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

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

December 19, 2016

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

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

2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of October 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 October 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
Nov-16

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1438
MDU-308-ARNEGARD	025	1.1438
MDU-314-APPLE VALLEY	271	1.1318
MDU-318-BEACH	032	1.0655
MDU-319-BELFIELD	032	1.0734
MDU-323-BERTHOLD	262	1.1070
MDU-327-BISMARCK	028	1.1070
MDU-330-BOWMAN	034	0.9137
MDU-337-BURLINGTON	262	1.1308
MDU-343-CARRINGTON	273	1.1308
MDU-344-CLEVELAND	272	1.1229
MDU-364-CAVALIER	273	1.1547
MDU-365-DAWSON	271	1.1238
MDU-368-DES LACS	262	1.1149
MDU-369-DICKINSON	031	1.0981
MDU-374-FT TOTTEN	273	1.1388
MDU-375-DEVILS LAKE	273	1.1388
MDU-379-BARLOW	273	1.1308
MDU-384-EPPING	264	1.1277
MDU-387-ELDRIDGE	272	1.1308
MDU-407-GLADSTONE	031	1.0981
MDU-411-GLEN ULLIN	031	1.1060
MDU-413-GOLVA	032	1.0499
MDU-416-GARRISON	262	1.1149
MDU-417-GRAFTON	273	1.1627
MDU-429-HEBRON	031	1.1060
MDU-432-HETTINGER	903	2.4049
MDU-449-JAMESTOWN	272	1.1388
MDU-459-KILLDEER	033	1.1183
MDU-463-LANGDON	273	1.1308
MDU-469-LEFOR	031	1.0981
MDU-474-LIGNITE	263	1.0740
MDU-475-LINTON	802	1.0208
MDU-478-LINCOLN	028	1.1308
MDU-488-MCKENZIE	271	1.1318
MDU-494-MEDINA	271	1.1238
MDU-498-MANDAN	028	1.1308
MDU-500-MARMARTH	034	0.9204
MDU-505-MINOT	262	1.1308
MDU-510-MOTT	031	1.0981
MDU-512-MAX	262	1.1070
MDU-522-NEW ENGLAND	031	1.0901
MDU-524-NEW SALEM	028	1.1070
MDU-532-NEW ROCKFORD	273	1.1308
MDU-539-PARK RIVER	273	1.1547
MDU-540-PALERMO	262	1.1070
MDU-558-RAY	264	1.1277
MDU-561-REGENT	031	1.0981
MDU-563-RHAME	034	0.9069

MDU-564-RICHARDTON	031	1.0901
MDU-568-ROSS	261	1.1009
MDU-572-RUTHVILLE	262	1.1308
MDU-574-SANBORN	272	1.1388
MDU-583-SENTINEL BUTTE	032	1.0655
MDU-588-SOUTH HEART	031	1.0901
MDU-717-SPIRITWOOD	272	1.1388
MDU-590-SPRINGBROOK	264	1.1277
MDU-591-STANLEY	261	1.1088
MDU-593-STEELE	271	1.1238
MDU-598-SHEYENNE	273	1.1388
MDU-605-SURREY	262	1.1308
MDU-610-TAPPEN	271	1.1238
MDU-611-TAYLOR	031	1.0901
MDU-616-TIOGA	261	1.1009
MDU-619-TURTLE LAKE	262	1.1149
MDU-620-TRENTON	024	1.1368
MDU-624-UNDERWOOD	262	1.1149
MDU-625-VALLEY CITY	272	1.1467
MDU-629-WALHALLA	273	1.1547
MDU-632-WATFORD CITY	610	1.1306
MDU-636-WHEELOCK	264	1.1196
MDU-637-WHITE EARTH	261	1.1088
MDU-642-WILLISTON	024	1.1368
MDU-646-WASHBURN	262	1.1229
MDU-647-WILTON	262	1.1070
MDU-664-RIVERDALE	262	1.1149
MDU-691-FAIRVIEW	241	1.1511
MDU-712-MINOT AFB	262	1.1308
MDU-718-FAIRMOUNT	600	1.1287
MDU-732-NEKOMA	273	1.1308
MDU-732-MSR SITE	273	1.1308

GQ Source Daily Summary

October 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	0.7338	1184.8	1205.7	1.161	3.612	68.564	22.483	3.806	0.117	0.228	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1407.58	
2	0.7289	1178.9	1199.8	1.119	3.571	69.424	21.793	3.732	0.113	0.221	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1405.37	
3	0.7296	1181.7	1202.6	1.097	3.504	69.530	21.636	3.762	0.145	0.288	0.019	0.017	0.000	0.000	0.000	0.000	0.000	1407.89	
4	0.7267	1178.0	1198.9	1.086	3.471	69.818	21.706	3.441	0.144	0.293	0.022	0.020	0.000	0.000	0.000	0.000	0.000	1406.38	
5	0.7209	1169.4	1190.1	1.054	3.498	70.573	21.250	3.234	0.123	0.238	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1401.74	
6	0.7234	1171.8	1192.6	1.102	3.520	70.101	21.668	3.192	0.130	0.255	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1402.15	
7	0.7224	1171.2	1192.0	1.085	3.489	70.200	21.702	3.119	0.125	0.248	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1402.37	
8	0.7251	1176.0	1196.8	1.087	3.444	69.852	21.919	3.281	0.130	0.255	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1405.52	
9	0.7230	1171.8	1192.5	1.095	3.494	70.187	21.614	3.195	0.129	0.254	0.017	0.015	0.000	0.000	0.000	0.000	0.000	1402.50	
10	0.7238	1173.4	1194.2	1.098	3.470	69.972	21.871	3.203	0.122	0.237	0.015	0.013	0.000	0.000	0.000	0.000	0.000	1403.61	
11	0.7206	1170.3	1191.0	1.054	3.423	70.468	21.580	3.098	0.117	0.231	0.015	0.013	0.000	0.000	0.000	0.000	0.000	1403.02	
12	0.7198	1169.3	1190.0	1.047	3.418	70.586	21.503	3.074	0.116	0.228	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1402.64	
13	0.7207	1171.1	1191.9	1.046	3.392	70.486	21.571	3.123	0.118	0.233	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1403.94	
14	0.7269	1177.7	1198.5	1.090	3.504	69.658	21.879	3.445	0.133	0.258	0.017	0.015	0.000	0.000	0.000	0.000	0.000	1405.79	
15	0.7267	1178.9	1199.8	1.084	3.424	69.666	21.980	3.428	0.131	0.255	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1407.42	
16	0.7234	1173.6	1194.4	1.068	3.461	70.128	21.672	3.268	0.127	0.246	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1404.27	
17	0.7234	1173.2	1194.0	1.082	3.459	70.097	21.741	3.223	0.125	0.243	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1403.87	
18	0.7220	1171.2	1191.9	1.079	3.465	70.281	21.625	3.159	0.123	0.239	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1402.69	
19	0.7237	1173.3	1194.1	1.089	3.469	70.089	21.682	3.272	0.126	0.243	0.015	0.013	0.000	0.000	0.000	0.000	0.000	1403.71	
20	0.7241	1173.7	1194.4	1.093	3.487	70.060	21.638	3.310	0.130	0.251	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1403.64	
21	0.7229	1172.2	1192.9	1.077	3.489	70.281	21.430	3.321	0.127	0.244	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1403.02	
22	0.7237	1173.2	1194.0	1.094	3.470	70.034	21.777	3.235	0.123	0.238	0.015	0.013	0.000	0.000	0.000	0.000	0.000	1403.56	
23	0.7219	1170.2	1190.9	1.090	3.494	70.339	21.511	3.171	0.124	0.242	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1401.67	
24	0.7218	1170.8	1191.6	1.077	3.469	70.439	21.376	3.226	0.129	0.253	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1402.48	
25	0.7185	1167.3	1188.0	1.060	3.399	70.908	21.160	3.095	0.118	0.230	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1401.47	
26	0.7157	1161.9	1182.5	1.051	3.474	71.375	20.707	3.025	0.116	0.224	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1397.75	
27	0.7180	1165.0	1185.6	1.048	3.511	71.094	20.764	3.195	0.122	0.237	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1399.18	
28	0.7198	1167.0	1187.7	1.076	3.511	70.670	21.247	3.118	0.120	0.231	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1399.89	
29	0.7217	1169.8	1190.5	1.089	3.505	70.370	21.456	3.196	0.122	0.234	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1401.33	
30	0.7236	1172.6	1193.3	1.099	3.491	70.117	21.622	3.271	0.126	0.244	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1402.90	
31	0.7230	1172.6	1193.4	1.071	3.474	70.457	21.128	3.429	0.139	0.269	0.017	0.016	0.000	0.000	0.000	0.000	0.000	1403.53	
Avg	0.7232	1173.0	1193.4	1.082	3.479	70.188	21.571	3.279	0.125	0.245	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1403.32	

