MONTANA-DAKOTA
UTILITIES CO.
A Division of MDU Resources Group, Inc.

400 North Fourth Street
Bismarck, ND 58501
(701) 222-7900

February 9, 2017

Executive Secretary
North Dakota Public Service Commission
State Capitol Building
Bismarck, ND 58505-0480

Re: Case No. PU-16-002 (Therm Billing)
Monthly Report – December 2016

Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc., herewith submits the following information, pursuant to the Ordering paragraphs one and two of the Order issued in Case No. 11,006, dated October 20, 1987 and pursuant to the North Dakota Administrative Code 69-09-01-02, part 2.

1. Attachment A is a schedule showing the thermal billing factors by community that reflect the BTU values shown on Attachment B and were used for billing purposes in January 2017.

2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of December 2016.

3. Attachment C is a listing which states the type of measuring device in place at each zone.

4. Attachment D is a monthly list of the heating value data, by zone, for the most recent 12-month period and an average thereof. It is being provided pursuant to a Staff request.

5. Attachment E provides a brief explanation of the thermal variances, where applicable, for the month of December 2016.

Please acknowledge receipt by stamping or initialing the duplicate copy of this letter attached hereto and returning the same in the enclosed self-addressed, stamped envelope. Should the Commission or its Staff have any comments or questions with respect to these reports, please call me.

Sincerely,

Tamie Aberle
Director of Regulatory Affairs

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
Jan-17

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1334
MDU-308-ARNEGARD	025	1.1334
MDU-314-APPLE VALLEY	271	1.1000
MDU-318-BEACH	032	1.0156
MDU-319-BELFIELD	032	1.0231
MDU-323-BERTHOLD	262	1.0833
MDU-327-BISMARCK	028	1.0826
MDU-330-BOWMAN	034	0.9137
MDU-337-BURLINGTON	262	1.1067
MDU-343-CARRINGTON	273	1.0990
MDU-344-CLEVELAND	272	1.0913
MDU-364-CAVALIER	273	1.1222
MDU-365-DAWSON	271	1.0922
MDU-368-DES LACS	262	1.0911
MDU-369-DICKINSON	031	1.0502
MDU-374-FT TOTTEN	273	1.1067
MDU-375-DEVILS LAKE	273	1.1067
MDU-379-BARLOW	273	1.0990
MDU-384-EPPING	264	1.0937
MDU-387-ELDRIDGE	272	1.0990
MDU-407-GLADSTONE	031	1.0502
MDU-411-GLEN ULLIN	031	1.0578
MDU-413-GOLVA	032	1.0007
MDU-416-GARRISON	262	1.0911
MDU-417-GRAFTON	273	1.1299
MDU-429-HEBRON	031	1.0578
MDU-432-HETTINGER	903	2.4049
MDU-449-JAMESTOWN	272	1.1067
MDU-459-KILLDEER	033	1.1136
MDU-463-LANGDON	273	1.0990
MDU-469-LEFOR	031	1.0502
MDU-474-LIGNITE	263	1.0826
MDU-475-LINTON	802	1.0208
MDU-478-LINCOLN	028	1.0826
MDU-488-MCKENZIE	271	1.1000
MDU-494-MEDINA	271	1.0922
MDU-498-MANDAN	028	1.0826
MDU-500-MARMARTH	034	0.9204
MDU-505-MINOT	262	1.1067
MDU-510-MOTT	031	1.0502
MDU-512-MAX	262	1.1067
MDU-522-NEW ENGLAND	031	1.0426
MDU-524-NEW SALEM	028	1.0730
MDU-532-NEW ROCKFORD	273	1.0990
MDU-539-PARK RIVER	273	1.1222
MDU-540-PALERMO	262	1.0833
MDU-558-RAY	264	1.0937
MDU-561-REGENT	031	1.5020
MDU-563-RHAME	034	0.9069

MDU-564-RICHARDTON	031	1.0426
MDU-568-ROSS	261	0.9696
MDU-572-RUTHVILLE	262	1.1067
MDU-574-SANBORN	272	1.1067
MDU-583-SENTINEL BUTTE	032	1.0156
MDU-588-SOUTH HEART	031	1.0426
MDU-717-SPIRITWOOD	272	1.1067
MDU-590-SPRINGBROOK	264	1.0937
MDU-591-STANLEY	261	0.9766
MDU-593-STEELE	271	1.0922
MDU-598-SHEYENNE	273	1.1067
MDU-605-SURREY	262	1.1067
MDU-610-TAPPEN	271	1.0922
MDU-611-TAYLOR	031	1.0426
MDU-616-TIOGA	261	0.9836
MDU-619-TURTLE LAKE	262	1.0911
MDU-620-TRENTON	024	1.1292
MDU-624-UNDERWOOD	262	1.0911
MDU-625-VALLEY CITY	272	1.1144
MDU-629-WALHALLA	273	1.1222
MDU-632-WATFORD CITY	610	1.1107
MDU-636-WHEELOCK	264	1.0859
MDU-637-WHITE EARTH	261	0.9766
MDU-642-WILLISTON	024	1.1292
MDU-646-WASHBURN	262	1.0989
MDU-647-WILTON	262	1.0833
MDU-664-RIVERDALE	262	1.0911
MDU-691-FAIRVIEW	241	1.1349
MDU-712-MINOT AFB	262	1.1067
MDU-718-FAIRMOUNT	600	1.1258
MDU-732-NEKOMA	273	1.0990
MDU-732-MSR SITE	273	1.0990

GQ Source Daily Summary

December 2016

Number: 251 **Pressure Base:** 14.730 **Contract Day:** 1

Name: SIDNEY BORDER-MONDAK JNCTN-SIDNEY PLANT **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7356	1182.3	1203.3	1.239	3.817	68.263	22.523	3.713	0.147	0.271	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1402.92	
2	0.7348	1180.3	1201.2	1.257	3.832	68.390	22.425	3.656	0.145	0.268	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1401.34	
3	0.7336	1178.4	1199.3	1.259	3.836	68.486	22.432	3.580	0.134	0.248	0.014	0.011	0.000	0.000	0.000	0.000	0.000	1400.21	
4	0.7342	1179.6	1200.5	1.256	3.821	68.487	22.377	3.612	0.148	0.273	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1401.06	
5	0.7342	1179.6	1200.5	1.253	3.825	68.526	22.251	3.732	0.139	0.252	0.013	0.010	0.000	0.000	0.000	0.000	0.000	1401.08	
6	0.7349	1180.6	1201.6	1.248	3.839	68.377	22.373	3.757	0.136	0.246	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1401.59	
7	0.7145	1169.2	1189.9	0.576	3.649	70.273	22.731	2.587	0.063	0.110	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1407.81	
8	0.7257	1180.7	1201.7	0.749	3.726	69.512	22.036	3.652	0.107	0.198	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1410.71	
9	0.7235	1177.2	1198.0	0.754	3.729	69.605	22.255	3.375	0.095	0.171	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1408.61	
10	0.7280	1188.0	1209.0	0.654	3.644	68.766	23.184	3.427	0.102	0.197	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1417.18	
11	0.7356	1182.5	1203.5	1.204	3.854	68.362	22.300	3.852	0.133	0.261	0.017	0.016	0.000	0.000	0.000	0.000	0.000	1403.19	
12	0.7205	1180.6	1201.5	0.521	3.599	69.327	23.536	2.780	0.073	0.144	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1415.71	
13	0.7430	1194.1	1215.3	1.227	3.803	67.474	22.706	4.303	0.147	0.298	0.021	0.020	0.000	0.000	0.000	0.000	0.000	1409.89	
14	0.7291	1181.2	1202.1	0.938	3.733	68.956	22.534	3.457	0.118	0.233	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1407.94	
15	0.7337	1183.8	1204.8	1.067	3.806	68.591	22.339	3.733	0.140	0.285	0.020	0.019	0.000	0.000	0.000	0.000	0.000	1406.57	
16	0.7489	1207.4	1228.8	1.093	3.748	67.324	22.168	4.918	0.217	0.461	0.035	0.034	0.000	0.000	0.000	0.000	0.000	1419.88	
17	0.6984	1162.2	1182.8	0.056	3.364	71.725	23.297	1.523	0.015	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.27	
18	0.7252	1175.2	1196.0	0.920	3.763	69.147	22.775	3.119	0.093	0.167	0.009	0.007	0.000	0.000	0.000	0.000	0.000	1404.53	
19	0.7331	1177.5	1198.3	1.261	3.848	68.232	22.953	3.364	0.114	0.208	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1399.55	
20	0.7336	1178.4	1199.2	1.253	3.853	68.262	22.795	3.483	0.118	0.215	0.012	0.009	0.000	0.000	0.000	0.000	0.000	1400.12	
21	0.7332	1177.8	1198.6	1.241	3.861	68.490	22.434	3.615	0.120	0.218	0.012	0.009	0.000	0.000	0.000	0.000	0.000	1399.87	
22	0.7339	1178.7	1199.6	1.243	3.873	68.448	22.361	3.703	0.124	0.226	0.012	0.009	0.000	0.000	0.000	0.000	0.000	1400.22	
23	0.7336	1178.3	1199.1	1.242	3.874	68.471	22.358	3.695	0.121	0.218	0.012	0.009	0.000	0.000	0.000	0.000	0.000	1400.00	
24	0.7309	1176.8	1197.6	1.156	3.839	68.756	22.358	3.554	0.113	0.205	0.011	0.008	0.000	0.000	0.000	0.000	0.000	1400.89	
25	0.7221	1176.0	1196.9	0.761	3.661	69.525	22.704	3.128	0.076	0.134	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1408.63	
26	0.7042	1166.7	1187.4	0.133	3.505	71.662	22.094	2.549	0.024	0.033	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1414.89	
27	0.6875	1130.3	1150.3	0.294	3.905	74.990	18.474	2.200	0.049	0.081	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1387.17	
28	0.7170	1192.1	1213.2	0.040	3.302	69.666	23.804	3.036	0.057	0.089	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1432.73	
29	0.7167	1179.1	1200.0	0.351	3.592	70.078	22.779	2.971	0.080	0.137	0.006	0.004	0.000	0.000	0.000	0.000	0.000	1417.46	
30	0.7311	1173.9	1194.7	1.254	3.887	68.663	22.453	3.400	0.116	0.208	0.011	0.008	0.000	0.000	0.000	0.000	0.000	1397.21	
31	0.7325	1176.6	1197.4	1.247	3.861	68.429	22.687	3.420	0.119	0.216	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1399.13	
Avg	0.7272	1178.0	1199.1	0.927	3.750	69.138	22.468	3.384	0.109	0.203	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1406.24	

