

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

January 9, 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 – November 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 December 2016.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of November 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 November 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
Dec-17

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1391
MDU-308-ARNEGARD	025	1.1391
MDU-314-APPLE VALLEY	271	1.1019
MDU-318-BEACH	032	1.0507
MDU-319-BELFIELD	032	1.0585
MDU-323-BERTHOLD	262	1.0777
MDU-327-BISMARCK	028	1.1115
MDU-330-BOWMAN	034	0.9137
MDU-337-BURLINGTON	262	1.1009
MDU-343-CARRINGTON	273	1.1019
MDU-344-CLEVELAND	272	1.0941
MDU-364-CAVALIER	273	1.1251
MDU-365-DAWSON	271	1.0941
MDU-368-DES LACS	262	1.0854
MDU-369-DICKINSON	031	1.0812
MDU-374-FT TOTTEN	273	1.1096
MDU-375-DEVILS LAKE	273	1.1096
MDU-379-BARLOW	273	1.1019
MDU-384-EPPING	264	1.0928
MDU-387-ELDRIDGE	272	1.1019
MDU-407-GLADSTONE	031	1.0812
MDU-411-GLEN ULLIN	031	1.0890
MDU-413-GOLVA	032	1.0353
MDU-416-GARRISON	262	1.0854
MDU-417-GRAFTON	273	1.1329
MDU-429-HEBRON	031	1.0890
MDU-432-HETTINGER	903	2.3875
MDU-449-JAMESTOWN	272	1.1096
MDU-459-KILLDEER	033	1.1164
MDU-463-LANGDON	273	1.1019
MDU-469-LEFOR	031	1.0812
MDU-474-LIGNITE	263	1.0654
MDU-475-LINTON	802	1.0160
MDU-478-LINCOLN	028	1.1115
MDU-488-MCKENZIE	271	1.1019
MDU-494-MEDINA	271	1.0941
MDU-498-MANDAN	028	1.1115
MDU-500-MARMARTH	034	0.9204
MDU-505-MINOT	262	1.1009
MDU-510-MOTT	031	1.0812
MDU-512-MAX	262	1.0833
MDU-522-NEW ENGLAND	031	1.0734
MDU-524-NEW SALEM	028	1.1115
MDU-532-NEW ROCKFORD	273	1.1019
MDU-539-PARK RIVER	273	1.1251
MDU-540-PALERMO	262	1.0777
MDU-558-RAY	264	1.0928
MDU-561-REGENT	031	1.0812
MDU-563-RHAME	034	0.9069

MDU-564-RICHARDTON	031	1.0733
MDU-568-ROSS	261	0.9199
MDU-572-RUTHVILLE	262	1.1009
MDU-574-SANBORN	272	1.1096
MDU-583-SENTINEL BUTTE	032	1.0507
MDU-588-SOUTH HEART	031	1.0733
MDU-717-SPIRITWOOD	272	1.1096
MDU-590-SPRINGBROOK	264	1.0928
MDU-591-STANLEY	261	0.9266
MDU-593-STEELE	271	1.0941
MDU-598-SHEYENNE	273	1.1096
MDU-605-SURREY	262	1.1009
MDU-610-TAPPEN	271	1.0941
MDU-611-TAYLOR	031	1.0734
MDU-616-TIOGA	261	0.9199
MDU-619-TURTLE LAKE	262	1.0854
MDU-620-TRENTON	024	1.1121
MDU-624-UNDERWOOD	262	1.0854
MDU-625-VALLEY CITY	272	1.1174
MDU-629-WALHALLA	273	1.1251
MDU-632-WATFORD CITY	610	1.1136
MDU-636-WHEELOCK	264	1.0859
MDU-637-WHITE EARTH	261	0.9266
MDU-642-WILLISTON	024	1.1121
MDU-646-WASHBURN	262	1.0932
MDU-647-WILTON	262	1.0777
MDU-664-RIVERDALE	262	1.0854
MDU-691-FAIRVIEW	241	1.1130
MDU-712-MINOT AFB	262	1.1009
MDU-718-FAIRMOUNT	600	1.1258
MDU-732-NEKOMA	273	1.1019
MDU-732-MSR SITE	273	1.1019

GQ Source Daily Summary

November 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		CO2	N2	Heating Value Dry										Wobbe	CCT		
		Wet	Dry			C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8			C9	C10
1	0.7215	1171.0	1191.8	1.087	3.410	70.433	21.503	3.171	0.123	0.242	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1403.04	
2	0.7350	1183.0	1203.9	1.221	3.740	68.453	22.393	3.733	0.150	0.281	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1404.36	
3	0.7325	1181.1	1202.0	1.198	3.656	68.698	22.499	3.499	0.144	0.274	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1404.50	
4	0.7289	1178.6	1199.4	1.153	3.549	69.232	22.247	3.398	0.133	0.257	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1404.86	
5	0.7273	1176.7	1197.5	1.142	3.524	69.508	22.061	3.354	0.130	0.251	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1404.20	
6	0.7278	1177.6	1198.5	1.143	3.511	69.464	22.079	3.379	0.133	0.259	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1404.86	
7	0.7303	1180.2	1201.1	1.158	3.566	69.122	22.209	3.495	0.143	0.275	0.017	0.015	0.000	0.000	0.000	0.000	0.000	1405.54	
8	0.7331	1178.9	1199.8	1.221	3.816	68.592	22.400	3.520	0.146	0.274	0.016	0.014	0.000	0.000	0.000	0.000	0.000	1401.25	
9	0.7341	1179.3	1200.2	1.239	3.855	68.457	22.428	3.568	0.148	0.276	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1400.83	
10	0.7332	1177.9	1198.7	1.249	3.848	68.472	22.555	3.444	0.141	0.262	0.015	0.013	0.000	0.000	0.000	0.000	0.000	1399.94	
11	0.7340	1179.7	1200.6	1.237	3.831	68.382	22.595	3.513	0.145	0.268	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1401.32	
12	0.7340	1179.7	1200.5	1.241	3.827	68.403	22.570	3.515	0.144	0.270	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1401.28	
13	0.7337	1178.8	1199.7	1.242	3.840	68.473	22.486	3.517	0.145	0.269	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1400.66	
14	0.7345	1180.2	1201.1	1.240	3.845	68.310	22.628	3.532	0.145	0.270	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1401.38	
15	0.7360	1182.7	1203.6	1.239	3.830	68.224	22.558	3.672	0.155	0.292	0.017	0.013	0.000	0.000	0.000	0.000	0.000	1402.98	
16	0.7338	1178.9	1199.8	1.245	3.841	68.521	22.360	3.594	0.144	0.268	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1400.64	
17	0.7327	1176.8	1197.7	1.249	3.859	68.703	22.184	3.575	0.141	0.261	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1399.21	
18	0.7348	1180.9	1201.9	1.244	3.819	68.448	22.345	3.673	0.154	0.287	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1402.03	
19	0.7341	1179.5	1200.3	1.241	3.842	68.385	22.525	3.612	0.130	0.241	0.013	0.011	0.000	0.000	0.000	0.000	0.000	1401.01	
20	0.7342	1179.6	1200.5	1.245	3.840	68.423	22.439	3.645	0.134	0.248	0.014	0.011	0.000	0.000	0.000	0.000	0.000	1401.03	
21	0.7353	1181.7	1202.6	1.240	3.829	68.229	22.597	3.708	0.130	0.242	0.014	0.012	0.000	0.000	0.000	0.000	0.000	1402.41	
22	0.7335	1178.8	1199.7	1.240	3.828	68.530	22.411	3.557	0.142	0.263	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1400.79	
23	0.7333	1178.3	1199.2	1.250	3.829	68.554	22.388	3.549	0.142	0.262	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1400.36	
24	0.7349	1180.7	1201.6	1.247	3.840	68.356	22.460	3.652	0.146	0.271	0.015	0.012	0.000	0.000	0.000	0.000	0.000	1401.61	
25	0.7335	1178.3	1199.1	1.249	3.848	68.510	22.412	3.561	0.138	0.256	0.014	0.012	0.000	0.000	0.000	0.000	0.000	1400.16	
26	0.7350	1181.0	1201.9	1.237	3.843	68.337	22.487	3.649	0.146	0.272	0.016	0.013	0.000	0.000	0.000	0.000	0.000	1401.92	
27	0.7329	1177.4	1198.3	1.245	3.849	68.577	22.391	3.527	0.135	0.250	0.014	0.011	0.000	0.000	0.000	0.000	0.000	1399.73	
28	0.7320	1175.5	1196.3	1.247	3.886	68.672	22.316	3.478	0.133	0.244	0.013	0.010	0.000	0.000	0.000	0.000	0.000	1398.21	
29	0.7338	1179.0	1199.9	1.237	3.851	68.350	22.664	3.479	0.139	0.254	0.014	0.011	0.000	0.000	0.000	0.000	0.000	1400.71	
30	0.7343	1179.7	1200.5	1.233	3.862	68.479	22.287	3.722	0.140	0.253	0.013	0.010	0.000	0.000	0.000	0.000	0.000	1401.03	
Avg	0.7328	1179.0	1199.9	1.222	3.777	68.643	22.383	3.543	0.141	0.263	0.015	0.013	0.000	0.000	0.000	0.000	0.000	1401.73	