Zone 211

GQ Source Daily Summary

October 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	0.6992	1154.9	1175.4	0.803	2.727	74.072	19.453	2.664	0.082	0.170	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1405.59	
2	0.6968	1151.0	1171.4	0.784	2.771	74.446	19.139	2.588	0.079	0.165	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1403.23	
3	0.6966	1150.6	1170.9	0.794	2.759	74.389	19.295	2.498	0.077	0.160	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1402.96	
4	0.6957	1149.0	1169.3	0.781	2.788	74.579	19.086	2.500	0.077	0.161	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1401.98	
5	0.6924	1144.4	1164.7	0.762	2.783	75.033	18.864	2.289	0.076	0.163	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1399.76	
6	0.6963	1150.1	1170.5	0.782	2.775	74.424	19.330	2.386	0.083	0.183	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1402.73	
7	0.6956	1149.1	1169.5	0.781	2.771	74.569	19.153	2.446	0.079	0.169	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1402.21	
8	0.6971	1151.6	1172.0	0.784	2.758	74.248	19.472	2.485	0.074	0.154	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1403.71	
9	0.6977	1152.4	1172.8	0.812	2.727	74.123	19.641	2.437	0.075	0.158	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1404.04	
10	0.7008	1157.8	1178.3	0.808	2.693	73.655	19.993	2.589	0.077	0.159	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1407.51	
11	0.6934	1146.3	1166.6	0.753	2.784	74.939	18.815	2.453	0.075	0.155	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1400.91	
12	0.6956	1149.0	1169.4	0.775	2.789	74.626	19.004	2.532	0.080	0.167	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1402.08	
13	0.6979	1152.4	1172.8	0.791	2.772	74.223	19.379	2.548	0.082	0.173	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1403.90	
14	0.7036	1161.1	1181.7	0.822	2.734	73.251	20.187	2.709	0.087	0.180	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1408.69	
15	0.7013	1157.4	1177.9	0.817	2.744	73.701	19.749	2.700	0.085	0.174	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1406.60	
16	0.6952	1147.9	1168.2	0.779	2.816	74.610	19.046	2.493	0.076	0.155	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1401.07	
17	0.6941	1146.1	1166.4	0.775	2.824	74.802	18.899	2.440	0.076	0.158	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1400.07	
18	0.6946	1147.4	1167.7	0.769	2.803	74.855	18.736	2.561	0.081	0.167	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1401.07	
19	0.6957	1149.0	1169.4	0.775	2.801	74.737	18.737	2.677	0.082	0.164	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1401.92	
20	0.6955	1148.8	1169.1	0.772	2.797	74.697	18.844	2.634	0.077	0.155	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1401.90	
21	0.6925	1143.4	1163.6	0.777	2.838	75.026	18.732	2.391	0.070	0.142	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1398.30	
22	0.6982	1152.2	1172.6	0.808	2.794	73.978	19.715	2.459	0.072	0.150	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1403.28	
23	0.6955	1147.5	1167.8	0.799	2.838	74.587	19.031	2.481	0.076	0.161	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1400.27	
24	0.6950	1146.9	1167.2	0.785	2.841	74.691	18.923	2.499	0.076	0.159	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1400.16	
25	0.6930	1143.8	1164.1	0.786	2.849	75.017	18.646	2.449	0.074	0.154	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1398.31	
26	0.6827	1128.5	1148.5	0.712	2.921	76.716	17.237	2.194	0.064	0.134	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1389.96	
27	0.6914	1141.1	1161.3	0.769	2.888	75.288	18.387	2.417	0.073	0.153	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1396.64	
28	0.6911	1141.3	1161.5	0.768	2.851	75.189	18.650	2.320	0.066	0.135	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1397.16	
29	0.6955	1148.0	1168.4	0.787	2.820	74.707	18.828	2.585	0.079	0.164	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1400.98	
30	0.6946	1146.6	1166.9	0.787	2.822	74.785	18.841	2.502	0.076	0.159	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1400.18	
31	0.6909	1140.7	1160.9	0.760	2.880	75.390	18.314	2.392	0.076	0.161	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1396.61	
Avg	0.6953	1148.0	1168.6	0.782	2.799	74.624	19.036	2.494	0.077	0.160	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1401.41	

Zone 24

GQ Source Analysis

GQ Source Number:	0602160	**Specific Gravity:**	0.6972
GQ Source Name:	FAIRVIEW BORDER	**Dry Heat Value:**	1169.81
Effective Date:	10/1/2016 9:00:00 AM	**Wet Heat Value:**	1149.45
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1169.81
Pressure Base:	14.730	**Sample Pressure:**	360.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content			Mol %
C1	Methane	74.310		CO2	Carbon Dioxide	0.822
C2	Ethane	19.068	0.0000	N2	Nitrogen	2.811
C3	Propane	2.633	0.7234	O2	Oxygen	0.000
IC4	Isobutane	0.095	0.0310	He	Helium	
NC4	n-Butane	0.214	0.0674	H2	Hydrogen	
IC5	Isopentane	0.020	0.0072	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.024	0.0087	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% 0.839 GPM

Sample Date: 11/1/2016 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:**	0.7267
GQ Source Name:	WATFORD CITY WEST BORDER	**Dry Heat Value:**	1206.26
Effective Date:	10/1/2016 9:00:00 AM	**Wet Heat Value:**	1185.26
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1206.26
Pressure Base:	14.730	**Sample Pressure:**	462.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content			Mol %
C1	Methane	69.693		CO2	Carbon Dioxide	1.030
C2	Ethane	22.187	5.9162	N2	Nitrogen	3.075
C3	Propane	3.369	0.9256	O2	Oxygen	0.007
IC4	Isobutane	0.185	0.0604	He	Helium	
NC4	n-Butane	0.390	0.1225	H2	Hydrogen	
IC5	Isopentane	0.031	0.0114	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.031	0.0111	Ar	Argon	
C6	Hexanes	0.002	0.0009	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 7.048 GPM

Sample Date: 11/1/2016 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

October 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	0.5851	972.2	989.4	0.041	4.291	93.446	2.001	0.183	0.009	0.023	0.003	0.004	0.000	0.000	0.000	0.000	0.000	1293.43	
2	0.5797	963.7	980.8	0.002	4.369	94.338	1.185	0.084	0.006	0.014	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1288.13	
3	0.5803	964.4	981.5	0.002	4.374	94.251	1.253	0.096	0.006	0.015	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1288.51	
4	0.5793	965.1	982.1	0.002	4.246	94.442	1.211	0.077	0.005	0.014	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1290.40	
5	0.5793	964.5	981.6	0.002	4.276	94.450	1.165	0.085	0.006	0.014	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1289.72	
6	0.5802	964.7	981.8	0.002	4.347	94.274	1.256	0.097	0.006	0.015	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1289.00	
7	0.5800	964.3	981.4	0.002	4.361	94.291	1.228	0.094	0.006	0.015	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1288.56	
8	0.5802	965.0	982.1	0.002	4.333	94.277	1.265	0.099	0.007	0.016	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1289.33	
9	0.5793	964.2	981.2	0.002	4.299	94.447	1.144	0.086	0.006	0.015	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1289.23	
10	0.5805	963.6	980.7	0.002	4.449	94.164	1.281	0.082	0.006	0.014	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1287.13	
11	0.5802	963.2	980.2	0.002	4.445	94.232	1.217	0.082	0.006	0.014	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1286.90	
12	0.5791	960.8	977.8	0.002	4.486	94.439	0.986	0.066	0.005	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1284.92	
13	0.5793	960.9	977.9	0.002	4.500	94.395	1.015	0.065	0.005	0.014	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1284.83	
14	0.5863	969.7	986.9	0.038	4.567	93.127	2.050	0.182	0.009	0.022	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1288.83	
15	0.5792	961.6	978.6	0.002	4.452	94.419	1.037	0.066	0.005	0.015	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1285.81	
16	0.5786	961.2	978.2	0.002	4.416	94.549	0.946	0.065	0.005	0.015	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1286.02	
17	0.5786	961.6	978.7	0.002	4.386	94.562	0.962	0.065	0.005	0.015	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1286.64	
18	0.5790	962.4	979.4	0.002	4.379	94.472	1.060	0.065	0.005	0.014	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1287.19	
19	0.5790	962.7	979.7	0.002	4.363	94.472	1.075	0.065	0.005	0.014	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1287.54	
20	0.5802	962.5	979.6	0.002	4.488	94.210	1.203	0.076	0.005	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1286.00	
21	0.5804	961.1	978.1	0.002	4.587	94.160	1.162	0.069	0.005	0.012	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1283.96	
22	0.5817	964.6	981.7	0.009	4.493	93.919	1.472	0.088	0.005	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1287.10	
23	0.5798	962.9	979.9	0.002	4.431	94.296	1.178	0.073	0.005	0.013	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1286.86	
24	0.5791	962.4	979.5	0.002	4.391	94.439	1.083	0.065	0.005	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1287.06	
25	0.5788	962.8	979.8	0.002	4.342	94.505	1.070	0.062	0.005	0.012	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1287.86	
26	0.5800	962.4	979.5	0.001	4.472	94.256	1.178	0.072	0.005	0.013	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1286.13	
27	0.5792	961.9	979.0	0.002	4.431	94.413	1.066	0.068	0.005	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1286.30	
28	0.5791	963.4	980.5	0.002	4.330	94.452	1.127	0.068	0.005	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1288.41	
29	0.5791	962.0	979.0	0.002	4.416	94.433	1.069	0.062	0.004	0.012	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1286.52	
30	0.5795	962.8	979.8	0.002	4.401	94.378	1.123	0.075	0.005	0.014	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1287.18	
31	0.5786	961.6	978.6	0.002	4.395	94.538	0.981	0.063	0.005	0.013	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1286.50	
Avg	0.5800	963.0	980.5	0.005	4.404	94.292	1.195	0.082	0.006	0.014	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1287.49	