Zone 211

GQ Source Daily Summary

December 2016

Number: 571 **Pressure Base:** 14.730 **Contract Day:** 1

Name: WILLISTON BORDER-CHARBONNEAU STATION **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7091	1169.8	1190.5	0.912	2.591	72.221	21.308	2.664	0.086	0.185	0.015	0.017	0.000	0.000	0.000	0.000	0.000	1413.68	
2	0.7076	1167.2	1187.9	0.916	2.596	72.416	21.226	2.546	0.085	0.183	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1412.13	
3	0.7076	1167.6	1188.2	0.909	2.589	72.405	21.235	2.568	0.084	0.179	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1412.51	
4	0.7088	1169.1	1189.8	0.911	2.601	72.232	21.344	2.611	0.086	0.183	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1413.23	
5	0.7092	1170.1	1190.8	0.906	2.590	72.122	21.476	2.613	0.084	0.179	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1413.99	
6	0.7084	1169.8	1190.5	0.923	2.504	72.060	21.822	2.432	0.076	0.158	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1414.47	
7	0.7095	1172.2	1193.0	0.942	2.436	71.868	22.055	2.433	0.078	0.164	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1416.25	
8	0.7070	1166.7	1187.4	0.945	2.526	72.505	21.208	2.535	0.082	0.174	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1412.13	
9	0.7114	1170.9	1191.7	0.951	2.675	71.738	21.699	2.628	0.089	0.191	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1412.85	
10	0.7114	1174.6	1195.4	0.948	2.459	71.928	21.593	2.748	0.094	0.200	0.015	0.017	0.000	0.000	0.000	0.000	0.000	1417.20	
11	0.7104	1173.5	1194.3	0.936	2.444	71.969	21.692	2.674	0.082	0.176	0.013	0.014	0.000	0.000	0.000	0.000	0.000	1416.95	
12	0.7113	1174.0	1194.8	0.943	2.491	71.707	21.969	2.610	0.081	0.172	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1416.63	
13	0.7109	1174.3	1195.1	0.927	2.454	71.826	21.856	2.664	0.080	0.168	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1417.43	
14	0.7101	1172.0	1192.8	0.928	2.518	71.827	21.959	2.483	0.083	0.176	0.013	0.014	0.000	0.000	0.000	0.000	0.000	1415.51	
15	0.7105	1172.0	1192.7	0.930	2.554	71.781	21.916	2.545	0.080	0.168	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1415.06	
16	0.7104	1172.1	1192.9	0.922	2.550	71.861	21.783	2.611	0.079	0.168	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1415.29	
17	0.7092	1169.4	1190.1	0.912	2.621	72.272	21.191	2.674	0.092	0.203	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1413.13	
18	0.7084	1167.5	1188.2	0.919	2.652	72.241	21.319	2.588	0.079	0.172	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1411.65	
19	0.7082	1166.0	1186.6	0.909	2.738	72.320	21.157	2.565	0.084	0.189	0.017	0.021	0.000	0.000	0.000	0.000	0.000	1410.05	
20	0.7072	1164.6	1185.2	0.908	2.730	72.445	21.099	2.520	0.083	0.182	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1409.38	
21	0.7062	1164.2	1184.9	0.900	2.675	72.630	20.963	2.554	0.080	0.170	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1409.89	
22	0.7055	1162.9	1183.5	0.905	2.677	72.590	21.187	2.371	0.078	0.165	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1409.01	
23	0.7095	1170.6	1191.4	0.903	2.585	72.340	21.058	2.774	0.095	0.206	0.017	0.022	0.000	0.000	0.000	0.000	0.000	1414.38	
24	0.7096	1171.7	1192.4	0.903	2.530	72.341	21.117	2.746	0.099	0.224	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1415.51	
25	0.7073	1168.4	1189.0	0.920	2.489	72.392	21.453	2.456	0.082	0.177	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1413.86	
26	0.7095	1171.7	1192.4	0.931	2.487	71.872	22.001	2.435	0.080	0.168	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1415.58	
27	0.7128	1172.6	1193.4	0.937	2.724	71.701	21.438	2.892	0.094	0.187	0.014	0.015	0.000	0.000	0.000	0.000	0.000	1413.52	
28	0.7014	1159.5	1180.0	0.898	2.512	73.535	20.298	2.498	0.073	0.157	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1408.97	
29	0.7038	1162.9	1183.5	0.906	2.519	73.087	20.680	2.567	0.070	0.146	0.011	0.014	0.000	0.000	0.000	0.000	0.000	1410.68	
30	0.7068	1166.7	1187.4	0.927	2.534	72.532	21.158	2.606	0.072	0.149	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1412.34	
31	0.7029	1161.6	1182.1	0.921	2.493	73.188	20.690	2.465	0.070	0.148	0.011	0.014	0.000	0.000	0.000	0.000	0.000	1409.98	
Avg	0.7085	1169.0	1189.6	0.921	2.566	72.257	21.385	2.583	0.083	0.176	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1413.33	

Zone 24

GQ Source Analysis

GQ Source Number:	0602160	**Specific Gravity:**	0.7339
GQ Source Name:	FAIRVIEW BORDER	**Dry Heat Value:**	1199.60
Effective Date:	12/1/2016 9:00:00 AM	**Wet Heat Value:**	1178.72
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1199.60
Pressure Base:	14.730	**Sample Pressure:**	368.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content			Mol %
C1	Methane	68.348		CO2	Carbon Dioxide	1.230
C2	Ethane	22.286	5.9425	N2	Nitrogen	3.836
C3	Propane	3.843	1.0557	O2	Oxygen	0.016
IC4	Isobutane	0.145	0.0473	He	Helium	
NC4	n-Butane	0.265	0.0834	H2	Hydrogen	
IC5	Isopentane	0.017	0.0061	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.015	0.0053	Ar	Argon	
C6	Hexanes	0.000	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 7.140 GPM

Sample Date: 1/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 241

GQ Source Analysis

GQ Source Number:	0602225	**Specific Gravity:**	0.7180
GQ Source Name:	WATFORD CITY WEST BORDER	**Dry Heat Value:**	1193.45
Effective Date:	12/1/2016 9:00:00 AM	**Wet Heat Value:**	1172.68
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1193.45
Pressure Base:	14.730	**Sample Pressure:**	370.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content			Mol %
C1	Methane	70.866		CO2	Carbon Dioxide	0.998
C2	Ethane	21.530	5.7408	N2	Nitrogen	3.071
C3	Propane	3.000	0.8240	O2	Oxygen	0.010
IC4	Isobutane	0.150	0.0489	He	Helium	
NC4	n-Butane	0.317	0.0996	H2	Hydrogen	
IC5	Isopentane	0.028	0.0102	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.029	0.0106	Ar	Argon	
C6	Hexanes	0.002	0.0011	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 6.735 GPM

Sample Date: 1/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 25

GQ Source Daily Summary

December 2016

Number: 163 **Pressure Base:** 14.730 **Contract Day:** 1

Name: NORTH TIOGA TRNSR-ROBINSON LAKE PLT **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6523	1074.6	1093.6	0.447	3.758	81.974	12.008	1.580	0.060	0.140	0.014	0.018	0.000	0.000	0.000	0.000	0.000	1354.05	
2	0.6446	1062.5	1081.4	0.437	3.780	83.319	10.837	1.426	0.052	0.121	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1346.87	
3	0.6450	1062.8	1081.7	0.434	3.803	83.244	10.868	1.458	0.052	0.117	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1346.85	
4	0.6467	1066.0	1084.9	0.443	3.756	83.018	11.059	1.507	0.056	0.130	0.013	0.017	0.000	0.000	0.000	0.000	0.000	1349.09	
5	0.6513	1073.4	1092.4	0.483	3.684	82.029	12.121	1.503	0.050	0.109	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1353.56	
6	0.6692	1100.5	1119.9	0.586	3.556	79.047	14.692	1.852	0.070	0.159	0.017	0.021	0.000	0.000	0.000	0.000	0.000	1369.06	
7	0.6723	1106.0	1125.6	0.625	3.456	78.503	15.233	1.920	0.070	0.158	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1372.73	
8	0.6635	1093.9	1113.3	0.587	3.419	79.925	14.183	1.682	0.054	0.122	0.012	0.016	0.000	0.000	0.000	0.000	0.000	1366.77	
9	0.6565	1091.7	1111.1	0.478	3.057	81.162	13.445	1.728	0.038	0.079	0.006	0.007	0.000	0.000	0.000	0.000	0.000	1371.29	
10	0.6572	1089.3	1108.6	0.445	3.325	80.960	13.405	1.717	0.046	0.090	0.006	0.007	0.000	0.000	0.000	0.000	0.000	1367.52	
11	0.6557	1080.9	1100.0	0.468	3.659	81.613	12.129	1.896	0.067	0.144	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1358.46	
12	0.6662	1099.9	1119.4	0.486	3.463	80.043	13.452	2.246	0.085	0.189	0.017	0.020	0.000	0.000	0.000	0.000	0.000	1371.34	
13	0.6591	1088.2	1107.5	0.491	3.501	80.722	13.377	1.710	0.055	0.120	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1364.14	
14	0.6628	1090.1	1109.4	0.563	3.627	79.988	13.926	1.696	0.056	0.122	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1362.65	
15	0.6611	1086.5	1105.8	0.589	3.642	80.214	13.781	1.604	0.049	0.103	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1359.97	
16	0.6615	1087.9	1107.1	0.567	3.631	80.258	13.677	1.654	0.057	0.130	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1361.24	
17	0.6623	1090.4	1109.8	0.549	3.574	80.403	13.430	1.746	0.072	0.178	0.021	0.026	0.000	0.000	0.000	0.000	0.000	1363.64	
18	0.6499	1071.0	1089.9	0.497	3.677	82.183	12.099	1.372	0.046	0.105	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1352.01	
19	0.6256	1034.9	1053.2	0.312	3.866	86.524	8.174	0.968	0.038	0.093	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1331.61	
20	0.6072	1007.8	1025.7	0.172	4.002	89.650	5.457	0.621	0.025	0.060	0.006	0.007	0.000	0.000	0.000	0.000	0.000	1316.23	
21	0.6282	1038.1	1056.5	0.320	3.904	85.836	8.904	0.927	0.030	0.065	0.006	0.007	0.000	0.000	0.000	0.000	0.000	1332.98	
22	0.6323	1044.4	1062.9	0.338	3.886	85.287	9.215	1.126	0.040	0.088	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1336.59	
23	0.6525	1075.4	1094.4	0.458	3.706	82.242	11.582	1.724	0.073	0.173	0.019	0.024	0.000	0.000	0.000	0.000	0.000	1354.87	
24	0.6603	1087.2	1106.5	0.502	3.656	80.992	12.622	1.860	0.090	0.225	0.024	0.029	0.000	0.000	0.000	0.000	0.000	1361.59	
25	0.6628	1092.2	1111.6	0.525	3.542	80.638	13.019	1.897	0.090	0.229	0.027	0.034	0.000	0.000	0.000	0.000	0.000	1365.40	
26	0.6589	1096.3	1115.7	0.516	2.949	80.404	14.580	1.435	0.036	0.069	0.005	0.006	0.000	0.000	0.000	0.000	0.000	1374.54	
27	0.6539	1084.1	1103.2	0.445	3.333	81.658	12.712	1.694	0.044	0.096	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1364.30	
28	0.6521	1074.2	1093.2	0.511	3.671	81.617	12.722	1.341	0.040	0.084	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1353.75	
29	0.6542	1077.9	1097.0	0.533	3.609	81.390	12.836	1.489	0.040	0.086	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1356.21	
30	0.6522	1073.9	1092.9	0.534	3.661	81.674	12.602	1.392	0.040	0.084	0.006	0.007	0.000	0.000	0.000	0.000	0.000	1353.26	
31	0.6532	1075.3	1094.4	0.529	3.675	81.522	12.698	1.432	0.040	0.087	0.007	0.009	0.000	0.000	0.000	0.000	0.000	1354.05	
Avg	0.6526	1077.0	1095.8	0.480	3.607	81.872	12.285	1.555	0.054	0.121	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1356.34	