Zone 211

GQ Source Daily Summary

November 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	Heating Value																
		Wet	Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7041	1161.9	1182.5	0.854	2.687	73.118	20.397	2.665	0.081	0.169	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1409.16	
2	0.7053	1164.8	1185.4	0.849	2.630	72.944	20.566	2.734	0.081	0.167	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1411.44	
3	0.7067	1166.0	1186.6	0.874	2.651	72.612	20.928	2.653	0.082	0.170	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1411.54	
4	0.7067	1165.8	1186.5	0.872	2.667	72.601	20.932	2.641	0.082	0.175	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1411.30	
5	0.7067	1165.8	1186.5	0.872	2.661	72.682	20.821	2.656	0.087	0.186	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1411.35	
6	0.7075	1167.4	1188.1	0.875	2.632	72.632	20.813	2.727	0.090	0.195	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1412.50	
7	0.7070	1166.3	1187.0	0.872	2.662	72.613	20.890	2.655	0.086	0.186	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1411.62	
8	0.7074	1167.4	1188.0	0.874	2.630	72.586	20.893	2.713	0.086	0.185	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1412.53	
9	0.6887	1133.8	1153.8	0.728	3.139	75.610	18.027	2.246	0.073	0.152	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1390.37	
10	0.6954	1145.7	1166.0	0.783	2.959	74.716	18.752	2.463	0.091	0.198	0.017	0.021	0.000	0.000	0.000	0.000	0.000	1398.14	
11	0.7078	1167.4	1188.1	0.878	2.657	72.537	20.913	2.692	0.090	0.196	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1412.19	
12	0.7100	1171.5	1192.3	0.895	2.590	72.236	21.116	2.852	0.089	0.188	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1414.94	
13	0.7112	1173.4	1194.2	0.889	2.596	72.139	21.092	2.950	0.095	0.202	0.017	0.021	0.000	0.000	0.000	0.000	0.000	1416.05	
14	0.7099	1171.3	1192.1	0.884	2.604	72.298	21.019	2.876	0.091	0.193	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1414.85	
15	0.7091	1169.8	1190.5	0.889	2.615	72.499	20.779	2.889	0.093	0.198	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1413.77	
16	0.7080	1168.1	1188.8	0.884	2.626	72.551	20.850	2.780	0.088	0.188	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1412.83	
17	0.7030	1160.9	1181.4	0.846	2.656	73.443	20.075	2.659	0.090	0.194	0.016	0.021	0.000	0.000	0.000	0.000	0.000	1409.00	
18	0.7114	1174.1	1194.9	0.898	2.560	72.104	21.143	2.968	0.093	0.198	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1416.65	
19	0.7101	1171.9	1192.7	0.907	2.553	72.175	21.270	2.785	0.088	0.188	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1415.37	
20	0.7095	1171.2	1192.0	0.900	2.553	72.224	21.263	2.760	0.087	0.182	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1415.10	
21	0.7081	1168.2	1188.9	0.899	2.609	72.328	21.262	2.611	0.084	0.177	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1412.85	
22	0.7093	1170.3	1191.0	0.899	2.587	72.263	21.207	2.745	0.086	0.181	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1414.24	
23	0.7066	1167.2	1187.8	0.877	2.560	72.683	20.911	2.691	0.082	0.168	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1413.11	
24	0.7086	1168.9	1189.6	0.903	2.604	72.334	21.178	2.683	0.085	0.181	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1413.23	
25	0.7090	1169.6	1190.3	0.900	2.602	72.278	21.231	2.685	0.087	0.184	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1413.69	
26	0.7095	1170.7	1191.4	0.895	2.588	72.286	21.151	2.751	0.094	0.200	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1414.51	
27	0.7084	1169.2	1189.9	0.900	2.575	72.403	21.124	2.694	0.086	0.185	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1413.73	
28	0.7089	1169.5	1190.2	0.904	2.592	72.292	21.240	2.661	0.088	0.189	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1413.66	
29	0.7069	1166.3	1187.0	0.902	2.610	72.508	21.149	2.541	0.083	0.176	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1411.71	
30	0.7075	1167.6	1188.3	0.914	2.568	72.398	21.301	2.523	0.084	0.179	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1412.69	
Avg	0.7069	1166.0	1187.1	0.877	2.641	72.670	20.810	2.698	0.087	0.184	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1411.80	

Zone 24

GQ Source Analysis

GQ Source Number:	0602160	Specific Gravity:	0.7268
GQ Source Name:	FAIRVIEW BORDER	Dry Heat Value:	1193.12
Effective Date:	11/1/2016 9:00:00 AM	Wet Heat Value:	1172.36
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1193.12
Pressure Base:	14.730	Sample Pressure:	155.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	69.502		CO2	Carbon Dioxide	1.171
C2	Ethane	21.626	0.0000	N2	Nitrogen	3.651
C3	Propane	3.631	0.9974	O2	Oxygen	0.010
IC4	Isobutane	0.137	0.0446	He	Helium	
NC4	n-Butane	0.243	0.0765	H2	Hydrogen	
IC5	Isopentane	0.015	0.0054	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.013	0.0048	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% 1.129 GPM

Sample Date: 12/1/2016 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:	0.7235
GQ Source Name:	WATFORD CITY WEST BORDER	Dry Heat Value:	1200.08
Effective Date:	11/1/2016 9:00:00 AM	Wet Heat Value:	1179.19
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1200.08
Pressure Base:	14.730	Sample Pressure:	520.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	70.179		CO2	Carbon Dioxide	1.026
C2	Ethane	21.763	5.8029	N2	Nitrogen	3.151
C3	Propane	3.264	0.8965	O2	Oxygen	0.007
IC4	Isobutane	0.177	0.0578	He	Helium	
NC4	n-Butane	0.372	0.1169	H2	Hydrogen	
IC5	Isopentane	0.030	0.0111	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.030	0.0109	Ar	Argon	
C6	Hexanes	0.002	0.0008	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
Totals		100.000%		6.897	GPM	

Sample Date: 12/1/2016 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

November 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	Heating Value																
		Wet	Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6049	1002.5	1020.3	0.168	4.120	89.944	5.150	0.550	0.019	0.041	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1311.76
2	0.5957	987.1	1004.5	0.105	4.289	91.572	3.584	0.391	0.015	0.036	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1301.49
3	0.5877	975.6	992.9	0.055	4.316	92.951	2.400	0.238	0.010	0.024	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1295.11
4	0.5921	981.7	999.1	0.080	4.313	92.188	3.046	0.324	0.013	0.030	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1298.45
5	0.5892	976.7	994.0	0.048	4.400	92.625	2.656	0.227	0.011	0.026	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1294.91
6	0.5906	978.0	995.3	0.066	4.425	92.420	2.755	0.283	0.013	0.030	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1295.11
7	0.5912	980.9	998.3	0.074	4.291	92.370	2.895	0.315	0.014	0.033	0.004	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1298.31
8	0.6014	996.8	1014.4	0.139	4.180	90.603	4.492	0.515	0.019	0.043	0.004	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1308.07
9	0.6148	1016.9	1034.9	0.224	4.084	88.306	6.488	0.796	0.027	0.062	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1319.91
10	0.5973	990.3	1007.8	0.108	4.237	91.342	3.806	0.433	0.018	0.045	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1304.01
11	0.6027	998.5	1016.2	0.146	4.193	90.388	4.644	0.549	0.021	0.049	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1308.81
12	0.6160	1019.5	1037.5	0.233	4.029	88.161	6.621	0.835	0.031	0.074	0.008	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1321.83
13	0.6054	1003.4	1021.2	0.163	4.113	90.021	4.965	0.632	0.026	0.064	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1312.48
14	0.6050	1001.8	1019.5	0.157	4.185	90.029	4.922	0.619	0.024	0.053	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1310.76
15	0.6031	1001.3	1019.0	0.155	4.040	90.403	4.732	0.581	0.023	0.053	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1312.17
16	0.6048	1004.7	1022.5	0.162	3.981	90.145	4.986	0.628	0.025	0.059	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1314.72
17	0.6116	1013.8	1031.8	0.191	4.023	88.961	5.938	0.761	0.032	0.076	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1319.25
18	0.6200	1026.2	1044.4	0.255	3.962	87.499	7.227	0.912	0.037	0.089	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1326.35
19	0.6298	1040.6	1059.0	0.329	3.897	85.728	8.835	1.067	0.037	0.087	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1334.39
20	0.6316	1043.8	1062.3	0.328	3.871	85.440	9.070	1.144	0.040	0.089	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1336.60
21	0.6244	1032.3	1050.6	0.288	3.953	86.679	7.947	1.006	0.035	0.077	0.007	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1329.55
22	0.6238	1031.8	1050.1	0.287	3.924	86.758	7.947	0.968	0.032	0.069	0.007	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1329.56
23	0.6148	1018.0	1036.0	0.219	4.033	88.247	6.637	0.774	0.025	0.054	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1321.11
24	0.6220	1028.4	1046.6	0.273	3.985	87.091	7.594	0.930	0.033	0.076	0.008	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1327.08
25	0.6274	1036.7	1055.0	0.302	3.946	86.247	8.256	1.096	0.040	0.091	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1331.92
26	0.6291	1039.7	1058.1	0.310	3.908	85.965	8.527	1.123	0.042	0.100	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1334.02
27	0.6385	1053.7	1072.3	0.378	3.841	84.312	10.007	1.281	0.047	0.109	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1341.95
28	0.6333	1044.2	1062.6	0.337	3.990	85.203	9.117	1.174	0.046	0.107	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1335.32
29	0.6454	1063.6	1082.5	0.424	3.815	83.104	11.037	1.425	0.051	0.117	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1347.34
30	0.6556	1079.1	1098.2	0.493	3.723	81.365	12.589	1.607	0.058	0.134	0.014	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1356.30
Avg	0.6136	1016.0	1033.6	0.217	4.069	88.536	6.296	0.773	0.029	0.067	0.007	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1319.29

