

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

July 18, 2017

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

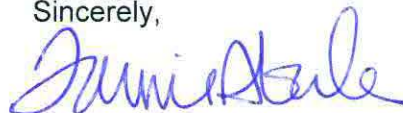
Re: Case No. PU-17-002 (Therm Billing)  
Monthly Report – May 2017

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 June 2017.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of May 2017.
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 May 2017.

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**  
**Jun-17**

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1334
MDU-308-ARNEGARD	025	1.1334
MDU-314-APPLE VALLEY	271	1.1472
MDU-318-BEACH	032	1.0202
MDU-319-BELFIELD	032	1.0277
MDU-323-BERTHOLD	262	1.1230
MDU-327-BISMARCK	028	1.1202
MDU-330-BOWMAN	034	0.9137
MDU-337-BURLINGTON	262	1.1472
MDU-343-CARRINGTON	273	1.1453
MDU-344-CLEVELAND	272	1.1372
MDU-364-CAVALIER	273	1.1695
MDU-365-DAWSON	271	1.1392
MDU-368-DES LACS	262	1.1311
MDU-369-DICKINSON	031	1.0756
MDU-374-FT TOTTEN	273	1.1534
MDU-375-DEVILS LAKE	273	1.1534
MDU-379-BARLOW	273	1.1453
MDU-384-EPPING	264	1.0900
MDU-387-ELDRIDGE	272	1.1453
MDU-407-GLADSTONE	031	1.0756
MDU-411-GLEN ULLIN	031	1.0833
MDU-413-GOLVA	032	1.0053
MDU-416-GARRISON	262	1.1311
MDU-417-GRAFTON	273	1.1775
MDU-429-HEBRON	031	1.0833
MDU-432-HETTINGER	903	2.4049
MDU-449-JAMESTOWN	272	1.1534
MDU-459-KILLDEER	033	1.1126
MDU-463-LANGDON	273	1.1453
MDU-469-LEFOR	031	1.0756
MDU-474-LIGNITE	263	1.0493
MDU-475-LINTON	802	1.0218
MDU-478-LINCOLN	028	1.1202
MDU-488-MCKENZIE	271	1.1472
MDU-494-MEDINA	271	1.1392
MDU-498-MANDAN	028	1.1202
MDU-500-MARMARTH	034	0.9204
MDU-505-MINOT	262	1.1472
MDU-510-MOTT	031	1.0756
MDU-512-MAX	262	1.1472
MDU-522-NEW ENGLAND	031	1.0678
MDU-524-NEW SALEM	028	1.0966
MDU-532-NEW ROCKFORD	273	1.1453
MDU-539-PARK RIVER	273	1.1695
MDU-540-PALERMO	262	1.1230
MDU-558-RAY	264	1.0900
MDU-561-REGENT	031	1.0756
MDU-563-RHAME	034	0.9069

MDU-564-RICHARDTON	031	1.0678
MDU-568-ROSS	261	1.0971
MDU-572-RUTHVILLE	262	1.1472
MDU-574-SANBORN	272	1.1534
MDU-583-SENTINEL BUTTE	032	1.0202
MDU-588-SOUTH HEART	031	1.0678
MDU-717-SPIRITWOOD	272	1.1534
MDU-590-SPRINGBROOK	264	1.0900
MDU-591-STANLEY	261	1.1130
MDU-593-STEELE	271	1.1392
MDU-598-SHEYENNE	273	1.1534
MDU-605-SURREY	262	1.1472
MDU-610-TAPPEN	271	1.1392
MDU-611-TAYLOR	031	1.0678
MDU-616-TIOGA	261	1.1051
MDU-619-TURTLE LAKE	262	1.1311
MDU-620-TRENTON	024	1.1016
MDU-624-UNDERWOOD	262	1.1311
MDU-625-VALLEY CITY	272	1.1614
MDU-629-WALHALLA	273	1.1695
MDU-632-WATFORD CITY	610	1.1221
MDU-636-WHEELOCK	264	1.0821
MDU-637-WHITE EARTH	261	1.1051
MDU-642-WILLISTON	024	1.1016
MDU-646-WASHBURN	262	1.1392
MDU-647-WILTON	262	1.1230
MDU-664-RIVERDALE	262	1.1311
MDU-691-FAIRVIEW	241	1.1102
MDU-712-MINOT AFB	262	1.1472
MDU-718-FAIRMOUNT	600	1.1238
MDU-732-NEKOMA	273	1.1453
MDU-732-MSR SITE	273	1.1453





<b>GQ Source Number:</b>	0602160	<b>Specific Gravity:</b>	0.6951
<b>GQ Source Name:</b>	FAIRVIEW BORDER	<b>Dry Heat Value:</b>	1167.93
<b>Effective Date:</b>	5/1/2017 9:00:00 AM	<b>Wet Heat Value:</b>	1147.61
<b>Effective End Date</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1167.93
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	285.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	0.00

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	73.885		CO2	Carbon Dioxide	0.598
C2	Ethane	19.887	0.0000	N2	Nitrogen	3.060
C3	Propane	2.359	0.6479	O2	Oxygen	0.007
IC4	Isobutane	0.063	0.0204	He	Helium	
NC4	n-Butane	0.123	0.0386	H2	Hydrogen	
IC5	Isopentane	0.009	0.0033	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.010	0.0035	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%      0.714 GPM

**Sample Date:** 6/1/2017 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** RR  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** MB

**Analysis Remarks:**

Zone 241

<b>GQ Source Number:</b>	0602225	<b>Specific Gravity:</b>	0.7270
<b>GQ Source Name:</b>	WATFORD CITY WEST BORDER	<b>Dry Heat Value:</b>	1203.78
<b>Effective Date:</b>	5/1/2017 9:00:00 AM	<b>Wet Heat Value:</b>	1182.83
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1203.78
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	472.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	0.00

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	69.546		CO2	Carbon Dioxide	1.026
C2	Ethane	22.210	5.9222	N2	Nitrogen	3.256
C3	Propane	3.318	0.9115	O2	Oxygen	0.009
IC4	Isobutane	0.182	0.0594	He	Helium	
NC4	n-Butane	0.384	0.1207	H2	Hydrogen	
IC5	Isopentane	0.033	0.0120	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.034	0.0121	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%      7.039 GPM

**Sample Date:** 6/1/2017 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** ES  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** MB

**Analysis Remarks:**

Zone 25

# GQ Source Daily Summary

May 2017

Number: 601

Pressure Base: 14.730

Contract Day: 1

Name: TIOGA COMP STATION-ROBINSON LAKE 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	0.7017	1146.7	1167.0	2.000	2.000	94.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1393.15	
2	0.7007	1146.6	1166.9	2.000	2.000	94.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1394.00	
3	0.7006	1146.0	1166.3	2.000	2.000	94.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1393.37	
4	0.7078	1151.2	1171.6	0.853	3.684	71.937	20.894	2.357	0.081	0.165	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1392.64	
5	0.7024	1147.8	1168.1	0.785	3.494	72.918	20.172	2.391	0.077	0.145	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1393.75	
6	0.7039	1151.8	1172.2	0.836	3.311	72.591	20.743	2.285	0.073	0.140	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1397.14	
7	0.7043	1152.9	1173.4	0.860	3.244	72.529	20.825	2.316	0.071	0.137	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1398.11	
8	0.7029	1151.1	1171.5	0.862	3.215	72.957	20.326	2.396	0.074	0.148	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1397.36	
9	0.7050	1155.6	1176.1	0.861	3.142	72.336	21.206	2.236	0.068	0.133	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1400.73	
10	0.7071	1159.3	1179.9	0.868	3.108	71.946	21.576	2.279	0.068	0.136	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1403.08	
11	0.7059	1157.7	1178.2	0.856	3.114	72.252	21.217	2.341	0.068	0.132	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1402.25	
12	0.7050	1157.0	1177.5	0.834	3.103	72.358	21.177	2.317	0.066	0.127	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1402.38	
13	0.7059	1158.0	1178.5	0.858	3.090	72.221	21.297	2.316	0.068	0.130	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1402.69	
14	0.6949	1141.7	1161.9	0.758	3.198	74.122	19.597	2.130	0.062	0.117	0.007	0.008	0.000	0.000	0.000	0.000	0.000	1393.70	
15	0.7058	1157.9	1178.4	0.857	3.088	72.215	21.353	2.262	0.068	0.134	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1402.66	
16	0.7057	1158.2	1178.7	0.849	3.072	72.239	21.337	2.278	0.069	0.134	0.009	0.012	0.000	0.000	0.000	0.000	0.000	1403.12	
17	0.7075	1160.4	1181.0	0.865	3.081	71.994	21.448	2.381	0.071	0.140	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1404.03	
18	0.7084	1161.6	1182.2	0.876	3.080	71.959	21.392	2.417	0.079	0.167	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1404.51	
19	0.7082	1161.5	1182.1	0.876	3.064	72.038	21.322	2.420	0.079	0.168	0.014	0.018	0.000	0.000	0.000	0.000	0.000	1404.62	
20	0.7069	1159.9	1180.4	0.858	3.068	72.077	21.439	2.313	0.073	0.149	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1403.97	
21	0.7071	1159.1	1179.6	0.872	3.108	72.167	21.221	2.372	0.075	0.156	0.012	0.016	0.000	0.000	0.000	0.000	0.000	1402.88	
22	0.7066	1158.3	1178.8	0.882	3.095	72.082	21.450	2.259	0.069	0.141	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1402.40	
23	0.7071	1160.1	1180.7	0.868	3.062	72.088	21.410	2.318	0.074	0.153	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1404.00	
24	0.7010	1153.5	1173.9	0.740	3.079	73.214	20.364	2.367	0.074	0.140	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1402.12	
25	0.7079	1159.9	1180.4	0.872	3.137	72.265	20.885	2.548	0.082	0.172	0.016	0.024	0.000	0.000	0.000	0.000	0.000	1402.99	
26	0.7082	1161.8	1182.3	0.871	3.059	71.989	21.380	2.440	0.078	0.158	0.011	0.014	0.000	0.000	0.000	0.000	0.000	1404.91	
27	0.7044	1155.7	1176.2	0.855	3.091	72.546	20.970	2.312	0.070	0.137	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1401.39	
28	0.7065	1158.9	1179.4	0.871	3.076	72.126	21.395	2.303	0.069	0.138	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1403.09	
29	0.7061	1158.8	1179.4	0.862	3.053	72.204	21.333	2.322	0.069	0.137	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1403.47	
30	0.7049	1156.8	1177.3	0.857	3.069	72.458	21.076	2.310	0.069	0.138	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1402.20	
31	0.7039	1155.1	1175.6	0.842	3.099	72.726	20.695	2.412	0.071	0.136	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1401.21	
Avg	0.7050	1156.0	1176.0	0.961	3.035	74.469	19.210	2.110	0.065	0.129	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1400.58	

