0.0053	0.999297
11-Jul-19	0.0065	0.999271
12-Jul-19	0.0065	0.999280
13-Jul-19	0.0065	0.999272
14-Jul-19	0.0065	0.999272
15-Jul-19	0.0065	0.999273
16-Jul-19	0.0065	0.999272
17-Jul-19	0.0065	0.999269
18-Jul-19	0.0065	0.999270
19-Jul-19	0.0065	0.999271
20-Jul-19	0.0046	0.999281
21-Jul-19	0.0062	0.999287
22-Jul-19	0.0067	0.999261
23-Jul-19	0.0103	1.000000

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
24-Jul-19	0.0113	1.000000
25-Jul-19	0.0086	1.000000
26-Jul-19	0.0076	0.999273
27-Jul-19	0.0078	0.999216
28-Jul-19	0.0078	0.999212
29-Jul-19	0.0079	0.999256
30-Jul-19	0.0082	0.999463
31-Jul-19	0.0107	1.000561
01-Aug-19	0.0100	1.000000
02-Aug-19	0.0101	1.000000
03-Aug-19	0.0099	1.000000
04-Aug-19	0.0093	1.000000
05-Aug-19	0.0096	1.000000
06-Aug-19	0.0097	1.000000
07-Aug-19	0.0099	1.000000
08-Aug-19	0.0091	1.000000
09-Aug-19	0.0097	1.000000
10-Aug-19	0.0082	1.000000
11-Aug-19	0.0083	0.999396
12-Aug-19	0.0083	0.999427
13-Aug-19	0.0083	0.999427
14-Aug-19	0.0112	1.000807
15-Aug-19	0.0119	1.001020
16-Aug-19	0.0119	1.001014
17-Aug-19	0.0122	1.001247
18-Aug-19	0.0091	1.001155
19-Aug-19	0.0104	1.001081
20-Aug-19	0.0104	1.000000
21-Aug-19	0.0121	1.000889
22-Aug-19	0.0123	1.001043
23-Aug-19	0.0134	1.001021
24-Aug-19	0.0140	1.001029
25-Aug-19	0.0145	1.001041
26-Aug-19	0.0128	1.001183
27-Aug-19	0.0137	1.001142
28-Aug-19	0.0141	1.001109
29-Aug-19	0.0136	1.001152
30-Aug-19	0.0150	1.000985
31-Aug-19	0.0172	1.000705
01-Sep-19	0.0166	1.000812
02-Sep-19	0.0172	1.000653
03-Sep-19	0.0145	1.000000

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
04-Sep-19	0.0200	1.000000
05-Sep-19	0.0224	1.000000
06-Sep-19	0.0190	1.000000
07-Sep-19	0.0203	1.000000
08-Sep-19	0.0213	1.000000
09-Sep-19	0.0190	1.000000
10-Sep-19	0.0222	1.000000
11-Sep-19	0.0191	1.000000
12-Sep-19	0.0206	1.000000
13-Sep-19	0.0195	1.000000
14-Sep-19	0.0174	1.000000
15-Sep-19	0.0194	1.000000
16-Sep-19	0.0227	1.000000
17-Sep-19	0.0218	1.000000
18-Sep-19	0.0215	1.000000
19-Sep-19	0.0230	1.000000
20-Sep-19	0.0234	1.000780
21-Sep-19	0.0243	1.000854
22-Sep-19	0.0265	1.000870
23-Sep-19	0.0264	1.000875
24-Sep-19	0.0207	1.000000
25-Sep-19	0.0230	1.000000
26-Sep-19	0.0216	1.000000
27-Sep-19	0.0229	1.000000
28-Sep-19	0.0226	1.000000
29-Sep-19	0.0227	1.000000
30-Sep-19	0.0217	1.000000
01-Oct-19	0.0207	1.000000
02-Oct-19	0.0200	1.000000
03-Oct-19	0.0200	1.000000
04-Oct-19	0.0214	1.000000
05-Oct-19	0.0214	1.000000
06-Oct-19	0.0220	1.000000
07-Oct-19	0.0220	1.000000
08-Oct-19	0.0218	1.000000
09-Oct-19	0.0240	1.000000
10-Oct-19	0.0267	1.000874
11-Oct-19	0.0268	1.000905
12-Oct-19	0.0274	1.000992
13-Oct-19	0.0254	1.000933
14-Oct-19	0.0268	1.000925
15-Oct-19	0.0203	1.000000