Zone 261

GQ Source Analysis

GQ Source Number:	2501030	Specific Gravity:	0.6688
GQ Source Name:	LIGNITE PLANT	Dry Heat Value:	1137.80
Effective Date:	11/1/2016 9:00:00 AM	Wet Heat Value:	1118.00
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1137.80
Pressure Base:	14.730	Sample Pressure:	620.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	77.931		CO2	Carbon Dioxide	0.167
C2	Ethane	17.063	4.5498	N2	Nitrogen	3.053
C3	Propane	1.740	0.4779	O2	Oxygen	0.007
IC4	Isobutane	0.027	0.0087	He	Helium	
NC4	n-Butane	0.010	0.0030	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.000	0.0000	Ar	Argon	
C6	Hexanes	0.003	0.0012	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
		Totals	100.000%	5.041 GPM		

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

Sample Remarks:

Analysis Tech: MB
Analysis Remarks:

Zone 2b3

*** End of Report ***

GQ Source Analysis

GQ Source Number:	0702010	Specific Gravity:	0.6905
GQ Source Name:	EPPING BORDER	Dry Heat Value:	1158.42
Effective Date:	11/1/2016 9:00:00 AM	Wet Heat Value:	1138.26
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1158.42
Pressure Base:	14.730	Sample Pressure:	667.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	75.349		CO2	Carbon Dioxide	0.751
C2	Ethane	18.133	4.8351	N2	Nitrogen	2.933
C3	Propane	2.500	0.6869	O2	Oxygen	0.036
IC4	Isobutane	0.083	0.0272	He	Helium	
NC4	n-Butane	0.179	0.0562	H2	Hydrogen	
IC5	Isopentane	0.015	0.0055	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.018	0.0065	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% 5.618 GPM

Sample Date: 12/1/2016 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

November 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	0.7055	1155.7	1176.1	0.826	3.241	72.542	20.621	2.505	0.076	0.160	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1400.30	
2	0.7067	1158.6	1179.1	0.792	3.228	72.489	20.554	2.631	0.084	0.185	0.017	0.020	0.000	0.000	0.000	0.000	0.000	1402.64	
3	0.7087	1160.6	1181.2	0.825	3.239	72.306	20.517	2.798	0.089	0.191	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1403.10	
4	0.7080	1159.9	1180.4	0.801	3.252	72.342	20.560	2.734	0.086	0.189	0.016	0.019	0.000	0.000	0.000	0.000	0.000	1402.94	
5	0.7116	1165.4	1186.1	0.829	3.217	72.125	20.446	2.973	0.108	0.245	0.025	0.032	0.000	0.000	0.000	0.000	0.000	1405.96	
6	0.7113	1165.2	1185.8	0.834	3.190	72.109	20.546	2.925	0.104	0.238	0.024	0.030	0.000	0.000	0.000	0.000	0.000	1406.03	
7	0.7096	1163.2	1183.7	0.816	3.178	72.366	20.414	2.830	0.101	0.236	0.025	0.032	0.000	0.000	0.000	0.000	0.000	1405.29	
8	0.7067	1158.9	1179.4	0.811	3.182	72.609	20.365	2.717	0.087	0.191	0.017	0.020	0.000	0.000	0.000	0.000	0.000	1402.92	
9	0.7043	1155.6	1176.0	0.802	3.171	72.844	20.295	2.648	0.074	0.144	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1401.35	
10	0.7114	1164.8	1185.4	0.833	3.229	72.241	20.330	2.905	0.113	0.277	0.031	0.040	0.000	0.000	0.000	0.000	0.000	1405.37	
11	0.7096	1162.2	1182.8	0.827	3.222	72.292	20.456	2.832	0.097	0.225	0.022	0.027	0.000	0.000	0.000	0.000	0.000	1404.15	
12	0.7106	1163.5	1184.1	0.846	3.215	72.191	20.497	2.863	0.100	0.233	0.024	0.030	0.000	0.000	0.000	0.000	0.000	1404.62	
13	0.7138	1168.8	1189.5	0.847	3.182	71.921	20.549	3.032	0.117	0.282	0.030	0.038	0.000	0.000	0.000	0.000	0.000	1407.95	
14	0.7107	1164.7	1185.4	0.823	3.180	72.226	20.411	2.982	0.104	0.228	0.021	0.026	0.000	0.000	0.000	0.000	0.000	1406.06	
15	0.7114	1164.5	1185.1	0.854	3.216	72.142	20.445	2.937	0.105	0.244	0.024	0.031	0.000	0.000	0.000	0.000	0.000	1405.04	
16	0.7122	1165.9	1186.6	0.839	3.220	72.039	20.493	3.001	0.107	0.248	0.024	0.030	0.000	0.000	0.000	0.000	0.000	1406.05	
17	0.7136	1169.0	1189.7	0.824	3.187	72.081	20.296	3.114	0.126	0.299	0.032	0.041	0.000	0.000	0.000	0.000	0.000	1408.33	
18	0.7112	1164.6	1185.2	0.847	3.197	72.146	20.525	2.853	0.109	0.263	0.026	0.032	0.000	0.000	0.000	0.000	0.000	1405.41	
19	0.7088	1160.3	1180.9	0.858	3.215	72.301	20.596	2.680	0.092	0.211	0.021	0.026	0.000	0.000	0.000	0.000	0.000	1402.67	
20	0.7080	1160.4	1180.9	0.822	3.190	72.484	20.398	2.764	0.094	0.206	0.019	0.023	0.000	0.000	0.000	0.000	0.000	1403.51	
21	0.7079	1160.2	1180.7	0.831	3.184	72.499	20.365	2.789	0.092	0.201	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1403.32	
22	0.7074	1159.4	1180.0	0.843	3.165	72.507	20.460	2.716	0.085	0.184	0.017	0.021	0.000	0.000	0.000	0.000	0.000	1402.93	
23	0.7018	1152.6	1173.0	0.752	3.197	73.350	19.822	2.601	0.081	0.167	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1400.18	
24	0.7084	1159.9	1180.5	0.848	3.219	72.456	20.365	2.759	0.094	0.213	0.020	0.026	0.000	0.000	0.000	0.000	0.000	1402.55	
25	0.7095	1162.2	1182.8	0.833	3.209	72.452	20.212	2.904	0.104	0.232	0.023	0.030	0.000	0.000	0.000	0.000	0.000	1404.14	
26	0.7084	1160.0	1180.6	0.820	3.254	72.627	20.044	2.848	0.105	0.247	0.024	0.030	0.000	0.000	0.000	0.000	0.000	1402.66	
27	0.7086	1160.4	1180.9	0.842	3.219	72.498	20.284	2.776	0.100	0.229	0.023	0.029	0.000	0.000	0.000	0.000	0.000	1402.90	
28	0.7091	1160.6	1181.1	0.845	3.244	72.489	20.201	2.815	0.106	0.243	0.025	0.032	0.000	0.000	0.000	0.000	0.000	1402.68	
29	0.7042	1153.0	1173.4	0.820	3.286	73.154	19.734	2.661	0.092	0.209	0.020	0.025	0.000	0.000	0.000	0.000	0.000	1398.36	
30	0.7057	1155.4	1175.9	0.839	3.248	72.940	19.930	2.681	0.094	0.218	0.022	0.028	0.000	0.000	0.000	0.000	0.000	1399.82	
Avg	0.7088	1161.0	1181.7	0.828	3.213	72.426	20.358	2.809	0.098	0.221	0.022	0.027	0.000	0.000	0.000	0.000	0.000	1403.64	