Zone 261

# GQ Source Daily Summary

May 2017

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	0.7388	1173.2	1193.9	0.874	5.223	67.706	21.477	4.180	0.151	0.346	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1389.06	
2	0.7389	1173.2	1194.0	0.872	5.235	67.674	21.504	4.180	0.150	0.344	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1389.01	
3	0.7393	1172.4	1193.2	0.868	5.329	67.522	21.618	4.125	0.151	0.347	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1387.68	
4	0.7359	1170.9	1191.7	0.861	5.110	67.985	21.598	3.939	0.143	0.326	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1389.16	
5	0.7319	1167.9	1188.6	0.838	4.951	68.690	21.210	3.798	0.144	0.327	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1389.39	
6	0.7370	1171.5	1192.3	0.871	5.159	67.896	21.541	4.013	0.147	0.332	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1388.84	
7	0.7334	1169.5	1190.2	0.845	4.992	68.422	21.349	3.902	0.140	0.314	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1389.75	
8	0.7345	1170.3	1191.0	0.845	5.047	68.268	21.379	3.963	0.142	0.319	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1389.65	
9	0.7343	1168.9	1189.6	0.846	5.113	68.370	21.138	4.036	0.142	0.320	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1388.15	
10	0.7337	1170.0	1190.7	0.849	4.980	68.346	21.463	3.879	0.137	0.309	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1390.09	
11	0.7323	1169.6	1190.3	0.868	4.850	68.549	21.451	3.822	0.131	0.295	0.016	0.018	0.000	0.000	0.000	0.000	0.000	1390.88	
12	0.7361	1172.8	1193.6	0.874	4.990	68.032	21.600	4.010	0.139	0.316	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1391.25	
13	0.7282	1167.5	1188.2	0.852	4.608	69.222	21.199	3.687	0.124	0.275	0.015	0.017	0.000	0.000	0.000	0.000	0.000	1392.40	
14	0.7323	1170.1	1190.8	0.851	4.844	68.600	21.350	3.897	0.131	0.293	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1391.49	
15	0.7357	1171.2	1192.0	0.857	5.080	68.110	21.414	4.050	0.138	0.313	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1389.67	
16	0.7326	1168.1	1188.8	0.853	4.988	68.472	21.392	3.827	0.132	0.299	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1388.89	
17	0.7341	1170.2	1191.0	0.865	4.977	68.239	21.581	3.863	0.136	0.303	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1390.03	
18	0.7356	1171.3	1192.0	0.873	5.041	68.031	21.632	3.936	0.139	0.311	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1389.84	
19	0.7366	1172.4	1193.2	0.875	5.064	67.926	21.631	3.994	0.144	0.325	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1390.25	
20	0.7364	1172.3	1193.0	0.878	5.047	68.007	21.558	3.993	0.143	0.331	0.020	0.023	0.000	0.000	0.000	0.000	0.000	1390.29	
21	0.7356	1171.6	1192.4	0.874	5.020	68.080	21.573	3.951	0.140	0.323	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1390.26	
22	0.7358	1171.4	1192.1	0.873	5.058	68.022	21.597	3.953	0.140	0.321	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1389.76	
23	0.7358	1171.2	1191.9	0.877	5.059	68.058	21.536	3.972	0.140	0.320	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1389.56	
24	0.7348	1170.8	1191.5	0.880	4.989	68.138	21.626	3.888	0.136	0.308	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1390.00	
25	0.7347	1171.1	1191.8	0.873	4.970	68.209	21.556	3.897	0.139	0.316	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1390.44	
26	0.7349	1171.1	1191.9	0.834	5.049	68.278	21.287	4.047	0.144	0.323	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1390.27	
27	0.7362	1173.3	1194.1	0.869	4.985	68.105	21.457	4.069	0.144	0.328	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1391.61	
28	0.7357	1173.2	1194.0	0.876	4.934	68.124	21.555	4.011	0.142	0.320	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1391.97	
29	0.7347	1172.1	1192.8	0.871	4.916	68.233	21.544	3.953	0.137	0.309	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1391.59	
30	0.7350	1172.3	1193.1	0.872	4.922	68.185	21.584	3.956	0.136	0.309	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1391.67	
31	0.7339	1171.4	1192.2	0.869	4.883	68.330	21.540	3.908	0.134	0.302	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1391.60	
Avg	0.7350	1171.0	1191.8	0.864	5.013	68.188	21.482	3.958	0.140	0.317	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1390.15	

Zone 2b2

<b>GQ Source Number:</b>	2501030	<b>Specific Gravity:</b>	0.6709
<b>GQ Source Name:</b>	LIGNITE PLANT	<b>Dry Heat Value:</b>	1114.84
<b>Effective Date:</b>	5/1/2017 9:00:00 AM	<b>Wet Heat Value:</b>	1095.43
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1114.84
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	325.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	0.00

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	77.690		CO2	Carbon Dioxide	0.138
C2	Ethane	15.406	4.1079	N2	Nitrogen	4.342
C3	Propane	2.042	0.5611	O2	Oxygen	0.303
IC4	Isobutane	0.049	0.0162	He	Helium	
NC4	n-Butane	0.030	0.0093	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.000	0.0000	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%      4.694 GPM

**Sample Date:** 6/1/2017 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** RR  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** MB

**Analysis Remarks:**

Zone 263

<b>GQ Source Number:</b>	3002013	<b>Specific Gravity:</b>	0.6800
<b>GQ Source Name:</b>	EPPING BORDER	<b>Dry Heat Value:</b>	1145.42
<b>Effective Date:</b>	5/1/2017 9:00:00 AM	<b>Wet Heat Value:</b>	1125.49
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1145.42
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	430.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	0.00

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	76.467		CO2	Carbon Dioxide	0.728
C2	Ethane	18.081	4.8213	N2	Nitrogen	2.779
C3	Propane	1.769	0.4860	O2	Oxygen	0.026
IC4	Isobutane	0.045	0.0148	He	Helium	
NC4	n-Butane	0.091	0.0287	H2	Hydrogen	
IC5	Isopentane	0.006	0.0023	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.007	0.0025	Ar	Argon	
C6	Hexanes	0.000	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

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**Totals**      100.000%      5.356 GPM

**Sample Date:** 6/1/2017 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** ES  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** MB

