

January 24, 2018

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

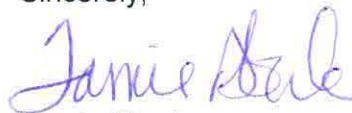
Re: Case No. PU-17-002 (Therm Billing)
Monthly Report – November 2017

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 December 2017.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of November 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 November 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
Dec-17

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1372
MDU-308-ARNEGARD	025	1.1372
MDU-314-APPLE VALLEY	271	1.1501
MDU-318-BEACH	032	1.0286
MDU-319-BELFIELD	032	1.0361
MDU-323-BERTHOLD	262	1.1277
MDU-327-BISMARCK	028	1.1318
MDU-330-BOWMAN	034	0.9340
MDU-337-BURLINGTON	262	1.1521
MDU-343-CARRINGTON	273	1.1501
MDU-344-CLEVELAND	272	1.1420
MDU-364-CAVALIER	273	1.1744
MDU-365-DAWSON	271	1.1420
MDU-368-DES LACS	262	1.1358
MDU-369-DICKINSON	031	1.0615
MDU-374-FT TOTTEN	273	1.1582
MDU-375-DEVILS LAKE	273	1.1582
MDU-379-BARLOW	273	1.1501
MDU-384-EPPING	264	1.0711
MDU-387-ELDRIDGE	272	1.1501
MDU-407-GLADSTONE	031	1.0615
MDU-411-GLEN ULLIN	031	1.0692
MDU-413-GOLVA	032	1.0135
MDU-416-GARRISON	262	1.1358
MDU-417-GRAFTON	273	1.1825
MDU-429-HEBRON	031	1.0692
MDU-432-HETTINGER	903	2.4049
MDU-449-JAMESTOWN	272	1.1582
MDU-459-KILLDEER	033	1.1088
MDU-463-LANGDON	273	1.1501
MDU-469-LEFOR	031	1.0615
MDU-474-LIGNITE	263	1.0854
MDU-475-LINTON	802	1.0266
MDU-478-LINCOLN	028	1.1318
MDU-488-MCKENZIE	271	1.1501
MDU-494-MEDINA	271	1.1420
MDU-498-MANDAN	028	1.1318
MDU-500-MARMARTH	034	0.9204
MDU-505-MINOT	262	1.1521
MDU-510-MOTT	031	1.0615
MDU-512-MAX	262	1.1277
MDU-522-NEW ENGLAND	031	1.0538
MDU-524-NEW SALEM	028	1.1079
MDU-532-NEW ROCKFORD	273	1.1501
MDU-539-PARK RIVER	273	1.1744
MDU-540-PALERMO	262	1.1277
MDU-558-RAY	264	1.0711
MDU-561-REGENT	031	1.0615
MDU-563-RHAME	034	0.9069

MDU-564-RICHARDTON	031	1.0538
MDU-568-ROSS	261	1.1027
MDU-572-RUTHVILLE	262	1.1521
MDU-574-SANBORN	272	1.1582
MDU-583-SENTINEL BUTTE	032	1.0286
MDU-588-SOUTH HEART	031	1.0538
MDU-717-SPIRITWOOD	272	1.1582
MDU-590-SPRINGBROOK	264	1.0711
MDU-591-STANLEY	261	1.1187
MDU-593-STEELE	271	1.1420
MDU-598-SHEYENNE	273	1.1582
MDU-605-SURREY	262	1.1521
MDU-610-TAPPEN	271	1.1420
MDU-611-TAYLOR	031	1.0538
MDU-616-TIOGA	260	0.9340
MDU-619-TURTLE LAKE	262	1.1358
MDU-620-TRENTON	024	1.0883
MDU-624-UNDERWOOD	262	1.1358
MDU-625-VALLEY CITY	272	1.1663
MDU-629-WALHALLA	273	1.1744
MDU-632-WATFORD CITY	610	1.1230
MDU-636-WHEELOCK	264	1.0634
MDU-637-WHITE EARTH	261	1.1107
MDU-642-WILLISTON	024	1.0883
MDU-646-WASHBURN	262	1.1439
MDU-647-WILTON	262	1.1277
MDU-664-RIVERDALE	262	1.1358
MDU-691-FAIRVIEW	241	1.1377
MDU-712-MINOT AFB	262	1.1521
MDU-718-FAIRMOUNT	600	1.1336
MDU-732-NEKOMA	273	1.1501
MDU-732-MSR SITE	273	1.1501