Zone 261

GQ Source Daily Summary

October 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	0.7349	1155.0	1175.5	0.821	6.043	68.242	20.075	4.414	0.132	0.254	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1371.23	
2	0.7324	1152.0	1172.4	0.823	5.998	68.574	19.952	4.261	0.128	0.246	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1369.86	
3	0.7313	1151.5	1171.9	0.835	5.899	68.764	19.923	4.188	0.128	0.247	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1370.38	
4	0.7142	1125.0	1144.9	0.717	6.090	71.762	17.178	3.877	0.122	0.241	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1354.71	
5	0.7034	1110.3	1130.0	0.649	6.071	73.596	15.717	3.612	0.115	0.230	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1347.32	
6	0.6995	1105.7	1125.3	0.625	6.023	74.259	15.223	3.529	0.111	0.219	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1345.46	
7	0.7005	1106.2	1125.8	0.630	6.080	74.057	15.349	3.542	0.112	0.220	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1345.12	
8	0.6962	1099.9	1119.4	0.616	6.084	74.711	14.898	3.373	0.105	0.206	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1341.54	
9	0.6995	1104.7	1124.2	0.631	6.082	74.158	15.327	3.480	0.107	0.207	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1344.15	
10	0.6968	1102.6	1122.2	0.608	5.978	74.717	14.904	3.471	0.107	0.208	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1344.38	
11	0.6973	1110.2	1129.9	0.611	5.564	74.468	15.820	3.176	0.108	0.236	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1353.11	
12	0.7063	1114.3	1134.1	0.664	6.079	72.647	17.067	3.148	0.120	0.257	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1349.41	
13	0.6983	1108.9	1128.5	0.597	5.757	74.237	15.944	3.037	0.125	0.278	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1350.52	
14	0.7063	1121.3	1141.2	0.635	5.696	72.959	16.986	3.245	0.137	0.310	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1357.87	
15	0.6877	1099.2	1118.7	0.543	5.435	76.146	14.654	2.806	0.119	0.271	0.013	0.014	0.000	0.000	0.000	0.000	0.000	1348.97	
16	0.7152	1135.7	1155.8	0.666	5.606	71.905	17.513	3.712	0.167	0.385	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1366.64	
17	0.7210	1144.0	1164.3	0.696	5.600	70.973	18.219	3.889	0.175	0.402	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1371.14	
18	0.7246	1149.0	1169.3	0.716	5.604	70.472	18.510	4.052	0.182	0.416	0.023	0.025	0.000	0.000	0.000	0.000	0.000	1373.63	
19	0.7152	1137.9	1158.0	0.661	5.478	72.072	17.336	3.847	0.171	0.390	0.022	0.023	0.000	0.000	0.000	0.000	0.000	1369.33	
20	0.7179	1141.6	1161.8	0.668	5.498	71.684	17.564	3.956	0.176	0.406	0.023	0.025	0.000	0.000	0.000	0.000	0.000	1371.14	
21	0.7196	1141.2	1161.5	0.664	5.676	71.533	17.319	4.179	0.177	0.405	0.023	0.024	0.000	0.000	0.000	0.000	0.000	1369.21	
22	0.7122	1126.5	1146.4	0.655	5.900	72.317	16.852	3.769	0.146	0.327	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1358.47	
23	0.7137	1125.7	1145.6	0.686	6.052	71.686	17.547	3.590	0.131	0.285	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1356.01	
24	0.7142	1130.1	1150.1	0.657	5.865	72.127	16.920	3.879	0.154	0.357	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1360.92	
25	0.7019	1107.8	1127.4	0.646	6.086	73.691	15.787	3.464	0.107	0.210	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1345.75	
26	0.7079	1115.6	1135.4	0.669	6.136	72.804	16.322	3.704	0.119	0.234	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1349.50	
27	0.7058	1112.3	1132.0	0.651	6.176	73.060	16.166	3.598	0.115	0.225	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1347.41	
28	0.7057	1111.8	1131.5	0.654	6.194	73.039	16.196	3.573	0.114	0.222	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1346.89	
29	0.6997	1104.9	1124.4	0.625	6.092	74.073	15.462	3.421	0.108	0.210	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1344.27	
30	0.7004	1105.9	1125.5	0.635	6.081	74.015	15.457	3.474	0.111	0.218	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1344.83	
31	0.7014	1107.1	1126.7	0.643	6.089	73.829	15.610	3.494	0.110	0.216	0.005	0.003	0.000	0.000	0.000	0.000	0.000	1345.35	
Avg	0.7091	1121.0	1141.3	0.664	5.904	72.664	16.703	3.637	0.130	0.275	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1355.31	

Zone 262

GQ Source Analysis

GQ Source Number:	2501030	**Specific Gravity:**	0.6724
GQ Source Name:	LIGNITE PLANT	**Dry Heat Value:**	1120.45
Effective Date:	10/1/2016 9:00:00 AM	**Wet Heat Value:**	1100.95
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1120.45
Pressure Base:	14.730	**Sample Pressure:**	660.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content			Mol %
C1	Methane	77.041		CO2	Carbon Dioxide	0.155
C2	Ethane	16.605	4.4277	N2	Nitrogen	4.168
C3	Propane	1.721	0.4727	O2	Oxygen	0.262
IC4	Isobutane	0.032	0.0104	He	Helium	
NC4	n-Butane	0.012	0.0039	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.000	0.0000	Ar	Argon	
C6	Hexanes	0.004	0.0016	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 4.916 GPM

Sample Date: 11/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 263

*** End of Report ***

GQ Source Analysis

GQ Source Number:	0702010	**Specific Gravity:**	0.6876
GQ Source Name:	EPPING BORDER	**Dry Heat Value:**	1156.71
Effective Date:	10/1/2016 9:00:00 AM	**Wet Heat Value:**	1136.58
Effective End Date	1/18/2038 9:14:07 PM	**As Deliv. Heat Value:**	1156.71
Pressure Base:	14.730	**Sample Pressure:**	560.00
Viscosity:		**Sample Temperature:**	

		Mol %	Liquid Content			Mol %
C1	Methane	75.927		CO2	Carbon Dioxide	0.728
C2	Ethane	17.723	4.7259	N2	Nitrogen	2.833
C3	Propane	2.502	0.6873	O2	Oxygen	0.000
IC4	Isobutane	0.081	0.0263	He	Helium	
NC4	n-Butane	0.172	0.0540	H2	Hydrogen	
IC5	Isopentane	0.014	0.0053	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.018	0.0064	Ar	Argon	
C6	Hexanes	0.002	0.0010	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 5.506 GPM

Sample Date: 11/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 264

GQ Source Daily Summary

October 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	1162.0	1182.6	0.837	3.225	72.243	20.490	2.876	0.094	0.198	0.017	0.020	0.000	0.000	0.000	0.000	0.000	1403.81	
2	0.7088	1160.5	1181.1	0.839	3.230	72.409	20.362	2.819	0.095	0.203	0.019	0.023	0.000	0.000	0.000	0.000	0.000	1402.89	
3	0.7060	1156.9	1177.4	0.810	3.231	72.677	20.315	2.665	0.086	0.183	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1401.34	
4	0.7085	1160.9	1181.4	0.821	3.216	72.425	20.390	2.810	0.093	0.202	0.019	0.024	0.000	0.000	0.000	0.000	0.000	1403.54	
5	0.7074	1159.6	1180.2	0.805	3.209	72.559	20.396	2.656	0.098	0.227	0.022	0.028	0.000	0.000	0.000	0.000	0.000	1403.17	
6	0.7098	1163.4	1184.0	0.805	3.205	72.376	20.376	2.790	0.113	0.272	0.029	0.035	0.000	0.000	0.000	0.000	0.000	1405.33	
7	0.7073	1158.6	1179.1	0.831	3.225	72.503	20.448	2.653	0.091	0.206	0.019	0.023	0.000	0.000	0.000	0.000	0.000	1401.99	
8	0.7055	1156.3	1176.7	0.808	3.229	72.612	20.542	2.517	0.079	0.177	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1401.03	
9	0.7053	1155.3	1175.7	0.823	3.250	72.579	20.590	2.493	0.075	0.161	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1400.00	
10	0.7052	1155.7	1176.1	0.815	3.229	72.672	20.489	2.508	0.078	0.173	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1400.57	
11	0.7038	1154.1	1174.6	0.790	3.235	72.819	20.423	2.459	0.077	0.166	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1400.02	
12	0.7081	1158.8	1179.3	0.835	3.280	72.417	20.439	2.663	0.096	0.222	0.022	0.026	0.000	0.000	0.000	0.000	0.000	1401.47	
13	0.7077	1157.7	1178.2	0.841	3.300	72.437	20.436	2.646	0.090	0.204	0.020	0.025	0.000	0.000	0.000	0.000	0.000	1400.56	
14	0.7073	1157.6	1178.1	0.820	3.310	72.406	20.502	2.654	0.085	0.186	0.017	0.020	0.000	0.000	0.000	0.000	0.000	1400.71	
15	0.7098	1160.0	1180.5	0.871	3.317	72.205	20.458	2.799	0.095	0.210	0.020	0.025	0.000	0.000	0.000	0.000	0.000	1401.17	
16	0.7091	1159.7	1180.3	0.851	3.296	72.190	20.576	2.780	0.090	0.184	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1401.58	
17	0.7074	1158.0	1178.5	0.835	3.265	72.513	20.368	2.682	0.091	0.202	0.020	0.025	0.000	0.000	0.000	0.000	0.000	1401.19	
18	0.7098	1162.0	1182.6	0.837	3.245	72.177	20.577	2.812	0.098	0.211	0.019	0.024	0.000	0.000	0.000	0.000	0.000	1403.62	
19	0.7109	1163.0	1183.6	0.865	3.240	72.062	20.604	2.878	0.098	0.211	0.019	0.023	0.000	0.000	0.000	0.000	0.000	1403.80	
20	0.7067	1158.2	1178.7	0.816	3.216	72.462	20.542	2.701	0.080	0.157	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1402.14	
21	0.7035	1153.1	1173.5	0.817	3.228	72.895	20.314	2.503	0.070	0.144	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1399.06	
22	0.7070	1158.3	1178.9	0.810	3.247	72.435	20.520	2.707	0.080	0.170	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1401.98	
23	0.7107	1162.6	1183.2	0.864	3.244	72.055	20.640	2.846	0.094	0.212	0.020	0.024	0.000	0.000	0.000	0.000	0.000	1403.54	
24	0.7100	1162.4	1183.0	0.831	3.246	72.104	20.632	2.868	0.091	0.193	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1403.94	
25	0.7063	1155.7	1176.1	0.840	3.294	72.640	20.229	2.705	0.082	0.178	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1399.48	
26	0.7073	1157.3	1177.8	0.831	3.308	72.372	20.533	2.663	0.081	0.180	0.015	0.017	0.000	0.000	0.000	0.000	0.000	1400.41	
27	0.7084	1159.6	1180.1	0.844	3.246	72.298	20.605	2.677	0.090	0.199	0.018	0.023	0.000	0.000	0.000	0.000	0.000	1402.15	
28	0.7044	1154.7	1175.2	0.810	3.227	72.674	20.531	2.521	0.070	0.144	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1400.14	
29	0.7094	1161.6	1182.1	0.839	3.227	72.223	20.600	2.766	0.093	0.207	0.020	0.024	0.000	0.000	0.000	0.000	0.000	1403.52	
30	0.7093	1161.9	1182.4	0.828	3.217	72.295	20.497	2.811	0.095	0.213	0.020	0.024	0.000	0.000	0.000	0.000	0.000	1403.98	
31	0.7121	1166.2	1186.8	0.830	3.217	71.999	20.579	2.955	0.112	0.256	0.024	0.029	0.000	0.000	0.000	0.000	0.000	1406.37	
Avg	0.7078	1159.0	1179.6	0.829	3.247	72.411	20.484	2.706	0.089	0.195	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1402.08	