Zone 265

GQ Source Daily Summary

November 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		CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
		Value Wet	Value Dry																
1	0.6930	1112.5	1132.2	0.654	4.954	75.146	16.003	2.939	0.097	0.189	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1360.09
2	0.6955	1114.9	1134.7	0.669	5.017	74.754	16.228	3.013	0.101	0.199	0.009	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1360.60
3	0.7035	1122.7	1142.6	0.702	5.252	73.401	17.036	3.267	0.108	0.215	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1362.20
4	0.7079	1120.8	1140.7	0.686	5.800	72.714	16.910	3.525	0.115	0.230	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1355.74
5	0.7095	1120.8	1140.7	0.695	5.938	72.535	16.797	3.651	0.121	0.242	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1354.17
6	0.7191	1131.2	1151.3	0.730	6.154	70.980	17.723	3.997	0.131	0.262	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1357.57
7	0.7125	1124.3	1144.2	0.698	6.004	71.964	17.245	3.706	0.121	0.241	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1355.50
8	0.7093	1126.8	1146.8	0.699	5.547	72.434	17.469	3.489	0.115	0.227	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1361.64
9	0.7018	1122.5	1142.4	0.695	5.114	73.648	17.038	3.172	0.105	0.208	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1363.62
10	0.7117	1132.2	1152.3	0.757	5.351	72.007	18.064	3.463	0.114	0.224	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1365.91
11	0.7264	1140.4	1160.6	0.782	6.202	69.701	18.748	4.140	0.135	0.269	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1361.71
12	0.7030	1112.8	1132.5	0.659	5.872	73.615	16.014	3.481	0.113	0.225	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1350.68
13	0.7179	1132.3	1152.3	0.732	5.970	71.113	17.918	3.863	0.126	0.253	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1360.01
14	0.7052	1122.2	1142.1	0.670	5.491	73.060	17.096	3.341	0.108	0.213	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1359.95
15	0.7017	1123.7	1143.6	0.663	5.075	73.624	17.181	3.116	0.107	0.215	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1365.23
16	0.7028	1123.7	1143.6	0.680	5.157	73.538	17.030	3.240	0.111	0.223	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1364.10
17	0.6910	1118.4	1138.2	0.659	4.402	75.318	16.685	2.652	0.090	0.176	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1369.26
18	0.7037	1123.7	1143.6	0.671	5.254	73.346	17.120	3.263	0.109	0.216	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1363.23
19	0.6939	1111.8	1131.5	0.636	5.110	75.051	15.864	3.015	0.102	0.201	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1358.31
20	0.6913	1109.5	1129.1	0.629	5.025	75.431	15.695	2.919	0.094	0.187	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1357.95
21	0.6921	1111.5	1131.2	0.612	4.998	75.166	16.082	2.857	0.088	0.178	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1359.72
22	0.6956	1114.9	1134.6	0.621	5.109	74.644	16.303	3.018	0.094	0.191	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1360.37
23	0.6971	1116.6	1136.4	0.622	5.139	74.383	16.496	3.053	0.094	0.193	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1361.05
24	0.7006	1118.5	1138.4	0.634	5.330	73.786	16.758	3.179	0.096	0.197	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1360.03
25	0.7004	1117.9	1137.7	0.636	5.351	73.823	16.695	3.181	0.096	0.198	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1359.41
26	0.7001	1116.6	1136.4	0.631	5.406	73.901	16.547	3.198	0.097	0.199	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1358.14
27	0.6992	1116.0	1135.8	0.618	5.376	74.057	16.456	3.172	0.097	0.201	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1358.33
28	0.6972	1115.8	1135.6	0.607	5.222	74.307	16.525	3.032	0.093	0.193	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1359.98
29	0.6978	1117.9	1137.7	0.625	5.120	74.259	16.631	3.055	0.096	0.192	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1361.96
30	0.6819	1105.5	1125.1	0.600	4.420	76.984	15.161	2.595	0.075	0.147	0.009	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1362.46
Avg	0.7021	1120.0	1139.8	0.666	5.339	73.623	16.784	3.253	0.105	0.210	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1360.30

Zone 271

GQ Source Daily Summary

November 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	0.6944	1110.2	1129.9	0.651	5.229	74.848	15.986	2.985	0.098	0.186	0.009	0.008	0.000					1355.95	
2	0.6959	1113.0	1132.7	0.677	5.164	74.654	16.159	3.029	0.102	0.197	0.009	0.009	0.000					1357.82	
3	0.7025	1120.6	1140.4	0.709	5.269	73.551	16.926	3.208	0.108	0.210	0.010	0.009	0.000					1360.68	
4	0.7059	1119.0	1138.8	0.685	5.723	72.966	16.881	3.393	0.112	0.220	0.010	0.009	0.000					1355.47	
5	0.7102	1120.2	1140.1	0.705	6.023	72.338	16.935	3.625	0.120	0.235	0.010	0.010	0.000					1352.82	
6	0.7178	1127.5	1147.5	0.729	6.252	71.159	17.518	3.929	0.131	0.260	0.012	0.011	0.000					1354.43	
7	0.7158	1124.6	1144.5	0.721	6.262	71.417	17.367	3.839	0.126	0.247	0.011	0.010	0.000					1352.73	
8	0.7119	1125.7	1145.7	0.711	5.840	71.977	17.513	3.589	0.119	0.231	0.010	0.010	0.000					1357.82	
9	0.7044	1120.4	1140.2	0.695	5.485	73.208	16.967	3.304	0.109	0.213	0.010	0.009	0.000					1358.57	
10	0.7081	1127.6	1147.6	0.745	5.315	72.533	17.757	3.310	0.110	0.212	0.010	0.009	0.000					1363.79	
11	0.7227	1137.8	1158.0	0.789	5.994	70.225	18.673	3.915	0.129	0.252	0.011	0.010	0.000					1362.21	
12	0.7179	1128.1	1148.1	0.740	6.212	71.073	17.703	3.877	0.126	0.248	0.011	0.011	0.000					1355.02	
13	0.7098	1118.9	1138.7	0.695	6.078	72.456	16.732	3.663	0.119	0.235	0.011	0.011	0.000					1351.63	
14	0.7097	1123.7	1143.6	0.696	5.775	72.331	17.332	3.510	0.114	0.222	0.011	0.010	0.000					1357.54	
15	0.7034	1121.6	1141.5	0.680	5.341	73.322	17.116	3.200	0.108	0.212	0.010	0.010	0.000					1360.99	
16	0.7046	1123.0	1142.8	0.684	5.366	73.148	17.189	3.263	0.111	0.219	0.010	0.009	0.000					1361.45	
17	0.6964	1120.3	1140.1	0.663	4.785	74.427	16.958	2.862	0.098	0.191	0.009	0.009	0.000					1366.29	
18	0.6999	1119.9	1139.7	0.691	5.100	73.931	16.871	3.083	0.104	0.200	0.010	0.009	0.000					1362.34	
19	0.6969	1113.1	1132.8	0.647	5.297	74.492	16.155	3.080	0.105	0.203	0.010	0.010	0.000					1356.96	
20	0.6944	1109.8	1129.4	0.643	5.268	74.958	15.799	2.989	0.102	0.223	0.010	0.009	0.000					1355.39	
21	0.6930	1110.2	1129.9	0.626	5.133	74.997	16.085	2.873	0.090	0.176	0.010	0.009	0.000					1357.34	
22	0.6956	1113.0	1132.7	0.626	5.215	74.587	16.291	2.984	0.093	0.186	0.010	0.009	0.000					1358.08	
23	0.6979	1114.8	1134.6	0.634	5.300	74.241	16.428	3.088	0.096	0.193	0.010	0.010	0.000					1358.17	
24	0.7005	1116.7	1136.5	0.642	5.419	73.759	16.723	3.149	0.096	0.193	0.010	0.009	0.000					1357.92	
25	0.7019	1117.8	1137.6	0.644	5.487	73.541	16.791	3.220	0.098	0.198	0.010	0.010	0.000					1357.80	
26	0.7007	1115.3	1135.1	0.640	5.533	73.720	16.614	3.183	0.096	0.195	0.010	0.010	0.000					1355.97	
27	0.7021	1117.6	1137.3	0.636	5.528	73.545	16.721	3.246	0.100	0.203	0.011	0.011	0.000					1357.38	
28	0.6986	1113.8	1133.6	0.619	5.458	74.048	16.480	3.087	0.095	0.193	0.010	0.010	0.000					1356.20	
29	0.6994	1116.5	1136.3	0.627	5.359	73.915	16.697	3.093	0.096	0.193	0.010	0.010	0.000					1358.66	
30	0.6866	1105.9	1125.5	0.610	4.822	76.168	15.403	2.739	0.083	0.158	0.009	0.009	0.000					1358.31	
Avg	0.7033	1119.0	1138.7	0.675	5.501	73.384	16.826	3.277	0.106	0.210	0.010	0.010	0.000					1357.86	