**Analysis Remarks:**

Zone 264

\*\*\* End of Report \*\*\*

# GQ Source Daily Summary

May 2017

**Number:** 603

**Pressure Base:** 14.730

**Contract Day:** 1

**Name:** TIOGA COMP STATION-COUNTY LINE PLANT

**Temperature Base:**

**Contract Hour:** 9

Day	Relative Density	Heating Value		CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT	
		Wet	Dry																	
1	0.7017	1146.7	1167.0	2.000	2.000	94.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1393.15	
2	0.7007	1146.6	1166.9	2.000	2.000	94.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1394.00	
3	0.7006	1146.0	1166.3	2.000	2.000	94.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1393.37	
4	0.7090	1150.2	1170.6	0.851	3.865	71.682	20.966	2.342	0.084	0.176	0.015	0.019	0.000	0.000	0.000	0.000	0.000	0.000	1390.20	
5	0.7030	1146.9	1167.3	0.777	3.612	72.688	20.371	2.320	0.075	0.140	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1392.17	
6	0.7029	1148.8	1169.2	0.828	3.414	72.807	20.381	2.331	0.075	0.143	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1394.53	
7	0.7066	1156.2	1176.7	0.869	3.247	72.038	21.336	2.286	0.070	0.136	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1399.85	
8	0.7012	1147.9	1168.2	0.859	3.261	73.276	19.955	2.412	0.073	0.144	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1395.06	
9	0.7050	1155.7	1176.2	0.859	3.143	72.354	21.173	2.240	0.069	0.139	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1400.80	
10	0.7061	1157.7	1178.2	0.862	3.117	72.114	21.438	2.254	0.067	0.131	0.008	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1402.16	
11	0.7071	1159.4	1179.9	0.863	3.107	72.052	21.405	2.343	0.069	0.138	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1403.19	
12	0.7040	1155.6	1176.0	0.825	3.113	72.521	21.029	2.312	0.065	0.121	0.007	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1401.58	
13	0.7065	1158.7	1179.2	0.867	3.089	72.143	21.365	2.309	0.069	0.136	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1402.91	
14	0.7045	1155.9	1176.4	0.830	3.122	72.523	20.942	2.370	0.068	0.128	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1401.59	
15	0.7040	1155.3	1175.8	0.838	3.104	72.505	21.121	2.216	0.066	0.128	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1401.34	
16	0.7055	1157.8	1178.3	0.847	3.078	72.239	21.352	2.270	0.067	0.129	0.008	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1402.86	
17	0.7074	1160.1	1180.6	0.867	3.084	72.081	21.325	2.400	0.073	0.146	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1403.77	
18	0.7083	1161.6	1182.2	0.872	3.076	71.905	21.505	2.383	0.075	0.157	0.012	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1404.62	
19	0.7074	1160.1	1180.6	0.870	3.079	72.163	21.215	2.404	0.078	0.164	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1403.76	
20	0.7067	1159.3	1179.9	0.863	3.073	72.201	21.254	2.350	0.076	0.158	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1403.53	
21	0.7070	1159.3	1179.8	0.872	3.094	72.023	21.490	2.285	0.071	0.143	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1403.15	
22	0.7055	1156.3	1176.8	0.880	3.116	72.340	21.143	2.284	0.071	0.145	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1401.08	
23	0.7062	1158.1	1178.6	0.877	3.079	72.144	21.446	2.223	0.068	0.140	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1402.54	
24	0.7053	1158.1	1178.6	0.830	3.073	72.448	21.032	2.362	0.075	0.153	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1403.32	
25	0.7017	1153.4	1173.8	0.750	3.137	73.336	19.998	2.503	0.081	0.157	0.015	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1401.27	
26	0.7082	1161.6	1182.2	0.868	3.070	72.025	21.288	2.491	0.078	0.156	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1404.74	
27	0.7050	1156.6	1177.1	0.861	3.083	72.410	21.139	2.280	0.069	0.137	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1401.92	
28	0.7067	1159.5	1180.1	0.869	3.058	72.043	21.514	2.296	0.067	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1403.71	
29	0.7065	1159.0	1179.6	0.866	3.068	72.095	21.457	2.292	0.068	0.135	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1403.37	
30	0.7058	1158.3	1178.8	0.861	3.061	72.256	21.274	2.325	0.068	0.135	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1403.09	
31	0.7070	1159.4	1179.9	0.879	3.078	72.216	21.136	2.442	0.075	0.150	0.011	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1403.22	
Avg	0.7053	1156.0	1176.1	0.963	3.048	74.407	19.260	2.107	0.065	0.129	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1400.51	

Zone 265

# GQ Source Daily Summary

May 2017

Number: 591

Pressure Base: 14.730

Contract Day: 1

Name: COUNTY LINE 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	0.7094	1161.7	1182.3	0.938	3.076	71.551	22.015	2.118	0.084	0.193	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1403.70	
2	0.7113	1165.7	1186.3	0.943	3.005	71.076	22.660	2.019	0.082	0.190	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1406.61	
3	0.7117	1166.1	1186.7	0.949	3.005	70.951	22.825	1.980	0.080	0.184	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1406.76	
4	0.7099	1163.8	1184.4	0.928	3.016	71.269	22.552	1.957	0.077	0.177	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1405.66	
5	0.7021	1149.2	1169.6	0.934	3.149	72.797	20.918	1.924	0.076	0.176	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1395.82	
6	0.7116	1165.6	1186.3	0.957	3.015	70.907	22.889	1.963	0.075	0.171	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1406.27	
7	0.7005	1145.9	1166.2	0.938	3.196	73.523	19.759	2.286	0.083	0.190	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1393.30	
8	0.7109	1164.9	1185.6	0.955	2.998	71.082	22.694	2.000	0.075	0.172	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1406.08	
9	0.7117	1166.2	1186.8	0.954	2.991	70.894	22.922	1.981	0.072	0.164	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1406.89	
10	0.7140	1170.7	1191.4	0.954	2.943	70.561	23.152	2.133	0.071	0.164	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1409.92	
11	0.7121	1166.9	1187.5	0.944	3.006	71.006	22.598	2.173	0.075	0.173	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1407.25	
12	0.7130	1169.0	1189.7	0.949	2.958	70.767	22.931	2.133	0.072	0.166	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1408.88	
13	0.7118	1167.3	1188.0	0.947	2.943	71.008	22.859	1.987	0.070	0.162	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1408.11	
14	0.7116	1167.2	1187.9	0.948	2.939	70.868	23.026	1.970	0.069	0.158	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1408.11	
15	0.7117	1167.5	1188.1	0.949	2.922	70.961	22.858	2.057	0.070	0.160	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1408.40	
16	0.7128	1169.2	1189.9	0.950	2.920	70.823	22.923	2.117	0.074	0.171	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1409.41	
17	0.7119	1168.1	1188.8	0.949	2.905	70.969	22.833	2.077	0.074	0.170	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1408.94	
18	0.7112	1167.3	1188.0	0.954	2.880	71.067	22.804	2.034	0.072	0.166	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1408.68	
19	0.7106	1166.4	1187.1	0.949	2.887	71.099	22.857	1.943	0.073	0.168	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1408.19	
20	0.7107	1165.8	1186.4	0.943	2.945	71.075	22.804	1.972	0.072	0.166	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1407.31	
21	0.7066	1158.7	1179.2	0.948	2.986	71.612	22.484	1.739	0.064	0.147	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1402.82	
22	0.7100	1164.8	1185.4	0.951	2.928	70.988	23.105	1.801	0.062	0.144	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1406.82	
23	0.7084	1162.6	1183.2	0.949	2.914	71.322	22.778	1.814	0.061	0.142	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1405.76	
24	0.7101	1163.9	1184.5	0.918	3.037	71.155	22.647	2.005	0.066	0.151	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1405.66	
25	0.7108	1166.2	1186.8	0.944	2.923	71.154	22.632	2.115	0.065	0.148	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1407.75	
26	0.7100	1165.2	1185.8	0.947	2.905	71.223	22.677	2.012	0.066	0.150	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1407.35	
27	0.7086	1162.7	1183.3	0.944	2.932	71.459	22.449	1.980	0.066	0.150	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1405.70	
28	0.7100	1165.1	1185.7	0.949	2.911	71.158	22.801	1.942	0.066	0.152	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1407.17	
29	0.7102	1165.4	1186.1	0.952	2.906	71.115	22.841	1.953	0.065	0.148	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1407.40	
30	0.7080	1161.8	1182.4	0.957	2.906	71.523	22.491	1.885	0.066	0.151	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1405.27	
31	0.7015	1149.9	1170.3	0.936	3.056	72.826	21.086	1.863	0.065	0.147	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1397.24	
Avg	0.7098	1164.0	1184.5	0.946	2.971	71.284	22.544	1.998	0.071	0.164	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1405.91	