Zone 265

GQ Source Daily Summary

October 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	0.7307	1151.2	1171.6	0.824	5.878	68.940	19.762	4.195	0.128	0.249	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1370.61	
2	0.7171	1129.8	1149.8	0.728	6.052	71.365	17.474	3.990	0.124	0.245	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1357.71	
3	0.7054	1112.6	1132.3	0.663	6.096	73.324	15.865	3.679	0.117	0.240	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1348.20	
4	0.7020	1109.0	1128.7	0.635	6.040	73.913	15.443	3.595	0.117	0.240	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1347.08	
5	0.7055	1121.7	1141.5	0.643	5.587	73.083	16.884	3.463	0.108	0.214	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1359.11	
6	0.6969	1118.5	1138.3	0.485	5.219	74.049	17.053	2.920	0.088	0.173	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1363.55	
7	0.6983	1123.2	1143.1	0.602	4.881	74.158	17.000	3.043	0.101	0.196	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1367.91	
8	0.6908	1106.3	1125.9	0.599	5.213	75.521	15.393	2.978	0.095	0.184	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1354.61	
9	0.6949	1110.8	1130.4	0.606	5.312	74.819	15.858	3.103	0.098	0.188	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1356.08	
10	0.6884	1108.5	1128.1	0.537	4.947	75.854	15.513	2.868	0.090	0.175	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1359.65	
11	0.6907	1114.5	1134.2	0.557	4.769	75.280	16.425	2.666	0.090	0.192	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1364.76	
12	0.6991	1117.0	1136.8	0.601	5.333	73.715	17.233	2.777	0.102	0.217	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1359.66	
13	0.6948	1113.9	1133.7	0.559	5.183	74.639	16.474	2.768	0.109	0.241	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1360.05	
14	0.6928	1112.8	1132.5	0.550	5.074	75.098	16.123	2.760	0.112	0.251	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1360.59	
15	0.6954	1111.2	1130.9	0.570	5.378	75.028	15.484	3.056	0.133	0.311	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1356.17	
16	0.7219	1146.0	1166.3	0.690	5.568	70.886	18.303	3.908	0.178	0.415	0.025	0.027	0.000	0.000	0.000	0.000	0.000	1372.70	
17	0.7186	1146.9	1167.2	0.703	5.190	71.351	18.422	3.733	0.173	0.382	0.023	0.024	0.000	0.000	0.000	0.000	0.000	1376.87	
18	0.7182	1146.5	1166.8	0.681	5.202	71.455	18.302	3.759	0.167	0.386	0.024	0.025	0.000	0.000	0.000	0.000	0.000	1376.86	
19	0.7139	1139.5	1159.7	0.650	5.271	72.305	17.411	3.756	0.167	0.389	0.024	0.026	0.000	0.000	0.000	0.000	0.000	1372.54	
20	0.7109	1139.0	1159.2	0.631	5.050	72.676	17.483	3.595	0.157	0.362	0.022	0.023	0.000	0.000	0.000	0.000	0.000	1374.86	
21	0.7137	1141.5	1161.8	0.605	5.203	72.203	17.658	3.778	0.154	0.354	0.022	0.022	0.000	0.000	0.000	0.000	0.000	1375.13	
22	0.7034	1122.8	1142.7	0.596	5.395	73.342	17.099	3.167	0.118	0.256	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1362.45	
23	0.7061	1127.0	1147.0	0.610	5.372	72.812	17.632	3.176	0.115	0.255	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1364.92	
24	0.7066	1130.4	1150.4	0.599	5.224	72.980	17.427	3.327	0.125	0.283	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1368.56	
25	0.6975	1111.8	1131.5	0.587	5.523	74.228	16.262	3.101	0.096	0.187	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1354.80	
26	0.7043	1121.7	1141.5	0.615	5.520	73.219	16.937	3.363	0.110	0.217	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1360.20	
27	0.7043	1111.3	1131.0	0.653	6.095	73.355	15.999	3.544	0.113	0.223	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1347.60	
28	0.7028	1108.3	1127.9	0.650	6.138	73.617	15.735	3.511	0.112	0.221	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1345.44	
29	0.6993	1106.9	1126.5	0.625	5.928	74.184	15.553	3.376	0.107	0.210	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1347.14	
30	0.6959	1108.2	1127.9	0.618	5.540	74.718	15.615	3.185	0.103	0.203	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1352.04	
31	0.6948	1108.7	1128.3	0.626	5.403	74.869	15.673	3.118	0.100	0.195	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1353.61	
Avg	0.7037	1122.0	1141.7	0.623	5.438	73.451	16.758	3.331	0.120	0.253	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1361.02	

Zone 271

GQ Source Daily Summary

October 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	0.7335	1151.8	1172.2	0.833	6.096	68.464	19.888	4.312	0.130	0.251	0.013	0.013	0.000					1368.62	
2	0.7294	1147.2	1167.6	0.810	6.020	69.171	19.401	4.194	0.129	0.251	0.012	0.013	0.000					1367.07	
3	0.7089	1115.4	1135.2	0.687	6.217	72.668	16.313	3.749	0.117	0.231	0.009	0.009	0.000					1348.27	
4	0.7077	1113.8	1133.6	0.678	6.215	72.881	16.142	3.712	0.118	0.236	0.009	0.008	0.000					1347.50	
5	0.7094	1117.5	1137.3	0.682	6.143	72.615	16.417	3.763	0.120	0.238	0.010	0.010	0.000					1350.34	
6	0.6988	1120.2	1140.1	0.520	5.236	73.734	17.284	2.953	0.089	0.170	0.007	0.007	0.000					1363.82	
7	0.6991	1121.0	1140.9	0.583	5.115	73.952	16.975	3.063	0.101	0.193	0.009	0.009	0.000					1364.52	
8	0.6961	1111.2	1130.8	0.622	5.377	74.576	16.028	3.086	0.101	0.193	0.009	0.009	0.000					1355.38	
9	0.6932	1107.2	1126.8	0.603	5.378	75.034	15.674	3.020	0.095	0.181	0.008	0.008	0.000					1353.34	
10	0.6957	1111.9	1131.6	0.601	5.327	74.599	16.104	3.067	0.098	0.187	0.009	0.008	0.000					1356.67	
11	0.6861	1107.8	1127.4	0.513	4.806	76.119	15.624	2.666	0.084	0.170	0.009	0.009	0.000					1361.12	
12	0.7005	1117.7	1137.5	0.614	5.402	73.486	17.335	2.818	0.104	0.218	0.012	0.011	0.000					1359.14	
13	0.6967	1113.0	1132.7	0.577	5.394	74.184	16.730	2.763	0.105	0.223	0.013	0.012	0.000					1357.01	
14	0.6983	1117.8	1137.6	0.575	5.253	74.070	16.850	2.852	0.115	0.253	0.016	0.016	0.000					1361.32	
15	0.6913	1104.8	1124.4	0.554	5.417	75.480	15.291	2.836	0.119	0.268	0.017	0.017	0.000					1352.25	
16	0.7205	1141.4	1161.6	0.688	5.726	71.036	18.082	3.841	0.174	0.399	0.026	0.027	0.000					1368.43	
17	0.7195	1144.3	1164.6	0.689	5.449	71.164	18.331	3.768	0.168	0.381	0.024	0.026	0.000					1372.95	
18	0.7196	1146.6	1166.9	0.694	5.313	71.143	18.497	3.759	0.167	0.378	0.024	0.025	0.000					1375.58	
19	0.7151	1138.7	1158.9	0.667	5.415	72.006	17.569	3.750	0.166	0.377	0.024	0.025	0.000					1370.36	
20	0.7144	1138.9	1159.1	0.657	5.341	72.175	17.479	3.755	0.166	0.377	0.024	0.026	0.000					1371.40	
21	0.7129	1139.0	1159.2	0.618	5.260	72.272	17.618	3.686	0.154	0.347	0.022	0.023	0.000					1372.91	
22	0.7080	1128.6	1148.6	0.602	5.456	72.793	17.257	3.433	0.133	0.291	0.017	0.018	0.000					1365.10	
23	0.6973	1112.5	1132.2	0.573	5.482	74.167	16.523	2.910	0.103	0.219	0.012	0.011	0.000					1355.88	
24	0.7063	1128.3	1148.3	0.593	5.332	72.985	17.353	3.284	0.128	0.286	0.018	0.019	0.000					1366.33	
25	0.7004	1114.8	1134.5	0.600	5.595	73.698	16.668	3.125	0.099	0.197	0.010	0.009	0.000					1355.62	
26	0.7016	1117.1	1136.8	0.600	5.569	73.523	16.791	3.200	0.103	0.197	0.009	0.008	0.000					1357.23	
27	0.7065	1114.7	1134.4	0.656	6.092	72.932	16.400	3.560	0.116	0.225	0.010	0.009	0.000					1349.59	
28	0.7071	1111.4	1131.1	0.674	6.314	72.860	16.178	3.617	0.115	0.224	0.009	0.009	0.000					1345.12	
29	0.7006	1104.1	1123.6	0.641	6.203	73.936	15.455	3.429	0.109	0.210	0.009	0.008	0.000					1342.41	
30	0.6978	1107.8	1127.4	0.624	5.737	74.348	15.732	3.234	0.105	0.202	0.009	0.008	0.000					1349.66	
31	0.6960	1106.9	1126.5	0.627	5.618	74.638	15.649	3.155	0.101	0.195	0.009	0.008	0.000					1350.33	
Avg	0.7054	1122.0	1141.6	0.634	5.590	73.120	16.891	3.367	0.120	0.251	0.013	0.014	0.000					1359.20	