Zone 261

GQ Source Daily Summary

December 2016

Number: 091 **Pressure Base:** 14.730 **Contract Day:** 1

Name: MINOT BRDR-PALERMO BRDR-BISMARCK STN **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7128	1125.9	1145.8	0.716	5.908	71.962	17.240	3.825	0.109	0.224	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1357.14	
2	0.7122	1125.4	1145.4	0.711	5.880	72.030	17.312	3.682	0.122	0.245	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1357.24	
3	0.7111	1124.6	1144.6	0.685	5.871	72.226	17.145	3.684	0.122	0.248	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1357.25	
4	0.7098	1124.1	1144.0	0.679	5.788	72.440	17.070	3.649	0.119	0.238	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1357.88	
5	0.7118	1127.6	1147.6	0.685	5.749	72.202	17.220	3.746	0.123	0.253	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1360.23	
6	0.7069	1122.3	1142.1	0.698	5.594	72.961	16.793	3.640	0.097	0.202	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1358.49	
7	0.7057	1126.6	1146.5	0.711	5.203	73.156	17.146	3.442	0.101	0.219	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1364.84	
8	0.7061	1125.7	1145.6	0.730	5.266	72.978	17.337	3.346	0.103	0.220	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1363.37	
9	0.7097	1130.9	1151.0	0.695	5.341	72.531	17.417	3.648	0.115	0.234	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1366.19	
10	0.7063	1129.9	1149.9	0.646	5.157	73.054	17.268	3.518	0.112	0.227	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1368.21	
11	0.7094	1128.8	1148.8	0.691	5.446	72.628	17.190	3.653	0.123	0.250	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1363.95	
12	0.7035	1123.6	1143.5	0.652	5.259	73.623	16.605	3.496	0.116	0.232	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1363.47	
13	0.7120	1133.1	1153.1	0.689	5.432	72.285	17.401	3.780	0.127	0.261	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1366.58	
14	0.7078	1125.9	1145.8	0.705	5.451	72.730	17.286	3.470	0.112	0.228	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1361.95	
15	0.7104	1127.6	1147.6	0.748	5.529	72.247	17.601	3.522	0.112	0.225	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1361.51	
16	0.7036	1121.6	1141.5	0.733	5.276	73.303	17.145	3.230	0.101	0.200	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1360.94	
17	0.7091	1125.9	1145.8	0.729	5.536	72.532	17.337	3.492	0.115	0.237	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1360.72	
18	0.7118	1128.3	1148.3	0.741	5.623	72.086	17.583	3.590	0.116	0.238	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1361.08	
19	0.7147	1127.6	1147.6	0.748	5.929	71.572	17.629	3.756	0.117	0.233	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1357.47	
20	0.7176	1128.7	1148.7	0.746	6.139	71.143	17.662	3.930	0.122	0.242	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1356.00	
21	0.7108	1120.2	1140.1	0.710	6.073	72.264	16.861	3.737	0.116	0.227	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1352.24	
22	0.7117	1122.4	1142.3	0.719	6.012	72.044	17.178	3.698	0.114	0.223	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1354.00	
23	0.7094	1121.3	1141.2	0.704	5.877	72.545	16.844	3.662	0.117	0.234	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1354.96	
24	0.7108	1125.5	1145.4	0.722	5.736	72.356	17.121	3.670	0.122	0.249	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1358.55	
25	0.7083	1124.4	1144.3	0.720	5.562	72.903	16.779	3.621	0.124	0.262	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1359.72	
26	0.7020	1121.0	1140.8	0.683	5.243	73.903	16.311	3.552	0.099	0.194	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1361.57	
27	0.7045	1123.5	1143.4	0.675	5.331	73.338	16.746	3.663	0.087	0.159	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1362.28	
28	0.7027	1114.3	1134.1	0.664	5.742	73.617	16.130	3.551	0.099	0.189	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1352.83	
29	0.7028	1115.2	1134.9	0.693	5.659	73.480	16.442	3.458	0.092	0.171	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1353.73	
30	0.7053	1116.9	1136.7	0.723	5.734	73.162	16.504	3.599	0.096	0.177	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1353.54	
31	0.7039	1116.1	1135.9	0.728	5.645	73.335	16.550	3.462	0.096	0.180	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1353.88	
Avg	0.7085	1124.0	1144.3	0.706	5.613	72.666	17.060	3.605	0.111	0.223	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1359.41	

Zone 262

GQ Source Analysis

GQ Source Number:	2501030	**Specific Gravity:**	0.6710
GQ Source Name:	LIGNITE PLANT	**Dry Heat Value:**	1109.83
Effective Date:	12/1/2016 9:00:00 AM	**Wet Heat Value:**	1090.51
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1109.83
Pressure Base:	14.730	**Sample Pressure:**	440.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content
C1	Methane	77.349	
C2	Ethane	15.744	4.1980
C3	Propane	1.796	0.4935
IC4	Isobutane	0.028	0.0092
NC4	n-Butane	0.007	0.0023
IC5	Isopentane	0.000	0.0000
NC5	n-Pentane	0.000	0.0000
C6	Hexanes	0.002	0.0008
C7	Heptanes		
C8	Octanes		
C9	Nonanes		
C10	Decanes		

		Mol %
CO2	Carbon Dioxide	0.159
N2	Nitrogen	4.550
O2	Oxygen	0.364
He	Helium	
H2	Hydrogen	
H2S	Hydrogen Sulfide	
Ar	Argon	
CO	Carbon Monoxide	
H2	Water	
Neo-C5	Neopentane	

Totals 100.000% 4.704 GPM

Sample Date: 1/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: Eric
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 263

*** End of Report ***

GQ Source Analysis

GQ Source Number:	0702010	**Specific Gravity:**	0.7051
GQ Source Name:	EPPING BORDER	**Dry Heat Value:**	1186.17
Effective Date:	12/1/2016 9:00:00 AM	**Wet Heat Value:**	1165.53
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1186.17
Pressure Base:	14.730	**Sample Pressure:**	510.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content
C1	Methane	72.409	
C2	Ethane	21.240	5.6636
C3	Propane	2.656	0.7297
IC4	Isobutane	0.076	0.0248
NC4	n-Butane	0.153	0.0482
IC5	Isopentane	0.012	0.0043
NC5	n-Pentane	0.013	0.0048
C6	Hexanes	0.000	0.0000
C7	Heptanes		
C8	Octanes		
C9	Nonanes		
C10	Decanes		

		Mol %
CO2	Carbon Dioxide	0.742
N2	Nitrogen	2.693
O2	Oxygen	0.006
He	Helium	
H2	Hydrogen	
H2S	Hydrogen Sulfide	
Ar	Argon	
CO	Carbon Monoxide	
H2	Water	
Neo-C5	Neopentane	

Totals 100.000% 6.475 GPM

Sample Date: 1/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: Eric
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 264

GQ Source Daily Summary

December 2016

Number: 161 **Pressure Base:** 14.730 **Contract Day:** 1

Name: N. TIOGA TRNS-CONOCO STONEVIEW TO **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7096	1161.9	1182.5	0.843	3.219	72.486	20.126	2.910	0.109	0.251	0.025	0.031	0.000	0.000	0.000	0.000	0.000	1403.72	
2	0.7068	1156.6	1177.1	0.863	3.250	72.829	19.928	2.752	0.099	0.229	0.023	0.028	0.000	0.000	0.000	0.000	0.000	1400.10	
3	0.7063	1156.1	1176.6	0.845	3.256	72.894	19.865	2.781	0.097	0.217	0.020	0.025	0.000	0.000	0.000	0.000	0.000	1400.01	
4	0.7071	1157.6	1178.1	0.846	3.243	72.875	19.819	2.821	0.104	0.238	0.024	0.031	0.000	0.000	0.000	0.000	0.000	1400.97	
5	0.7028	1151.1	1171.5	0.832	3.253	73.224	19.841	2.550	0.083	0.181	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1397.44	
6	0.7051	1154.4	1174.9	0.835	3.264	73.145	19.657	2.700	0.105	0.240	0.024	0.031	0.000	0.000	0.000	0.000	0.000	1399.12	
7	0.7059	1155.5	1176.0	0.832	3.275	72.959	19.831	2.710	0.105	0.241	0.022	0.025	0.000	0.000	0.000	0.000	0.000	1399.68	
8	0.6942	1138.0	1158.2	0.768	3.344	74.724	18.566	2.288	0.081	0.185	0.019	0.025	0.000	0.000	0.000	0.000	0.000	1390.05	
9	0.6729	1124.4	1144.3	0.239	2.979	77.419	17.673	1.616	0.026	0.040	0.003	0.004	0.000	0.000	0.000	0.000	0.000	1395.01	
10	0.6832	1132.2	1152.3	0.470	3.112	76.206	17.894	2.155	0.054	0.096	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1394.15	
11	0.7001	1149.0	1169.3	0.742	3.267	74.275	18.339	3.009	0.105	0.226	0.017	0.020	0.000	0.000	0.000	0.000	0.000	1397.46	
12	0.7084	1164.0	1184.7	0.694	3.195	73.311	18.858	3.435	0.138	0.308	0.028	0.034	0.000	0.000	0.000	0.000	0.000	1407.48	
13	0.6972	1146.8	1167.1	0.685	3.216	74.208	19.074	2.520	0.082	0.177	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1397.75	
14	0.7013	1148.2	1168.5	0.837	3.292	73.388	19.737	2.465	0.080	0.172	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1395.28	
15	0.7018	1147.5	1167.8	0.886	3.308	73.181	19.993	2.387	0.070	0.148	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1393.94	
16	0.7029	1150.6	1171.0	0.854	3.257	73.230	19.849	2.485	0.086	0.197	0.019	0.023	0.000	0.000	0.000	0.000	0.000	1396.76	
17	0.7056	1155.5	1176.0	0.841	3.235	73.116	19.733	2.636	0.107	0.263	0.030	0.039	0.000	0.000	0.000	0.000	0.000	1399.96	
18	0.7017	1148.2	1168.5	0.864	3.284	73.281	19.911	2.364	0.079	0.181	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1394.93	
19	0.7051	1153.7	1174.2	0.870	3.257	72.985	19.975	2.532	0.095	0.229	0.025	0.032	0.000	0.000	0.000	0.000	0.000	1398.27	
20	0.7071	1157.4	1177.9	0.855	3.236	72.656	20.210	2.680	0.096	0.219	0.021	0.026	0.000	0.000	0.000	0.000	0.000	1400.84	
21	0.6992	1146.1	1166.4	0.822	3.240	73.474	20.011	2.221	0.066	0.139	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1394.90	
22	0.7036	1152.9	1173.3	0.823	3.238	73.184	19.799	2.628	0.090	0.199	0.018	0.022	0.000	0.000	0.000	0.000	0.000	1398.76	
23	0.7096	1161.7	1182.3	0.827	3.247	72.889	19.452	3.068	0.130	0.309	0.034	0.043	0.000	0.000	0.000	0.000	0.000	1403.53	
24	0.7108	1163.5	1184.2	0.824	3.252	72.730	19.584	3.015	0.145	0.364	0.039	0.046	0.000	0.000	0.000	0.000	0.000	1404.50	
25	0.6991	1147.9	1168.2	0.730	3.248	74.682	18.038	2.775	0.128	0.319	0.036	0.045	0.000	0.000	0.000	0.000	0.000	1397.25	
26	0.6687	1121.1	1141.0	0.221	2.806	78.504	16.532	1.870	0.036	0.027	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1395.30	
27	0.6812	1132.0	1152.0	0.456	2.961	76.670	17.616	2.107	0.059	0.106	0.011	0.014	0.000	0.000	0.000	0.000	0.000	1395.92	
28	0.7000	1147.2	1167.5	0.865	3.188	73.314	20.175	2.239	0.064	0.135	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1395.40	
29	0.7019	1148.9	1169.2	0.889	3.222	73.187	20.029	2.454	0.063	0.133	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1395.61	
30	0.6997	1144.5	1164.7	0.900	3.271	73.450	19.858	2.309	0.063	0.130	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1392.39	
31	0.7012	1148.1	1168.4	0.889	3.205	73.250	20.065	2.371	0.063	0.134	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1395.34	
Avg	0.7000	1149.0	1169.5	0.766	3.214	73.798	19.356	2.543	0.087	0.195	0.018	0.023	0.000	0.000	0.000	0.000	0.000	1397.80	