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
16-Oct-19	0.0255	1.000671
17-Oct-19	0.0265	1.000845
18-Oct-19	0.0270	1.000943
19-Oct-19	0.0270	1.000937
20-Oct-19	0.0269	1.000916
21-Oct-19	0.0231	1.000000
22-Oct-19	0.0238	1.000000
23-Oct-19	0.0248	1.000533
24-Oct-19	0.0242	1.000652
25-Oct-19	0.0263	1.000795
26-Oct-19	0.0264	1.000715
27-Oct-19	0.0243	1.000645
28-Oct-19	0.0221	1.000000
29-Oct-19	0.0247	1.000587
30-Oct-19	0.0246	1.000641
31-Oct-19	0.0234	1.000574
01-Nov-19	0.0241	1.000752
02-Nov-19	0.0264	1.000804
03-Nov-19	0.0260	1.000849
04-Nov-19	0.0242	1.000687
05-Nov-19	0.0264	1.000808
06-Nov-19	0.0270	1.000921
07-Nov-19	0.0257	1.000829
08-Nov-19	0.0268	1.000857
09-Nov-19	0.0219	1.000630
10-Nov-19	0.0240	1.000664
11-Nov-19	0.0241	1.000000
12-Nov-19	0.0228	1.000000
13-Nov-19	0.0234	1.000000
14-Nov-19	0.0236	1.000000
15-Nov-19	0.0243	1.000000
16-Nov-19	0.0261	1.000707
17-Nov-19	0.0252	1.000540
18-Nov-19	0.0241	1.000000
19-Nov-19	0.0224	1.000000
20-Nov-19	0.0244	1.000000
21-Nov-19	0.0229	1.000000
22-Nov-19	0.0240	1.000000
23-Nov-19	0.0235	1.000512
24-Nov-19	0.0227	1.000000
25-Nov-19	0.0226	1.000000
26-Nov-19	0.0213	1.000000



Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
27-Nov-19	0.0201	1.000000
28-Nov-19	0.0195	1.000000
29-Nov-19	0.0212	1.000000
30-Nov-19	0.0183	1.000000
01-Dec-19	0.0225	1.000000
02-Dec-19	0.0233	1.000000
03-Dec-19	0.0254	1.000833
04-Dec-19	0.0264	1.000847
05-Dec-19	0.0224	1.000602
06-Dec-19	0.0257	1.000637
07-Dec-19	0.0269	1.000841
08-Dec-19	0.0262	1.000833
09-Dec-19	0.0266	1.000835
10-Dec-19	0.0246	1.000568
11-Dec-19	0.0231	1.000854
12-Dec-19	0.0248	1.000630
13-Dec-19	0.0251	1.000668
14-Dec-19	0.0247	1.000543
15-Dec-19	0.0252	1.000698
16-Dec-19	0.0252	1.000716
17-Dec-19	0.0228	1.000696
18-Dec-19	0.0245	1.000630
19-Dec-19	0.0262	1.000716
20-Dec-19	0.0260	1.000682
21-Dec-19	0.0264	1.000757
22-Dec-19	0.0263	1.000745
23-Dec-19	0.0249	1.000592
24-Dec-19	0.0241	1.000616
25-Dec-19	0.0194	1.000000
26-Dec-19	0.0210	1.000000
27-Dec-19	0.0210	1.000508
28-Dec-19	0.0229	1.000000
29-Dec-19	0.0229	1.000501
30-Dec-19	0.0253	1.000588
31-Dec-19	0.0263	1.000742
01-Jan-20	0.0239	1.000000
02-Jan-20	0.0234	1.000000
03-Jan-20	0.0248	1.000000
04-Jan-20	0.0207	1.000000
05-Jan-20	0.0251	1.000520
06-Jan-20	0.0177	1.000690
07-Jan-20	0.0173	1.000732