Zone 272

GQ Source Daily Summary

October 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	0.7327	1152.0	1172.4	0.833	6.006	68.580	19.909	4.272	0.129	0.247	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1369.68	
2	0.7280	1146.8	1167.1	0.806	5.922	69.409	19.315	4.147	0.128	0.248	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1367.85	
3	0.7057	1112.1	1131.8	0.669	6.149	73.220	15.917	3.685	0.115	0.227	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1347.30	
4	0.7047	1110.8	1130.5	0.661	6.146	73.405	15.771	3.649	0.117	0.234	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1346.64	
5	0.7080	1117.0	1136.8	0.673	6.055	72.880	16.277	3.740	0.119	0.236	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1351.06	
6	0.6971	1120.2	1140.0	0.509	5.098	74.012	17.222	2.892	0.087	0.165	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1365.39	
7	0.6979	1122.2	1142.1	0.572	4.944	74.125	17.068	2.990	0.098	0.186	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1367.19	
8	0.6951	1111.7	1131.4	0.614	5.262	74.756	15.999	3.061	0.100	0.190	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1357.03	
9	0.6927	1108.3	1128.0	0.600	5.265	75.135	15.700	3.012	0.094	0.178	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1355.24	
10	0.6949	1112.6	1132.3	0.597	5.220	74.746	16.088	3.051	0.097	0.184	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1358.27	
11	0.6851	1108.2	1127.9	0.508	4.699	76.289	15.594	2.642	0.083	0.168	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1362.59	
12	0.7000	1118.8	1138.6	0.613	5.295	73.582	17.355	2.812	0.104	0.216	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1360.91	
13	0.6954	1112.9	1132.6	0.571	5.284	74.427	16.631	2.737	0.104	0.222	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1358.22	
14	0.6979	1118.9	1138.7	0.574	5.146	74.163	16.872	2.848	0.115	0.251	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1363.11	
15	0.6908	1106.0	1125.6	0.551	5.294	75.600	15.305	2.832	0.119	0.265	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1354.30	
16	0.7191	1141.1	1161.3	0.682	5.617	71.293	17.980	3.808	0.173	0.395	0.025	0.027	0.000	0.000	0.000	0.000	0.000	1369.46	
17	0.7190	1145.1	1165.4	0.685	5.362	71.267	18.315	3.771	0.170	0.381	0.024	0.025	0.000	0.000	0.000	0.000	0.000	1374.35	
18	0.7190	1147.4	1167.8	0.690	5.210	71.262	18.495	3.754	0.167	0.375	0.024	0.025	0.000	0.000	0.000	0.000	0.000	1377.18	
19	0.7144	1139.5	1159.6	0.663	5.303	72.148	17.558	3.740	0.166	0.374	0.024	0.025	0.000	0.000	0.000	0.000	0.000	1372.01	
20	0.7138	1140.0	1160.2	0.654	5.228	72.290	17.487	3.750	0.166	0.376	0.024	0.025	0.000	0.000	0.000	0.000	0.000	1373.23	
21	0.7124	1140.3	1160.5	0.614	5.140	72.378	17.640	3.685	0.154	0.344	0.022	0.022	0.000	0.000	0.000	0.000	0.000	1374.93	
22	0.7075	1129.8	1149.8	0.599	5.348	72.887	17.275	3.433	0.133	0.290	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1366.93	
23	0.6971	1113.8	1133.5	0.573	5.388	74.220	16.561	2.914	0.103	0.218	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1357.59	
24	0.7060	1129.7	1149.7	0.592	5.223	73.044	17.415	3.279	0.128	0.283	0.018	0.018	0.000	0.000	0.000	0.000	0.000	1368.29	
25	0.6998	1115.5	1135.2	0.597	5.496	73.818	16.664	3.114	0.098	0.195	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1357.10	
26	0.7009	1117.7	1137.5	0.597	5.473	73.645	16.786	3.184	0.102	0.195	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1358.63	
27	0.7064	1116.0	1135.8	0.655	6.000	72.974	16.440	3.574	0.115	0.223	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1351.34	
28	0.7063	1112.0	1131.7	0.670	6.212	73.005	16.154	3.605	0.115	0.222	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1346.58	
29	0.7001	1105.0	1124.6	0.638	6.102	74.039	15.465	3.425	0.108	0.208	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1344.03	
30	0.6970	1108.2	1127.8	0.621	5.646	74.496	15.692	3.224	0.104	0.200	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1350.85	
31	0.6953	1107.5	1127.1	0.624	5.520	74.774	15.627	3.146	0.101	0.193	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1351.72	
Avg	0.7045	1122.0	1142.0	0.629	5.486	73.286	16.857	3.348	0.120	0.248	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1360.61	

Zone 273

GQ Source Daily Summary

October 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	0.7307	1151.0	1171.4	0.824	5.894	68.932	19.752	4.196	0.128	0.250	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1370.34	
2	0.7180	1131.2	1151.2	0.734	6.039	71.206	17.628	4.001	0.124	0.245	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1358.62	
3	0.7052	1112.4	1132.1	0.663	6.098	73.347	15.847	3.672	0.117	0.239	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1348.04	
4	0.7019	1109.0	1128.6	0.635	6.037	73.930	15.429	3.594	0.117	0.241	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1347.11	
5	0.7101	1140.4	1160.6	0.656	4.858	71.982	18.966	3.227	0.099	0.191	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1377.62	
6	0.6926	1157.7	1178.2	0.096	3.028	72.680	22.983	1.162	0.019	0.030	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1415.70	
7	0.6969	1151.0	1171.4	0.580	3.089	73.833	19.966	2.268	0.087	0.157	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1403.23	
8	0.6773	1124.5	1144.4	0.565	2.887	77.211	17.376	1.762	0.065	0.116	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1390.58	
9	0.6751	1124.8	1144.7	0.514	2.740	77.377	17.638	1.559	0.058	0.099	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1393.23	
10	0.6775	1129.3	1149.3	0.446	2.804	76.671	18.454	1.473	0.051	0.087	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1396.23	
11	0.6801	1128.7	1148.7	0.439	3.090	76.249	18.446	1.612	0.054	0.095	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1392.92	
12	0.6830	1123.9	1143.8	0.469	3.614	75.885	17.986	1.868	0.058	0.106	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1383.96	
13	0.6815	1122.3	1142.2	0.442	3.602	76.146	17.786	1.853	0.055	0.102	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1383.63	
14	0.6800	1120.5	1140.4	0.422	3.603	76.358	17.664	1.787	0.053	0.099	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1382.92	
15	0.6899	1131.4	1151.4	0.439	3.842	75.109	17.971	2.379	0.081	0.158	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1386.29	
16	0.6904	1139.9	1160.1	0.504	3.275	74.996	18.723	2.251	0.084	0.150	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1396.16	
17	0.6923	1147.0	1167.3	0.531	2.980	74.621	19.432	2.185	0.083	0.150	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1402.92	
18	0.6809	1130.0	1150.1	0.537	2.932	76.620	17.784	1.911	0.072	0.127	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1393.72	
19	0.6826	1132.1	1152.1	0.548	2.949	76.359	17.956	1.963	0.075	0.133	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1394.49	
20	0.6830	1132.2	1152.3	0.526	3.012	76.242	18.026	1.973	0.074	0.131	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1394.26	
21	0.6847	1138.1	1158.2	0.382	3.037	75.368	19.345	1.696	0.058	0.101	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1399.72	
22	0.6845	1136.3	1156.4	0.370	3.151	75.365	19.246	1.698	0.057	0.101	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1397.69	
23	0.6859	1139.2	1159.4	0.376	3.089	74.927	19.895	1.562	0.050	0.089	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1399.95	
24	0.6859	1138.8	1159.0	0.417	3.056	75.051	19.698	1.611	0.055	0.098	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1399.38	
25	0.6819	1128.2	1148.2	0.382	3.379	75.719	18.782	1.593	0.047	0.086	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1390.44	
26	0.6847	1135.7	1155.8	0.412	3.141	75.312	19.325	1.644	0.055	0.098	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1396.75	
27	0.6997	1140.3	1160.5	0.535	4.082	73.264	19.357	2.502	0.085	0.158	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1387.29	
28	0.6998	1126.1	1146.0	0.590	4.863	73.654	17.715	2.877	0.097	0.187	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1369.99	
29	0.6885	1127.6	1147.6	0.483	3.872	75.041	18.302	2.092	0.068	0.127	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1383.16	
30	0.6758	1124.3	1144.2	0.562	2.760	77.336	17.563	1.598	0.059	0.106	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1391.92	
31	0.6682	1112.5	1132.2	0.569	2.758	78.694	16.364	1.461	0.051	0.091	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1385.10	
Avg	0.6893	1132.0	1151.9	0.505	3.663	75.016	18.432	2.162	0.072	0.134	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1387.53	