Zone 2b5

GQ Source Daily Summary

December 2016

Number: 043 **Pressure Base:** 14.730 **Contract Day:** 1

Name: BISMARCK STATION-CLEVELAND STATION **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6893	1111.7	1131.4	0.648	4.671	75.784	15.780	2.848	0.082	0.167	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1362.66	
2	0.6949	1115.6	1135.4	0.592	5.041	74.662	16.489	2.917	0.093	0.185	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1361.98	
3	0.6972	1117.7	1137.5	0.611	5.098	74.323	16.656	2.994	0.099	0.198	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1362.29	
4	0.6930	1112.9	1132.6	0.609	5.003	75.040	16.165	2.882	0.094	0.187	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1360.51	
5	0.6916	1113.2	1132.9	0.586	4.882	75.341	16.015	2.865	0.096	0.193	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1362.31	
6	0.6927	1117.6	1137.4	0.612	4.683	75.079	16.505	2.830	0.091	0.180	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1366.59	
7	0.6854	1113.0	1132.7	0.568	4.348	76.199	16.107	2.523	0.079	0.156	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1368.13	
8	0.6802	1109.5	1129.1	0.517	4.148	76.950	15.879	2.278	0.069	0.138	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1369.05	
9	0.6732	1102.3	1121.8	0.480	3.979	78.120	15.156	2.054	0.066	0.127	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1367.30	
10	0.6771	1109.1	1128.7	0.476	3.943	77.760	15.190	2.344	0.087	0.175	0.013	0.012	0.000	0.000	0.000	0.000	0.000	1371.67	
11	0.6755	1106.7	1126.3	0.453	3.969	77.924	15.126	2.296	0.074	0.138	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1370.40	
12	0.6729	1103.7	1123.3	0.506	3.827	78.452	14.749	2.236	0.074	0.138	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1369.33	
13	0.6708	1101.2	1120.7	0.489	3.805	78.802	14.495	2.190	0.071	0.131	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1368.41	
14	0.6763	1108.6	1128.3	0.454	3.930	77.637	15.540	2.222	0.070	0.130	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1371.94	
15	0.6756	1107.0	1126.6	0.493	3.903	77.823	15.341	2.226	0.069	0.129	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1370.64	
16	0.6716	1101.2	1120.7	0.463	3.922	78.420	14.922	2.080	0.063	0.114	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1367.57	
17	0.6715	1101.4	1120.9	0.494	3.855	78.465	14.930	2.067	0.062	0.112	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1367.90	
18	0.6733	1104.4	1123.9	0.493	3.848	78.220	15.075	2.158	0.066	0.123	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1369.71	
19	0.6818	1107.4	1127.0	0.531	4.403	76.808	15.551	2.476	0.075	0.141	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1364.88	
20	0.6903	1112.8	1132.5	0.527	4.875	75.363	16.191	2.780	0.084	0.162	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1363.11	
21	0.6916	1113.6	1133.3	0.538	4.940	75.063	16.424	2.777	0.083	0.159	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1362.72	
22	0.6903	1110.3	1130.0	0.535	5.016	75.318	16.101	2.778	0.081	0.156	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1360.04	
23	0.6898	1110.9	1130.6	0.537	4.931	75.403	16.125	2.750	0.081	0.156	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1361.27	
24	0.6844	1107.3	1126.9	0.505	4.693	76.350	15.626	2.575	0.079	0.154	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1362.15	
25	0.6829	1106.5	1126.1	0.497	4.613	76.617	15.484	2.530	0.080	0.158	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1362.70	
26	0.6770	1101.7	1121.2	0.460	4.405	77.635	14.890	2.372	0.073	0.145	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1362.69	
27	0.6758	1104.0	1123.6	0.455	4.156	77.669	15.277	2.274	0.057	0.101	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1366.84	
28	0.6778	1101.9	1121.4	0.474	4.448	77.448	14.987	2.455	0.063	0.113	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1362.12	
29	0.6738	1093.6	1112.9	0.467	4.587	78.023	14.488	2.255	0.060	0.108	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1355.89	
30	0.6765	1097.5	1117.0	0.473	4.594	77.578	14.813	2.358	0.061	0.111	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1358.03	
31	0.6780	1099.2	1118.7	0.476	4.625	77.329	14.978	2.403	0.063	0.114	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1358.65	
Avg	0.6817	1107.0	1126.8	0.517	4.424	76.826	15.518	2.477	0.076	0.145	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1364.82	

Zone 271

GQ Source Daily Summary

December 2016

Number: 063 **Pressure Base:** 14.730 **Contract Day:** 1

Name: CLEVELAND STATION-MAPLETON **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6872	1107.8	1127.5	0.638	4.724	76.086	15.538	2.755	0.081	0.159	0.009	0.009	0.000					1360.02	
2	0.6947	1114.0	1133.7	0.624	5.071	74.760	16.306	2.949	0.091	0.179	0.010	0.010	0.000					1360.19	
3	0.6977	1116.2	1136.0	0.612	5.239	74.174	16.678	2.985	0.099	0.193	0.010	0.010	0.000					1359.97	
4	0.6955	1112.9	1132.6	0.620	5.215	74.613	16.291	2.953	0.098	0.191	0.010	0.010	0.000					1358.16	
5	0.6942	1113.0	1132.7	0.615	5.095	74.879	16.182	2.919	0.095	0.190	0.012	0.012	0.000					1359.52	
6	0.6944	1115.9	1135.7	0.609	4.946	74.792	16.472	2.872	0.097	0.189	0.011	0.011	0.000					1362.88	
7	0.6886	1112.5	1132.2	0.594	4.637	75.712	16.121	2.679	0.082	0.158	0.009	0.009	0.000					1364.35	
8	0.6829	1110.2	1129.9	0.542	4.317	76.560	15.954	2.383	0.075	0.148	0.010	0.010	0.000					1367.28	
9	0.6749	1101.2	1120.7	0.494	4.186	77.818	15.193	2.098	0.066	0.128	0.009	0.008	0.000					1364.21	
10	0.6750	1102.7	1122.2	0.486	4.123	77.929	15.023	2.211	0.074	0.138	0.009	0.008	0.000					1365.85	
11	0.6811	1115.0	1134.7	0.472	3.966	77.037	15.830	2.409	0.087	0.170	0.014	0.015	0.000					1374.92	
12	0.6736	1101.4	1120.9	0.483	4.068	78.296	14.657	2.267	0.075	0.137	0.009	0.008	0.000					1365.74	
13	0.6702	1098.6	1118.0	0.502	3.891	78.870	14.388	2.137	0.070	0.125	0.008	0.008	0.000					1365.70	
14	0.6766	1105.9	1125.5	0.472	4.094	77.702	15.198	2.305	0.074	0.137	0.009	0.009	0.000					1368.28	
15	0.6772	1107.1	1126.7	0.489	4.053	77.489	15.530	2.228	0.069	0.127	0.008	0.008	0.000					1369.14	
16	0.6751	1103.4	1122.9	0.487	4.084	77.876	15.144	2.203	0.068	0.123	0.008	0.007	0.000					1366.68	
17	0.6708	1098.9	1118.4	0.484	3.963	78.515	14.842	2.014	0.061	0.108	0.007	0.007	0.000					1365.47	
18	0.6731	1102.5	1122.0	0.499	3.936	78.196	15.064	2.111	0.064	0.115	0.008	0.008	0.000					1367.56	
19	0.6794	1105.8	1125.3	0.524	4.286	77.197	15.413	2.354	0.072	0.135	0.009	0.009	0.000					1365.31	
20	0.6894	1111.1	1130.8	0.536	4.881	75.493	16.112	2.723	0.082	0.155	0.009	0.008	0.000					1361.91	
21	0.6937	1113.4	1133.1	0.555	5.118	74.715	16.527	2.823	0.085	0.161	0.008	0.008	0.000					1360.47	
22	0.6900	1108.5	1128.2	0.534	5.103	75.340	16.019	2.754	0.081	0.153	0.008	0.008	0.000					1358.12	
23	0.6910	1109.2	1128.8	0.546	5.133	75.168	16.129	2.772	0.082	0.154	0.008	0.007	0.000					1358.00	
24	0.6872	1107.6	1127.2	0.530	4.903	75.863	15.789	2.660	0.081	0.156	0.009	0.009	0.000					1359.72	
25	0.6839	1105.6	1125.2	0.504	4.748	76.372	15.622	2.511	0.077	0.148	0.009	0.009	0.000					1360.64	
26	0.6810	1102.9	1122.4	0.490	4.662	76.924	15.225	2.447	0.077	0.154	0.010	0.011	0.000					1360.18	
27	0.6763	1102.7	1122.2	0.450	4.298	77.633	15.133	2.287	0.064	0.119	0.008	0.008	0.000					1364.59	
28	0.6802	1105.2	1124.8	0.488	4.450	76.982	15.430	2.473	0.061	0.106	0.006	0.005	0.000					1363.82	
29	0.6748	1093.0	1112.3	0.469	4.724	77.870	14.441	2.305	0.063	0.115	0.006	0.007	0.000					1354.02	
30	0.6764	1095.5	1114.9	0.477	4.705	77.540	14.783	2.315	0.061	0.108	0.006	0.006	0.000					1355.62	
31	0.6793	1098.6	1118.1	0.483	4.771	77.106	15.008	2.443	0.064	0.113	0.006	0.005	0.000					1356.63	
Avg	0.6827	1106.0	1126.0	0.526	4.561	76.629	15.550	2.495	0.077	0.145	0.009	0.009	0.000					1362.74	