Source Daily Summary

November 2017

Number: 251 Pressure Base: 14.730 Contract Day: 1
 Name: SDNY BDR-MNDK JNCTN-SDNY PLT Temperature Base: Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7349	1179.3	1200.2	1195.9	1.245	3.920	68.437	22.223	3.727	0.148	0.272	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1396.66
2	0.7355	1180.5	1201.4	1197.1	1.239	3.918	68.327	22.321	3.737	0.152	0.278	0.016	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1397.47
3	0.7348	1179.1	1200.0	1195.6	1.240	3.937	68.528	22.028	3.822	0.148	0.270	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1396.44
4	0.7352	1180.0	1200.9	1196.5	1.236	3.921	68.417	22.177	3.821	0.143	0.260	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1397.18
5	0.7394	1187.5	1208.5	1203.9	1.231	3.871	67.964	22.279	4.228	0.143	0.259	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1401.93
6	0.7454	1199.1	1220.3	1215.6	1.240	3.725	66.579	23.970	4.080	0.136	0.246	0.013	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1409.75
7	0.7414	1192.6	1213.7	1209.2	1.262	3.703	66.862	24.244	3.527	0.135	0.244	0.013	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1406.13
8	0.7349	1190.7	1211.8	1207.4	1.001	3.604	67.467	24.387	3.217	0.110	0.195	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1410.31
9	0.7019	1169.7	1190.4	1186.2	0.031	3.263	71.704	22.745	2.210	0.020	0.025	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1417.62
10	0.7175	1174.9	1195.7	1191.4	0.634	3.499	70.060	22.753	2.834	0.075	0.131	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1408.37
11	0.7380	1186.3	1207.3	1203.0	1.274	3.744	67.594	23.451	3.516	0.141	0.256	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1402.03
12	0.7390	1188.3	1209.3	1205.0	1.267	3.729	67.389	23.674	3.517	0.140	0.257	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1403.39
13	0.7417	1192.9	1214.0	1209.6	1.267	3.707	66.887	24.155	3.556	0.141	0.259	0.015	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1406.18
14	0.7392	1188.3	1209.4	1205.0	1.273	3.742	67.382	23.611	3.576	0.138	0.252	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1403.20
15	0.7399	1189.8	1210.8	1206.3	1.272	3.720	67.140	23.974	3.483	0.137	0.248	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1404.22
16	0.7401	1190.3	1211.4	1206.9	1.268	3.710	67.108	24.027	3.468	0.139	0.255	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1404.71
17	0.7398	1189.7	1210.8	1206.2	1.273	3.713	67.203	23.881	3.516	0.138	0.251	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1404.26
18	0.7412	1191.9	1213.1	1208.4	1.266	3.717	66.973	24.062	3.560	0.140	0.257	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1405.59
19	0.7430	1195.2	1216.4	1211.7	1.257	3.701	66.754	24.162	3.698	0.141	0.260	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1407.69
20	0.7220	1181.0	1201.9	1197.4	0.688	3.460	69.416	23.222	2.965	0.084	0.150	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1411.34
21	0.7474	1198.9	1220.1	1217.9	1.224	3.640	66.220	24.659	3.824	0.139	0.252	0.013	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1412.23
22	0.7439	1197.3	1218.5	1213.9	1.258	3.657	66.307	24.913	3.451	0.137	0.253	0.014	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1409.33
23	0.7440	1196.6	1217.8	1213.4	1.263	3.701	66.618	24.257	3.685	0.153	0.294	0.016	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1408.48
24	0.7413	1191.7	1212.8	1208.5	1.275	3.729	66.993	23.986	3.566	0.147	0.278	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1405.30
25	0.7449	1198.0	1219.2	1214.8	1.264	3.703	66.414	24.460	3.691	0.151	0.288	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1409.22
26	0.7443	1196.9	1218.1	1213.7	1.265	3.711	66.500	24.414	3.635	0.153	0.294	0.015	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1408.52
27	0.7416	1191.9	1213.0	1208.6	1.272	3.743	66.993	23.943	3.577	0.153	0.291	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1405.30
28	0.7391	1190.4	1211.5	1207.0	1.238	3.654	67.246	24.021	3.411	0.141	0.264	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1405.86
29	0.7370	1188.3	1209.4	1204.9	1.218	3.613	67.592	23.815	3.342	0.138	0.256	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1405.33
30	0.7387	1191.5	1212.6	1207.9	1.217	3.588	67.265	24.139	3.374	0.137	0.254	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1407.38
Avg	0.7376	1189.0	1210.0	1205.8	1.165	3.701	67.545	23.665	3.521	0.133	0.245	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1405.71

Zone 211

Source Daily Summary

November 2017

Number: 571

Pressure Base: 14.730

Contract Day: 1

Name: WILLISTON BDR-CHARBN STN

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6799	1124.3	1144.3	1141.2	0.834	2.725	77.300	16.863	2.066	0.063	0.130	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1384.54	
2	0.6793	1122.6	1142.5	1139.4	0.841	2.769	77.424	16.678	2.071	0.064	0.134	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1382.96	
3	0.6807	1125.5	1145.4	1142.4	0.839	2.720	77.293	16.736	2.188	0.066	0.137	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1385.15	
4	0.6829	1130.1	1150.1	1147.1	0.828	2.662	77.001	16.932	2.359	0.065	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1388.60	
5	0.6778	1121.9	1141.8	1138.7	0.836	2.677	77.815	16.304	2.154	0.063	0.131	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1383.63	
6	0.6759	1118.4	1138.2	1135.1	0.843	2.702	78.332	15.644	2.254	0.067	0.138	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1381.20	
7	0.6787	1122.7	1142.6	1139.6	0.840	2.703	77.923	15.897	2.406	0.068	0.142	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1383.73	
8	0.6765	1119.4	1139.2	1136.2	0.830	2.711	78.122	15.947	2.165	0.067	0.138	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1381.89	
9	0.6771	1121.1	1140.9	1137.8	0.822	2.680	77.877	16.332	2.079	0.062	0.130	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1383.34	
10	0.6812	1128.0	1147.9	1144.9	0.821	2.648	76.991	17.304	2.020	0.063	0.133	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1387.66	
11	0.6813	1127.6	1147.5	1144.5	0.837	2.662	77.220	16.810	2.243	0.067	0.140	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1387.01	
12	0.6816	1127.9	1147.9	1144.8	0.824	2.685	77.150	16.884	2.221	0.069	0.145	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1387.14	
13	0.6832	1130.1	1150.1	1147.1	0.829	2.691	76.829	17.194	2.225	0.068	0.142	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1388.26	
14	0.6793	1124.1	1144.0	1141.0	0.815	2.717	77.473	16.651	2.118	0.065	0.138	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1384.78	
15	0.6793	1124.1	1144.0	1140.9	0.838	2.682	77.565	16.522	2.163	0.067	0.142	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1384.75	
16	0.6824	1127.7	1147.7	1144.6	0.813	2.790	76.748	17.388	2.045	0.064	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1386.11	
17	0.6838	1128.3	1148.3	1145.2	0.832	2.854	76.825	16.917	2.313	0.076	0.159	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1385.40	
18	0.6818	1126.5	1146.5	1143.4	0.842	2.762	77.179	16.703	2.264	0.073	0.153	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1385.22	
19	0.6823	1128.2	1148.1	1145.1	0.839	2.711	76.920	17.169	2.128	0.068	0.143	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1386.77	
20	0.6789	1122.9	1142.8	1139.8	0.830	2.725	77.545	16.584	2.094	0.066	0.137	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1383.79	
21	0.6750	1117.7	1137.5	1134.5	0.828	2.684	78.278	15.946	2.045	0.064	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1381.26	
22	0.6791	1123.3	1143.2	1140.2	0.822	2.735	77.609	16.397	2.212	0.067	0.138	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1384.03	
23	0.6832	1128.9	1148.8	1145.8	0.820	2.782	76.685	17.372	2.111	0.067	0.141	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1386.72	
24	0.6804	1124.2	1144.1	1141.2	0.829	2.794	77.249	16.773	2.135	0.066	0.135	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1383.81	
25	0.6799	1123.7	1143.6	1140.6	0.831	2.770	77.443	16.539	2.185	0.069	0.142	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1383.74	
26	0.6837	1130.7	1150.7	1147.7	0.820	2.725	76.618	17.442	2.171	0.067	0.138	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1388.41	
27	0.6814	1127.1	1147.1	1144.1	0.808	2.740	76.959	17.224	2.051	0.065	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1386.39	
28	0.6765	1119.8	1139.7	1136.6	0.741	2.827	77.769	16.492	1.970	0.060	0.124	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1382.34	
29	0.6739	1114.8	1134.5	1131.6	0.726	2.913	78.173	16.100	1.890	0.058	0.122	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1378.81	
30	0.6744	1115.3	1135.0	1132.1	0.747	2.897	78.078	16.219	1.853	0.061	0.127	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1378.94	
Avg	0.6797	1124.0	1144.1	1141.1	0.820	2.738	77.413	16.665	2.140	0.066	0.137	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1384.55	