Zone 28

GQ Source Daily Summary

October 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	0.6913	1149.0	1169.3	0.350	3.040	73.998	20.700	1.759	0.052	0.091	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1406.44	
2	0.6852	1140.6	1160.8	0.410	2.891	75.273	19.558	1.718	0.051	0.088	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1402.27	
3	0.6866	1141.8	1162.1	0.319	3.084	74.792	20.011	1.653	0.044	0.083	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1402.42	
4	0.6925	1157.8	1178.3	0.053	3.075	72.669	22.964	1.188	0.018	0.031	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1415.98	
5	0.6916	1158.0	1178.5	0.026	3.019	72.651	23.233	1.040	0.012	0.018	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1417.16	
6	0.6944	1148.3	1168.7	0.567	3.042	74.222	19.695	2.230	0.080	0.145	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1402.41	
7	0.6814	1129.5	1149.5	0.570	2.963	76.489	17.881	1.888	0.068	0.125	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1392.50	
8	0.6736	1122.5	1142.4	0.515	2.740	77.636	17.388	1.555	0.055	0.097	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1391.93	
9	0.6776	1130.1	1150.1	0.387	2.853	76.512	18.662	1.448	0.046	0.081	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1397.12	
10	0.6777	1127.2	1147.2	0.415	2.996	76.662	18.192	1.578	0.052	0.093	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1393.45	
11	0.6794	1121.8	1141.7	0.455	3.423	76.549	17.589	1.813	0.056	0.103	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1385.06	
12	0.6803	1120.0	1139.8	0.436	3.645	76.338	17.570	1.846	0.053	0.101	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1381.92	
13	0.6791	1119.0	1138.8	0.416	3.620	76.533	17.453	1.815	0.052	0.098	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1381.96	
14	0.6861	1132.1	1152.2	0.449	3.431	75.679	18.006	2.211	0.073	0.135	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1390.93	
15	0.6978	1153.9	1174.4	0.565	3.015	73.843	19.855	2.431	0.096	0.174	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1405.90	
16	0.6841	1135.8	1155.9	0.505	2.930	75.974	18.399	1.981	0.070	0.127	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1397.53	
17	0.6791	1127.5	1147.5	0.529	2.926	76.961	17.452	1.923	0.070	0.124	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1392.48	
18	0.6803	1128.4	1148.3	0.550	2.955	76.806	17.496	1.974	0.073	0.131	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1392.28	
19	0.6829	1133.4	1153.5	0.438	3.068	75.934	18.535	1.837	0.062	0.113	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1395.81	
20	0.6835	1136.1	1156.2	0.379	3.051	75.615	19.053	1.731	0.057	0.102	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1398.52	
21	0.6831	1134.3	1154.4	0.326	3.211	75.354	19.426	1.550	0.044	0.080	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1396.64	
22	0.6853	1138.3	1158.4	0.375	3.094	75.085	19.679	1.615	0.051	0.091	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1399.34	
23	0.6817	1132.3	1152.4	0.420	3.049	75.859	18.925	1.589	0.052	0.095	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1395.72	
24	0.6810	1127.3	1147.3	0.347	3.397	75.853	18.670	1.593	0.046	0.084	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1390.29	
25	0.6885	1141.8	1162.1	0.434	3.084	74.776	19.699	1.817	0.062	0.113	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1400.49	
26	0.6827	1132.6	1152.7	0.384	3.181	75.668	18.977	1.634	0.049	0.090	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1395.05	
27	0.6793	1127.2	1147.2	0.431	3.114	76.322	18.413	1.571	0.049	0.089	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1391.94	
28	0.6907	1144.4	1164.7	0.577	2.918	74.793	19.454	2.024	0.077	0.141	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1401.38	
29	0.6719	1119.1	1138.9	0.561	2.721	78.016	16.996	1.541	0.054	0.098	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1389.38	
30	0.6676	1111.3	1131.0	0.564	2.785	78.782	16.248	1.472	0.049	0.089	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1384.19	
31	0.6652	1109.5	1129.2	0.617	2.579	79.374	15.814	1.463	0.051	0.092	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1384.54	
Avg	0.6826	1133.0	1153.3	0.431	3.061	75.839	18.774	1.725	0.056	0.101	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1395.90	

Zone 31

GQ Source Daily Summary

October 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	0.6769	1115.9	1135.7	0.735	3.105	77.927	15.810	2.183	0.080	0.140	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1380.45	
2	0.6778	1119.2	1139.0	0.798	2.902	77.950	15.841	2.236	0.091	0.159	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1383.45	
3	0.6744	1114.0	1133.7	0.774	2.931	78.527	15.349	2.157	0.088	0.153	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1380.55	
4	0.6816	1125.5	1145.5	0.845	2.800	77.386	16.341	2.331	0.099	0.174	0.013	0.011	0.000	0.000	0.000	0.000	0.000	1387.45	
5	0.6932	1137.4	1157.5	0.720	3.356	75.196	17.737	2.671	0.104	0.190	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1390.26	
6	0.6910	1135.2	1155.3	0.777	3.197	75.570	17.609	2.534	0.103	0.187	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1389.80	
7	0.6713	1108.7	1128.3	0.687	3.093	78.864	15.094	2.028	0.076	0.138	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1377.22	
8	0.6722	1109.1	1128.8	0.669	3.183	78.654	15.214	2.049	0.076	0.136	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1376.79	
9	0.6748	1110.1	1129.7	0.633	3.429	78.127	15.461	2.110	0.078	0.143	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1375.23	
10	0.6751	1113.0	1132.7	0.700	3.176	78.133	15.686	2.060	0.081	0.144	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1378.56	
11	0.6790	1112.4	1132.1	0.573	3.772	77.039	16.338	2.069	0.067	0.126	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1373.90	
12	0.6761	1109.3	1129.0	0.590	3.658	77.678	15.801	2.059	0.069	0.128	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1373.06	
13	0.6775	1111.0	1130.7	0.579	3.701	77.634	15.590	2.255	0.077	0.145	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1373.73	
14	0.6875	1129.4	1149.3	0.722	3.304	76.489	16.401	2.733	0.116	0.210	0.013	0.012	0.000	0.000	0.000	0.000	0.000	1386.17	
15	0.6819	1123.3	1143.2	0.743	3.121	77.439	15.812	2.562	0.106	0.192	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1384.32	
16	0.6756	1117.0	1136.8	0.786	2.839	78.560	15.176	2.341	0.099	0.177	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1383.10	
17	0.6768	1118.8	1138.7	0.782	2.844	78.365	15.328	2.374	0.102	0.181	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1384.13	
18	0.6778	1118.8	1138.6	0.761	2.972	78.142	15.420	2.398	0.101	0.182	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1383.09	
19	0.6777	1117.5	1137.3	0.717	3.114	77.981	15.576	2.322	0.096	0.173	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1381.54	
20	0.6787	1120.2	1140.1	0.774	2.958	77.834	15.845	2.294	0.097	0.175	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1383.84	
21	0.6803	1122.1	1141.9	0.782	2.980	77.552	16.075	2.314	0.098	0.177	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1384.54	
22	0.6769	1114.4	1134.1	0.699	3.258	77.855	15.798	2.133	0.084	0.153	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1378.48	
23	0.6766	1113.7	1133.4	0.684	3.294	77.838	15.844	2.090	0.082	0.148	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1377.95	
24	0.6851	1128.1	1148.1	0.778	3.073	76.588	16.910	2.347	0.100	0.180	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1387.09	
25	0.6779	1117.1	1136.8	0.723	3.159	77.653	16.099	2.106	0.085	0.154	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1380.71	
26	0.6756	1115.0	1134.7	0.749	3.023	78.113	15.820	2.036	0.085	0.154	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1380.56	
27	0.6863	1130.4	1150.4	0.830	2.965	76.509	16.976	2.398	0.106	0.191	0.013	0.012	0.000	0.000	0.000	0.000	0.000	1388.66	
28	0.6725	1112.8	1132.5	0.803	2.785	78.817	15.317	2.017	0.086	0.155	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1381.00	
29	0.6647	1101.7	1121.2	0.755	2.808	80.002	14.449	1.774	0.070	0.126	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1375.15	
30	0.6628	1099.3	1118.7	0.750	2.781	80.311	14.244	1.710	0.066	0.121	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1374.13	
31	0.6604	1098.1	1117.6	0.792	2.557	80.867	13.894	1.683	0.069	0.123	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1375.25	
Avg	0.6773	1117.0	1136.5	0.733	3.101	77.923	15.770	2.206	0.088	0.159	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1380.97	

Zone 32

GQ Source Daily Summary

October 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	0.6955	1166.1	1186.7	0.000	2.940	71.901	24.011	1.119	0.011	0.016	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1422.96	
2	0.6958	1165.6	1186.2	0.000	2.996	71.850	23.998	1.125	0.011	0.017	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1422.06	
3	0.6953	1164.5	1185.1	0.000	3.016	71.918	23.942	1.091	0.012	0.019	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1421.23	
4	0.6947	1164.1	1184.7	0.000	2.988	71.892	24.126	0.971	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.34	
5	0.6943	1164.6	1185.2	0.000	2.919	72.009	24.063	0.985	0.009	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.37	
6	0.6956	1167.7	1188.3	0.000	2.847	71.843	24.231	1.037	0.013	0.024	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1424.84	
7	0.6929	1162.9	1183.5	0.000	2.884	72.196	24.021	0.881	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.83	
8	0.6922	1161.5	1182.1	0.000	2.905	72.271	23.982	0.823	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.83	
9	0.6922	1161.5	1182.1	0.000	2.908	72.290	23.941	0.844	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.78	
10	0.6930	1162.4	1183.0	0.000	2.923	72.208	23.934	0.914	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.12	
11	0.6923	1161.5	1182.1	0.000	2.919	72.305	23.875	0.880	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.66	
12	0.6914	1163.0	1183.5	0.001	2.741	72.537	23.808	0.891	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.39	
13	0.6922	1162.4	1183.0	0.000	2.846	72.379	23.845	0.911	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.97	
14	0.6927	1161.9	1182.5	0.001	2.933	72.291	23.801	0.955	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.71	
15	0.6929	1162.2	1182.8	0.001	2.929	72.263	23.828	0.957	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.94	
16	0.6915	1160.3	1180.9	0.003	2.912	72.497	23.663	0.904	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.04	
17	0.6918	1160.2	1180.7	0.003	2.946	72.436	23.690	0.903	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.56	
18	0.6917	1160.3	1180.9	0.002	2.929	72.469	23.666	0.911	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.85	
19	0.6916	1160.0	1180.6	0.001	2.942	72.467	23.662	0.909	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.58	
20	0.6914	1160.0	1180.6	0.001	2.920	72.530	23.614	0.913	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.80	
21	0.6915	1159.9	1180.5	0.004	2.936	72.506	23.613	0.920	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.54	
22	0.6914	1160.0	1180.5	0.002	2.922	72.537	23.602	0.915	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.73	
23	0.6908	1158.8	1179.3	0.002	2.941	72.597	23.568	0.870	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.89	
24	0.6915	1159.9	1180.5	0.001	2.934	72.508	23.622	0.915	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.59	
25	0.6923	1161.2	1181.7	0.001	2.938	72.351	23.758	0.931	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.24	
26	0.6923	1160.9	1181.4	0.000	2.950	72.391	23.685	0.951	0.009	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.95	
27	0.6922	1160.9	1181.4	0.000	2.949	72.380	23.706	0.942	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.98	
28	0.6920	1160.4	1181.0	0.000	2.956	72.414	23.682	0.924	0.009	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.64	
29	0.6911	1159.1	1179.6	0.000	2.948	72.510	23.682	0.841	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.99	
30	0.6912	1158.8	1179.3	0.000	2.982	72.502	23.628	0.868	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.47	
31	0.6914	1158.9	1179.4	0.000	2.996	72.485	23.604	0.897	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.35	
Avg	0.6925	1162.0	1182.2	0.001	2.929	72.314	23.802	0.932	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.62	

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			Mol %
C1	Methane	94.019		CO2	Carbon Dioxide	0.232
C2	Ethane	1.995	0.5321	N2	Nitrogen	3.460
C3	Propane	0.226	0.0621	O2	Oxygen	0.020
IC4	Isobutane	0.020	0.0066	He	Helium	
NC4	n-Butane	0.022	0.0068	H2	Hydrogen	
IC5	Isopentane	0.003	0.0010	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.002	0.0007	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% 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