Zone 26b

# GQ Source Daily Summary

May 2017

**Number:** 043

**Pressure Base:** 14.730

**Contract Day:** 1

**Name:** BISMARCK STATION-CLEVELAND STATION

**Temperature Base:**

**Contract Hour:** 9

Day	Relative Density	Heating Value		CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
		Wet	Dry																
1	0.7383	1173.4	1194.2	0.859	5.189	67.864	21.341	4.194	0.153	0.352	0.023	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1389.76
2	0.7406	1174.5	1195.3	0.855	5.339	67.480	21.492	4.268	0.156	0.362	0.023	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1388.96
3	0.7363	1171.6	1192.4	0.850	5.126	67.992	21.528	3.980	0.146	0.335	0.021	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1389.55
4	0.7345	1170.5	1191.3	0.834	5.042	68.371	21.274	3.941	0.148	0.342	0.023	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1390.01
5	0.7326	1169.6	1190.3	0.839	4.915	68.594	21.300	3.858	0.139	0.315	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1390.69
6	0.7335	1169.0	1189.7	0.840	5.032	68.546	21.099	3.973	0.143	0.325	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1389.12
7	0.7352	1171.5	1192.2	0.854	5.018	68.223	21.422	3.974	0.141	0.325	0.021	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1390.47
8	0.7339	1169.2	1189.9	0.853	5.038	68.480	21.131	3.998	0.140	0.320	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1388.98
9	0.7334	1170.2	1190.9	0.849	4.942	68.433	21.421	3.867	0.136	0.311	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1390.59
10	0.7331	1170.9	1191.7	0.851	4.864	68.480	21.455	3.872	0.133	0.304	0.019	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1391.77
11	0.7331	1171.8	1192.5	0.854	4.804	68.529	21.444	3.890	0.133	0.306	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1392.83
12	0.7297	1168.1	1188.8	0.833	4.736	69.102	21.042	3.833	0.128	0.289	0.018	0.019	0.000	0.000	0.000	0.000	0.000	0.000	1391.75
13	0.7328	1170.5	1191.2	0.852	4.856	68.621	21.266	3.927	0.133	0.304	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1391.59
14	0.7328	1167.3	1188.0	0.831	5.088	68.574	21.086	3.931	0.137	0.313	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1387.73
15	0.7330	1169.3	1190.0	0.839	4.971	68.472	21.384	3.854	0.134	0.306	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1389.95
16	0.7336	1170.5	1191.3	0.848	4.942	68.328	21.564	3.841	0.134	0.304	0.018	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1390.80
17	0.7357	1172.3	1193.1	0.856	5.010	68.086	21.594	3.948	0.141	0.322	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1391.02
18	0.7363	1173.4	1194.1	0.860	5.003	67.960	21.723	3.946	0.141	0.324	0.021	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1391.62
19	0.7359	1172.4	1193.1	0.860	5.020	68.135	21.470	3.993	0.143	0.332	0.022	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1390.89
20	0.7349	1171.5	1192.2	0.854	4.993	68.248	21.451	3.944	0.141	0.325	0.021	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1390.72
21	0.7355	1171.5	1192.2	0.859	5.039	68.173	21.440	3.976	0.142	0.326	0.021	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1390.18
22	0.7353	1171.5	1192.2	0.862	5.017	68.179	21.476	3.961	0.140	0.323	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1390.39
23	0.7340	1171.0	1191.8	0.862	4.925	68.336	21.521	3.863	0.136	0.314	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1391.05
24	0.7352	1171.9	1192.7	0.853	4.998	68.270	21.345	4.013	0.143	0.332	0.021	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1390.96
25	0.7350	1172.6	1193.4	0.825	4.978	68.391	21.190	4.084	0.147	0.336	0.022	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1391.98
26	0.7353	1173.5	1194.2	0.858	4.905	68.229	21.501	4.001	0.141	0.323	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1392.70
27	0.7351	1173.4	1194.2	0.858	4.882	68.238	21.556	3.966	0.138	0.318	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1392.90
28	0.7342	1172.0	1192.8	0.856	4.894	68.366	21.436	3.961	0.136	0.312	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1392.03
29	0.7345	1172.7	1193.5	0.856	4.879	68.311	21.515	3.949	0.136	0.312	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1392.56
30	0.7335	1171.6	1192.4	0.855	4.856	68.429	21.485	3.897	0.133	0.305	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1392.18
31	0.7322	1169.5	1190.2	0.855	4.857	68.667	21.312	3.818	0.136	0.312	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1390.95
Avg	0.7345	1171.0	1192.0	0.851	4.973	68.326	21.396	3.952	0.140	0.320	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1390.86

Zone 271

# GQ Source Daily Summary

May 2017

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	0.7386	1173.3	1194.1	0.870	5.200	67.819	21.412	4.126	0.157	0.360	0.026	0.029	0.000					1389.46	
2	0.7391	1172.7	1193.4	0.867	5.292	67.689	21.427	4.182	0.152	0.344	0.023	0.024	0.000					1388.20	
3	0.7394	1172.9	1193.6	0.865	5.312	67.608	21.487	4.187	0.152	0.342	0.022	0.024	0.000					1388.13	
4	0.7390	1172.1	1192.9	0.860	5.335	67.595	21.553	4.114	0.152	0.344	0.023	0.024	0.000					1387.58	
5	0.7333	1168.6	1189.3	0.843	5.043	68.442	21.320	3.846	0.142	0.320	0.021	0.023	0.000					1388.74	
6	0.7346	1169.1	1189.8	0.845	5.120	68.300	21.277	3.948	0.143	0.322	0.021	0.023	0.000					1388.22	
7	0.7337	1168.3	1189.0	0.837	5.101	68.458	21.138	3.962	0.142	0.318	0.021	0.022	0.000					1388.11	
8	0.7356	1170.6	1191.3	0.862	5.102	68.101	21.471	3.963	0.141	0.317	0.021	0.023	0.000					1388.99	
9	0.7348	1168.7	1189.4	0.858	5.146	68.308	21.166	4.020	0.141	0.318	0.021	0.022	0.000					1387.52	
10	0.7337	1168.6	1189.3	0.861	5.050	68.403	21.290	3.910	0.137	0.307	0.020	0.022	0.000					1388.40	
11	0.7327	1168.9	1189.6	0.861	4.935	68.485	21.439	3.812	0.132	0.296	0.020	0.021	0.000					1389.75	
12	0.7345	1171.2	1192.0	0.863	4.957	68.271	21.493	3.937	0.135	0.303	0.020	0.022	0.000					1390.81	
13	0.7300	1168.1	1188.8	0.849	4.742	68.964	21.242	3.761	0.126	0.278	0.018	0.020	0.000					1391.42	
14	0.7344	1170.8	1191.5	0.856	4.991	68.303	21.401	3.973	0.134	0.300	0.020	0.022	0.000					1390.32	
15	0.7341	1168.8	1189.5	0.851	5.088	68.319	21.328	3.937	0.135	0.302	0.020	0.021	0.000					1388.27	
16	0.7309	1164.2	1184.8	0.826	5.097	68.833	20.943	3.830	0.133	0.297	0.019	0.021	0.000					1385.94	
17	0.7350	1170.2	1191.0	0.861	5.071	68.115	21.580	3.892	0.136	0.303	0.020	0.022	0.000					1389.13	
18	0.7355	1170.6	1191.3	0.869	5.079	68.084	21.569	3.904	0.138	0.312	0.022	0.023	0.000					1389.14	
19	0.7359	1171.0	1191.7	0.865	5.098	68.006	21.606	3.938	0.137	0.306	0.021	0.024	0.000					1389.23	
20	0.7352	1171.4	1192.1	0.847	5.043	68.204	21.382	4.040	0.137	0.304	0.021	0.022	0.000					1390.27	
21	0.7365	1171.7	1192.5	0.868	5.105	67.967	21.570	3.980	0.142	0.323	0.022	0.024	0.000					1389.52	
22	0.7362	1171.4	1192.2	0.866	5.102	68.004	21.544	3.977	0.142	0.321	0.021	0.023	0.000					1389.43	
23	0.7363	1171.2	1192.0	0.870	5.113	67.990	21.543	3.980	0.141	0.319	0.021	0.023	0.000					1389.13	
24	0.7358	1171.2	1191.9	0.872	5.063	68.044	21.590	3.935	0.139	0.313	0.021	0.023	0.000					1389.59	
25	0.7353	1170.9	1191.6	0.859	5.061	68.157	21.463	3.956	0.141	0.318	0.021	0.024	0.000					1389.64	
26	0.7354	1171.0	1191.8	0.833	5.097	68.240	21.255	4.060	0.144	0.324	0.022	0.024	0.000					1389.75	
27	0.7364	1173.0	1193.8	0.867	5.021	68.075	21.473	4.050	0.143	0.324	0.022	0.025	0.000					1391.14	
28	0.7355	1172.3	1193.0	0.865	4.981	68.163	21.510	3.982	0.140	0.314	0.021	0.023	0.000					1391.13	
29	0.7350	1171.4	1192.1	0.866	4.992	68.220	21.465	3.970	0.137	0.308	0.020	0.022	0.000					1390.49	
30	0.7354	1172.2	1192.9	0.867	4.976	68.135	21.571	3.965	0.136	0.306	0.020	0.022	0.000					1391.12	
31	0.7347	1171.3	1192.1	0.863	4.970	68.232	21.518	3.935	0.135	0.305	0.020	0.022	0.000					1390.75	
Avg	0.7352	1171.0	1191.3	0.859	5.074	68.178	21.420	3.970	0.140	0.315	0.021	0.023	0.000					1389.33	