Zone 24

Source Daily Summary

November 2017

Number: 164

Pressure Base: 14.730

Contract Day: 1

Name: N TIOGA TRANSFER-NESSON PLT

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT	
1	0.6395	1065.6	1084.5		0.007	3.788	82.200	13.880	0.105	0.009	0.009	0.000	0.000	0.000						1352.87	
2	0.5839	971.9	989.1		0.006	4.254	93.517	2.110	0.092	0.010	0.010	0.000	0.001	0.000						1291.44	
3	0.5836	972.2	989.4		0.007	4.206	93.583	2.094	0.091	0.009	0.010	0.000	0.000	0.000						1292.17	
4	0.5833	971.9	989.1		0.006	4.205	93.627	2.056	0.088	0.008	0.009	0.000	0.000	0.000						1291.99	
5	0.5833	972.3	989.5		0.006	4.173	93.652	2.059	0.089	0.009	0.010	0.000	0.000	0.000						1292.61	
6	0.5838	971.5	988.7		0.006	4.273	93.527	2.079	0.092	0.009	0.012	0.000	0.001	0.000						1290.97	
7	0.5841	970.0	987.2		0.006	4.390	93.441	2.055	0.088	0.008	0.010	0.000	0.001	0.000						1288.70	
8	0.5857	972.6	989.9		0.013	4.369	93.155	2.334	0.109	0.008	0.012	0.000	0.000	0.000						1290.43	
9	0.5837	971.4	988.6		0.004	4.267	93.538	2.088	0.085	0.006	0.010	0.000	0.000	0.000						1291.03	
10	0.5837	971.7	988.9		0.006	4.246	93.549	2.095	0.088	0.006	0.011	0.000	0.000	0.000						1291.45	
11	0.5839	972.5	989.8		0.006	4.214	93.514	2.161	0.090	0.004	0.011	0.000	0.000	0.000						1292.30	
12	0.5840	972.3	989.5		0.006	4.238	93.486	2.164	0.091	0.004	0.010	0.000	0.000	0.000						1291.89	
13	0.5838	972.8	990.1		0.006	4.188	93.532	2.167	0.091	0.004	0.011	0.000	0.000	0.000						1292.79	
14	0.5840	972.3	989.5		0.006	4.238	93.486	2.164	0.091	0.004	0.010	0.000	0.000	0.000						1294.87	
15	0.5840	972.3	989.5		0.006	4.238	93.486	2.164	0.091	0.004	0.010	0.000	0.000	0.000						1294.87	
16	0.5848	971.4	988.6		0.006	4.372	93.292	2.228	0.088	0.003	0.009	0.000	0.000	0.000						1289.73	
17	0.5851	971.8	989.0		0.006	4.372	93.234	2.287	0.088	0.002	0.009	0.000	0.000	0.000						1290.00	
18	0.5850	971.8	989.0		0.006	4.372	93.234	2.287	0.088	0.002	0.009	0.000	0.000	0.000						1293.07	
19	0.5851	971.8	989.0		0.006	4.372	93.234	2.287	0.088	0.002	0.009	0.000	0.000	0.000						1290.00	
20	0.5850	971.8	989.0		0.006	4.372	93.234	2.287	0.088	0.002	0.009	0.000	0.000	0.000						1293.07	
21	0.5838	971.5	988.7		0.006	4.274	93.505	2.114	0.087	0.004	0.010	0.000	0.000	0.000						1290.96	
22	0.5837	971.0	988.2		0.006	4.290	93.530	2.072	0.087	0.004	0.010	0.000	0.000	0.000						1290.49	
23	0.5839	970.6	987.8		0.006	4.336	93.478	2.076	0.088	0.004	0.011	0.000	0.000	0.000						1289.72	
24	0.5838	971.1	988.3		0.006	4.292	93.516	2.084	0.087	0.004	0.010	0.000	0.000	0.000						1290.50	
25	0.5837	972.2	989.4		0.006	4.214	93.555	2.120	0.090	0.004	0.011	0.000	0.000	0.000						1292.10	
26	0.5833	972.9	990.1		0.006	4.142	93.638	2.107	0.091	0.004	0.011	0.000	0.000	0.000						1293.34	
27	0.5833	970.8	988.0		0.006	4.263	93.625	2.003	0.087	0.004	0.010	0.000	0.000	0.000						1290.65	
28	0.5839	972.1	989.3		0.005	4.249	93.486	2.161	0.085	0.004	0.010	0.000	0.000	0.000						1291.64	
29	0.5836	970.6	987.8		0.006	4.305	93.544	2.047	0.084	0.003	0.010	0.000	0.000	0.000						1290.07	
30	0.5847	970.1	987.3		0.007	4.435	93.325	2.123	0.089	0.005	0.012	0.001	0.001	0.002						1288.22	
Avg	0.5859	975.0	992.1		0.006	4.265	93.091	2.532	0.090	0.005	0.010	0.000	0.000	0.000						1293.46	