Zone 272

GQ Source Daily Summary

November 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	0.6936	1110.8	1130.5	0.648	5.122	74.995	15.975	2.965	0.096	0.183	0.008	0.008	0.000	0.000	0.000	0.000	0.000	1357.44	
2	0.6955	1114.0	1133.7	0.674	5.068	74.745	16.177	3.024	0.101	0.194	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1359.43	
3	0.7017	1121.3	1141.1	0.707	5.159	73.691	16.918	3.194	0.106	0.206	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1362.25	
4	0.7052	1119.5	1139.3	0.683	5.634	73.085	16.871	3.381	0.111	0.216	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1356.71	
5	0.7097	1121.1	1140.9	0.704	5.922	72.444	16.938	3.621	0.119	0.232	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1354.37	
6	0.7172	1128.4	1148.4	0.727	6.144	71.271	17.530	3.920	0.130	0.256	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1356.08	
7	0.7153	1125.5	1145.5	0.718	6.160	71.517	17.384	3.833	0.125	0.244	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1354.36	
8	0.7112	1126.4	1146.3	0.708	5.739	72.109	17.498	3.581	0.118	0.228	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.28	
9	0.7037	1121.3	1141.1	0.692	5.373	73.341	16.962	3.295	0.109	0.210	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1360.29	
10	0.7076	1128.6	1148.6	0.742	5.216	72.632	17.767	3.306	0.109	0.210	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1365.41	
11	0.7227	1139.3	1159.4	0.788	5.907	70.257	18.716	3.930	0.130	0.252	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1363.94	
12	0.7174	1129.1	1149.1	0.736	6.109	71.180	17.710	3.873	0.126	0.245	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1356.69	
13	0.7090	1119.6	1139.5	0.691	5.968	72.603	16.714	3.651	0.119	0.232	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1353.22	
14	0.7088	1124.1	1144.0	0.692	5.676	72.488	17.310	3.484	0.112	0.218	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1358.84	
15	0.7027	1122.3	1142.2	0.676	5.239	73.460	17.101	3.187	0.108	0.210	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1362.50	
16	0.7042	1124.1	1144.0	0.681	5.259	73.241	17.215	3.258	0.111	0.216	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1363.28	
17	0.6955	1120.9	1140.7	0.660	4.676	74.569	16.960	2.833	0.096	0.187	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1367.81	
18	0.6993	1120.7	1140.6	0.687	4.992	74.069	16.855	3.076	0.104	0.198	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1364.00	
19	0.6961	1113.6	1133.3	0.642	5.195	74.645	16.130	3.064	0.104	0.200	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1358.41	
20	0.6924	1109.1	1128.7	0.627	5.150	75.238	15.724	2.958	0.095	0.188	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1356.47	
21	0.6922	1110.8	1130.5	0.623	5.034	75.129	16.074	2.858	0.089	0.174	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1358.76	
22	0.6948	1113.6	1133.3	0.623	5.105	74.724	16.289	2.966	0.092	0.183	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.64	
23	0.6970	1115.4	1135.2	0.630	5.191	74.397	16.406	3.071	0.095	0.190	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.70	
24	0.6998	1117.5	1137.3	0.637	5.311	73.897	16.708	3.141	0.096	0.191	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.60	
25	0.7011	1118.3	1138.1	0.639	5.384	73.697	16.764	3.203	0.098	0.196	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.27	
26	0.7002	1116.2	1135.9	0.637	5.435	73.827	16.621	3.173	0.096	0.192	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1357.51	
27	0.7012	1117.9	1137.7	0.630	5.437	73.695	16.695	3.224	0.099	0.200	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1358.60	
28	0.6978	1114.2	1134.0	0.614	5.360	74.209	16.443	3.069	0.094	0.191	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1357.53	
29	0.6987	1117.1	1136.9	0.624	5.256	74.065	16.667	3.082	0.095	0.191	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1360.13	
30	0.6857	1106.6	1126.2	0.607	4.708	76.334	15.372	2.725	0.082	0.155	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1359.94	
Avg	0.7026	1120.0	1139.4	0.671	5.398	73.519	16.816	3.265	0.105	0.206	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1359.38	

Zone 273

GQ Source Daily Summary

November 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	0.6661	1111.1	1130.7	0.633	2.554	79.259	15.907	1.481	0.055	0.097	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1385.43	
2	0.6641	1107.3	1126.9	0.635	2.592	79.628	15.539	1.440	0.055	0.098	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1382.80	
3	0.6586	1098.0	1117.5	0.589	2.707	80.451	14.858	1.258	0.046	0.080	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1376.96	
4	0.6621	1097.5	1116.9	0.480	3.236	79.715	15.012	1.403	0.052	0.090	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1372.65	
5	0.6656	1105.7	1125.2	0.540	2.974	79.161	15.728	1.435	0.055	0.095	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1379.25	
6	0.6728	1112.8	1132.5	0.488	3.297	77.767	16.694	1.575	0.060	0.106	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1380.66	
7	0.6709	1112.2	1131.9	0.476	3.173	77.995	16.739	1.457	0.054	0.095	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1381.91	
8	0.6752	1122.2	1142.0	0.604	2.773	77.493	17.361	1.583	0.062	0.110	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1389.86	
9	0.6661	1110.0	1129.7	0.622	2.632	79.153	16.034	1.398	0.054	0.095	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1384.15	
10	0.6593	1101.8	1121.3	0.671	2.419	80.520	14.914	1.327	0.050	0.087	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1380.95	
11	0.6660	1106.8	1126.4	0.635	2.803	79.278	15.608	1.499	0.059	0.105	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1380.22	
12	0.6640	1101.1	1120.6	0.539	3.104	79.494	15.238	1.460	0.055	0.097	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1375.20	
13	0.6691	1112.9	1132.6	0.587	2.791	78.604	16.341	1.498	0.060	0.105	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1384.66	
14	0.6701	1113.8	1133.5	0.509	2.953	78.169	16.807	1.404	0.053	0.091	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1384.67	
15	0.6735	1119.1	1138.9	0.543	2.893	77.611	17.316	1.469	0.056	0.099	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1387.80	
16	0.6695	1116.4	1136.2	0.597	2.607	78.422	16.813	1.400	0.054	0.095	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1388.51	
17	0.6655	1110.6	1130.3	0.592	2.588	79.109	16.269	1.297	0.049	0.085	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1385.48	
18	0.6660	1099.4	1118.9	0.515	3.432	79.139	15.167	1.574	0.058	0.103	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1371.02	
19	0.6574	1087.2	1106.5	0.503	3.378	80.830	13.619	1.489	0.060	0.105	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1364.72	
20	0.6556	1084.5	1103.7	0.499	3.385	81.156	13.318	1.463	0.060	0.105	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1363.14	
21	0.6613	1091.0	1110.3	0.459	3.588	79.989	14.246	1.547	0.057	0.100	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1365.34	
22	0.6606	1089.6	1108.9	0.454	3.611	80.100	14.139	1.527	0.057	0.099	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1364.39	
23	0.6638	1094.6	1114.0	0.453	3.610	79.519	14.658	1.584	0.058	0.103	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1367.30	
24	0.6643	1096.6	1116.0	0.432	3.570	79.309	15.000	1.523	0.056	0.097	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1369.28	
25	0.6657	1098.0	1117.4	0.432	3.621	79.037	15.195	1.550	0.055	0.097	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1369.53	
26	0.6650	1096.4	1115.8	0.411	3.677	79.127	15.101	1.527	0.053	0.092	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1368.34	
27	0.6612	1090.0	1109.3	0.363	3.792	79.641	14.680	1.385	0.046	0.080	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1364.13	
28	0.6625	1092.2	1111.6	0.372	3.763	79.429	14.874	1.422	0.047	0.082	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1365.63	
29	0.6613	1092.0	1111.4	0.415	3.591	79.725	14.740	1.387	0.048	0.082	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1366.66	
30	0.6627	1097.6	1117.0	0.545	3.188	79.927	14.545	1.617	0.060	0.105	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1372.15	
Avg	0.6649	1102.0	1121.8	0.520	3.143	79.292	15.415	1.466	0.055	0.096	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1375.76	

Zone 28

GQ Source Daily Summary

November 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	0.6628	1106.1	1125.7	0.648	2.524	79.911	15.291	1.461	0.054	0.098	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1382.63	
2	0.6608	1102.5	1122.0	0.603	2.619	80.132	15.141	1.360	0.048	0.087	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1380.30	
3	0.6584	1092.6	1111.9	0.453	3.228	80.357	14.471	1.351	0.047	0.084	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1370.34	
4	0.6709	1112.5	1132.2	0.524	3.079	78.241	16.366	1.609	0.061	0.109	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1382.28	
5	0.6643	1101.3	1120.8	0.433	3.280	79.158	15.612	1.374	0.047	0.086	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1375.14	
6	0.6725	1115.9	1135.6	0.473	3.104	77.751	16.970	1.535	0.056	0.100	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1384.81	
7	0.6756	1122.7	1142.6	0.592	2.801	77.458	17.288	1.669	0.064	0.115	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1390.06	
8	0.6653	1109.4	1129.0	0.596	2.634	79.279	15.918	1.416	0.052	0.094	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1384.20	
9	0.6618	1102.4	1121.9	0.617	2.697	79.948	15.215	1.373	0.050	0.090	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1379.14	
10	0.6622	1102.1	1121.6	0.632	2.733	79.946	15.114	1.412	0.054	0.098	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1378.29	
11	0.6635	1101.8	1121.3	0.565	3.007	79.610	15.171	1.478	0.055	0.098	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1376.60	
12	0.6683	1111.7	1131.4	0.569	2.812	78.729	16.214	1.505	0.057	0.102	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1384.04	
13	0.6678	1110.6	1130.2	0.499	2.947	78.586	16.422	1.396	0.050	0.088	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1383.06	
14	0.6721	1117.1	1136.9	0.532	2.902	77.863	17.060	1.480	0.054	0.097	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1386.75	
15	0.6676	1114.2	1134.0	0.562	2.607	78.731	16.570	1.380	0.050	0.090	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1387.87	
16	0.6652	1111.3	1131.0	0.553	2.579	79.097	16.332	1.302	0.046	0.082	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1386.66	
17	0.6613	1099.1	1118.6	0.562	2.937	80.006	14.920	1.421	0.051	0.092	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1375.53	
18	0.6591	1088.3	1107.5	0.474	3.521	80.406	13.925	1.508	0.055	0.099	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1364.22	
19	0.6557	1085.1	1104.3	0.505	3.347	81.150	13.337	1.486	0.059	0.104	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1363.81	
20	0.6579	1087.0	1106.2	0.461	3.506	80.656	13.686	1.520	0.056	0.101	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1363.88	
21	0.6598	1088.6	1107.9	0.459	3.590	80.250	14.005	1.534	0.055	0.097	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1363.96	
22	0.6605	1089.2	1108.5	0.454	3.624	80.143	14.048	1.563	0.056	0.100	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1364.01	
23	0.6625	1093.6	1112.9	0.435	3.584	79.665	14.617	1.538	0.054	0.096	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1367.31	
24	0.6643	1096.3	1115.7	0.431	3.587	79.310	14.970	1.541	0.053	0.096	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1368.92	
25	0.6642	1095.0	1114.4	0.418	3.682	79.285	14.918	1.543	0.052	0.093	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1367.33	
26	0.6620	1092.7	1112.1	0.370	3.683	79.552	14.825	1.431	0.046	0.083	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1366.82	
27	0.6607	1088.0	1107.3	0.367	3.858	79.725	14.516	1.402	0.045	0.079	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1362.20	
28	0.6596	1088.1	1107.4	0.375	3.729	79.966	14.421	1.378	0.045	0.077	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1363.54	
29	0.6593	1090.7	1110.0	0.486	3.376	80.330	14.180	1.475	0.052	0.091	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1367.09	
30	0.6596	1093.8	1113.2	0.545	3.126	80.466	14.147	1.549	0.056	0.099	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.64	
Avg	0.6635	1100.0	1119.8	0.506	3.157	79.524	15.189	1.466	0.053	0.094	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1374.71	