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
08-Jan-20	0.0187	1.000000
09-Jan-20	0.0209	1.000000
10-Jan-20	0.0245	1.000000
11-Jan-20	0.0251	1.000539
12-Jan-20	0.0241	1.000000
13-Jan-20	0.0248	1.000579
14-Jan-20	0.0254	1.000597
15-Jan-20	0.0254	1.000575
16-Jan-20	0.0264	1.000758
17-Jan-20	0.0250	1.000852
18-Jan-20	0.0241	1.000704
19-Jan-20	0.0197	1.000000
20-Jan-20	0.0168	1.000000
21-Jan-20	0.0257	1.000666
22-Jan-20	0.0261	1.000698
23-Jan-20	0.0250	1.000524
24-Jan-20	0.0251	1.000630
25-Jan-20	0.0273	1.000908
26-Jan-20	0.0275	1.000936
27-Jan-20	0.0276	1.000966
28-Jan-20	0.0248	1.000792
29-Jan-20	0.0249	1.000543
30-Jan-20	0.0275	1.000934
31-Jan-20	0.0262	1.000767
01-Feb-20	0.0267	1.000802
02-Feb-20	0.0251	1.000518
03-Feb-20	0.0246	1.000000
04-Feb-20	0.0248	1.000647
05-Feb-20	0.0268	1.000843
06-Feb-20	0.0258	1.000780
07-Feb-20	0.0271	1.000867
08-Feb-20	0.0260	1.000698
09-Feb-20	0.0234	1.000692
10-Feb-20	0.0245	1.000000
11-Feb-20	0.0214	1.000000
12-Feb-20	0.0239	1.000000
13-Feb-20	0.0258	1.000627
14-Feb-20	0.0265	1.000802
15-Feb-20	0.0261	1.000705
16-Feb-20	0.0260	1.000816
17-Feb-20	0.0267	1.000819
18-Feb-20	0.0264	1.000823

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
19-Feb-20	0.0263	1.000789
20-Feb-20	0.0256	1.000771
21-Feb-20	0.0263	1.000721
22-Feb-20	0.0256	1.000649
23-Feb-20	0.0245	1.000562
24-Feb-20	0.0264	1.000757
25-Feb-20	0.0249	1.000692
26-Feb-20	0.0260	1.000694
27-Feb-20	0.0247	1.000631
28-Feb-20	0.0259	1.000650
29-Feb-20	0.0223	1.000000
01-Mar-20	0.0221	1.000000
02-Mar-20	0.0233	1.000000
03-Mar-20	0.0226	1.000000
04-Mar-20	0.0226	1.000000
05-Mar-20	0.0236	1.000000
06-Mar-20	0.0241	1.000000
07-Mar-20	0.0218	1.000000
08-Mar-20	0.0214	1.000000
09-Mar-20	0.0219	1.000000
10-Mar-20	0.0170	1.000000
11-Mar-20	0.0216	1.005778
12-Mar-20	0.0266	1.000725
13-Mar-20	0.0259	1.000779
14-Mar-20	0.0262	1.000651
15-Mar-20	0.0266	1.000749
16-Mar-20	0.0255	1.000565
17-Mar-20	0.0185	1.000689
18-Mar-20	0.0247	1.000578
19-Mar-20	0.0231	1.000000
20-Mar-20	0.0227	1.000000
21-Mar-20	0.0226	1.000000
22-Mar-20	0.0208	1.000000
23-Mar-20	0.0210	1.000000
24-Mar-20	0.0223	1.000000
25-Mar-20	0.0250	1.000000
26-Mar-20	0.0264	1.000695
27-Mar-20	0.0269	1.000764
28-Mar-20	0.0262	1.000849
29-Mar-20	0.0266	1.000881
30-Mar-20	0.0276	1.000934
31-Mar-20	0.0265	1.000765