October 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	0.6860	1127.1	1147.1	0.988	2.908	75.394	18.994	1.692	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1384.98	
2	0.6824	1121.5	1141.4	0.991	2.915	75.799	18.891	1.382	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1381.62	
3	0.6852	1125.8	1145.7	1.002	2.893	75.245	19.464	1.378	0.008	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1384.16	
4	0.6802	1117.0	1136.8	1.003	2.961	75.804	19.286	0.932	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.39	
5	0.6798	1116.7	1136.5	1.005	2.938	75.978	19.057	0.998	0.011	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.39	
6	0.6844	1124.9	1144.8	1.000	2.879	75.621	18.895	1.573	0.015	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1383.78	
7	0.6767	1112.2	1131.9	1.004	2.920	76.303	19.055	0.706	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.05	
8	0.6759	1110.8	1130.5	1.007	2.929	76.395	19.020	0.637	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1375.08	
9	0.6738	1107.0	1126.6	1.013	2.955	76.631	18.940	0.451	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1372.53	
10	0.6933	1141.2	1161.4	0.973	2.760	74.176	20.152	1.862	0.027	0.045	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1394.74	
11	0.6928	1139.7	1159.9	0.972	2.810	73.880	20.744	1.561	0.015	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1393.44	
12	0.6791	1116.4	1136.2	0.996	2.909	75.610	19.946	0.532	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.76	
13	0.6497	1063.5	1082.3	1.091	3.216	81.935	12.990	0.730	0.014	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1342.77	
14	0.6475	1061.7	1080.5	1.091	3.122	82.316	12.778	0.657	0.013	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1342.76	
15	0.6451	1055.7	1074.4	1.093	3.256	82.777	12.197	0.646	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1337.67	
16	0.6778	1113.0	1132.7	1.012	2.965	76.525	18.362	1.089	0.018	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1375.84	
17	0.6597	1082.1	1101.2	1.032	3.117	80.043	14.835	0.937	0.014	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1355.79	
18	0.6482	1061.7	1080.5	1.083	3.202	82.181	12.813	0.686	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1341.99	
19	0.6456	1057.3	1076.0	1.085	3.218	82.674	12.344	0.649	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1339.21	
20	0.6608	1083.3	1102.5	1.059	3.106	79.865	14.974	0.962	0.013	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1356.19	
21	0.6597	1081.8	1101.0	1.059	3.094	80.005	14.919	0.895	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1355.49	
22	0.6593	1080.9	1100.0	1.059	3.116	80.053	14.882	0.862	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1354.68	
23	0.6605	1082.7	1101.8	1.061	3.111	79.856	15.048	0.895	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1355.76	
24	0.6586	1078.2	1097.3	1.064	3.198	80.178	14.697	0.832	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1352.15	
25	0.6601	1081.3	1100.5	1.059	3.158	79.899	14.995	0.859	0.012	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1354.49	
26	0.6549	1072.5	1091.4	1.072	3.188	80.861	14.096	0.759	0.010	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1348.74	
27	0.6429	1052.3	1071.0	1.089	3.266	83.165	11.843	0.609	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.63	
28	0.6454	1056.7	1075.4	1.101	3.216	82.690	12.339	0.623	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1338.61	
29	0.6456	1058.2	1076.9	1.086	3.165	82.617	12.510	0.593	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1340.29	
30	0.6424	1051.9	1070.5	1.091	3.245	83.239	11.820	0.576	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.57	
31	0.6427	1051.8	1070.4	1.104	3.251	83.252	11.737	0.628	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.25	
Avg	0.6644	1090.0	1109.2	1.043	3.064	79.063	15.891	0.910	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1360.67	

Zone 43

Oct-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**	
10/1/2016	10/2/2016	54	65	1.206	50	58	1.147	1.178	10/1/2016
10/2/2016	10/3/2016	86	103	1.206	47	54	1.141	1.183	10/2/2016
10/3/2016	10/4/2016	130	157	1.206	60	69	1.146	1.187	10/3/2016
10/4/2016	10/5/2016	274	330	1.206	82	93	1.137	1.190	10/4/2016
10/5/2016	10/6/2016	405	488	1.206	205	233	1.137	1.183	10/5/2016
10/6/2016	10/7/2016	405	488	1.206	189	216	1.145	1.187	10/6/2016
10/7/2016	10/8/2016	383	463	1.206	169	192	1.132	1.183	10/7/2016
10/8/2016	10/9/2016	339	409	1.206	113	128	1.131	1.187	10/8/2016
10/9/2016	10/10/2016	197	238	1.206	50	57	1.127	1.190	10/9/2016
10/10/2016	10/11/2016	331	399	1.206	146	170	1.161	1.192	10/10/2016
10/11/2016	10/12/2016	397	479	1.206	187	217	1.160	1.191	10/11/2016
10/12/2016	10/13/2016	378	456	1.206	174	197	1.136	1.184	10/12/2016
10/13/2016	10/14/2016	273	329	1.206	103	111	1.082	1.172	10/13/2016
10/14/2016	10/15/2016	187	226	1.206	75	81	1.081	1.170	10/14/2016
10/15/2016	10/16/2016	194	233	1.206	51	55	1.074	1.179	10/15/2016
10/16/2016	10/17/2016	251	302	1.206	33	38	1.133	1.198	10/16/2016
10/17/2016	10/18/2016	283	341	1.206	128	141	1.101	1.173	10/17/2016
10/18/2016	10/19/2016	392	473	1.206	168	181	1.081	1.169	10/18/2016
10/19/2016	10/20/2016	417	503	1.206	107	115	1.076	1.179	10/19/2016
10/20/2016	10/21/2016	292	353	1.206	137	151	1.103	1.173	10/20/2016
10/21/2016	10/22/2016	288	348	1.206	119	131	1.101	1.175	10/21/2016
10/22/2016	10/23/2016	250	301	1.206	103	113	1.100	1.175	10/22/2016
10/23/2016	10/24/2016	331	399	1.206	122	135	1.102	1.178	10/23/2016
10/24/2016	10/25/2016	346	417	1.206	123	135	1.097	1.177	10/24/2016
10/25/2016	10/26/2016	347	419	1.206	129	142	1.101	1.178	10/25/2016
10/26/2016	10/27/2016	294	354	1.206	141	154	1.091	1.169	10/26/2016
10/27/2016	10/28/2016	207	250	1.206	100	107	1.071	1.162	10/27/2016
10/28/2016	10/29/2016	298	359	1.206	129	139	1.075	1.166	10/28/2016
10/29/2016	10/30/2016	377	455	1.206	124	134	1.077	1.174	10/29/2016
10/30/2016	10/31/2016	305	368	1.206	103	110	1.071	1.172	10/30/2016
10/31/2016	11/1/2016	369	445	1.206	116	124	1.070	1.173	10/31/2016
		9,080	10,950		3,583	3,981	1.1093	1.1790	