Zone 260

Source Daily Summary

November 2017

Number: 601

Pressure Base: 14.730

Contract Day: 1

Name: TIOGA STN-ROBINSON LAKE PLNT

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7049	1154.7	1175.2	1171.0	0.865	3.180	72.623	20.663	2.399	0.079	0.166	0.011	0.014	0.000	0.000	0.000	0.000	0.000	1396.41	
2	0.7047	1154.1	1174.5	1170.3	0.871	3.190	72.729	20.496	2.431	0.083	0.173	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1395.81	
3	0.7052	1154.9	1175.3	1171.1	0.876	3.180	72.711	20.464	2.471	0.086	0.182	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1396.29	
4	0.7046	1154.4	1174.9	1170.7	0.876	3.153	72.807	20.419	2.451	0.085	0.178	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1396.29	
5	0.7015	1150.4	1170.8	1166.7	0.845	3.159	73.220	20.171	2.341	0.080	0.162	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1394.51	
6	0.7010	1148.9	1169.2	1165.0	0.855	3.186	73.576	19.613	2.450	0.091	0.194	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1393.09	
7	0.7009	1148.4	1168.8	1164.9	0.860	3.190	73.704	19.404	2.505	0.095	0.205	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1392.70	
8	0.7023	1151.4	1171.8	1167.9	0.854	3.150	73.402	19.751	2.524	0.090	0.196	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1394.93	
9	0.7011	1149.3	1169.7	1165.8	0.854	3.168	73.414	19.904	2.375	0.081	0.174	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1393.60	
10	0.7002	1148.3	1168.6	1164.7	0.828	3.192	73.575	19.711	2.420	0.079	0.168	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1393.14	
11	0.7008	1148.1	1168.5	1164.5	0.839	3.236	73.490	19.732	2.422	0.079	0.172	0.013	0.017	0.000	0.000	0.000	0.000	0.000	1392.40	
12	0.7042	1154.2	1174.6	1170.5	0.830	3.200	73.148	19.856	2.614	0.095	0.215	0.019	0.024	0.000	0.000	0.000	0.000	0.000	1396.29	
13	0.7032	1152.4	1172.8	1168.8	0.836	3.208	73.221	19.860	2.559	0.088	0.192	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1395.08	
14	0.7027	1151.0	1171.4	1167.7	0.843	3.235	73.179	19.944	2.515	0.083	0.172	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1394.05	
15	0.7024	1150.2	1170.6	1166.8	0.854	3.231	73.225	19.961	2.429	0.085	0.183	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1393.43	
16	0.7003	1147.0	1167.3	1163.6	0.856	3.235	73.348	20.070	2.239	0.074	0.154	0.011	0.014	0.000	0.000	0.000	0.000	0.000	1391.58	
17	0.7007	1148.3	1168.7	1165.0	0.837	3.215	73.318	20.062	2.324	0.074	0.150	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1392.88	
18	0.7005	1146.9	1167.2	1163.5	0.858	3.257	73.404	19.907	2.309	0.077	0.163	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1391.25	
19	0.7029	1150.0	1170.4	1166.5	0.862	3.283	73.225	19.810	2.504	0.091	0.193	0.014	0.018	0.000	0.000	0.000	0.000	0.000	1392.62	
20	0.7020	1149.1	1169.4	1165.7	0.849	3.276	73.374	19.670	2.532	0.089	0.182	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1392.41	
21	0.6987	1143.4	1163.7	1160.0	0.864	3.287	73.855	19.347	2.371	0.084	0.170	0.011	0.012	0.000	0.000	0.000	0.000	0.000	1388.88	
22	0.7016	1148.0	1168.3	1164.5	0.850	3.297	73.608	19.359	2.525	0.100	0.220	0.018	0.023	0.000	0.000	0.000	0.000	0.000	1391.49	
23	0.7031	1150.5	1170.8	1166.9	0.865	3.271	73.194	19.852	2.497	0.091	0.195	0.015	0.019	0.000	0.000	0.000	0.000	0.000	1392.94	
24	0.7006	1147.1	1167.4	1163.7	0.844	3.269	73.469	19.743	2.405	0.081	0.164	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1391.47	
25	0.7013	1148.0	1168.4	1164.5	0.846	3.280	73.379	19.781	2.437	0.082	0.168	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1391.80	
26	0.7007	1147.1	1167.5	1163.7	0.835	3.293	73.568	19.515	2.501	0.086	0.175	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1391.36	
27	0.7011	1147.7	1168.1	1164.2	0.839	3.288	73.540	19.515	2.518	0.088	0.183	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1391.67	
28	0.6961	1140.5	1160.7	1157.0	0.789	3.329	74.385	18.769	2.461	0.081	0.162	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1387.95	
29	0.7000	1144.9	1165.2	1161.4	0.855	3.333	73.638	19.483	2.403	0.086	0.176	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1389.32	
30	0.6988	1143.7	1163.9	1160.2	0.849	3.308	73.724	19.544	2.307	0.079	0.164	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1389.04	
Avg	0.7016	1149.0	1169.5	1165.5	0.849	3.236	73.368	19.813	2.441	0.085	0.178	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1392.82	