Zone 272

GQ Source Daily Summary

December 2016

Number: 061 **Pressure Base:** 14.730 **Contract Day:** 1

Name: CLEVELAND STATION-GRAFTON BORDER **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6848	1107.3	1127.0	0.633	4.527	76.536	15.368	2.688	0.078	0.152	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1361.89	
2	0.6942	1114.8	1134.5	0.620	4.986	74.842	16.327	2.938	0.091	0.177	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1361.62	
3	0.6971	1117.0	1136.8	0.609	5.138	74.295	16.672	2.976	0.098	0.191	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1361.54	
4	0.6950	1113.9	1133.6	0.617	5.114	74.716	16.299	2.948	0.098	0.189	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.80	
5	0.6927	1112.8	1132.5	0.604	4.984	75.121	16.110	2.883	0.095	0.184	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1360.71	
6	0.6939	1116.9	1136.7	0.606	4.844	74.894	16.482	2.868	0.097	0.188	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1364.60	
7	0.6880	1113.3	1133.0	0.593	4.534	75.837	16.110	2.670	0.082	0.157	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1365.92	
8	0.6823	1111.1	1130.8	0.541	4.209	76.677	15.961	2.372	0.075	0.145	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1368.96	
9	0.6743	1101.8	1121.3	0.492	4.097	77.930	15.184	2.089	0.066	0.126	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1365.57	
10	0.6747	1103.6	1123.1	0.484	4.040	78.001	15.034	2.214	0.074	0.136	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1367.31	
11	0.6806	1115.8	1135.6	0.469	3.869	77.148	15.824	2.406	0.086	0.169	0.014	0.015	0.000	0.000	0.000	0.000	0.000	1376.47	
12	0.6728	1102.1	1121.6	0.480	3.961	78.437	14.640	2.256	0.074	0.135	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1367.33	
13	0.6695	1099.3	1118.7	0.499	3.795	78.991	14.377	2.129	0.069	0.124	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1367.19	
14	0.6760	1106.5	1126.1	0.468	4.002	77.820	15.185	2.298	0.074	0.136	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1369.70	
15	0.6765	1107.6	1127.2	0.488	3.961	77.619	15.503	2.219	0.069	0.126	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1370.46	
16	0.6746	1104.2	1123.7	0.484	3.990	77.977	15.151	2.195	0.067	0.122	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1368.21	
17	0.6704	1099.5	1119.0	0.480	3.893	78.597	14.840	2.010	0.060	0.107	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1366.63	
18	0.6725	1103.2	1122.8	0.495	3.836	78.316	15.063	2.098	0.063	0.113	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1369.14	
19	0.6788	1106.7	1126.3	0.522	4.175	77.322	15.411	2.347	0.072	0.134	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1367.06	
20	0.6889	1112.2	1131.9	0.533	4.781	75.585	16.127	2.721	0.082	0.154	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1363.64	
21	0.6932	1114.5	1134.2	0.552	5.011	74.813	16.546	2.818	0.085	0.160	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1362.27	
22	0.6899	1109.9	1129.6	0.532	5.006	75.383	16.070	2.760	0.081	0.152	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1359.99	
23	0.6905	1110.3	1129.9	0.543	5.029	75.270	16.139	2.771	0.081	0.153	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1359.77	
24	0.6872	1108.4	1128.1	0.525	4.858	75.874	15.811	2.678	0.081	0.155	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1360.78	
25	0.6838	1107.0	1126.6	0.502	4.663	76.406	15.663	2.521	0.077	0.148	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1362.34	
26	0.6806	1103.9	1123.4	0.488	4.571	77.005	15.238	2.448	0.077	0.153	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1361.73	
27	0.6756	1103.2	1122.7	0.446	4.211	77.767	15.096	2.282	0.064	0.118	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1365.86	
28	0.6798	1106.2	1125.8	0.485	4.357	77.067	15.447	2.469	0.060	0.104	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1365.42	
29	0.6743	1093.6	1113.0	0.465	4.641	77.977	14.429	2.299	0.063	0.114	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1355.35	
30	0.6758	1096.2	1115.6	0.474	4.615	77.663	14.763	2.307	0.060	0.106	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1356.98	
31	0.6786	1099.2	1118.7	0.480	4.673	77.244	14.983	2.434	0.063	0.112	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1358.07	
Avg	0.6822	1107.0	1126.8	0.523	4.464	76.746	15.544	2.487	0.076	0.143	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1364.27	

Zone 273

GQ Source Daily Summary

December 2016

Number: 041 **Pressure Base:** 14.730 **Contract Day:** 1

Name: BISMARCK STATION-GLEN ULLIN STATION **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6600	1095.1	1114.5	0.550	3.080	80.366	14.339	1.494	0.058	0.101	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1371.80	
2	0.6615	1095.1	1114.5	0.376	3.480	79.650	14.972	1.390	0.045	0.077	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.36	
3	0.6654	1100.0	1119.5	0.385	3.534	78.967	15.494	1.477	0.048	0.084	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1372.43	
4	0.6594	1091.8	1111.2	0.415	3.429	80.089	14.572	1.359	0.046	0.079	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1368.34	
5	0.6585	1090.9	1110.2	0.387	3.438	80.198	14.528	1.320	0.044	0.075	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1368.18	
6	0.6703	1106.9	1126.5	0.496	3.408	78.411	15.804	1.680	0.068	0.119	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1375.95	
7	0.6672	1102.1	1121.6	0.454	3.468	78.932	15.313	1.652	0.061	0.106	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1373.22	
8	0.6637	1098.5	1117.9	0.381	3.478	79.358	15.120	1.518	0.049	0.084	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1372.21	
9	0.6596	1092.1	1111.4	0.383	3.472	80.235	14.220	1.542	0.049	0.085	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1368.53	
10	0.6640	1099.5	1119.0	0.391	3.422	79.797	14.361	1.787	0.074	0.145	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1373.18	
11	0.6624	1097.3	1116.8	0.362	3.450	79.950	14.297	1.764	0.057	0.099	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1372.11	
12	0.6573	1093.0	1112.3	0.424	3.138	80.913	13.741	1.625	0.054	0.090	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1372.02	
13	0.6551	1089.4	1108.7	0.411	3.176	81.220	13.504	1.547	0.049	0.080	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1369.74	
14	0.6610	1098.4	1117.9	0.348	3.276	79.946	14.717	1.577	0.047	0.078	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1374.97	
15	0.6611	1098.7	1118.1	0.392	3.205	80.071	14.535	1.653	0.050	0.083	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1375.14	
16	0.6573	1092.0	1111.3	0.351	3.322	80.640	14.018	1.541	0.045	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.66	
17	0.6559	1090.5	1109.8	0.397	3.208	80.931	13.853	1.486	0.043	0.070	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.29	
18	0.6585	1095.2	1114.6	0.404	3.153	80.524	14.214	1.580	0.044	0.071	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1373.50	
19	0.6566	1090.5	1109.8	0.361	3.326	80.750	13.932	1.513	0.041	0.066	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1369.61	
20	0.6607	1095.1	1114.5	0.284	3.548	79.792	14.759	1.498	0.040	0.068	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1371.10	
21	0.6636	1098.9	1118.4	0.320	3.531	79.144	15.472	1.426	0.037	0.062	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1372.92	
22	0.6616	1094.9	1114.3	0.298	3.628	79.528	14.975	1.473	0.035	0.056	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1369.90	
23	0.6615	1095.0	1114.4	0.310	3.586	79.591	14.933	1.477	0.036	0.058	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1370.23	
24	0.6585	1090.3	1109.6	0.300	3.607	80.138	14.430	1.425	0.035	0.057	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1367.42	
25	0.6567	1087.9	1107.2	0.291	3.594	80.483	14.122	1.413	0.034	0.055	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1366.34	
26	0.6550	1086.2	1105.4	0.275	3.569	80.808	13.852	1.390	0.036	0.060	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1365.82	
27	0.6579	1091.5	1110.8	0.303	3.481	80.276	14.416	1.419	0.037	0.059	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1369.43	
28	0.6553	1086.6	1105.9	0.302	3.533	80.737	13.960	1.365	0.035	0.057	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1366.04	
29	0.6494	1076.0	1095.1	0.276	3.659	81.718	13.055	1.203	0.031	0.050	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1358.92	
30	0.6523	1080.7	1099.8	0.267	3.664	81.221	13.449	1.308	0.033	0.052	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1361.76	
31	0.6540	1083.5	1102.7	0.259	3.665	80.901	13.742	1.339	0.033	0.053	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1363.52	
Avg	0.6594	1093.0	1112.4	0.360	3.436	80.170	14.410	1.492	0.045	0.076	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1369.86	

Zone 28

GQ Source Daily Summary

December 2016

Number: 271 **Pressure Base:** 14.730 **Contract Day:** 1

Name: DICKINSON BRD-BELFIELD TSF-GLENULLIN STN **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6596	1093.2	1112.6	0.430	3.334	80.158	14.512	1.424	0.048	0.084	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1369.92	
2	0.6645	1098.2	1117.7	0.378	3.570	79.119	15.303	1.492	0.047	0.082	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1371.13	
3	0.6589	1091.3	1110.6	0.406	3.426	80.183	14.479	1.375	0.045	0.079	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1368.22	
4	0.6569	1089.3	1108.6	0.380	3.396	80.494	14.297	1.309	0.042	0.073	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1367.79	
5	0.6635	1096.7	1116.1	0.423	3.508	79.442	14.943	1.525	0.054	0.095	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.15	
6	0.6679	1103.6	1123.1	0.483	3.407	78.860	15.365	1.693	0.064	0.114	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1374.22	
7	0.6646	1099.1	1118.6	0.424	3.458	79.354	14.962	1.636	0.056	0.098	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1372.09	
8	0.6583	1089.7	1109.0	0.364	3.529	80.354	14.151	1.469	0.045	0.078	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1366.82	
9	0.6585	1090.8	1110.1	0.372	3.465	80.448	14.009	1.563	0.048	0.084	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1368.04	
10	0.6670	1105.4	1125.0	0.383	3.354	79.342	14.753	1.918	0.074	0.148	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1377.47	
11	0.6563	1089.3	1108.6	0.363	3.370	81.010	13.437	1.666	0.053	0.090	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1368.32	
12	0.6557	1090.6	1109.9	0.443	3.109	81.216	13.471	1.609	0.050	0.086	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1370.65	
13	0.6551	1088.9	1108.1	0.373	3.264	81.138	13.539	1.552	0.046	0.078	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1369.11	
14	0.6602	1097.4	1116.8	0.363	3.237	80.130	14.549	1.589	0.046	0.077	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1374.52	
15	0.6586	1094.5	1113.9	0.382	3.236	80.541	14.053	1.649	0.048	0.081	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1372.55	
16	0.6544	1087.9	1107.2	0.351	3.295	81.118	13.656	1.465	0.040	0.066	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1368.60	
17	0.6567	1091.9	1111.3	0.403	3.187	80.816	13.922	1.548	0.043	0.071	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1371.25	
18	0.6565	1091.6	1110.9	0.392	3.200	80.850	13.886	1.550	0.042	0.070	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1371.09	
19	0.6581	1092.4	1111.7	0.303	3.440	80.364	14.244	1.533	0.040	0.068	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1370.40	
20	0.6604	1094.0	1113.3	0.309	3.554	79.694	14.961	1.382	0.035	0.058	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1369.99	
21	0.6612	1095.1	1114.5	0.293	3.585	79.605	14.938	1.480	0.035	0.058	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1370.59	
22	0.6593	1091.8	1111.1	0.285	3.620	79.955	14.582	1.462	0.034	0.056	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1368.40	
23	0.6587	1091.2	1110.5	0.290	3.587	80.099	14.472	1.454	0.035	0.058	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1368.32	
24	0.6567	1087.9	1107.1	0.289	3.601	80.463	14.135	1.418	0.034	0.055	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1366.26	
25	0.6535	1083.4	1102.5	0.271	3.608	81.018	13.656	1.358	0.032	0.052	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1363.85	
26	0.6567	1090.1	1109.4	0.281	3.481	80.547	14.116	1.463	0.039	0.066	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1369.01	
27	0.6571	1090.6	1109.9	0.293	3.464	80.431	14.285	1.425	0.035	0.059	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1369.29	
28	0.6491	1075.9	1094.9	0.278	3.640	81.805	12.944	1.245	0.032	0.051	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1358.99	
29	0.6498	1077.2	1096.3	0.263	3.647	81.644	13.109	1.251	0.031	0.050	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1360.00	
30	0.6519	1080.6	1099.7	0.250	3.660	81.292	13.374	1.336	0.032	0.052	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1362.02	
31	0.6546	1085.0	1104.2	0.255	3.634	80.770	13.907	1.344	0.033	0.053	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1364.78	
Avg	0.6581	1091.0	1110.4	0.348	3.447	80.395	14.194	1.490	0.043	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1368.83	