Zone 31

GQ Source Daily Summary

November 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		CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
		Value Wet	Value Dry																
1	0.6587	1095.1	1114.5	0.794	2.584	81.177	13.584	1.653	0.068	0.123	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1373.15
2	0.6516	1082.8	1102.0	0.753	2.722	82.371	12.471	1.499	0.060	0.109	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1365.18
3	0.6516	1078.1	1097.2	0.716	3.062	82.396	12.054	1.570	0.067	0.120	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1359.28
4	0.6584	1087.1	1106.3	0.735	3.132	81.258	12.879	1.764	0.077	0.137	0.009	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1363.41
5	0.6586	1086.4	1105.6	0.719	3.213	81.188	12.887	1.764	0.075	0.136	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1362.38
6	0.6752	1113.8	1133.5	0.857	2.893	78.497	15.313	2.147	0.096	0.174	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1379.48
7	0.6617	1096.9	1116.3	0.835	2.688	80.741	13.747	1.759	0.075	0.137	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1372.36
8	0.6560	1079.9	1099.0	0.753	3.320	81.572	12.496	1.644	0.069	0.130	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1356.82
9	0.6540	1070.0	1089.0	0.664	3.861	81.852	11.742	1.661	0.070	0.134	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1346.42
10	0.6570	1086.9	1106.2	0.728	3.020	81.566	12.676	1.778	0.076	0.138	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1364.61
11	0.6486	1069.1	1088.0	0.653	3.425	83.269	10.549	1.856	0.082	0.147	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1350.81
12	0.6578	1083.4	1102.6	0.678	3.389	81.368	12.493	1.829	0.081	0.144	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1359.39
13	0.6583	1083.2	1102.4	0.698	3.412	81.326	12.461	1.856	0.081	0.146	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1358.69
14	0.6557	1084.7	1103.9	0.767	2.969	81.857	12.426	1.749	0.077	0.137	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1363.30
15	0.6501	1082.0	1101.2	0.829	2.515	82.837	12.088	1.535	0.065	0.116	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1365.73
16	0.6483	1079.8	1098.9	0.840	2.470	83.213	11.750	1.530	0.066	0.117	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1364.75
17	0.6511	1074.1	1093.1	0.702	3.284	82.786	11.143	1.849	0.078	0.140	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1354.70
18	0.6501	1072.3	1091.3	0.666	3.346	82.990	10.896	1.856	0.082	0.145	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1353.57
19	0.6500	1074.2	1093.2	0.683	3.205	83.086	10.883	1.888	0.085	0.150	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1355.92
20	0.6516	1076.5	1095.6	0.672	3.228	82.803	11.096	1.945	0.085	0.150	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1357.21
21	0.6523	1077.1	1096.1	0.637	3.312	82.558	11.343	1.907	0.081	0.143	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1357.20
22	0.6460	1067.2	1086.1	0.625	3.339	83.831	10.046	1.916	0.081	0.143	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1351.30
23	0.6530	1077.7	1096.8	0.655	3.552	93.526	0.000	2.013	0.085	0.149	0.011	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1357.28
24	0.6547	1078.9	1098.0	0.590	3.171	85.418	8.794	1.801	0.076	0.132	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1357.00
25	0.6546	1075.8	1094.9	0.475	3.606	93.688	0.000	1.987	0.082	0.144	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1353.28
26	0.6525	1068.6	1087.5	0.000	3.248	94.450	0.000	2.051	0.087	0.152	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1346.29
27	0.6512	1065.6	1084.5	0.000	4.001	93.850	0.000	2.062	0.083	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1343.92
28	0.6501	1070.3	1089.3	0.000	4.000	92.724	0.000	2.000	1.276	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1351.01
29	0.6498	1077.1	1096.2	0.000	4.000	92.724	0.000	2.000	1.276	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1359.88
30	0.6501	1081.7	1100.9	0.000	4.000	92.724	0.000	2.000	1.276	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1365.39
Avg	0.6540	1080.0	1099.0	0.591	3.266	84.788	9.194	1.829	0.197	0.120	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1358.99

Zone 32

GQ Source Daily Summary

November 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	0.6910	1158.8	1179.3	0.000	2.958	72.491	23.730	0.802	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.73	
2	0.6908	1159.0	1179.5	0.000	2.928	72.493	23.796	0.767	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.18	
3	0.6916	1159.5	1180.1	0.000	2.975	72.352	23.848	0.809	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.95	
4	0.6914	1158.9	1179.4	0.000	2.992	72.396	23.792	0.803	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.39	
5	0.6915	1159.0	1179.6	0.000	2.997	72.362	23.828	0.799	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.43	
6	0.6912	1158.8	1179.3	0.000	2.983	72.410	23.809	0.783	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.45	
7	0.6910	1158.5	1179.1	0.000	2.974	72.457	23.777	0.777	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.41	
8	0.6914	1159.3	1179.8	0.000	2.968	72.388	23.833	0.796	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.90	
9	0.6911	1158.4	1179.0	0.000	2.989	72.450	23.756	0.790	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.19	
10	0.6909	1158.1	1178.6	0.000	2.992	72.470	23.752	0.771	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.96	
11	0.6914	1159.4	1180.0	0.000	2.962	72.367	23.875	0.781	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.05	
12	0.6911	1159.1	1179.6	0.000	2.951	72.444	23.805	0.785	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.97	
13	0.6916	1159.7	1180.3	0.000	2.956	72.357	23.877	0.795	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.28	
14	0.6912	1159.1	1179.6	0.022	2.932	72.488	23.723	0.815	0.007	0.010	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1418.80	
15	0.6911	1159.0	1179.6	0.000	2.953	72.429	23.831	0.771	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.92	
16	0.6908	1158.8	1179.3	0.000	2.943	72.460	23.834	0.747	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.90	
17	0.6907	1158.1	1178.6	0.000	2.977	72.450	23.832	0.726	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.16	
18	0.6908	1158.2	1178.7	0.000	2.977	72.447	23.832	0.728	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.19	
19	0.6909	1158.4	1178.9	0.000	2.971	72.445	23.830	0.740	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.38	
20	0.6907	1158.2	1178.7	0.000	2.975	72.473	23.793	0.744	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.19	
21	0.6909	1159.1	1179.6	0.000	2.935	72.440	23.868	0.743	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.15	
22	0.6916	1160.5	1181.0	0.000	2.915	72.329	23.976	0.764	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.13	
23	0.6909	1160.2	1180.8	0.000	2.867	72.468	23.885	0.765	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1420.53	
24	0.6903	1159.3	1179.8	0.000	2.867	72.587	23.772	0.758	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.99	
25	0.6917	1159.9	1180.4	0.000	2.962	72.309	23.930	0.784	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1419.30	
26	0.6912	1159.1	1179.6	0.000	2.959	72.423	23.824	0.780	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.87	
27	0.6904	1158.1	1178.6	0.000	2.945	72.544	23.759	0.739	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.48	
28	0.6904	1157.8	1178.3	0.000	2.966	72.486	23.840	0.694	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.10	
29	0.6909	1158.5	1179.0	0.000	2.968	72.400	23.915	0.702	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.47	
30	0.6909	1158.2	1178.7	0.000	2.988	72.434	23.823	0.739	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.08	
Avg	0.6911	1159.0	1179.4	0.001	2.957	72.435	23.825	0.767	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418.78	

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:	

	<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:

Zone 34

GQ Source Daily Summary

November 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	0.6447	1055.2	1073.9	1.103	3.233	82.855	12.145	0.634	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1337.50	
2	0.6456	1056.7	1075.4	1.097	3.236	82.669	12.332	0.636	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1338.46	
3	0.6463	1058.0	1076.7	1.092	3.234	82.529	12.468	0.646	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1339.31	
4	0.6467	1058.5	1077.2	1.091	3.242	82.486	12.468	0.679	0.013	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1339.52	
5	0.6440	1053.8	1072.5	1.092	3.272	82.957	12.039	0.610	0.012	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1336.41	
6	0.6429	1052.5	1071.1	1.066	3.289	83.198	11.765	0.648	0.013	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.85	
7	0.6437	1054.1	1072.8	1.079	3.246	83.053	11.934	0.654	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1337.11	
8	0.6446	1056.0	1074.7	1.042	3.271	82.849	12.131	0.671	0.014	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1338.55	
9	0.6671	1093.8	1113.2	1.001	3.148	78.830	15.710	1.268	0.017	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1362.83	
10	0.6718	1101.5	1121.0	0.976	3.149	78.162	16.099	1.574	0.017	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.73	
11	0.6823	1119.3	1139.1	0.988	3.052	75.342	19.698	0.871	0.017	0.031	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1378.93	
12	0.6837	1121.9	1141.8	0.988	3.026	74.575	20.935	0.467	0.004	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.81	
13	0.6830	1120.8	1140.6	0.982	3.034	74.750	20.727	0.495	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.17	
14	0.6928	1137.7	1157.8	0.966	2.932	74.657	19.217	2.038	0.067	0.121	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1391.03	
15	0.6734	1104.2	1123.7	1.004	3.107	76.731	18.651	0.494	0.005	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1369.38	
16	0.6808	1116.4	1136.1	0.996	3.070	75.353	19.929	0.644	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.97	
17	0.6800	1117.9	1137.7	0.991	2.911	75.604	19.773	0.716	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.62	
18	0.6828	1121.0	1140.9	0.992	2.976	75.006	20.330	0.688	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.75	
19	0.6824	1119.1	1138.9	0.991	3.065	74.965	20.381	0.594	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.67	
20	0.6828	1119.8	1139.6	0.994	3.057	74.960	20.310	0.673	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.14	
21	0.6827	1119.6	1139.5	0.996	3.049	74.970	20.334	0.646	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.10	
22	0.6827	1120.0	1139.9	0.997	3.026	75.030	20.232	0.709	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.55	
23	0.6816	1118.2	1138.0	0.995	3.039	75.141	20.218	0.602	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1378.39	
24	0.6822	1119.5	1139.4	0.987	3.025	75.067	20.261	0.655	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1379.46	
25	0.6835	1121.6	1141.5	0.986	3.024	74.822	20.483	0.680	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.67	
26	0.6803	1115.8	1135.6	0.988	3.067	75.435	19.868	0.637	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1376.83	
27	0.6731	1105.5	1125.1	1.006	2.992	76.719	18.864	0.416	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1371.38	
28	0.6411	1052.8	1071.4	0.944	3.285	83.635	11.298	0.776	0.020	0.039	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1338.06	
29	0.6497	1062.1	1080.9	1.086	3.315	81.948	12.844	0.762	0.017	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1340.96	
30	0.6544	1070.4	1089.3	1.085	3.256	81.059	13.728	0.826	0.017	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1346.52	
Avg	0.6678	1095.0	1114.2	1.020	3.121	78.178	16.906	0.747	0.011	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1363.32	

Zone 43

Watford City

Effective 2-3-16

01325

Watford City West Border

01312

Watford City East Border

Weighted

Begin Date	End Date	BTU			BTU			AVG BTU	
		MCF	DK	Zone 25	MCF	DK	Zone 43		
11/1/2016	11/2/2016	347	416	1.200	141	152	1.074	1.164	11/1/2016
11/2/2016	11/3/2016	361	433	1.200	136	146	1.075	1.166	11/2/2016
11/3/2016	11/4/2016	316	379	1.200	119	128	1.077	1.166	11/3/2016
11/4/2016	11/5/2016	259	311	1.200	111	120	1.077	1.163	11/4/2016
11/5/2016	11/6/2016	285	342	1.200	104	112	1.073	1.166	11/5/2016
11/6/2016	11/7/2016	254	304	1.200	100	108	1.071	1.164	11/6/2016
11/7/2016	11/8/2016	387	465	1.200	132	141	1.073	1.168	11/7/2016
11/8/2016	11/9/2016	379	455	1.200	126	136	1.075	1.169	11/8/2016
11/9/2016	11/10/2016	263	315	1.200	113	126	1.113	1.174	11/9/2016
11/10/2016	11/11/2016	402	483	1.200	151	169	1.121	1.178	11/10/2016
11/11/2016	11/12/2016	339	407	1.200	112	128	1.139	1.185	11/11/2016
11/12/2016	11/13/2016	242	290	1.200	110	125	1.142	1.182	11/12/2016
11/13/2016	11/14/2016	315	378	1.200	121	138	1.141	1.184	11/13/2016
11/14/2016	11/15/2016	269	323	1.200	105	122	1.158	1.188	11/14/2016
11/15/2016	11/16/2016	322	386	1.200	107	121	1.124	1.181	11/15/2016
11/16/2016	11/17/2016	429	514	1.200	308	350	1.136	1.173	11/16/2016
11/17/2016	11/18/2016	587	704	1.200	234	267	1.138	1.182	11/17/2016
11/18/2016	11/19/2016	637	764	1.200	338	386	1.141	1.180	11/18/2016
11/19/2016	11/20/2016	608	729	1.200	253	288	1.139	1.182	11/19/2016
11/20/2016	11/21/2016	518	622	1.200	224	256	1.140	1.182	11/20/2016
11/21/2016	11/22/2016	512	614	1.200	160	182	1.140	1.186	11/21/2016
11/22/2016	11/23/2016	550	660	1.200	246	280	1.140	1.181	11/22/2016
11/23/2016	11/24/2016	558	670	1.200	202	230	1.138	1.184	11/23/2016
11/24/2016	11/25/2016	535	642	1.200	176	201	1.139	1.185	11/24/2016
11/25/2016	11/26/2016	526	631	1.200	173	198	1.142	1.186	11/25/2016
11/26/2016	11/27/2016	499	599	1.200	165	188	1.136	1.184	11/26/2016
11/27/2016	11/28/2016	518	622	1.200	189	213	1.125	1.180	11/27/2016
11/28/2016	11/29/2016	660	792	1.200	274	294	1.071	1.162	11/28/2016
11/29/2016	11/30/2016	687	824	1.200	298	323	1.081	1.164	11/29/2016
11/30/2016	12/1/2016	637	766	1.200	243	264	1.089	1.169	11/30/2016
		13,201	15,840		5,271	5,892	1.1143	1.1759	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (cal/cf)	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	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	
11587	GLEN ULLIN	1052.4	0.6068	1351	-76	1.3167	0.8629	90.0685	7.1505	0.3818	0.0192	0.0127	0.0011	0.0017	0	0.0006	0.1682	0.0151	11/1/2016	11/2/2016	11/2/2016 2:53:21 PM	
11587	GLEN ULLIN	1054.6	0.6085	1351.9	-75.6	1.3597	0.8568	89.6833	7.5259	0.3714	0.0151	0.0094	0.0003	0.0006	0	0	0.1615	0.0143	11/2/2016	11/3/2016	11/3/2016 2:53:56 PM	
11587	GLEN ULLIN	1052.8	0.6069	1351.5	-76.9	1.3379	0.8386	89.9914	7.2689	0.3637	0.0147	0.0085	0.0001	0.0002	0	0	0.1608	0.0139	11/3/2016	11/4/2016	11/4/2016 2:53:13 PM	
11587	GLEN ULLIN	1056.2	0.6094	1353.1	-74.7	1.344	0.8538	89.6213	7.6125	0.4052	0.0163	0.0098	0.0004	0.0005	0	0	0.12	0.0165	11/4/2016	11/5/2016	11/5/2016 2:52:54 PM	
11587	GLEN ULLIN	1055.4	0.6089	1352.5	-75.1	1.3423	0.8644	89.6207	7.5852	0.3836	0.0165	0.0098	0.0004	0.0006	0	0	0.1614	0.0136	11/5/2016	11/6/2016	11/6/2016 2:52:45 PM	
11587	GLEN ULLIN	1058.3	0.6112	1353.7	-73.5	1.3766	0.8649	89.1762	8.0213	0.3761	0.016	0.0092	0.0002	0.0003	0	0	0.143	0.0134	11/6/2016	11/7/2016	11/7/2016 2:55:33 PM	
11587	GLEN ULLIN	1056.9	0.6098	1353.4	-74.7	1.3729	0.8356	89.545	7.7357	0.3785	0.0166	0.0093	0.0001	0.0001	0	0	0.0951	0.0108	11/7/2016	11/8/2016	11/8/2016 2:54:30 PM	
11587	GLEN ULLIN	1055	0.6088	1352.2	-75.9	1.3685	0.8476	89.7799	7.5461	0.3493	0.0155	0.009	0.0002	0.0004	0	0	0.0756	0.008	11/8/2016	11/9/2016	11/9/2016 2:53:46 PM	
11587	GLEN ULLIN	1052.1	0.6059	1351.6	-78.1	1.3146	0.8219	90.2898	7.1075	0.3418	0.0128	0.0074	0.0001	0.0001	0	0	0.0945	0.0094	11/9/2016	11/10/2016	11/10/2016 2:53:24 PM	
11587	GLEN ULLIN	1059.3	0.6116	1354.6	-63.3	1.3739	0.8479	89.3757	7.7177	0.4951	0.0325	0.0237	0.0035	0.0046	0	0.003	0.11	0.0121	11/10/2016	11/11/2016	11/11/2016 2:54:05 PM	
11587	GLEN ULLIN	1057.5	0.6106	1353.3	-74.1	1.4091	0.8369	89.3407	7.8762	0.385	0.0156	0.0088	0.0001	0.0002	0	0	0.1155	0.0132	11/11/2016	11/12/2016	11/12/2016 2:53:23 PM	
11587	GLEN ULLIN	1056.1	0.6094	1352.8	-75.2	1.3786	0.8426	89.482	7.77	0.3474	0.0137	0.0075	0	0	0	0	0.1443	0.0151	11/12/2016	11/13/2016	11/13/2016 2:53:02 PM	
11587	GLEN ULLIN	1058.1	0.611	1353.7	-74	1.4246	0.8276	89.153	8.0547	0.3579	0.0142	0.0079	0.0001	0.0001	0	0	0.1435	0.0156	11/13/2016	11/14/2016	11/14/2016 2:54:06 PM	
11587	GLEN ULLIN	1059	0.6114	1354.3	-72.7	1.3717	0.8514	89.1606	7.9644	0.4408	0.0187	0.0104	0.0001	0.0001	0	0	0.1656	0.0161	11/14/2016	11/15/2016	11/15/2016 2:54:51 PM	
11587	GLEN ULLIN	1056	0.6092	1353	-75.3	1.3517	0.8496	89.5218	7.7468	0.3451	0.0133	0.0074	0.0001	0.0001	0	0	0.1479	0.0165	11/15/2016	11/16/2016	11/16/2016 2:57:55 PM	
11587	GLEN ULLIN	1059.1	0.611	1354.9	-73.5	1.335	0.8516	89.1772	8.0509	0.3892	0.0129	0.0075	0.0001	0.0001	0	0	0.1604	0.016	11/16/2016	11/17/2016	11/17/2016 2:53:37 PM	
11587	GLEN ULLIN	1060.1	0.6113	1355.8	-73.2	1.3286	0.8304	89.2385	8.0885	0.381	0.0143	0.0087	0.0003	0.0006	0	0.0002	0.0925	0.0174	11/17/2016	11/18/2016	11/18/2016 2:53:21 PM	
11587	GLEN ULLIN	1063.2	0.614	1356.9	-70.8	1.4036	0.8208	88.7755	8.4038	0.4662	0.0165	0.0095	0.0003	0.0005	0	0	0.0848	0.0174	11/18/2016	11/19/2016	11/19/2016 2:53:22 PM	
11587	GLEN ULLIN	1070.5	0.6199	1359.7	-65.8	1.5216	0.8236	87.5171	9.4237	0.527	0.0198	0.0109	0.0012	0.001	0	0	0.1378	0.017	11/19/2016	11/20/2016	11/20/2016 2:53:07 PM	
11587	GLEN ULLIN	1077.5	0.6244	1363.6	-47.7	1.4567	0.8723	87.0354	9.5323	0.7844	0.0585	0.044	0.0071	0.0095	0	0.0058	0.1789	0.0162	11/20/2016	11/21/2016	11/21/2016 2:55:32 PM	
11587	GLEN ULLIN	1069.6	0.6208	1357.5	-63.9	1.6441	0.839	87.327	9.3391	0.6003	0.0271	0.0156	0.0023	0.0024	0	0.0005	0.1865	0.0177	11/21/2016	11/22/2016	11/22/2016 2:54:59 PM	
11587	GLEN ULLIN	1073.3	0.6219	1361	-50.5	1.5128	0.8439	87.4968	9.076	0.7668	0.0561	0.0404	0.0066	0.0086	0	0.0051	0.1717	0.0177	11/22/2016	11/23/2016	11/23/2016 2:55:34 PM	
11587	GLEN ULLIN	1059.8	0.6123	1354.4	-71.7	1.4623	0.8167	88.9641	8.0803	0.4683	0.0187	0.0103	0.0012	0.0011	0	0	0.1619	0.017	11/23/2016	11/24/2016	11/24/2016 2:53:42 PM	
11587	GLEN ULLIN	1057.1	0.6098	1353.6	-73.7	1.415	0.8005	89.4658	7.7034	0.4252	0.019	0.0106	0.0015	0.0015	0	0.0002	0.1429	0.0173	11/24/2016	11/25/2016	11/25/2016 2:53:38 PM	
11587	GLEN ULLIN	1059	0.6112	1354.6	-71.4	1.3873	0.8265	89.2287	7.8768	0.4589	0.0223	0.0142	0.0021	0.0026	0	0.0009	0.1633	0.017	11/25/2016	11/26/2016	11/26/2016 2:54:41 PM	
11587	GLEN ULLIN	1054.1	0.6078	1352.1	-75.9	1.4141	0.7946	89.7686	7.4303	0.3867	0.015	0.0081	0.001	0.0007	0	0.0001	0.164	0.0169	11/26/2016	11/27/2016	11/27/2016 2:55:31 PM	
11587	GLEN ULLIN	1053	0.6069	1351.7	-77	1.3739	0.8078	89.9347	7.3244	0.3575	0.0136	0.0074	0.0003	0.0002	0	0	0.1655	0.0166	11/27/2016	11/28/2016	11/28/2016 2:54:44 PM	
11587	GLEN ULLIN	1048.2	0.6038	1348.9	-79.8	1.3486	0.8212	90.5414	6.7448	0.3308	0.0127	0.0073	0	0	0	0	0.1751	0.0176	11/28/2016	11/29/2016	11/29/2016 2:54:21 PM	
11587	GLEN ULLIN	1049.6	0.605	1349.4	-78.7	1.3415	0.8443	90.3375	6.9136	0.3504	0.0131	0.0074	0.0001	0.0001	0	0	0.1751	0.0175	11/29/2016	11/30/2016	11/30/2016 2:54:40 PM	
11587	GLEN ULLIN	1045.5	0.6008	1348.8	-82.3	1.2438	0.8104	91.1594	6.2951	0.2977	0.0112	0.0066	0	0	0	0	0.1605	0.016	11/30/2016	12/1/2016	12/1/2016 2:54:57 PM	