Zone 261

Source Daily Summary

November 2017

Number: 091

Pressure Base: 14.730

Contract Day: 1

Name: MNT BRD-PLRMO BRD-BIS STN

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7359	1170.8	1191.5	1188.2	0.874	5.099	67.981	21.675	3.826	0.153	0.350	0.020	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1385.64
2	0.7363	1171.2	1191.9	1188.6	0.874	5.118	67.941	21.647	3.867	0.155	0.355	0.020	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1385.66
3	0.7359	1170.9	1191.6	1188.3	0.877	5.084	68.047	21.576	3.860	0.155	0.356	0.021	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1385.79
4	0.7349	1170.7	1191.5	1188.1	0.878	4.999	68.191	21.584	3.805	0.152	0.348	0.020	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1386.54
5	0.7326	1168.5	1189.2	1185.9	0.870	4.932	68.497	21.476	3.705	0.147	0.334	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1386.11
6	0.7317	1167.5	1188.2	1184.8	0.869	4.911	68.764	21.187	3.729	0.151	0.345	0.021	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1385.68
7	0.7338	1169.4	1190.1	1186.7	0.873	4.990	68.496	21.232	3.842	0.157	0.362	0.022	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1385.90
8	0.7343	1170.7	1191.4	1188.0	0.866	4.968	68.370	21.395	3.849	0.153	0.353	0.021	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1386.94
9	0.7337	1169.6	1190.3	1187.0	0.866	4.974	68.385	21.459	3.781	0.149	0.343	0.020	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1386.30
10	0.7336	1168.9	1189.6	1186.3	0.854	5.026	68.421	21.345	3.820	0.149	0.342	0.019	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1385.56
11	0.7352	1169.9	1190.6	1187.3	0.864	5.104	68.181	21.416	3.884	0.153	0.354	0.021	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1385.22
12	0.7365	1172.1	1192.8	1189.4	0.858	5.102	68.071	21.422	3.963	0.160	0.374	0.023	0.027	0.000	0.000	0.000	0.000	0.000	0.000	1386.52
13	0.7355	1170.3	1191.0	1187.7	0.864	5.101	68.201	21.353	3.915	0.156	0.362	0.022	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1385.47
14	0.7362	1171.2	1191.9	1188.6	0.869	5.113	68.026	21.523	3.915	0.154	0.355	0.021	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1385.77
15	0.7344	1170.6	1191.3	1188.0	0.869	4.981	68.306	21.473	3.818	0.153	0.354	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1385.78
16	0.7388	1169.5	1190.2	1186.9	0.868	5.463	67.690	21.255	4.154	0.160	0.365	0.020	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1381.33
17	0.7423	1164.3	1185.0	1181.7	0.881	6.084	67.129	20.989	4.307	0.172	0.392	0.022	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1372.00
18	0.7380	1167.2	1187.9	1184.6	0.878	5.508	67.836	21.109	4.077	0.166	0.380	0.022	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1379.43
19	0.7344	1168.8	1189.5	1186.2	0.875	5.083	68.363	21.242	3.876	0.157	0.360	0.021	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1384.62
20	0.7349	1168.9	1189.6	1186.3	0.869	5.123	68.365	21.129	3.942	0.160	0.365	0.022	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1384.34
21	0.7309	1166.5	1187.1	1183.9	0.871	4.901	68.889	21.074	3.736	0.149	0.339	0.018	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1385.21
22	0.7343	1169.4	1190.1	1186.8	0.860	5.048	68.565	20.977	3.948	0.165	0.385	0.024	0.028	0.000	0.000	0.000	0.000	0.000	0.000	1385.50
23	0.7347	1169.2	1189.9	1186.6	0.871	5.084	68.347	21.234	3.896	0.158	0.364	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1384.91
24	0.7374	1171.0	1191.7	1188.4	0.865	5.240	67.955	21.307	4.051	0.162	0.373	0.022	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1384.41
25	0.7369	1171.4	1192.2	1188.9	0.862	5.171	67.985	21.395	4.022	0.158	0.363	0.020	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1385.46
26	0.7357	1170.2	1190.9	1187.6	0.860	5.133	68.243	21.182	4.016	0.158	0.362	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1385.13
27	0.7359	1170.2	1190.9	1187.6	0.863	5.150	68.207	21.190	4.021	0.159	0.365	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1384.94
28	0.7346	1169.3	1190.0	1186.7	0.842	5.113	68.518	20.887	4.064	0.161	0.370	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1385.10
29	0.7350	1169.4	1190.1	1186.9	0.865	5.108	68.347	21.142	3.972	0.158	0.363	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1384.89
30	0.7351	1169.1	1189.8	1186.6	0.869	5.135	68.282	21.202	3.952	0.156	0.360	0.020	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1384.39
Avg	0.7353	1170.0	1190.3	1186.9	0.868	5.128	68.220	21.303	3.920	0.157	0.360	0.021	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1384.72