Zone 31

GQ Source Daily Summary

December 2016

Number: 051 **Pressure Base:** 14.730 **Contract Day:** 1

Name: CABIN CREEK STATION-BELFIELD TRANSFER **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6584	1088.3	1107.6	0.000	4.000	92.724	0.000	2.000	1.276	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1365.02	
2	0.6613	1094.9	1114.3	0.375	3.483	79.681	14.934	1.392	0.049	0.077	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.18	
3	0.6654	1100.0	1119.5	0.385	3.533	78.966	15.494	1.477	0.048	0.084	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1372.43	
4	0.6596	1092.2	1111.6	0.427	3.400	80.117	14.525	1.389	0.048	0.083	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1368.69	
5	0.6629	1098.9	1118.4	0.535	3.137	79.986	14.466	1.677	0.067	0.117	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1373.64	
6	0.6633	1099.9	1119.4	0.498	3.167	79.794	14.721	1.643	0.060	0.104	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1374.50	
7	0.6626	1100.4	1119.9	0.458	3.136	79.778	14.907	1.564	0.053	0.091	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1375.77	
8	0.6617	1099.5	1118.9	0.438	3.138	79.876	14.883	1.519	0.050	0.085	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1375.58	
9	0.6619	1100.2	1119.7	0.436	3.115	79.833	14.957	1.513	0.050	0.085	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1376.28	
10	0.6617	1100.4	1119.9	0.433	3.088	79.853	14.980	1.502	0.049	0.083	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1376.77	
11	0.6612	1100.5	1120.0	0.436	3.033	79.944	14.964	1.483	0.048	0.081	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1377.34	
12	0.6590	1097.0	1116.5	0.438	3.036	80.348	14.594	1.448	0.047	0.078	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1375.30	
13	0.6602	1098.5	1117.9	0.411	3.097	80.053	14.872	1.436	0.045	0.075	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1375.92	
14	0.6613	1100.7	1120.2	0.420	3.053	79.869	15.065	1.460	0.046	0.076	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1377.53	
15	0.6607	1099.4	1118.9	0.408	3.098	79.954	14.950	1.461	0.045	0.074	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1376.53	
16	0.6586	1096.1	1115.5	0.409	3.103	80.340	14.598	1.423	0.044	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1374.52	
17	0.6610	1100.8	1120.3	0.411	3.033	79.908	15.067	1.452	0.044	0.073	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1377.95	
18	0.6616	1102.4	1121.9	0.402	3.011	79.758	15.261	1.441	0.044	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1379.26	
19	0.6614	1101.7	1121.2	0.392	3.043	79.777	15.236	1.428	0.043	0.071	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1378.70	
20	0.6615	1101.8	1121.3	0.394	3.050	79.747	15.252	1.433	0.043	0.071	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1378.63	
21	0.6612	1102.2	1121.8	0.394	2.994	79.799	15.276	1.413	0.043	0.071	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1379.52	
22	0.6613	1101.3	1120.8	0.389	3.063	79.797	15.189	1.439	0.042	0.070	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1378.30	
23	0.6609	1100.3	1119.8	0.385	3.093	79.865	15.095	1.442	0.042	0.069	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1377.48	
24	0.6598	1097.7	1117.2	0.377	3.162	80.059	14.847	1.438	0.041	0.068	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1375.35	
25	0.6558	1089.7	1109.0	0.355	3.304	80.764	14.085	1.380	0.039	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1369.49	
26	0.6586	1096.2	1115.6	0.370	3.149	80.259	14.708	1.399	0.040	0.065	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1374.72	
27	0.6603	1100.2	1119.6	0.379	3.059	79.943	15.091	1.412	0.040	0.066	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1377.86	
28	0.6575	1094.6	1114.0	0.368	3.154	80.436	14.559	1.370	0.039	0.064	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1373.76	
29	0.6599	1099.4	1118.9	0.374	3.069	80.014	15.024	1.403	0.040	0.066	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1377.40	
30	0.6592	1097.6	1117.1	0.364	3.125	80.142	14.849	1.405	0.040	0.065	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1375.92	
31	0.6598	1099.0	1118.4	0.371	3.099	80.012	15.000	1.404	0.040	0.065	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1376.86	
Avg	0.6606	1098.0	1117.9	0.395	3.162	80.368	14.434	1.472	0.085	0.074	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1375.39	

Zone 32

GQ Source Daily Summary

December 2016

Number: 111 **Pressure Base:** 14.730 **Contract Day:** 1

Name: LITTLE KNIFE PLANT **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6922	1160.5	1181.0	0.000	2.974	72.189	24.053	0.768	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.50	
2	0.6911	1159.5	1180.0	0.000	2.931	72.396	23.913	0.745	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.42	
3	0.6912	1160.2	1180.8	0.000	2.890	72.402	23.943	0.749	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.26	
4	0.6911	1160.1	1180.6	0.000	2.895	72.405	23.935	0.750	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.14	
5	0.6909	1158.6	1179.1	0.000	2.966	72.375	23.959	0.685	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.52	
6	0.6917	1159.6	1180.1	0.000	2.975	72.338	23.885	0.775	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.99	
7	0.6952	1164.9	1185.6	0.000	2.979	72.065	23.829	1.010	0.031	0.070	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1421.83	
8	0.7501	1251.1	1273.2	0.000	2.832	68.915	21.160	5.477	0.396	0.968	0.116	0.132	0.000	0.000	0.000	0.000	0.000	1469.55	
9	0.7290	1218.8	1240.4	0.000	2.842	70.067	21.863	4.493	0.198	0.439	0.046	0.052	0.000	0.000	0.000	0.000	0.000	1452.62	
10	0.7180	1202.2	1223.5	0.000	2.835	70.410	22.791	3.691	0.095	0.166	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1443.84	
11	0.7158	1198.6	1219.8	0.000	2.845	70.499	23.037	3.370	0.088	0.151	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1441.81	
12	0.7255	1215.2	1236.7	0.000	2.745	69.599	23.202	4.037	0.118	0.249	0.023	0.026	0.000	0.000	0.000	0.000	0.000	1451.73	
13	0.7124	1193.6	1214.7	0.000	2.831	71.229	22.310	3.344	0.099	0.175	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1439.17	
14	0.7160	1200.2	1221.4	0.000	2.772	70.355	23.294	3.378	0.073	0.123	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1443.47	
15	0.7151	1198.1	1219.4	0.000	2.809	70.484	23.189	3.317	0.074	0.124	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1441.95	
16	0.7092	1188.9	1209.9	0.000	2.828	70.896	23.426	2.747	0.040	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1436.71	
17	0.7110	1192.2	1213.3	0.000	2.795	70.734	23.423	2.949	0.039	0.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1438.86	
18	0.7127	1194.5	1215.7	0.000	2.803	70.592	23.383	3.103	0.045	0.074	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1440.07	
19	0.7092	1188.8	1209.8	0.000	2.828	71.058	23.432	2.323	0.099	0.224	0.018	0.018	0.000	0.000	0.000	0.000	0.000	1436.42	
20	0.6974	1171.2	1191.9	0.000	2.803	71.766	24.062	1.337	0.011	0.019	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1427.28	
21	0.6989	1172.7	1193.4	0.000	2.852	71.664	23.889	1.576	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1427.56	
22	0.6974	1170.9	1191.7	0.000	2.822	71.875	23.793	1.491	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1426.93	
23	0.6961	1170.1	1190.8	0.000	2.753	72.132	23.637	1.456	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1427.19	
24	0.6944	1167.9	1188.6	0.000	2.724	72.309	23.653	1.295	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1426.33	
25	0.6975	1173.0	1193.8	0.000	2.701	72.180	23.441	1.543	0.042	0.084	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1429.27	
26	0.6899	1160.4	1181.0	0.000	2.757	72.728	23.711	0.784	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.82	
27	0.6917	1162.9	1183.5	0.000	2.777	72.441	23.887	0.874	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.99	
28	0.6932	1164.1	1184.7	0.000	2.845	72.151	24.092	0.894	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.90	
29	0.6935	1163.0	1183.6	0.000	2.936	72.092	24.044	0.910	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.31	
30	0.6932	1160.8	1181.4	0.000	3.039	72.084	24.004	0.855	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.99	
31	0.6932	1160.7	1181.3	0.000	3.053	72.078	23.985	0.866	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.77	
Avg	0.7034	1179.0	1200.3	0.000	2.853	71.500	23.491	1.987	0.051	0.102	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1431.17	

Zone 33

GQ Source Analysis

GQ Source Number:	1202160	**Specific Gravity:**	0.5840
GQ Source Name:	BOWMAN BORDER	**Dry Heat Value:**	996.12
Effective Date:	6/1/2016 9:00:00 AM	**Wet Heat Value:**	978.78
Effective End Date	1/18/2038 9:14:00 PM	**As Deliv. Heat Value:**	996.12
Pressure Base:	14.730	**Sample Pressure:**	380.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content
C1	Methane	94.019	
C2	Ethane	1.995	0.5321
C3	Propane	0.226	0.0621
IC4	Isobutane	0.020	0.0066
NC4	n-Butane	0.022	0.0068
IC5	Isopentane	0.003	0.0010
NC5	n-Pentane	0.002	0.0007
C6	Hexanes	0.000	0.0000
C7	Heptanes		
C8	Octanes		
C9	Nonanes		
C10	Decanes		