Zone 272

# GQ Source Daily Summary

May 2017

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	0.7378	1171.5	1192.2	0.865	5.250	67.845	21.379	4.139	0.148	0.332	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1387.97	
2	0.7377	1171.6	1192.3	0.866	5.229	67.841	21.430	4.124	0.146	0.324	0.020	0.020	0.000	0.000	0.000	0.000	0.000	1388.22	
3	0.7392	1171.1	1191.9	0.864	5.400	67.531	21.549	4.137	0.148	0.331	0.020	0.020	0.000	0.000	0.000	0.000	0.000	1386.31	
4	0.7332	1168.9	1189.6	0.843	5.008	68.458	21.355	3.832	0.142	0.318	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1389.28	
5	0.7354	1170.9	1191.6	0.848	5.085	68.171	21.404	3.976	0.145	0.326	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1389.58	
6	0.7339	1169.3	1190.0	0.841	5.049	68.450	21.190	3.965	0.143	0.318	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1389.08	
7	0.7351	1170.9	1191.6	0.860	5.037	68.199	21.456	3.948	0.140	0.316	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1389.86	
8	0.7351	1169.7	1190.4	0.858	5.114	68.257	21.242	4.028	0.141	0.317	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1388.43	
9	0.7342	1169.9	1190.6	0.862	5.014	68.337	21.361	3.936	0.138	0.309	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1389.49	
10	0.7337	1169.7	1190.4	0.858	4.980	68.373	21.436	3.875	0.135	0.302	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1389.78	
11	0.7351	1172.4	1193.2	0.864	4.936	68.204	21.544	3.966	0.136	0.306	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1391.68	
12	0.7291	1168.4	1189.1	0.849	4.650	69.090	21.255	3.720	0.125	0.274	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1392.53	
13	0.7340	1171.2	1192.0	0.852	4.926	68.393	21.385	3.969	0.134	0.299	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1391.30	
14	0.7346	1170.4	1191.2	0.856	5.026	68.253	21.425	3.961	0.136	0.302	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1389.77	
15	0.7308	1164.9	1185.5	0.825	5.054	68.848	20.973	3.832	0.133	0.296	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1386.78	
16	0.7345	1170.2	1191.0	0.859	5.023	68.203	21.558	3.882	0.134	0.300	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1389.66	
17	0.7348	1170.7	1191.5	0.861	5.016	68.181	21.568	3.890	0.137	0.306	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1389.99	
18	0.7349	1171.0	1191.8	0.863	5.009	68.223	21.447	3.973	0.137	0.307	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1390.18	
19	0.7371	1171.2	1191.9	0.858	5.213	67.882	21.476	4.063	0.141	0.321	0.023	0.023	0.000	0.000	0.000	0.000	0.000	1388.29	
20	0.7346	1171.4	1192.2	0.857	4.961	68.144	21.716	3.854	0.133	0.295	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1390.99	
21	0.7358	1171.7	1192.4	0.862	5.057	68.041	21.586	3.952	0.140	0.317	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1390.08	
22	0.7361	1171.5	1192.3	0.868	5.081	68.058	21.487	3.998	0.142	0.321	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1389.65	
23	0.7355	1171.7	1192.5	0.873	5.007	68.085	21.614	3.930	0.138	0.311	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1390.45	
24	0.7351	1171.6	1192.4	0.866	4.985	68.192	21.530	3.925	0.140	0.317	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1390.71	
25	0.7347	1170.8	1191.5	0.824	5.062	68.338	21.225	4.042	0.143	0.320	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1390.09	
26	0.7369	1174.1	1194.9	0.869	4.995	68.054	21.464	4.091	0.146	0.332	0.023	0.026	0.000	0.000	0.000	0.000	0.000	1391.97	
27	0.7351	1172.7	1193.5	0.861	4.920	68.240	21.507	3.974	0.140	0.314	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1392.09	
28	0.7347	1171.8	1192.6	0.867	4.934	68.279	21.470	3.964	0.137	0.307	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1391.34	
29	0.7354	1172.8	1193.5	0.867	4.942	68.152	21.582	3.972	0.136	0.307	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1391.78	
30	0.7343	1171.9	1192.6	0.862	4.901	68.302	21.529	3.928	0.135	0.302	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1391.78	
31	0.7339	1170.7	1191.4	0.859	4.937	68.382	21.424	3.915	0.135	0.304	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1390.76	
Avg	0.7349	1171.0	1191.6	0.858	5.026	68.226	21.438	3.960	0.139	0.311	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1390.00	

Zone 273

# GQ Source Daily Summary

May 2017

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	0.7315	1166.3	1187.0	0.855	4.984	69.026	20.618	3.993	0.145	0.335	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1387.91	
2	0.7062	1139.5	1159.7	0.833	4.276	73.262	18.004	3.213	0.115	0.264	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1380.11	
3	0.7306	1165.6	1186.2	0.847	4.965	68.960	20.914	3.814	0.139	0.320	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1387.78	
4	0.7340	1170.2	1190.9	0.835	5.014	68.442	21.263	3.912	0.146	0.339	0.022	0.025	0.000	0.000	0.000	0.000	0.000	1390.07	
5	0.7328	1169.5	1190.2	0.840	4.937	68.567	21.291	3.870	0.139	0.316	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1390.40	
6	0.7333	1168.8	1189.5	0.838	5.031	68.575	21.076	3.970	0.143	0.325	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1389.06	
7	0.7351	1171.3	1192.1	0.854	5.018	68.241	21.404	3.974	0.141	0.325	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1390.38	
8	0.7340	1169.3	1190.0	0.853	5.039	68.461	21.145	4.000	0.140	0.321	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1389.04	
9	0.7334	1170.1	1190.8	0.849	4.940	68.444	21.412	3.865	0.136	0.311	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1390.55	
10	0.7330	1170.7	1191.5	0.851	4.868	68.491	21.446	3.868	0.133	0.303	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1391.63	
11	0.7352	1173.1	1193.9	0.853	4.922	68.244	21.469	4.013	0.138	0.317	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1392.40	
12	0.7310	1169.4	1190.1	0.834	4.783	68.898	21.139	3.884	0.130	0.294	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1391.97	
13	0.7328	1170.6	1191.3	0.851	4.856	68.615	21.271	3.929	0.133	0.304	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1391.66	
14	0.7333	1168.0	1188.6	0.834	5.084	68.490	21.169	3.935	0.136	0.311	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1388.10	
15	0.7330	1169.2	1189.9	0.841	4.970	68.480	21.380	3.850	0.134	0.305	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1389.88	
16	0.7337	1170.5	1191.3	0.849	4.945	68.323	21.565	3.842	0.134	0.304	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1390.77	
17	0.7356	1172.2	1193.0	0.856	5.009	68.098	21.586	3.946	0.140	0.321	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1390.98	
18	0.7363	1173.3	1194.1	0.860	4.999	67.965	21.726	3.943	0.141	0.324	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1391.64	
19	0.7359	1172.5	1193.2	0.860	5.021	68.126	21.474	3.995	0.143	0.333	0.022	0.025	0.000	0.000	0.000	0.000	0.000	1390.92	
20	0.7349	1171.5	1192.3	0.855	4.993	68.240	21.459	3.943	0.141	0.325	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1390.73	
21	0.7355	1171.5	1192.2	0.860	5.036	68.174	21.443	3.975	0.142	0.327	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1390.23	
22	0.7353	1171.4	1192.2	0.862	5.019	68.184	21.466	3.963	0.140	0.323	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1390.33	
23	0.7340	1171.0	1191.8	0.862	4.925	68.335	21.524	3.862	0.136	0.313	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1391.04	
24	0.7352	1171.8	1192.6	0.853	4.997	68.280	21.340	4.008	0.143	0.332	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1390.90	
25	0.7349	1172.2	1193.0	0.824	4.988	68.420	21.159	4.075	0.147	0.338	0.023	0.025	0.000	0.000	0.000	0.000	0.000	1391.66	
26	0.7353	1173.4	1194.1	0.858	4.909	68.231	21.496	4.000	0.141	0.322	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1392.60	
27	0.7350	1173.3	1194.1	0.858	4.885	68.241	21.554	3.964	0.138	0.317	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1392.83	
28	0.7342	1172.0	1192.7	0.856	4.895	68.375	21.427	3.960	0.136	0.312	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1391.97	
29	0.7345	1172.7	1193.5	0.856	4.882	68.311	21.509	3.951	0.136	0.313	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1392.52	
30	0.7335	1171.7	1192.4	0.855	4.854	68.429	21.486	3.898	0.133	0.305	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1392.24	
31	0.7320	1169.6	1190.3	0.855	4.839	68.680	21.330	3.810	0.135	0.310	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1391.19	
Avg	0.7331	1170.0	1190.5	0.850	4.932	68.568	21.243	3.911	0.138	0.316	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1390.44	

Zone 28





# GQ Source Daily Summary

May 2017

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	0.6911	1156.1	1176.6	0.000	3.135	72.526	23.430	0.888	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.27	
2	0.6923	1158.0	1178.5	0.000	3.126	72.316	23.621	0.917	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.47	
3	0.6929	1159.1	1179.6	0.000	3.119	72.219	23.702	0.941	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.14	
4	0.6889	1155.2	1175.7	0.000	2.980	72.974	23.160	0.869	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.47	
5	0.6876	1154.7	1175.1	0.001	2.887	73.218	23.047	0.829	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.18	
6	0.6889	1157.6	1178.1	0.002	2.833	73.046	23.191	0.911	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.36	
7	0.6870	1153.7	1174.2	0.001	2.894	73.337	22.915	0.836	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.58	
8	0.6878	1154.7	1175.2	0.000	2.908	73.145	23.119	0.809	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.98	
9	0.6881	1154.5	1174.9	0.000	2.952	73.067	23.165	0.801	0.007	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.36	
10	0.6874	1155.5	1175.9	0.001	2.824	73.213	23.168	0.778	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.31	
11	0.6885	1157.0	1177.5	0.001	2.833	73.077	23.201	0.867	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.05	
12	0.6881	1156.3	1176.7	0.001	2.839	73.156	23.123	0.863	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.57	
13	0.6882	1156.7	1177.1	0.001	2.827	73.132	23.161	0.862	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.93	
14	0.6871	1155.2	1175.6	0.001	2.816	73.272	23.114	0.782	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.23	
15	0.6869	1154.5	1174.9	0.001	2.838	73.312	23.057	0.776	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.60	
16	0.6894	1157.3	1177.8	0.000	2.903	72.832	23.432	0.817	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.47	
17	0.6894	1157.3	1177.8	0.000	2.903	72.832	23.432	0.817	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.47	
18	0.6878	1155.6	1176.1	0.009	2.839	73.145	23.206	0.784	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.09	
19	0.6880	1157.4	1177.9	0.002	2.762	73.120	23.295	0.806	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.05	
20	0.6876	1156.4	1176.9	0.002	2.783	73.197	23.210	0.791	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.27	
21	0.6874	1156.0	1176.5	0.001	2.793	73.237	23.150	0.802	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.94	
22	0.6892	1159.8	1180.3	0.002	2.725	73.088	23.176	0.983	0.010	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.75	
23	0.6873	1156.9	1177.4	0.002	2.726	73.271	23.185	0.801	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.15	
24	0.6867	1156.0	1176.5	0.001	2.720	73.384	23.092	0.785	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.76	
25	0.6874	1157.4	1177.9	0.002	2.699	73.343	23.065	0.871	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.76	
26	0.6869	1156.4	1176.9	0.001	2.712	73.349	23.137	0.783	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.07	
27	0.6866	1155.2	1175.7	0.001	2.760	73.406	23.023	0.793	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.87	
28	0.6867	1154.9	1175.4	0.001	2.787	73.375	23.036	0.786	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.39	
29	0.6861	1154.9	1175.3	0.002	2.739	73.466	23.019	0.757	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.88	
30	0.6872	1155.9	1176.4	0.002	2.776	73.277	23.137	0.792	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.06	
31	0.6876	1156.9	1177.4	0.002	2.753	73.220	23.191	0.819	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.90	
Avg	0.6881	1156.0	1176.7	0.001	2.845	73.115	23.192	0.830	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.50	