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	NOTES
11587	GLEN ULLIN	1056.5	0.6089	1353.9	-69.1	1.3097	0.8364	89.9291	7.2521	0.4867	0.0346	0.0261	0.0036	0.0051	0	0.0016	0.1012	0.0136	9/30/2016	10/1/2016	10/1/2016 2:50:20 PM	
11587	GLEN ULLIN	1061.3	0.612	1356.6	-62.7	1.2719	0.8595	89.5431	7.5415	0.5998	0.0439	0.0338	0.005	0.0069	0	0.0025	0.0795	0.0108	10/1/2016	10/2/2016	10/2/2016 2:50:30 PM	
11587	GLEN ULLIN	1061.5	0.613	1355.8	-68.3	1.3676	0.85	89.2755	7.8083	0.5672	0.0333	0.0249	0.0032	0.0045	0	0.0008	0.0577	0.008	10/2/2016	10/3/2016	10/3/2016 2:50:18 PM	
11587	GLEN ULLIN	1064.8	0.6147	1358.1	-54.4	1.3481	0.8431	89.1723	7.8092	0.6702	0.0535	0.0416	0.0068	0.0091	0	0.0043	0.0354	0.0058	10/3/2016	10/4/2016	10/4/2016 2:52:23 PM	
11587	GLEN ULLIN	1063.9	0.6139	1357.9	-61.3	1.2894	0.8623	89.2057	7.9242	0.5813	0.0414	0.032	0.0047	0.0064	0	0.0027	0.042	0.0073	10/4/2016	10/5/2016	10/5/2016 2:53:09 PM	
11587	GLEN ULLIN	1067.5	0.6158	1360.4	-51.3	1.2913	0.8368	88.9724	7.9988	0.7045	0.0594	0.0471	0.0075	0.0102	0	0.0052	0.0614	0.0071	10/5/2016	10/6/2016	10/6/2016 2:51:53 PM	
11587	GLEN ULLIN	1063	0.612	1358.8	-59.1	1.1984	0.8409	89.5763	7.569	0.6196	0.0483	0.038	0.0062	0.0082	0	0.0031	0.0809	0.0112	10/6/2016	10/7/2016	10/7/2016 2:51:50 PM	
11587	GLEN ULLIN	1063	0.6132	1357.5	-56	1.2955	0.8505	89.2914	7.6566	0.6438	0.0547	0.0442	0.0073	0.0098	0	0.0038	0.1289	0.0142	10/7/2016	10/8/2016	10/8/2016 2:50:18 PM	
11587	GLEN ULLIN	1057.4	0.6094	1354.6	-64	1.2648	0.858	89.9875	7.1357	0.5585	0.0414	0.0335	0.0049	0.007	0	0.0023	0.0948	0.0128	10/8/2016	10/9/2016	10/9/2016 2:51:42 PM	
11587	GLEN ULLIN	1052.9	0.6066	1351.8	-76.7	1.2602	0.866	90.1241	7.1699	0.3751	0.0152	0.0111	0.0008	0.0013	0	0	0.1597	0.0174	10/9/2016	10/10/2016	10/10/2016 2:52:24 PM	
11587	GLEN ULLIN	1048.1	0.6021	1350.7	-78.7	1.1368	0.8582	91.0723	6.2886	0.4058	0.0213	0.0146	0.0021	0.0027	0	0.0004	0.1751	0.0244	10/10/2016	10/11/2016	10/11/2016 2:52:35 PM	
11587	GLEN ULLIN	1054.2	0.6073	1352.8	-74.9	1.2514	0.8589	90.0448	7.0832	0.5239	0.0155	0.0108	0.0003	0.0007	0	0	0.1392	0.0715	10/11/2016	10/12/2016	10/12/2016 2:59:52 PM	
11587	GLEN ULLIN	1051.2	0.606	1350.4	-75.4	1.3134	0.8493	90.2851	6.8774	0.4324	0.0239	0.0152	0.0027	0.003	0	0.0007	0.1199	0.0773	10/12/2016	10/13/2016	10/13/2016 2:50:53 PM	
11587	GLEN ULLIN	1051.7	0.6063	1350.7	-67.8	1.3185	0.8532	90.3633	6.6935	0.5054	0.0374	0.0274	0.0043	0.0057	0	0.0021	0.1488	0.0496	10/13/2016	10/14/2016	10/14/2016 2:51:58 PM	
11587	GLEN ULLIN	1055.7	0.6089	1353	-62	1.3169	0.8619	90.0025	6.9188	0.6217	0.0454	0.0337	0.0052	0.0071	0	0.0028	0.1653	0.0173	10/14/2016	10/15/2016	10/15/2016 2:50:16 PM	
11587	GLEN ULLIN	1054.2	0.6084	1351.6	-66.3	1.3172	0.8829	90.0705	6.8862	0.576	0.0401	0.0304	0.0041	0.006	0	0.0021	0.1517	0.0318	10/15/2016	10/16/2016	10/16/2016 2:50:45 PM	
11587	GLEN ULLIN	1055	0.6093	1351.6	-66.7	1.3537	0.8876	89.9101	6.977	0.6125	0.0378	0.0288	0.0037	0.0055	0	0.0018	0.1625	0.0195	10/16/2016	10/17/2016	10/17/2016 2:51:51 PM	
11587	GLEN ULLIN	1053	0.6077	1350.7	-71.4	1.3469	0.8721	90.1424	6.8244	0.5666	0.0311	0.0233	0.003	0.0043	0	0.001	0.1624	0.02	10/17/2016	10/18/2016	10/18/2016 2:52:36 PM	
11587	GLEN ULLIN	1040.7	0.5999	1343.6	-78.3	1.3618	0.8632	91.6472	5.3743	0.5088	0.029	0.0212	0.0023	0.0033	0	0.0009	0.157	0.0313	10/18/2016	10/19/2016	10/19/2016 2:53:34 PM	
11587	GLEN ULLIN	1028.9	0.5929	1336.2	-62.1	1.3334	0.908	93.3833	3.4739	0.6293	0.052	0.0407	0.0023	0.0019	0	0.0041	0.1337	0.0394	10/19/2016	10/20/2016	10/20/2016 2:50:32 PM	
11587	GLEN ULLIN	1034.7	0.5955	1340.8	-46.3	1.2542	0.898	93.1382	3.4571	0.8694	0.0874	0.0703	0.0003	0.0001	0	0.0095	0.1918	0.0268	10/20/2016	10/21/2016	10/21/2016 2:51:56 PM	
11587	GLEN ULLIN	1033.8	0.5946	1340.6	-46.4	1.2178	0.9038	93.3235	3.2781	0.8867	0.0867	0.0699	0	0	0	0.0094	0.2117	0.0168	10/21/2016	10/22/2016	10/22/2016 2:51:55 PM	
11587	GLEN ULLIN	1057.1	0.6082	1355.5	-52.1	1.2825	0.7806	90.1816	6.8489	0.604	0.0326	0.0255	0.0568	0.0049	0	0.0026	0.1633	0.0199	10/22/2016	10/23/2016	10/23/2016 2:51:43 PM	
11587	GLEN ULLIN	1058.9	0.6104	1355.3	-69.9	1.3127	0.8346	89.4421	7.7041	0.4801	0.0239	0.018	0.0023	0.0034	0	0.0016	0.1621	0.0156	10/23/2016	10/24/2016	10/24/2016 2:53:59 PM	
11587	GLEN ULLIN	1052.9	0.6064	1352.1	-76.4	1.3174	0.8213	90.1427	7.1452	0.3853	0.0153	0.0108	0.0009	0.0016	0	0.0005	0.1444	0.0153	10/24/2016	10/25/2016	10/25/2016 2:51:38 PM	
11587	GLEN ULLIN	1055.1	0.6077	1353.5	-74.9	1.269	0.8401	89.8846	7.3794	0.4056	0.0165	0.0121	0.001	0.0019	0	0.0007	0.174	0.0159	10/25/2016	10/26/2016	10/26/2016 2:53:25 PM	
11587	GLEN ULLIN	1051.2	0.6047	1351.8	-78.4	1.2446	0.8274	90.4201	6.9456	0.3558	0.0123	0.0083	0.0003	0.0007	0	0.0001	0.1706	0.0166	10/26/2016	10/27/2016	10/27/2016 2:51:58 PM	
11587	GLEN ULLIN	1050.5	0.6048	1350.7	-78.3	1.3022	0.8242	90.4108	6.8817	0.37	0.0155	0.0091	0.0003	0.0007	0	0	0.1706	0.0159	10/27/2016	10/28/2016	10/28/2016 2:53:19 PM	
11587	GLEN ULLIN	1050.6	0.6049	1350.8	-77.5	1.2817	0.8377	90.467	6.8038	0.3957	0.0197	0.0125	0.0013	0.0017	0	0.0002	0.1627	0.0167	10/28/2016	10/29/2016	10/29/2016 2:53:01 PM	
11587	GLEN ULLIN	1051.2	0.6051	1351.4	-77.6	1.2637	0.8395	90.3692	6.946	0.3674	0.016	0.0109	0.0007	0.0013	0	0.0003	0.1685	0.0167	10/29/2016	10/30/2016	10/30/2016 2:53:05 PM	
11587	GLEN ULLIN	1053.3	0.6069	1352.1	-75.6	1.2994	0.8446	90.0242	7.2214	0.3842	0.0185	0.0131	0.0014	0.0022	0	0.0006	0.1737	0.0153	10/30/2016	10/31/2016	10/31/2016 2:54:05 PM	
11587	GLEN ULLIN	1050.9	0.6053	1350.8	-77.7	1.2801	0.8529	90.3659	6.9294	0.3709	0.016	0.0106	0.0006	0.0012	0	0.0002	0.1574	0.0149	10/31/2016	11/1/2016	11/1/2016 2:52:42 PM	

32 record(s) retrieved

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	OCT 16	SEPT 16	AUG 16	JULY 16	JUNE 16	MAY 16	APR 16	MAR 16	FEB 16	JAN 16	DEC 15	NOV 15	ZONE
MT/ND	211	Sidney Area	1206	1193	1209	1210	1208	1206	1205	1207	1213	1209	1207	1204	1195	211
ND	24	Williston Area	1189	1169	1195	1169	1197	1191	1182	1196	1194	1195	1195	1199	1183	24
ND	25	Watford City Border	1212	1206	1211	1213	1211	1206	1209	1211	1211	1213	1216	1216	1223	25
ND/MT	241	Fairview Area	1198	1170	1210	1200	1202	1197	1202	1207	1201	1201	1199	1199	1184	241
ND	261	Williston - Tioga - Minot Line	1103	981	1174	1074	1206	1182	1179	1186	1048	1035	1052	1066	1047	261
ND	262	Minot Area	1190	1141	1172	1191	1208	1208	1208	1206	1189	1190	1189	1188	1192	262
ND	263	Tioga - Portal	1095	1120	1129	1127	1118	1116	947	1105	1082	1107	1092	1082	1112	263
ND	264	Williston - Ray	1182	1157	1194	1198	1169	1183	1184	1190	1189	1181	1183	1180	1178	264
ND	265	North Tioga Transfer - Portal	1182	1180	1186	1166	1177	1170	1173	1190	1186	1187	1190	1188	1189	265
ND	271	Bismarck - Cleveland	1187	1142	1173	1185	1208	1208	1208	1206	1186	1181	1172	1181	1192	271
ND	272	Cleveland - Mapleton	1186	1142	1172	1184	1207	1207	1206	1204	1185	1180	1171	1180	1191	272
ND	273	Cleveland - Grafton	1185	1142	1172	1184	1207	1206	1206	1201	1185	1179	1171	1180	1190	273
ND	28	Bismarck - Cabin Creek	1169	1152	1172	1185	1208	1208	1202	1190	1154	1142	1131	1137	1148	28
ND	31	Dickinson Area	1138	1153	1171	1169	1124	1128	1117	1114	1144	1139	1130	1136	1135	31
ND	311	Taylor Take-Off - Glen Ullin Comp	1147	0	0	0	0	0	0	0	0	0	0	0	1147	311
ND/MT	32	Cabin Creek - Dickinson	1134	1137	1153	1150	1157	1153	1137	1129	1121	1125	1117	1117	1111	32
ND	33	Killdeer	1183	1182	1184	1183	1184	1185	1184	1181	1181	1183	1182	1186	1185	33
ND	34	Bowman Area	1027	996	996	996	996	996	980	982	979	1082	1103	1121	1102	34
ND	43	Spring Creek - Garden Crk Plant	1103	1109	1128	1109	1089	1087	1102	1143	1112	1091	1087	1092	1088	43
ND	610	MDU-Watford City BTU	1179	1179	1197	1206	1203	1186	1184	1174	1153	1140	1155	1174	1197	610
ND	802	Linton	1060	1053	1058	1059	1054	1065	1062	1062	1057	1056	1060	1066	1073	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

THERMAL ZONE VARIANCE DOCUMENTATION October 2016		
ZONE	***BTU VARIANCE***	***REASON***
24	-26	Blending of Supply / Flow Direction
241	-40	Blending of Supply / Flow Direction
261	-193	Operational / Supply Changes
262	-31	Blending of Supply / Flow Direction
264	-37	Blending of Supply / Flow Direction
271	-31	Blending of Supply / Flow Direction
272	-30	Blending of Supply / Flow Direction
273	-30	Blending of Supply / Flow Direction
28	-20	Blending of Supply / Flow Direction