		Mol %
CO2	Carbon Dioxide	0.232
N2	Nitrogen	3.460
O2	Oxygen	0.020
He	Helium	
H2	Hydrogen	
H2S	Hydrogen Sulfide	
Ar	Argon	
CO	Carbon Monoxide	
H2	Water	
Neo-C5	Neopentane	

Totals 100.000% 0.609 GPM

Sample Date: 7/1/2016 12:00:00 AM
Sample Type: Spot
Sample Tech: MG
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 34

GQ Source Daily Summary

December 2016

Number: 471 **Pressure Base:** 14.730 **Contract Day:**

Name: SPRING CREEK I - SAX VALVE I **Temperature Base:** **Contract Hour:** 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6482	1060.9	1079.7	1.048	3.297	82.209	12.665	0.739	0.016	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1341.10	
2	0.6489	1062.2	1081.0	1.022	3.331	82.013	12.860	0.732	0.015	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1341.88	
3	0.6459	1056.0	1074.7	1.061	3.368	82.641	12.172	0.717	0.016	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1337.17	
4	0.6424	1049.9	1068.5	1.097	3.349	83.323	11.555	0.639	0.013	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1333.11	
5	0.6449	1053.9	1072.6	1.069	3.380	82.871	11.915	0.724	0.015	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.66	
6	0.6459	1055.8	1074.5	1.096	3.325	82.556	12.389	0.601	0.012	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1336.91	
7	0.6494	1062.5	1081.3	1.081	3.269	81.893	13.060	0.659	0.014	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1341.79	
8	0.6767	1110.2	1129.8	1.001	3.055	76.556	18.403	0.943	0.015	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1373.15	
9	0.6856	1125.7	1145.7	0.969	2.996	74.703	20.325	0.998	0.004	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1383.60	
10	0.6888	1131.3	1151.3	0.971	2.951	74.316	20.498	1.253	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1387.22	
11	0.6854	1125.4	1145.3	0.980	2.975	74.664	20.482	0.893	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1383.43	
12	0.6831	1121.4	1141.2	0.986	2.996	74.923	20.406	0.685	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.82	
13	0.6820	1119.6	1139.4	0.978	3.018	75.086	20.264	0.650	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.71	
14	0.6812	1119.3	1139.2	0.986	2.945	75.194	20.303	0.569	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.22	
15	0.6784	1114.1	1133.8	0.995	2.985	75.684	19.859	0.475	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.61	
16	0.6802	1117.2	1137.0	0.989	2.972	75.460	19.954	0.622	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.64	
17	0.6801	1117.5	1137.3	0.989	2.952	75.534	19.848	0.661	0.006	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.01	
18	0.6785	1115.5	1135.2	0.988	2.920	75.714	19.853	0.522	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.21	
19	0.6762	1111.1	1130.8	0.996	2.962	76.097	19.501	0.442	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1375.09	
20	0.6788	1114.0	1133.7	0.996	3.033	75.739	19.598	0.631	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.00	
21	0.6777	1112.3	1132.0	0.988	3.040	75.916	19.467	0.585	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1375.08	
22	0.6775	1111.2	1130.9	0.984	3.094	75.924	19.431	0.564	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1373.93	
23	0.6793	1114.9	1134.7	0.971	3.059	75.657	19.632	0.677	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.66	
24	0.6797	1115.2	1135.0	0.967	3.076	75.660	19.538	0.754	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.72	
25	0.6721	1101.7	1121.2	0.972	3.183	77.189	17.910	0.730	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.48	
26	0.6897	1136.2	1156.3	0.992	2.699	74.219	20.839	1.212	0.016	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1392.36	
27	0.6838	1123.6	1143.5	1.004	2.898	74.534	21.157	0.400	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1382.92	
28	0.6765	1109.7	1129.3	0.998	3.078	75.896	19.699	0.322	0.002	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1373.00	
29	0.6719	1101.7	1121.2	1.009	3.114	76.830	18.737	0.304	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.78	
30	0.6734	1104.4	1123.9	1.008	3.087	76.551	19.027	0.321	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1369.66	
31	0.6718	1101.8	1121.3	1.012	3.087	76.886	18.691	0.318	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1368.08	
Avg	0.6721	1102.0	1122.0	1.007	3.080	77.175	18.066	0.656	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1368.48	

Zone 43

Dec-16 **ZONE 610**

Watford City Effective 2-3-16

		01325 Watford City West Border			01312 Watford City East Border			**Weighted**	
Begin Date	End Date	MCF	DK	BTU Zone 25	MCF	DK	BTU Zone 43	**AVG BTU**	
12/1/2016	12/2/2016	604	721	1.193	248	268	1.080	1.160	12/1/2016
12/2/2016	12/3/2016	633	755	1.193	250	270	1.081	1.161	12/2/2016
12/3/2016	12/4/2016	578	690	1.193	208	224	1.075	1.162	12/3/2016
12/4/2016	12/5/2016	567	677	1.193	264	281	1.069	1.154	12/4/2016
12/5/2016	12/6/2016	757	904	1.193	574	615	1.073	1.141	12/5/2016
12/6/2016	12/7/2016	838	1000	1.193	698	750	1.075	1.139	12/6/2016
12/7/2016	12/8/2016	829	990	1.193	795	859	1.081	1.138	12/7/2016
12/8/2016	12/9/2016	835	996	1.193	834	943	1.130	1.162	12/8/2016
12/9/2016	12/10/2016	842	1005	1.193	851	975	1.146	1.169	12/9/2016
12/10/2016	12/11/2016	812	969	1.193	694	799	1.151	1.174	12/10/2016
12/11/2016	12/12/2016	764	911	1.193	664	760	1.145	1.171	12/11/2016
12/12/2016	12/13/2016	799	953	1.193	794	906	1.141	1.167	12/12/2016
12/13/2016	12/14/2016	796	950	1.193	883	1006	1.139	1.165	12/13/2016
12/14/2016	12/15/2016	831	992	1.193	778	886	1.139	1.167	12/14/2016
12/15/2016	12/16/2016	797	951	1.193	690	783	1.134	1.166	12/15/2016
12/16/2016	12/17/2016	882	1053	1.193	794	902	1.137	1.166	12/16/2016
12/17/2016	12/18/2016	925	1104	1.193	856	973	1.137	1.166	12/17/2016
12/18/2016	12/19/2016	822	981	1.193	527	599	1.135	1.170	12/18/2016
12/19/2016	12/20/2016	752	898	1.193	441	499	1.131	1.170	12/19/2016
12/20/2016	12/21/2016	702	838	1.193	241	273	1.134	1.178	12/20/2016
12/21/2016	12/22/2016	718	857	1.193	577	653	1.132	1.166	12/21/2016
12/22/2016	12/23/2016	722	862	1.193	639	722	1.131	1.164	12/22/2016
12/23/2016	12/24/2016	723	862	1.193	591	670	1.135	1.167	12/23/2016
12/24/2016	12/25/2016	833	994	1.193	886	1006	1.135	1.163	12/24/2016
12/25/2016	12/26/2016	826	986	1.193	938	1050	1.121	1.155	12/25/2016
12/26/2016	12/27/2016	820	978	1.193	902	1042	1.156	1.174	12/26/2016
12/27/2016	12/28/2016	749	894	1.193	758	867	1.144	1.168	12/27/2016
12/28/2016	12/29/2016	742	885	1.193	787	888	1.129	1.160	12/28/2016
12/29/2016	12/30/2016	729	869	1.193	765	858	1.121	1.156	12/29/2016
12/30/2016	12/31/2016	764	912	1.193	830	933	1.124	1.157	12/30/2016
12/31/2016	1/1/2017	723	862	1.193	756	847	1.121	1.156	12/31/2016
		23,714	28,299		20,513	23,107	1.1220	1.1623	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (calc)	CRICONDENTHERM (deg F)	NITROGEN (mole percent)	CARBON DIOXIDE (mole percent)	METHANE (mole percent)	ETHANE (mole percent)	PROPANE (mole percent)	NORMAL BUTANE (mole percent)	ISO BUTANE (mole percent)	PENTANE (mole percent)	ISO PENTANE (mole percent)	NEO PENTANE (mole percent)	HEXANES PLUS (mole percent)	HYDROGEN (mole percent)	HELIUM (mole percent)	PRODUCTION DATE	POSTING DATE	Changetimestamp	NOTI
11587	GLEN ULLIN	1045.5	0.6008	1348.8	-82.3	1.2438	0.8104	91.1594	6.2951	0.2977	0.0112	0.0066	0	0	0	0	0.1605	0.016	11/30/2016	12/1/2016	12/1/2016 2:54:57 PM	
11587	GLEN ULLIN	1048.8	0.6034	1350.2	-79.2	1.2604	0.8309	90.6768	6.7038	0.3183	0.0169	0.0091	0.0014	0.0013	0	0.0007	0.1639	0.0185	12/1/2016	12/2/2016	12/2/2016 2:55:01 PM	
11587	GLEN ULLIN	1046.6	0.6021	1348.7	-81.6	1.2876	0.8219	90.8562	6.5586	0.2788	0.0093	0.006	0	0.0001	0	0	0.1653	0.0167	12/2/2016	12/3/2016	12/3/2016 2:53:50 PM	
11587	GLEN ULLIN	1048.1	0.6037	1349	-80	1.3269	0.833	90.5731	6.7562	0.3087	0.0122	0.0078	0.0002	0.0004	0	0.0001	0.1651	0.0167	12/3/2016	12/4/2016	12/4/2016 2:55:22 PM	
11587	GLEN ULLIN	1053.6	0.6072	1352.1	-75	1.3208	0.8368	90.0092	7.2283	0.3887	0.0215	0.0155	0.0017	0.0026	0	0.0009	0.1589	0.0171	12/4/2016	12/5/2016	12/5/2016 2:54:59 PM	
11587	GLEN ULLIN	1052.9	0.6062	1352.3	-75.9	1.2869	0.8298	90.1367	7.1338	0.3788	0.0205	0.0144	0.0014	0.0025	0	0.0007	0.1795	0.0165	12/5/2016	12/6/2016	12/6/2016 2:56:31 PM	
11587	GLEN ULLIN	1052.9	0.6062	1352.3	-75.9	1.2869	0.8298	90.1367	7.1338	0.3788	0.0205	0.0144	0.0014	0.0025	0	0.0007	0.1795	0.0165	12/5/2016	12/7/2016	12/7/2016 2:58:39 PM	
11587	GLEN ULLIN	1042.8	0.5983	1348.2	-84.6	1.1815	0.8011	91.6181	5.9583	0.2485	0.0095	0.0068	0.0002	0.0004	0	0.0001	0.1599	0.0161	12/7/2016	12/8/2016	12/8/2016 2:57:33 PM	
11587	GLEN ULLIN	1046.4	0.6013	1349.5	-82.1	1.2364	0.8095	91.0309	6.4707	0.2665	0.009	0.0065	0.0002	0.0004	0	0.0001	0.1529	0.0172	12/8/2016	12/9/2016	12/9/2016 2:55:23 PM	
11587	GLEN ULLIN	1051.2	0.6038	1352.8	-79.6	1.226	0.7849	90.61	6.9284	0.3005	0.0121	0.0074	0.0001	0.0001	0	0	0.1147	0.0177	12/9/2016	12/10/2016	12/10/2016 2:55:19 PM	
11587	GLEN ULLIN	1053.8	0.6059	1353.8	-77.1	1.2421	0.8	90.2229	7.1527	0.3939	0.0134	0.0083	0	0	0	0	0.1505	0.0167	12/10/2016	12/11/2016	12/11/2016 2:56:06 PM	
11587	GLEN ULLIN	1060	0.6102	1356.9	-71.9	1.2363	0.8274	89.4144	7.887	0.417	0.0202	0.0154	0.0016	0.0026	0	0.001	0.1617	0.0174	12/11/2016	12/12/2016	12/12/2016 2:58:36 PM	
11587	GLEN ULLIN	1059	0.6097	1356.3	-71.7	1.2552	0.82	89.4251	7.8507	0.3933	0.0207	0.0164	0.002	0.0031	0	0.0013	0.1976	0.0168	12/12/2016	12/13/2016	12/13/2016 2:56:03 PM	
11587	GLEN ULLIN	1054.4	0.6062	1354.2	-76.9	1.2274	0.8096	89.9691	7.4222	0.3203	0.0119	0.0088	0.0004	0.0009	0	0.0002	0.2124	0.016	12/13/2016	12/14/2016	12/14/2016 2:59:37 PM	
11587	GLEN ULLIN	1054.4	0.6062	1354.2	-76.9	1.2274	0.8096	89.9691	7.4222	0.3203	0.0119	0.0088	0.0004	0.0009	0	0.0002	0.2124	0.016	12/13/2016	12/15/2016	12/15/2016 2:56:33 PM	
11587	GLEN ULLIN	1053.2	0.6052	1353.9	-76.9	1.2362	0.789	90.1211	7.2278	0.336	0.0158	0.0112	0.0008	0.0015	0	0.0006	0.2446	0.0164	12/15/2016	12/16/2016	12/16/2016 2:56:38 PM	
11587	GLEN ULLIN	1052.9	0.6056	1353	-77.2	1.2863	0.7903	90.1591	7.1935	0.3387	0.0154	0.0112	0.001	0.0015	0	0.0004	0.186	0.0167	12/16/2016	12/17/2016	12/17/2016 2:57:48 PM	
11587	GLEN ULLIN	1052.9	0.6045	1354.2	-75.9	1.179	0.7951	90.3468	7.012	0.3659	0.0216	0.0157	0.002	0.0029	0	0.001	0.2418	0.0164	12/17/2016	12/18/2016	12/18/2016 2:59:12 PM	
11587	GLEN ULLIN	1055.4	0.6061	1355.6	-74.9	1.1702	0.8042	89.997	7.3199	0.3857	0.0211	0.0153	0.0019	0.0027	0	0.0007	0.2677	0.0148	12/18/2016	12/19/2016	12/19/2016 2:59:56 PM	
11587	GLEN ULLIN	1056.5	0.6075	1355.4	-74.2	1.2154	0.8115	89.8395	7.4848	0.3829	0.0214	0.0156	0.0017	0.0025	0	0.0008	0.2077	0.0159	12/19/2016	12/20/2016	12/20/2016 2:57:58 PM	
11587	GLEN ULLIN	1055	0.6073	1353.8	-75	1.3125	0.7961	89.7984	7.4413	0.383	0.0174	0.0127	0.0013	0.002	0	0.0006	0.2187	0.016	12/20/2016	12/21/2016	12/21/2016 2:58:30 PM	
11587	GLEN ULLIN	1049.3	0.603	1351.3	-80.1	1.2655	0.7831	90.6449	6.7644	0.324	0.0101	0.0063	0	0	0	0	0.1864	0.0164	12/21/2016	12/22/2016	12/22/2016 2:59:15 PM	
11587	GLEN ULLIN	1052.5	0.6057	1352.4	-78	1.3201	0.7866	90.1187	7.2257	0.3367	0.0102	0.0065	0	0	0	0	0.178	0.0169	12/22/2016	12/23/2016	12/23/2016 2:59:14 PM	
11587	GLEN ULLIN	1055.7	0.6081	1353.8	-75.8	1.3129	0.8129	89.6649	7.6287	0.357	0.0122	0.0074	0	0.0001	0	0	0.1861	0.0168	12/23/2016	12/24/2016	12/24/2016 2:54:28 PM	
11587	GLEN ULLIN	1055.3	0.6076	1353.8	-76.1	1.2975	0.8154	89.7308	7.5618	0.3574	0.0121	0.0076	0	0.0001	0	0	0.2005	0.0167	12/24/2016	12/25/2016	12/25/2016 2:57:50 PM	
11587	GLEN ULLIN	1052.3	0.6053	1352.5	-78.3	1.2566	0.8154	90.1777	7.2213	0.3075	0.0101	0.0063	0.0001	0.0001	0	0	0.1901	0.0163	12/25/2016	12/26/2016	12/26/2016 2:57:09 PM	
11587	GLEN ULLIN	1044.6	0.5977	1351.1	-84.2	1.0702	0.7723	91.723	5.9323	0.294	0.009	0.0061	0	0	0	0	0.1763	0.0182	12/26/2016	12/27/2016	12/27/2016 2:57:48 PM	
11587	GLEN ULLIN	1048.8	0.6017	1352.1	-80.9	1.1488	0.7954	90.9777	6.5738	0.302	0.0131	0.0085	0	0.0001	0	0	0.1644	0.0168	12/27/2016	12/28/2016	12/28/2016 2:59:32 PM	
11587	GLEN ULLIN	1047.5	0.6014	1350.7	-81.5	1.1905	0.8052	90.9797	6.5175	0.2896	0.0109	0.0073	0	0.0001	0	0	0.1825	0.017	12/28/2016	12/29/2016	12/29/2016 2:57:43 PM	
11587	GLEN ULLIN	1046	0.6006	1349.8	-82.4	1.2005	0.8036	91.1439	6.3663	0.2754	0.01	0.0069	0	0	0	0	0.1765	0.0174	12/29/2016	12/30/2016	12/30/2016 2:56:31 PM	
11587	GLEN ULLIN	1047.6	0.602	1350.3	-81.3	1.2175	0.8179	90.8654	6.6054	0.2828	0.0098	0.0069	0	0.0001	0	0	0.1769	0.0172	12/30/2016	12/31/2016	12/31/2016 2:57:10 PM	
11587	GLEN ULLIN	1047.6	0.6022	1350	-81.3	1.2366	0.8188	90.8305	6.6348	0.2758	0.0093	0.0063	0	0	0	0	0.1722	0.0176	12/31/2016	1/1/2017	1/1/2017 2:56:46 PM	