Zone 33

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

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
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:** Inactive

Zone 34

# GQ Source Daily Summary

May 2017

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	0.7024	1155.6	1176.0	0.963	2.761	71.934	22.742	1.558	0.018	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1403.19	
2	0.6832	1120.8	1140.7	0.989	3.040	74.699	20.772	0.496	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.98	
3	0.6798	1113.5	1133.2	1.011	3.130	75.636	19.503	0.706	0.005	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1374.40	
4	0.6778	1110.1	1129.7	1.014	3.143	75.967	19.237	0.628	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1372.24	
5	0.6774	1109.8	1129.5	1.020	3.113	76.105	19.089	0.644	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1372.34	
6	0.6752	1105.9	1125.5	1.024	3.140	76.434	18.848	0.530	0.009	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1369.67	
7	0.6759	1107.6	1127.2	1.015	3.119	76.372	18.843	0.625	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1371.04	
8	0.6815	1117.4	1137.2	1.008	3.054	75.242	20.046	0.632	0.007	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1377.55	
9	0.6799	1113.8	1133.6	1.008	3.125	75.488	19.791	0.563	0.009	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1374.74	
10	0.6793	1112.6	1132.3	1.012	3.142	75.617	19.631	0.571	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1373.74	
11	0.6783	1110.1	1129.8	1.018	3.180	75.796	19.449	0.533	0.009	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1371.83	
12	0.6909	1131.0	1151.1	1.043	3.054	73.514	21.594	0.761	0.021	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1384.83	
13	0.6920	1134.3	1154.4	1.109	2.863	73.170	22.238	0.612	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1387.69	
14	0.6875	1126.9	1146.9	1.093	2.913	73.895	21.652	0.443	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1383.20	
15	0.6876	1129.3	1149.3	1.036	2.868	73.931	21.612	0.542	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1385.91	
16	0.6933	1139.5	1159.6	1.028	2.788	73.459	21.496	1.212	0.008	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1392.65	
17	0.6874	1129.3	1149.3	1.017	2.869	74.702	20.124	1.274	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1386.17	
18	0.6756	1106.8	1126.4	1.020	3.127	76.605	18.428	0.807	0.005	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1370.39	
19	0.6777	1109.9	1129.5	1.002	3.170	76.072	19.008	0.737	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1372.03	
20	0.6845	1128.2	1148.2	0.985	2.719	74.611	21.055	0.621	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1387.77	
21	0.6904	1131.5	1151.6	0.988	3.063	73.841	21.009	1.078	0.008	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1385.89	
22	0.6750	1104.3	1123.8	1.020	3.223	76.600	18.458	0.682	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.92	
23	0.6772	1108.3	1128.0	1.012	3.193	76.232	18.780	0.762	0.008	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1370.71	
24	0.6736	1102.9	1122.4	1.004	3.208	76.656	18.633	0.484	0.005	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.53	
25	0.6815	1118.5	1138.3	1.004	2.988	75.393	19.896	0.641	0.019	0.049	0.004	0.005	0.000	0.000	0.000	0.000	0.000	1378.96	
26	0.6683	1093.9	1113.2	1.007	3.253	77.665	17.652	0.410	0.005	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1361.74	
27	0.6846	1121.9	1141.8	0.994	3.097	74.829	20.299	0.668	0.026	0.070	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1379.90	
28	0.6768	1108.7	1128.4	0.997	3.162	75.974	19.399	0.452	0.006	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1371.57	
29	0.6768	1108.7	1128.3	1.008	3.143	76.128	19.127	0.575	0.007	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1371.54	
30	0.6700	1097.6	1117.0	1.028	3.151	77.433	17.895	0.474	0.007	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1364.68	
31	0.6731	1102.1	1121.6	1.012	3.192	76.846	18.388	0.547	0.006	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.10	
Avg	0.6811	1116.0	1136.2	1.016	3.064	75.382	19.829	0.686	0.008	0.014	0.000	0.001	0.000	0.000	0.000	0.000	0.000	1376.74	

Zone 43

# Alliance Pipeline

DAILY ANALYSIS --- USA  
 ND07MD1 --- Hankinson Sales  
 May 2017

DAY	Heating Value (BTU/m3)	Relative Density	C1 Mol%	C2 Mol%	C3 Mol%	IC4 Mol%	NC4 Mol%	IC5 Mol%	NC5 Mol%	C6+ Mol%	N2 Mol%	CO2 Mol%	Hel Mol%
1	1,154.603	0.6669	83.4810	9.7633	3.7216	0.3688	0.6531	0.0605	0.0503	0.0253	1.3651	0.4985	0.0127
2	1,154.345	0.6672	83.4319	9.7357	3.7382	0.3706	0.6586	0.0612	0.0508	0.0258	1.4158	0.4990	0.0125
3	1,155.119	0.6676	83.3965	9.7143	3.8231	0.3678	0.6416	0.0614	0.0510	0.0256	1.4084	0.4976	0.0126
4	1,156.680	0.6684	83.3249	9.7506	3.8445	0.3770	0.6637	0.0623	0.0516	0.0257	1.4004	0.4866	0.0126
5	1,154.279	0.6670	83.4263	9.7305	3.7528	0.3666	0.6590	0.0592	0.0492	0.0254	1.4661	0.4528	0.0122
6	1,150.597	0.6641	83.8060	9.5953	3.6122	0.3518	0.6234	0.0594	0.0495	0.0271	1.4040	0.4587	0.0125
7	1,150.111	0.6638	83.7658	9.6688	3.5989	0.3449	0.6124	0.0543	0.0452	0.0254	1.4150	0.4567	0.0126
8	1,148.091	0.6630	83.9093	9.4978	3.5963	0.3413	0.6068	0.0540	0.0450	0.0248	1.4608	0.4522	0.0119
9	1,148.015	0.6633	83.8670	9.4981	3.6188	0.3381	0.6002	0.0546	0.0455	0.0257	1.4645	0.4755	0.0119
10	1,143.022	0.6597	84.4484	9.0543	3.5381	0.3319	0.5830	0.0535	0.0446	0.0243	1.4536	0.4560	0.0123
11	1,145.043	0.6603	84.4380	9.0827	3.5639	0.3413	0.5959	0.0559	0.0461	0.0258	1.3817	0.4562	0.0126
12	1,146.013	0.6603	84.4514	9.1319	3.5476	0.3402	0.5987	0.0581	0.0486	0.0283	1.3242	0.4587	0.0123
13	1,147.177	0.6617	84.2801	9.1688	3.6107	0.3485	0.6123	0.0583	0.0482	0.0267	1.3595	0.4740	0.0127
14	1,147.119	0.6620	84.2552	9.0480	3.7252	0.3437	0.6112	0.0544	0.0452	0.0251	1.4207	0.4588	0.0125
15	1,146.151	0.6609	84.4289	8.9724	3.6798	0.3419	0.6046	0.0550	0.0458	0.0251	1.3774	0.4572	0.0120
16	1,146.706	0.6610	84.4170	8.9943	3.7159	0.3387	0.5949	0.0534	0.0441	0.0236	1.3430	0.4630	0.0123
17	1,147.959	0.6622	84.2558	9.0181	3.8054	0.3405	0.6026	0.0524	0.0432	0.0227	1.3944	0.4530	0.0120
18	1,146.865	0.6613	84.3743	9.0165	3.7305	0.3402	0.5912	0.0533	0.0440	0.0216	1.3478	0.4686	0.0121
19	1,149.205	0.6636	84.1100	9.0375	3.8675	0.3501	0.6151	0.0542	0.0446	0.0214	1.4111	0.4762	0.0121
20	1,146.797	0.6612	84.4222	8.9583	3.7251	0.3443	0.5997	0.0556	0.0461	0.0221	1.3427	0.4717	0.0122
21	1,146.973	0.6613	84.4291	8.9494	3.7238	0.3438	0.6000	0.0582	0.0486	0.0241	1.3384	0.4723	0.0121
22	1,152.399	0.6656	83.9367	9.0496	3.9687	0.3667	0.6483	0.0594	0.0498	0.0236	1.4093	0.4757	0.0121
23	1,152.950	0.6659	83.6974	9.4428	3.8348	0.3601	0.6390	0.0577	0.0483	0.0240	1.4030	0.4813	0.0116
24	1,152.014	0.6650	83.7905	9.4375	3.8175	0.3489	0.6161	0.0555	0.0463	0.0230	1.3755	0.4777	0.0117
25	1,150.256	0.6640	84.0150	9.1933	3.8286	0.3481	0.6174	0.0556	0.0466	0.0231	1.3787	0.4819	0.0118
26	1,148.293	0.6631	84.1695	9.0555	3.7788	0.3487	0.6176	0.0574	0.0480	0.0237	1.4010	0.4881	0.0116
27	1,147.155	0.6623	84.4241	8.7831	3.7515	0.3611	0.6471	0.0622	0.0523	0.0255	1.3869	0.4946	0.0115
28	1,149.634	0.6641	84.2944	8.7471	3.8143	0.3767	0.6882	0.0715	0.0614	0.0304	1.4155	0.4895	0.0111
29	1,149.194	0.6638	84.3659	8.6742	3.7996	0.3816	0.6978	0.0724	0.0620	0.0297	1.4232	0.4822	0.0114
30	1,146.975	0.6617	84.6636	8.5408	3.7308	0.3703	0.6774	0.0713	0.0615	0.0297	1.3684	0.4748	0.0115
31	1,148.235	0.6619	84.6559	8.5921	3.7346	0.3741	0.6760	0.0734	0.0629	0.0317	1.3193	0.4682	0.0117
Volume	1,149.915	0.6637	84.0689	9.1687	3.7618	0.3570	0.6338	0.0597	0.0500	0.0253	1.3870	0.4757	0.0120
Weight Avg Energy	1,149.923	0.6638	84.0678	9.1695	3.7619	0.3570	0.6339	0.0597	0.0500	0.0253	1.3871	0.4757	0.0120