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
01-Apr-20	0.0249	1.000000
02-Apr-20	0.0263	1.000704
03-Apr-20	0.0267	1.000762
04-Apr-20	0.0239	1.000738
05-Apr-20	0.0253	1.000665
06-Apr-20	0.0260	1.000706
07-Apr-20	0.0249	1.000505
08-Apr-20	0.0255	1.000632
09-Apr-20	0.0150	1.000705
10-Apr-20	0.0260	1.000750
11-Apr-20	0.0237	1.000553
12-Apr-20	0.0224	1.000000
13-Apr-20	0.0229	1.000634
14-Apr-20	0.0233	1.000000
15-Apr-20	0.0238	1.000000
16-Apr-20	0.0219	1.000500
17-Apr-20	0.0235	1.000000
18-Apr-20	0.0255	1.000647
19-Apr-20	0.0252	1.000581
20-Apr-20	0.0233	1.000725
21-Apr-20	0.0256	1.000647
22-Apr-20	0.0262	1.000735
23-Apr-20	0.0260	1.000736
24-Apr-20	0.0261	1.000709
25-Apr-20	0.0263	1.000728
26-Apr-20	0.0252	1.000592
27-Apr-20	0.0271	1.000943
28-Apr-20	0.0278	1.001135
29-Apr-20	0.0278	1.001087
30-Apr-20	0.0277	1.001069
01-May-20	0.0239	1.000657
02-May-20	0.0252	1.000649
03-May-20	0.0271	1.000984
04-May-20	0.0270	1.000940
05-May-20	0.0249	1.000615
06-May-20	0.0262	1.000870
07-May-20	0.0256	1.000866
08-May-20	0.0236	1.000000
09-May-20	0.0230	1.000616
10-May-20	0.0261	1.000954
11-May-20	0.0248	1.000510
12-May-20	0.0258	1.000898

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
13-May-20	0.0263	1.000866
14-May-20	0.0277	1.001041
15-May-20	0.0267	1.000874
16-May-20	0.0272	1.001014
17-May-20	0.0243	1.000831
18-May-20	0.0273	1.000999
19-May-20	0.0272	1.000996
20-May-20	0.0266	1.000945
21-May-20	0.0251	1.000745
22-May-20	0.0274	1.001067
23-May-20	0.0273	1.001003
24-May-20	0.0274	1.001024
25-May-20	0.0274	1.001034
26-May-20	0.0277	1.001123
27-May-20	0.0262	1.001101
28-May-20	0.0255	1.000800
29-May-20	0.0243	1.000844
30-May-20	0.0233	1.000786
31-May-20	0.0235	1.000983
01-Jun-20	0.0245	1.000843
02-Jun-20	0.0247	1.000542
03-Jun-20	0.0237	1.000000
04-Jun-20	0.0246	1.000621
05-Jun-20	0.0262	1.000943
06-Jun-20	0.0259	1.000730
07-Jun-20	0.0253	1.000624
08-Jun-20	0.0265	1.000897
09-Jun-20	0.0263	1.001000
10-Jun-20	0.0258	1.000851
11-Jun-20	0.0250	1.000786
12-Jun-20	0.0250	1.000709
13-Jun-20	0.0262	1.000827
14-Jun-20	0.0256	1.000876
15-Jun-20	0.0222	1.000000
16-Jun-20	0.0261	1.000831
17-Jun-20	0.0247	1.000688
18-Jun-20	0.0264	1.000849
19-Jun-20	0.0260	1.000803
20-Jun-20	0.0258	1.000765
21-Jun-20	0.0268	1.000925
22-Jun-20	0.0232	1.000000
23-Jun-20	0.0255	1.000770