Zone 802

NORTH DAKOTA HEATING VALUE ZONES		
ZONES	***MEASURING DEVICE***	***LOCATION***
211	Chromatograph	Sidney Area
24	Monthly Sampler	Williston Area
241	Monthly Sampler	Fairview Area
25	Monthly Sampler	Watford City Area
261	Chromatograph	Williston – Tioga – Minot Line
262	Chromatograph	Minot Area
263	Monthly Sampler	Tioga – Portal
264	Monthly Sampler	Williston – Ray
265	Chromatograph	North Tioga
271	Chromatograph	Bismarck – Cleveland
272	Chromatograph	Cleveland – Mapleton
273	Chromatograph	Cleveland – Grafton
28	Chromatograph	Bismarck
31	Chromatograph	Dickinson
32	Chromatograph	Cabin Creek – Dickinson
33	Chromatograph	Killdeer
34	Monthly Sampler	Bowman Area
43	Chromatograph	Spring Creek
600	Chromatograph	Hankinson Area
610	Monthly Sampler & Chromatograph	Watford City
802	Chromatograph	Linton

MONTANA DAKOTA UTILITIES CO
NORTH DAKOTA
HEATING VALUE DATA

STATE	ZONE	ZONE BOUNDARY	12 MONTH AVERAGE	DEC 16	NOV 16	OCT 16	SEPT 16	AUG 16	JULY 16	JUNE 16	MAY 16	APR 16	MAR 16	FEB 16	JAN 16	ZONE
MT/ND	211	Sidney Area	1206	1199	1200	1193	1209	1210	1208	1206	1205	1207	1213	1209	1207	211
ND	24	Williston Area	1188	1190	1187	1169	1195	1169	1197	1191	1182	1196	1194	1195	1195	24
ND	25	Watford City Border	1208	1193	1200	1206	1211	1213	1211	1206	1209	1211	1211	1213	1216	25
ND/MT	241	Fairview Area	1199	1200	1193	1170	1210	1200	1202	1197	1202	1207	1201	1201	1199	241
ND	261	Williston - Tioga - Minot Line	1104	1096	1034	981	1174	1074	1206	1182	1179	1186	1048	1035	1052	261
ND	262	Minot Area	1183	1144	1147	1141	1172	1191	1208	1208	1208	1206	1189	1190	1189	262
ND	263	Tioga - Portal	1099	1110	1138	1120	1129	1127	1118	1116	947	1105	1082	1107	1092	263
ND	264	Williston - Ray	1181	1186	1158	1157	1194	1198	1169	1183	1184	1190	1189	1181	1183	264
ND	265	North Tioga Transfer - Portal	1180	1170	1182	1180	1186	1166	1177	1170	1173	1190	1186	1187	1190	265
ND	271	Bismarck - Cleveland	1178	1127	1140	1142	1173	1185	1208	1208	1208	1206	1186	1181	1172	271
ND	272	Cleveland - Mapleton	1177	1126	1139	1142	1172	1184	1207	1207	1206	1204	1185	1180	1171	272
ND	273	Cleveland - Grafton	1177	1127	1139	1142	1172	1184	1207	1206	1206	1201	1185	1179	1171	273
ND	28	Bismarck - Cabin Creek	1165	1112	1122	1152	1172	1185	1208	1208	1202	1190	1154	1142	1131	28
ND	31	Dickinson Area	1135	1110	1120	1153	1171	1169	1124	1128	1117	1114	1144	1139	1130	31
ND	311	Taylor Take-Off - Glen Ullin Comp	#DIV/0!	0	0	0	0	0	0	0	0	0	0	0	0	311
ND/MT	32	Cabin Creek - Dickinson	1133	1118	1099	1137	1153	1150	1157	1153	1137	1129	1121	1125	1117	32
ND	33	Killdeer	1184	1200	1179	1182	1184	1183	1184	1185	1184	1181	1181	1183	1182	33
ND	34	Bowman Area	1008	996	996	996	996	996	996	996	980	982	979	1082	1103	34
ND	43	Spring Creek - Garden Crk Plant	1108	1122	1114	1109	1128	1109	1089	1087	1102	1143	1112	1091	1087	43
ND	610	MDU-Watford City BTU	1176	1162	1176	1179	1197	1206	1203	1186	1184	1174	1153	1140	1155	610
ND	802	Linton	1058	1051	1058	1053	1058	1059	1054	1065	1062	1062	1057	1056	1060	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

THERMAL ZONE VARIANCE DOCUMENTATION December 2016		
ZONE	***BTU VARIANCE***	***REASON***
261	62	Addition & Blending in Gas Source
263	-28	Operational
264	28	Change in Direction of flow
33	25	Blending of & Change in Supply