*Zone 1000*

May-17

ZONE 610

Watford City

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	
5/1/2017	5/2/2017	297	358	1.204	79	93	1.176	1.198	5/1/2017
5/2/2017	5/3/2017	287	346	1.204	60	69	1.141	1.193	5/2/2017
5/3/2017	5/4/2017	261	314	1.204	61	69	1.133	1.191	5/3/2017
5/4/2017	5/5/2017	153	185	1.204	55	62	1.130	1.184	5/4/2017
5/5/2017	5/6/2017	106	128	1.204	38	43	1.130	1.184	5/5/2017
5/6/2017	5/7/2017	83	99	1.204	35	39	1.126	1.181	5/6/2017
5/7/2017	5/8/2017	113	136	1.204	16	18	1.127	1.194	5/7/2017
5/8/2017	5/9/2017	202	243	1.204	77	88	1.137	1.186	5/8/2017
5/9/2017	5/10/2017	170	205	1.204	71	80	1.134	1.183	5/9/2017
5/10/2017	5/11/2017	137	165	1.204	115	130	1.132	1.171	5/10/2017
5/11/2017	5/12/2017	94	113	1.204	52	58	1.130	1.178	5/11/2017
5/12/2017	5/13/2017	84	102	1.204	53	61	1.151	1.183	5/12/2017
5/13/2017	5/14/2017	82	99	1.204	45	52	1.154	1.186	5/13/2017
5/14/2017	5/15/2017	113	136	1.204	53	61	1.147	1.186	5/14/2017
5/15/2017	5/16/2017	153	184	1.204	72	83	1.149	1.186	5/15/2017
5/16/2017	5/17/2017	159	191	1.204	52	60	1.160	1.193	5/16/2017
5/17/2017	5/18/2017	282	339	1.204	102	117	1.149	1.189	5/17/2017
5/18/2017	5/19/2017	260	313	1.204	105	119	1.126	1.182	5/18/2017
5/19/2017	5/20/2017	198	238	1.204	118	133	1.130	1.176	5/19/2017
5/20/2017	5/21/2017	156	188	1.204	90	104	1.148	1.184	5/20/2017
5/21/2017	5/22/2017	149	179	1.204	84	96	1.152	1.185	5/21/2017
5/22/2017	5/23/2017	186	223	1.204	103	116	1.124	1.175	5/22/2017
5/23/2017	5/24/2017	145	175	1.204	72	81	1.128	1.179	5/23/2017
5/24/2017	5/25/2017	159	191	1.204	94	106	1.122	1.174	5/24/2017
5/25/2017	5/26/2017	172	207	1.204	88	100	1.138	1.182	5/25/2017
5/26/2017	5/27/2017	185	223	1.204	92	102	1.113	1.174	5/26/2017
5/27/2017	5/28/2017	118	142	1.204	83	94	1.142	1.178	5/27/2017
5/28/2017	5/29/2017	142	171	1.204	88	99	1.128	1.175	5/28/2017
5/29/2017	5/30/2017	170	205	1.204	58	65	1.128	1.185	5/29/2017
5/30/2017	5/31/2017	164	197	1.204	54	61	1.117	1.182	5/30/2017
5/31/2017	6/1/2017	114	137	1.204	44	49	1.122	1.181	5/31/2017
		5,094	6,132		2,209	2,508	1.1363	1.1832	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (cal)	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	Changefimestamp	NOTES
11587	GLEN ULLIN	1068.5	0.618	1359.3	-67.5	1.4876	0.8107	87.7709	9.2063	0.5114	0.0126	0.0076	0	0.0001	0	0	0.1741	0.0186	4/30/2017	5/1/2017	5/1/2017 3:06:43 PM	
11587	GLEN ULLIN	1067.1	0.6151	1360.5	-68.3	1.3386	0.7824	88.4762	8.5955	0.5896	0.0179	0.0109	0.0001	0.0001	0	0	0.1717	0.0186	5/1/2017	5/2/2017	5/2/2017 3:07:03 PM	
11587	GLEN ULLIN	1066.1	0.6152	1359.3	-70.1	1.3716	0.807	88.2875	8.9511	0.3937	0.0129	0.0073	0	0	0	0	0.1535	0.0186	5/2/2017	5/3/2017	5/3/2017 3:05:41 PM	
11587	GLEN ULLIN	1066.9	0.6166	1358.7	-69.1	1.453	0.81	87.9921	9.1295	0.4097	0.0143	0.0082	0.0001	0.0002	0	0	0.1654	0.0186	5/3/2017	5/4/2017	5/4/2017 3:06:28 PM	
11587	GLEN ULLIN	1065.8	0.6159	1358	-69.7	1.4467	0.817	88.1086	9.0281	0.3913	0.0142	0.0079	0	0	0	0	0.1693	0.0186	5/4/2017	5/5/2017	5/5/2017 3:05:46 PM	
11587	GLEN ULLIN	1067.5	0.6172	1358.8	-68.2	1.4521	0.8229	87.911	9.1404	0.4495	0.018	0.0098	0.0002	0.0002	0	0	0.1771	0.0186	5/5/2017	5/6/2017	5/6/2017 3:07:52 PM	
11587	GLEN ULLIN	1064.2	0.6153	1356.7	-69.9	1.4647	0.8261	88.3278	8.738	0.4362	0.0186	0.0101	0.0001	0.0002	0	0	0.1612	0.0186	5/6/2017	5/7/2017	5/7/2017 3:06:27 PM	
11587	GLEN ULLIN	1066.2	0.6171	1357.3	-68.1	1.4766	0.8497	87.9915	9.0149	0.4464	0.0214	0.0125	0.0009	0.0012	0	0.0002	0.1667	0.0186	5/7/2017	5/8/2017	5/8/2017 3:05:37 PM	
11587	GLEN ULLIN	1062.6	0.6143	1355.7	-70.7	1.4633	0.8318	88.5275	8.5424	0.4329	0.0188	0.0101	0	0.0001	0	0	0.1561	0.0186	5/8/2017	5/9/2017	5/9/2017 3:05:23 PM	
11587	GLEN ULLIN	1062	0.6135	1355.8	-71.5	1.4574	0.8073	88.6797	8.461	0.4105	0.0167	0.0092	0	0	0	0	0.1413	0.0186	5/9/2017	5/10/2017	5/10/2017 3:08:24 PM	
11587	GLEN ULLIN	1060.8	0.613	1354.9	-71.9	1.4542	0.8252	88.7663	8.3425	0.4112	0.0172	0.0095	0	0.0001	0	0	0.1568	0.0186	5/10/2017	5/11/2017	5/11/2017 3:07:38 PM	
11587	GLEN ULLIN	1058	0.6107	1353.9	-73.8	1.3639	0.8505	89.2717	7.9502	0.3758	0.0164	0.0094	0.0002	0.0004	0	0	0.1432	0.0186	5/11/2017	5/12/2017	5/12/2017 3:10:01 PM	
11587	GLEN ULLIN	1066.2	0.6163	1358.1	-68.6	1.4165	0.841	88.2311	8.8368	0.482	0.0188	0.0112	0.0006	0.001	0	0	0.1448	0.0186	5/12/2017	5/13/2017	5/13/2017 3:06:47 PM	
11587	GLEN ULLIN	1071.4	0.6197	1361	-65.7	1.4233	0.8416	87.5673	9.4295	0.5419	0.0177	0.0103	0.0005	0.0009	0	0	0.1507	0.0186	5/13/2017	5/14/2017	5/14/2017 3:06:50 PM	
11587	GLEN ULLIN	1061.6	0.6136	1355.2	-71.6	1.4234	0.8524	88.6808	8.452	0.4036	0.0144	0.0083	0.0002	0.0003	0	0	0.1486	0.0186	5/14/2017	5/15/2017	5/15/2017 3:07:11 PM	
11587	GLEN ULLIN	1061.2	0.6135	1354.8	-71.4	1.4317	0.86	88.7252	8.3629	0.4244	0.0185	0.0102	0.0001	0.0001	0	0	0.1513	0.0186	5/15/2017	5/16/2017	5/16/2017 3:04:57 PM	
11587	GLEN ULLIN	1058.7	0.6111	1354.3	-73.1	1.3907	0.8308	89.2017	7.9722	0.411	0.0176	0.01	0.0004	0.0005	0	0.0002	0.1478	0.0186	5/16/2017	5/17/2017	5/17/2017 3:05:54 PM	
11587	GLEN ULLIN	1056.4	0.61	1352.6	-74.2	1.4312	0.8268	89.4392	7.7124	0.4103	0.0174	0.0101	0.0005	0.0007	0	0.0001	0.1351	0.0186	5/17/2017	5/18/2017	5/18/2017 3:05:56 PM	
11587	GLEN ULLIN	1055.9	0.6097	1352.3	-74.9	1.4205	0.8364	89.5152	7.6932	0.3824	0.0155	0.0085	0	0.0001	0	0	0.1094	0.0186	5/18/2017	5/19/2017	5/19/2017 3:06:33 PM	
11587	GLEN ULLIN	1056.5	0.6104	1352.3	-74.6	1.4522	0.835	89.3443	7.8459	0.3708	0.0143	0.0078	0	0	0	0	0.113	0.0186	5/19/2017	5/20/2017	5/20/2017 3:06:26 PM	
11587	GLEN ULLIN	1060.4	0.6123	1355.1	-72.5	1.4062	0.8328	88.9397	8.2595	0.3858	0.0164	0.0091	0.0002	0.0004	0	0	0.1344	0.0186	5/20/2017	5/21/2017	5/21/2017 3:05:45 PM	
11587	GLEN ULLIN	1066.9	0.6168	1358.5	-66.6	1.4	0.8545	88.2304	8.8006	0.5067	0.0292	0.0188	0.0021	0.003	0	0.0009	0.136	0.0186	5/21/2017	5/22/2017	5/22/2017 3:06:01 PM	
11587	GLEN ULLIN	1066.9	0.6168	1358.5	-66.6	1.4	0.8545	88.2304	8.8006	0.5067	0.0292	0.0188	0.0021	0.003	0	0.0009	0.136	0.0186	5/21/2017	5/23/2017	5/23/2017 3:05:21 PM	
11587	GLEN ULLIN	1066	0.6163	1357.8	-64.3	1.4007	0.8589	88.3361	8.653	0.5092	0.0343	0.0239	0.0035	0.0047	0	0.002	0.1567	0.0179	5/23/2017	5/24/2017	5/24/2017 3:07:09 PM	
11587	GLEN ULLIN	1066	0.6163	1357.8	-64.3	1.4007	0.8589	88.3361	8.653	0.5092	0.0343	0.0239	0.0035	0.0047	0	0.002	0.1567	0.0179	5/23/2017	5/25/2017	5/25/2017 3:07:05 PM	
11587	GLEN ULLIN	1065.5	0.6165	1357	-67.5	1.4802	0.8449	88.1466	8.8278	0.4644	0.0311	0.0146	0.0024	0.0022	0	0.0006	0.168	0.0186	5/25/2017	5/26/2017	5/26/2017 3:06:48 PM	
11587	GLEN ULLIN	1058.5	0.6113	1353.9	-72.8	1.4341	0.825	89.1635	7.9369	0.4378	0.0205	0.0114	0.0004	0.0006	0	0.0001	0.1521	0.0186	5/26/2017	5/27/2017	5/27/2017 3:06:30 PM	
11587	GLEN ULLIN	1064.4	0.6157	1356.5	-68.2	1.4742	0.8376	88.3421	8.7003	0.4426	0.0296	0.0133	0.0026	0.0022	0	0.0008	0.1387	0.0186	5/27/2017	5/28/2017	5/28/2017 3:07:44 PM	
11587	GLEN ULLIN	1063.1	0.6149	1355.8	-69.6	1.4258	0.8685	88.5436	8.5712	0.4127	0.0256	0.0126	0.0019	0.0018	0	0.0006	0.1182	0.0167	5/28/2017	5/29/2017	5/29/2017 3:06:48 PM	
11587	GLEN ULLIN	1062.3	0.6142	1355.4	-70.6	1.4111	0.8674	88.6668	8.4728	0.4075	0.0206	0.0126	0.0012	0.0017	0	0.0002	0.1215	0.0163	5/29/2017	5/30/2017	5/30/2017 3:08:35 PM	
11587	GLEN ULLIN	1062.8	0.615	1355.2	-70.5	1.4289	0.8848	88.5051	8.6136	0.4005	0.0189	0.011	0.0006	0.001	0	0.0001	0.1162	0.0163	5/30/2017	5/31/2017	5/31/2017 3:06:49 PM	
11587	GLEN ULLIN	1062.3	0.6149	1354.7	-70.3	1.4567	0.8813	88.5045	8.582	0.4029	0.0193	0.0112	0.0009	0.0012	0	0.0003	0.1223	0.0166	5/31/2017	6/1/2017	6/1/2017 3:10:22 PM	