Zone 2b2

Gas Composition and Properties

Effective November 1, 2017 09:00 - January 18, 2038 21:14

Attachment B
Page 8 of 22

Source #: 2501030
Name: LIGNITE PLANT

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.1219		0.2763
Nitrogen, N2	3.0074		4.3396
Methane, C1	77.7142		64.2187
Ethane, C2	17.1457	4.5869	26.5561
Propane, C3	1.9400	0.5329	4.4064
iso-Butane, iC4	0.0396	0.0129	0.1186
n-Butane, nC4	0.0244	0.0077	0.0731
iso-Pentane, iC5	0.0000	0.0000	0.0000
n-Pentane, nC5	0.0000	0.0000	0.0000
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0000	0.0000	0.0000
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2	0.0068		0.0112
Carbon Monoxide, CO			
Hydrogen, H2			
Helium, He			
Argon, Ar			

Property	Total Sample	C6 Plus Fraction
Pressure Base	14.730	
Temperature Base	60.00	
HCDP @ Sample Pressure	-29.025	
Cricodonterm	-28.424	
HV, Dry @ Base P, T	1142.89	
HV, Sat @ Base P, T	1123.00	
HV, Sat @ Sample P, T	1142.89	
Relative Density	0.6709	

C6+: 100

Totals	100.0000	5.1410	100.0000
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Sample

Date: 12/01/2017 Pressure: 760.0
 Type: Composite Temperature: 0.0
 Tech: ES H2O: lbs/mm
 H2S: ppm

Remarks:

Analysis

Date: 12/04/2017 Instrument: WBI- 249
 Cylinder: 335

Tech: MB

Remarks:

Zone 263

Gas Composition and Properties

Effective November 1, 2017 09:00 - January 18, 2038 21:14

Attachment B
Page 9 of 22

Source #: 3002013
Name: EPPING BORDER

Component	Mole %	Liquid Content	Mass %	Property	Total Sample	C6 Plus Fraction
Carbon Dioxide, CO2	0.7240		1.6334	Pressure Base	14.730	
Nitrogen, N2	2.9437		4.2273	Temperature Base	60.00	
Methane, C1	77.7512		63.9417	HCDP @ Sample Pressure		
Ethane, C2	16.5808	4.4357	25.5581	Cricondentherm		
Propane, C3	1.7622	0.4841	3.9834	HV, Dry @ Base P, T	1132.96	
iso-Butane, iC4	0.0560	0.0183	0.1669	HV, Sat @ Base P, T	1113.25	
n-Butane, nC4	0.1153	0.0363	0.3435	HV, Sat @ Sample P, T	1132.96	
iso-Pentane, iC5	0.0083	0.0030	0.0307	Relative Density	0.6741	
n-Pentane, nC5	0.0092	0.0033	0.0340			
Neo-Pentane, NeoC5						
Hexanes Plus, C6+	0.0000	0.0000	0.0000			
Water, H2O						
Hydrogen Sulfide, H2S						
Oxygen, O2	0.0494		0.0810			
Carbon Monoxide, CO						
Hydrogen, H2						
Helium, He						
Argon, Ar						
				C6+: 100		
Totals	100.0001	4.9800	100.0000			

Sample
 Date: 12/01/2017 Pressure: 520.0
 Type: Composite Temperature: 0.0
 Tech: ES H2O: lbs/mm
 H2S: ppm
 Remarks:

Analysis
 Date: 12/04/2017 Instrument: WBI- 251
 Cylinder: 383
 Tech: MB
 Remarks:

Zone 264

Source Daily Summary

November 2017

Number: 603

Pressure Base: 14.730

Contract Day: 1

Name: TIOGA STN-COUNTY LINE PLANT

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7052	1155.3	1175.7	1172.4	0.866	3.179	72.556	20.730	2.397	0.080	0.167	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1396.69
2	0.7046	1153.9	1174.4	1171.1	0.870	3.191	72.745	20.482	2.430	0.083	0.173	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1395.75
3	0.7050	1154.6	1175.1	1171.7	0.876	3.180	72.730	20.455	2.464	0.085	0.181	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1396.15
4	0.7045	1154.2	1174.7	1171.3	0.875	3.157	72.831	20.389	2.452	0.086	0.179	0.013	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1396.16
5	0.7013	1150.0	1170.3	1167.1	0.845	3.162	73.259	20.135	2.338	0.079	0.160	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1394.24
6	0.7008	1148.5	1168.8	1165.4	0.855	3.188	73.633	19.546	2.456	0.091	0.195	0.015	0.019	0.000	0.000	0.000	0.000	0.000	0.000	1392.84
7	0.7012	1148.9	1169.3	1165.9	0.862	3.189	73.655	19.440	2.512	0.096	0.207	0.017	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1392.96
8	0.7022	1151.4	1171.8	1168.4	0.850	3.151	73.402	19.754	2.525	0.090	0.195	0.015	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1394.98
9	0.7011	1149.5	1169.8	1166.5	0.853	3.164	73.416	19.901	2.378	0.082	0.176	0.013	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1393.72
10	0.7003	1148.4	1168.7	1165.3	0.827	3.194	73.560	19.726	2.420	0.078	0.167	0.012	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1393.19
11	0.7009	1148.3	1168.6	1165.2	0.840	3.236	73.477	19.739	2.425	0.079	0.173	0.014	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1392.46
12	0.7045	1154.7	1175.2	1171.7	0.827	3.201	73.124	19.846	2.641	0.097	0.220	0.019	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1396.64
13	0.7034	1152.6	1173.0	1169.6	0.839	3.206	73.185	19.893	2.562	0.088	0.192	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.21
14	0.7032	1151.6	1172.0	1168.7	0.846	3.235	73.120	19.983	2.528	0.084	0.175	0.013	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1394.32
15	0.7027	1150.7	1171.1	1167.7	0.858	3.229	73.184	19.985	2.436	0.086	0.188	0.015	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1393.64
16	0.7003	1147.1	1167.4	1164.1	0.853	3.233	73.335	20.100	2.230	0.073	0.152	0.011	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1391.67
17	0.7007	1148.4	1168.7	1165.5	0.840	3.216	73.297	20.084	2.318	0.074	0.150	0.010	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1392.84
18	0.7008	1147.3	1167.6	1164.3	0.864	3.256	73.355	19.944	2.312	0.078	0.165	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1391.35
19	0.7033	1150.6	1171.0	1167.7	0.862	3.281	73.156	19.871	2.512	0.091	0.194	0.014	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1392.99
20	0.7019	1148.9	1169.3	1166.0	0.849	3.275	73.388	19.664	2.526	0.089	0.181	0.013	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1392.34
21	0.6990	1143.9	1164.2	1161.0	0.864	3.287	73.818	19.360	2.384	0.086	0.175	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1389.12
22	0.7011	1147.4	1167.7	1164.4	0.849	3.297	73.655	19.341	2.506	0.098	0.215	0.017	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1391.16
23	0.7034	1150.9	1171.3	1167.9	0.865	3.268	73.156	19.883	2.503	0.091	0.197	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1393.20
24	0.7007	1147.4	1167.7	1164.5	0.845	3.268	73.428	19.792	2.400	0.080	0.163	0.011	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1391.64
25	0.7015	1148.4	1168.7	1165.4	0.846	3.278	73.353	19.799	2.445	0.082	0.170	0.012	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1392.01
26	0.7009	1147.5	1167.8	1164.6	0.836	3.291	73.525	19.556	2.503	0.086	0.176	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1391.56
27	0.7012	1148.0	1168.3	1165.0	0.839	3.284	73.517	19.545	2.515	0.088	0.183	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1391.83
28	0.6966	1141.2	1161.4	1158.2	0.795	3.329	74.308	18.821	2.474	0.082	0.166	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1388.23
29	0.7003	1145.5	1165.8	1162.5	0.854	3.326	73.579	19.552	2.398	0.085	0.179	0.013	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1389.76
30	0.6991	1144.1	1164.4	1161.2	0.853	3.307	73.676	19.579	2.316	0.079	0.165	0.011	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1389.22
Avg	0.7017	1149.0	1169.7	1166.3	0.850	3.235	73.348	19.830	2.443	0.085	0.179	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1392.93

Zone 265

Source Daily Summary

November 2017

Number: 043

Pressure Base: 14.730

Contract Day: 1

Name: BISMARCK STN-CLEVELAND STN

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7308	1166.0	1186.6	1182.7	0.825	4.984	68.821	21.173	3.672	0.147	0.334	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1384.71	
2	0.7276	1163.1	1183.7	1179.7	0.802	4.902	69.293	20.947	3.547	0.142	0.323	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1384.22	
3	0.7261	1161.2	1181.8	1177.9	0.791	4.892	69.562	20.724	3.525	0.141	0.322	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1383.45	
4	0.7280	1164.1	1184.7	1180.8	0.820	4.851	69.305	20.913	3.590	0.145	0.330	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1385.06	
5	0.7277	1164.2	1184.8	1180.8	0.815	4.828	69.287	21.018	3.544	0.142	0.323	0.021	0.022	0.000	0.000	0.000	0.000	0.000	1385.42	
6	0.7198	1155.6	1176.1	1172.2	0.778	4.658	70.605	20.170	3.315	0.133	0.300	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1382.83	
7	0.7108	1144.0	1164.3	1160.5	0.713	4.619	72.107	19.004	3.119	0.123	0.276	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1377.59	
8	0.7066	1140.8	1161.0	1157.3	0.735	4.387	72.874	18.581	3.000	0.119	0.266	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1377.79	
9	0.7079	1142.5	1162.7	1159.0	0.700	4.455	72.488	18.993	2.960	0.114	0.255	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1378.63	
10	0.7080	1141.8	1162.1	1158.3	0.696	4.517	72.495	18.881	3.002	0.116	0.257	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1377.66	
11	0.7145	1148.3	1168.6	1164.9	0.723	4.691	71.441	19.500	3.206	0.123	0.279	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1379.17	
12	0.7217	1156.6	1177.1	1173.2	0.760	4.800	70.387	20.095	3.457	0.138	0.317	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1382.19	
13	0.7265	1161.9	1182.5	1178.5	0.793	4.876	69.668	20.501	3.632	0.146	0.335	0.023	0.025	0.000	0.000	0.000	0.000	0.000	1383.90	
14	0.7267	1161.8	1182.4	1178.4	0.793	4.907	69.560	20.616	3.606	0.143	0.329	0.022	0.025	0.000	0.000	0.000	0.000	0.000	1383.57	
15	0.7211	1158.5	1179.0	1175.1	0.735	4.675	70.256	20.564	3.307	0.129	0.294	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1384.97	
16	0.7206	1154.9	1175.3	1171.4	0.763	4.797	70.550	19.965	3.446	0.133	0.303	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1381.19	
17	0.7250	1150.2	1170.6	1166.8	0.765	5.496	69.868	19.644	3.710	0.146	0.330	0.020	0.021	0.000	0.000	0.000	0.000	0.000	1371.42	
18	0.7228	1149.1	1169.5	1165.7	0.760	5.363	70.212	19.552	3.603	0.143	0.325	0.021	0.021	0.000	0.000	0.000	0.000	0.000	1372.22	
19	0.7222	1157.1	1177.6	1173.7	0.786	4.787	70.272	20.207	3.454	0.138	0.315	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1382.22	
20	0.7209	1155.1	1175.5	1171.6	0.756	4.830	70.513	19.958	3.443	0.139	0.317	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1381.07	
21	0.7123	1147.0	1167.4	1163.6	0.708	4.579	71.760	19.430	3.097	0.121	0.269	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1379.83	
22	0.7269	1162.9	1183.5	1179.5	0.810	4.833	69.713	20.406	3.672	0.156	0.360	0.025	0.027	0.000	0.000	0.000	0.000	0.000	1384.68	
23	0.7326	1168.2	1188.9	1184.8	0.850	4.985	68.717	21.055	3.824	0.157	0.362	0.024	0.026	0.000	0.000	0.000	0.000	0.000	1385.58	
24	0.7368	1171.5	1192.2	1188.0	0.852	5.171	68.110	21.252	4.015	0.165	0.381	0.026	0.028	0.000	0.000	0.000	0.000	0.000	1385.49	
25	0.7368	1172.3	1193.1	1189.0	0.846	5.129	68.012	21.452	3.991	0.158	0.363	0.024	0.026	0.000	0.000	0.000	0.000	0.000	1386.54	
26	0.7351	1170.9	1191.6	1187.5	0.840	5.068	68.340	21.218	3.964	0.158	0.362	0.024	0.026	0.000	0.000	0.000	0.000	0.000	1386.38	
27	0.7334	1168.8	1189.5	1185.4	0.835	5.045	68.637	20.986	3.932	0.157	0.359	0.024	0.026	0.000	0.000	0.000	0.000	0.000	1385.50	
28	0.7313	1166.9	1187.6	1183.6	0.812	4.997	68.977	20.779	3.878	0.155	0.354	0.023	0.025	0.000	0.000	0.000	0.000	0.000	1385.28	
29	0.7290	1164.8	1185.4	1181.5	0.791	4.941	69.299	20.650	3.779	0.150	0.343	0.023	0.024	0.000	0.000	0.000	0.000	0.000	1384.95	
30	0.7284	1162.7	1183.3	1179.3	0.817	4.970	69.386	20.564	3.730	0.148	0.339	0.022	0.024	0.000	0.000	0.000	0.000	0.000	1383.06	
Avg	0.7239	1158.0	1178.9	1175.0	0.782	4.868	70.017	20.293	3.534	0.141	0.321	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1382.22	