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
24-Jun-20	0.0248	1.000849
25-Jun-20	0.0243	1.000783
26-Jun-20	0.0226	1.000650
27-Jun-20	0.0260	1.000778
28-Jun-20	0.0229	1.000000
29-Jun-20	0.0266	1.000914
30-Jun-20	0.0264	1.000871
01-Jul-20	0.0259	1.000790
02-Jul-20	0.0262	1.000823
03-Jul-20	0.0252	1.000657
04-Jul-20	0.0254	1.000688
05-Jul-20	0.0242	1.000692
06-Jul-20	0.0247	1.000910
07-Jul-20	0.0266	1.000924
08-Jul-20	0.0252	1.000680
09-Jul-20	0.0267	1.000910
10-Jul-20	0.0251	1.000655
11-Jul-20	0.0255	1.000802
12-Jul-20	0.0238	1.000592
13-Jul-20	0.0241	1.000000
14-Jul-20	0.0250	1.000579
15-Jul-20	0.0241	1.000000
16-Jul-20	0.0251	1.000673
17-Jul-20	0.0240	1.000710
18-Jul-20	0.0264	1.000863
19-Jul-20	0.0254	1.000804
20-Jul-20	0.0257	1.000863
21-Jul-20	0.0260	1.000901
22-Jul-20	0.0254	1.000707
23-Jul-20	0.0265	1.000888
24-Jul-20	0.0226	1.000000
25-Jul-20	0.0183	1.000759
26-Jul-20	0.0234	1.000000
27-Jul-20	0.0216	1.000641
28-Jul-20	0.0263	1.000824
29-Jul-20	0.0250	1.000720
30-Jul-20	0.0221	1.000687
31-Jul-20	0.0143	1.000000
01-Aug-20	0.0202	1.000000
02-Aug-20	0.0246	1.000698
03-Aug-20	0.0270	1.000971
04-Aug-20	0.0239	1.000900

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
05-Aug-20	0.0257	1.000776
06-Aug-20	0.0239	1.000663
07-Aug-20	0.0248	1.000681
08-Aug-20	0.0239	1.000575
09-Aug-20	0.0250	1.000666
10-Aug-20	0.0253	1.000806
11-Aug-20	0.0265	1.000870
12-Aug-20	0.0248	1.000736
13-Aug-20	0.0232	1.000000
14-Aug-20	0.0208	1.000000
15-Aug-20	0.0213	1.000000
16-Aug-20	0.0215	1.000000
17-Aug-20	0.0215	1.000000
18-Aug-20	0.0222	1.000000
19-Aug-20	0.0198	1.000000
20-Aug-20	0.0173	1.000558
21-Aug-20	0.0172	1.000714
22-Aug-20	0.0165	1.000804
23-Aug-20	0.0191	1.000000
24-Aug-20	0.0187	1.000000
25-Aug-20	0.0167	1.000000
26-Aug-20	0.0203	1.000000
27-Aug-20	0.0211	1.000000
28-Aug-20	0.0225	1.000000
29-Aug-20	0.0219	1.000510
30-Aug-20	0.0250	1.000727
31-Aug-20	0.0223	1.000618
01-Sep-20	0.0163	1.000000
02-Sep-20	0.0195	1.000000
03-Sep-20	0.0224	1.000573
04-Sep-20	0.0239	1.000712
05-Sep-20	0.0177	1.000547
06-Sep-20	0.0191	1.000734
07-Sep-20	0.0227	1.000000
08-Sep-20	0.0186	1.000000
09-Sep-20	0.0188	1.000510
10-Sep-20	0.0183	1.000000
11-Sep-20	0.0212	1.000538
12-Sep-20	0.0203	1.000000
13-Sep-20	0.0206	1.000765
14-Sep-20	0.0238	1.000786
15-Sep-20	0.0257	1.000826