31 record(s) retrieved

Zone 602

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	NOV 16	OCT 16	SEPT 16	AUG 16	JULY 16	JUNE 16	MAY 16	APR 16	MAR 16	FEB 16	JAN 16	DEC 15	ZONE
MT/ND	211	Sidney Area	1206	1200	1193	1209	1210	1208	1206	1205	1207	1213	1209	1207	1204	211
ND	24	Williston Area	1189	1187	1169	1195	1169	1197	1191	1182	1196	1194	1195	1195	1199	24
ND	25	Watford City Border	1210	1200	1206	1211	1213	1211	1206	1209	1211	1211	1213	1216	1216	25
ND/MT	241	Fairview Area	1198	1193	1170	1210	1200	1202	1197	1202	1207	1201	1201	1199	1199	241
ND	261	Williston - Tioga - Minot Line	1101	1034	981	1174	1074	1206	1182	1179	1186	1048	1035	1052	1066	261
ND	262	Minot Area	1186	1147	1141	1172	1191	1208	1208	1208	1206	1189	1190	1189	1188	262
ND	263	Tioga - Portal	1097	1138	1120	1129	1127	1118	1116	947	1105	1082	1107	1092	1082	263
ND	264	Williston - Ray	1181	1158	1157	1194	1198	1169	1183	1184	1190	1189	1181	1183	1180	264
ND	265	North Tioga Transfer - Portal	1181	1182	1180	1186	1166	1177	1170	1173	1190	1186	1187	1190	1188	265
ND	271	Bismarck - Cleveland	1183	1140	1142	1173	1185	1208	1208	1208	1206	1186	1181	1172	1181	271
ND	272	Cleveland - Mapleton	1181	1139	1142	1172	1184	1207	1207	1206	1204	1185	1180	1171	1180	272
ND	273	Cleveland - Grafton	1181	1139	1142	1172	1184	1207	1206	1206	1201	1185	1179	1171	1180	273
ND	28	Bismarck - Cabin Creek	1167	1122	1152	1172	1185	1208	1208	1202	1190	1154	1142	1131	1137	28
ND	31	Dickinson Area	1137	1120	1153	1171	1169	1124	1128	1117	1114	1144	1139	1130	1136	31
ND	311	Taylor Take-Off - Glen Ullin Comp	#DIV/0!	0	0	0	0	0	0	0	0	0	0	0	0	311
ND/MT	32	Cabin Creek - Dickinson	1133	1099	1137	1153	1150	1157	1153	1137	1129	1121	1125	1117	1117	32
ND	33	Killdeer	1183	1179	1182	1184	1183	1184	1185	1184	1181	1181	1183	1182	1186	33
ND	34	Bowman Area	1019	996	996	996	996	996	996	980	982	979	1082	1103	1121	34
ND	43	Spring Creek - Garden Crk Plant	1105	1114	1109	1128	1109	1089	1087	1102	1143	1112	1091	1087	1092	43
ND	610	MDU-Watford City BTU	1177	1176	1179	1197	1206	1203	1186	1184	1174	1153	1140	1155	1174	610
ND	802	Linton	1059	1058	1053	1058	1059	1054	1065	1062	1062	1057	1056	1060	1066	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

**THERMAL ZONE VARIANCE
DOCUMENTATION**

November 2016

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
241	23	Blending of & Change in Supply
261	53	Operational / Receipt off line
28	-30	Operational / Receipt off line
31	-33	Operational / Receipt off line
32	-38	Operational / Receipt off line