Zone  
802

<b>NORTH DAKOTA HEATING VALUE ZONES</b>		
<b>ZONES</b>	<b>MEASURING DEVICE</b>	<b>LOCATION</b>
211	Chromatograph	Sidney Border
24	Monthly Sampler	Williston Border
241	Monthly Sampler	Fairview Border
25	Monthly Sampler	Watford City West Border
261	Chromatograph	Tioga Comp Station – Robinson Lake Plant
262	Chromatograph	Minot Border
263	Monthly Sampler	Lignite Plant
264	Monthly Sampler	Epping Border
265	Chromatograph	Tioga Comp Station – County Line Plant
266	Chromatograph	County Line Plant
271	Chromatograph	Bismarck – Cleveland
272	Chromatograph	Cleveland – Mapleton
273	Chromatograph	Cleveland – Grafton
28	Chromatograph	Bismarck Station
31	Chromatograph	Dickinson Border
32	Chromatograph	Cabin Creek Station
33	Chromatograph	Little Knife Plant
34	Monthly Sampler	Bowman Border
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	MAY 17	APRIL 17	MAR 17	FEB 17	JAN 17	DEC 16	NOV 16	OCT 16	SEPT 16	AUG 16	JULY 16	JUNE 16	ZONE
MT/ND	211	Sidney Border - MonDak Tfr - Sidney Plt	1201	1206	1191	1194	1195	1199	1199	1200	1193	1209	1210	1208	1206	211
ND	24	Williston Border - Charbonneau Station	1178	1148	1158	1171	1173	1189	1190	1187	1169	1195	1169	1197	1191	24
ND	25	Watford City West Border	1204	1204	1200	1199	1202	1198	1193	1200	1206	1211	1213	1211	1206	25
ND	28	Bismarck Station - Glen Ullin Station	1155	1191	1161	1118	1121	1115	1112	1122	1152	1172	1185	1208	1208	28
ND	31	Dickinson Brd - Belfield Tfr - G Ullin Stn	1134	1137	1147	1118	1119	1113	1110	1120	1153	1171	1169	1124	1128	31
ND/MT	32	Cabin Creek Station - Belfield Transfer	1126	1097	1104	1112	1114	1118	1118	1099	1137	1153	1150	1157	1153	32
ND	33	Little Knife Plant	1182	1177	1178	1176	1177	1181	1200	1179	1182	1184	1183	1184	1185	33
ND	34	Bowman Border	996	996	996	996	996	996	996	996	996	996	996	996	996	34
ND	43	Spring Creek I - Sax Valve I	1111	1136	1141	1102	1075	1121	1122	1114	1109	1128	1109	1089	1087	43
ND/MT	241	Fairview Border	1189	1168	1167	1179	1181	1196	1200	1193	1170	1210	1200	1202	1197	241
ND	260	North Tioga Transfer - Nesson Plant		1090	1082	0										260
ND	261	Tioga Comp Station - Robinson Lake Plan	1113	1176	1170	1065	1089	1105	1096	1034	981	1174	1074	1206	1182	261
ND	262	Minot Bdr - Palermo Bdr - Bismarck Stn	1175	1192	1189	1181	1178	1152	1144	1147	1141	1172	1191	1208	1208	262
ND	263	Lignite Plant	1117	1115	1103	1115	1112	1103	1110	1138	1120	1129	1127	1118	1116	263
ND	264	Epping Border	1172	1145	1154	1158	1172	1186	1186	1158	1157	1194	1198	1169	1183	264
ND	265	Tioga Comp Station - County Line Plant	1176	1176	1170	1174	1175	1184	1170	1182	1180	1186	1166	1177	1170	265
ND	266	County Line Plant		1185	1185	1173	1182	0								266
ND	271	Bismarck Station - Cleveland Station	1168	1192	1189	1163	1155	1129	1127	1140	1142	1173	1185	1208	1208	271
ND	272	Cleveland Station - Mapleton	1166	1191	1187	1161	1153	1128	1126	1139	1142	1172	1184	1207	1207	272
ND	273	Cleveland Station - Grafton Border	1167	1192	1187	1162	1154	1128	1127	1139	1142	1172	1184	1207	1206	273
ND	610	MDU-Watford City BTU	1182	1183	1188	1171	1163	1170	1162	1176	1179	1197	1206	1203	1186	610
ND	802	Linton	1056	1063	1059	1054	1052	1049	1051	1058	1053	1058	1059	1054	1065	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

**THERMAL ZONE VARIANCE  
DOCUMENTATION**

**May 2017**

<b><i>ZONE</i></b>	<b><i>BTU VARIANCE</i></b>	<b><i>REASON</i></b>
28	30	Change in Gas Source
432	-24	Operational Change
433	-40	Operational Change