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
16-Sep-20	0.0253	1.000851
17-Sep-20	0.0269	1.000932
18-Sep-20	0.0262	1.000928
19-Sep-20	0.0262	1.000815
20-Sep-20	0.0262	1.000808
21-Sep-20	0.0268	1.000955
22-Sep-20	0.0266	1.000978
23-Sep-20	0.0235	1.000615
24-Sep-20	0.0257	1.000778
25-Sep-20	0.0220	1.000000
26-Sep-20	0.0225	1.000000
27-Sep-20	0.0229	1.000000
28-Sep-20	0.0236	1.000000
29-Sep-20	0.0198	1.000000
30-Sep-20	0.0207	1.000000
01-Oct-20	0.0244	1.000576
02-Oct-20	0.0204	1.000000
03-Oct-20	0.0224	1.000000
04-Oct-20	0.0206	1.000817
05-Oct-20	0.0216	1.000000
06-Oct-20	0.0225	1.000814
07-Oct-20	0.0252	1.000766
08-Oct-20	0.0263	1.000784
09-Oct-20	0.0259	1.000709
10-Oct-20	0.0263	1.000772
11-Oct-20	0.0232	1.000974
12-Oct-20	0.0255	1.000632
13-Oct-20	0.0261	1.000903
14-Oct-20	0.0277	1.001024
15-Oct-20	0.0280	1.001076
16-Oct-20	0.0277	1.001015
17-Oct-20	0.0278	1.001096
18-Oct-20	0.0275	1.001094
19-Oct-20	0.0254	1.000964
20-Oct-20	0.0277	1.001026
21-Oct-20	0.0275	1.000980
22-Oct-20	0.0278	1.001032
23-Oct-20	0.0281	1.001068
24-Oct-20	0.0286	1.000974
25-Oct-20	0.0280	1.001051
26-Oct-20	0.0124	1.000731
27-Oct-20	0.0257	1.000857

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
28-Oct-20	0.0276	1.001011
29-Oct-20	0.0278	1.001013
30-Oct-20	0.0249	1.001025
31-Oct-20	0.0280	1.001054
01-Nov-20	0.0267	1.000952
02-Nov-20	0.0235	1.001035
03-Nov-20	0.0279	1.001068
04-Nov-20	0.0266	1.001019
05-Nov-20	0.0277	1.001011
06-Nov-20	0.0271	1.000949
07-Nov-20	0.0261	1.000728
08-Nov-20	0.0271	1.000914
09-Nov-20	0.0272	1.000914
10-Nov-20	0.0270	1.000886
11-Nov-20	0.0248	1.000000
12-Nov-20	0.0242	1.000000
13-Nov-20	0.0231	1.000000
14-Nov-20	0.0250	1.000514
15-Nov-20	0.0247	1.000000
16-Nov-20	0.0237	1.000000
17-Nov-20	0.0257	1.000000
18-Nov-20	0.0250	1.000000
19-Nov-20	0.0220	1.000662
20-Nov-20	0.0262	1.000700
21-Nov-20	0.0269	1.000841
22-Nov-20	0.0256	1.000729
23-Nov-20	0.0254	1.000754
24-Nov-20	0.0280	1.001031
25-Nov-20	0.0274	1.000955
26-Nov-20	0.0250	1.000709
27-Nov-20	0.0254	1.000782
28-Nov-20	0.0276	1.000958
29-Nov-20	0.0271	1.000864
30-Nov-20	0.0267	1.000782
01-Dec-20	0.0270	1.000830
02-Dec-20	0.0278	1.000977
03-Dec-20	0.0263	1.000702
04-Dec-20	0.0225	1.000000
05-Dec-20	0.0215	1.000000
06-Dec-20	0.0214	1.000000
07-Dec-20	0.0240	1.000000
08-Dec-20	0.0237	1.000000

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
09-Dec-20	0.0238	1.000000
10-Dec-20	0.0222	1.000000
11-Dec-20	0.0224	1.000000
12-Dec-20	0.0229	1.000000
13-Dec-20	0.0212	1.000000
14-Dec-20	0.0222	1.000000
15-Dec-20	0.0228	1.000000
16-Dec-20	0.0249	1.000570
17-Dec-20	0.0242	1.000660
18-Dec-20	0.0259	1.000758
19-Dec-20	0.0249	1.000000
20-Dec-20	0.0249	1.000600
21-Dec-20	0.0261	1.000783
22-Dec-20	0.0266	1.000798
23-Dec-20	0.0252	1.000594
24-Dec-20	0.0237	1.000000
25-Dec-20	0.0254	1.000506
26-Dec-20	0.0241	1.000000
27-Dec-20	0.0251	1.000551
28-Dec-20	0.0261	1.000634
29-Dec-20	0.0262	1.000658
30-Dec-20	0.0261	1.000722
31-Dec-20	0.0240	1.000853
01-Jan-21	0.0246	1.000890
02-Jan-21	0.0278	1.000949
03-Jan-21	0.0278	1.000937
04-Jan-21	0.0277	1.000906
05-Jan-21	0.0274	1.000859
06-Jan-21	0.0275	1.000872
07-Jan-21	0.0275	1.000871
08-Jan-21	0.0218	1.000876
09-Jan-21	0.0244	1.000940
10-Jan-21	0.0283	1.001009
11-Jan-21	0.0257	1.000820
12-Jan-21	0.0267	1.000879
13-Jan-21	0.0274	1.000849
14-Jan-21	0.0265	1.000748
15-Jan-21	0.0247	1.000711
16-Jan-21	0.0240	1.000632
17-Jan-21	0.0195	1.000567
18-Jan-21	0.0247	1.000574
19-Jan-21	0.0259	1.000670

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
20-Jan-21	0.0264	1.000721
21-Jan-21	0.0256	1.000620
22-Jan-21	0.0253	1.000601
23-Jan-21	0.0262	1.000647
24-Jan-21	0.0241	1.000000
25-Jan-21	0.0257	1.000580
26-Jan-21	0.0220	1.000000
27-Jan-21	0.0261	1.000611
28-Jan-21	0.0260	1.000635
29-Jan-21	0.0263	1.000660
30-Jan-21	0.0242	1.000000
31-Jan-21	0.0253	1.000513
01-Feb-21	0.0261	1.000618
02-Feb-21	0.0253	1.000000
03-Feb-21	0.0257	1.000596
04-Feb-21	0.0256	1.000599
05-Feb-21	0.0247	1.000584
06-Feb-21	0.0226	1.000000
07-Feb-21	0.0224	1.000000
08-Feb-21	0.0227	1.000000
09-Feb-21	0.0229	1.000000
10-Feb-21	0.0246	1.000508
11-Feb-21	0.0229	1.000000
12-Feb-21	0.0244	1.000000
13-Feb-21	0.0247	1.000000
14-Feb-21	0.0249	1.000000
15-Feb-21	0.0220	1.000000
16-Feb-21	0.0234	1.000000
17-Feb-21	0.0209	1.000000
18-Feb-21	0.0229	1.000000
19-Feb-21	0.0215	1.000000
20-Feb-21	0.0232	1.000000
21-Feb-21	0.0240	1.000000
22-Feb-21	0.0243	1.000000
23-Feb-21	0.0238	1.000000
24-Feb-21	0.0237	1.000000
25-Feb-21	0.0248	1.000506
26-Feb-21	0.0250	1.000548
27-Feb-21	0.0257	1.000621
28-Feb-21	0.0261	1.000620
01-Mar-21	0.0260	1.000672
02-Mar-21	0.0264	1.000674

Gas Day	Gemini Volume (MSm <sup>3</sup> )	Daily Correction Factor
03-Mar-21	0.0264	1.000684
04-Mar-21	0.0266	1.000718
05-Mar-21	0.0264	1.000716
06-Mar-21	0.0261	1.000634
07-Mar-21	0.0265	1.000690
08-Mar-21	0.0154	1.000000
09-Mar-21	0.0153	1.000000
10-Mar-21	0.0226	1.000502
11-Mar-21	0.0253	1.000866
12-Mar-21	0.0250	1.000763
13-Mar-21	0.0260	1.000894
14-Mar-21	0.0225	1.000893
15-Mar-21	0.0263	1.000967
16-Mar-21	0.0202	1.001038
17-Mar-21	0.0270	1.001100
18-Mar-21	0.0263	1.001008
19-Mar-21	0.0262	1.000954
20-Mar-21	0.0262	1.000946
21-Mar-21	0.0260	1.000914
22-Mar-21	0.0261	1.000938
23-Mar-21	0.0256	1.000842
24-Mar-21	0.0258	1.000902
25-Mar-21	0.0258	1.000875
26-Mar-21	0.0239	1.000763
27-Mar-21	0.0228	1.000820
28-Mar-21	0.0230	1.000000
29-Mar-21	0.0220	1.000000
30-Mar-21	0.0213	1.000000