Zone 271

Source Daily Summary

November 2017

Number: 063

Pressure Base: 14.730

Contract Day: 1

Name: CLEVELAND STN-MAPLETON

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT	
1	0.7312	1166.1	1186.8	1182.7	0.834	5.005	68.746	21.213	3.688	0.143	0.324	0.022	0.024	0.000						1384.38	
2	0.7302	1165.4	1186.1	1182.0	0.825	4.967	68.903	21.156	3.631	0.145	0.328	0.022	0.024	0.000						1384.50	
3	0.7263	1160.6	1181.1	1177.1	0.797	4.936	69.554	20.674	3.537	0.141	0.317	0.021	0.022	0.000						1382.45	
4	0.7284	1164.0	1184.7	1180.8	0.818	4.894	69.234	20.937	3.600	0.145	0.327	0.022	0.024	0.000						1384.56	
5	0.7289	1164.8	1185.4	1181.5	0.829	4.879	69.157	21.009	3.612	0.144	0.325	0.022	0.023	0.000						1384.94	
6	0.7226	1157.9	1178.4	1174.5	0.795	4.754	70.159	20.405	3.410	0.135	0.300	0.020	0.021	0.000						1382.79	
7	0.7160	1150.1	1170.5	1166.6	0.754	4.672	71.270	19.601	3.248	0.128	0.286	0.020	0.021	0.000						1379.81	
8	0.7075	1140.4	1160.6	1156.9	0.717	4.518	72.692	18.640	3.011	0.119	0.264	0.019	0.020	0.000						1376.42	
9	0.7072	1141.1	1161.4	1157.7	0.728	4.429	72.735	18.700	2.995	0.117	0.259	0.018	0.019	0.000						1377.61	
10	0.7087	1142.9	1163.1	1159.4	0.702	4.510	72.346	19.052	2.987	0.114	0.253	0.017	0.018	0.000						1378.20	
11	0.7116	1145.0	1165.3	1161.6	0.711	4.633	71.908	19.225	3.106	0.118	0.263	0.018	0.019	0.000						1377.99	
12	0.7188	1152.1	1172.5	1168.6	0.750	4.818	70.803	19.819	3.344	0.130	0.295	0.020	0.021	0.000						1379.48	
13	0.7267	1161.8	1182.4	1178.6	0.789	4.908	69.638	20.479	3.651	0.147	0.337	0.024	0.026	0.000						1383.64	
14	0.7278	1162.7	1183.3	1179.5	0.810	4.922	69.424	20.664	3.656	0.144	0.331	0.023	0.025	0.000						1383.68	
15	0.7228	1159.0	1179.5	1175.8	0.754	4.776	70.049	20.528	3.418	0.132	0.300	0.020	0.022	0.000						1383.91	
16	0.7180	1153.5	1174.0	1170.2	0.755	4.654	70.839	20.049	3.247	0.127	0.287	0.020	0.022	0.000						1382.03	
17	0.7266	1155.3	1175.7	1172.1	0.778	5.315	69.605	20.052	3.741	0.144	0.322	0.020	0.021	0.000						1375.94	
18	0.7249	1149.2	1169.6	1166.0	0.771	5.534	69.860	19.641	3.684	0.145	0.324	0.021	0.021	0.000						1370.37	
19	0.7205	1151.8	1172.2	1168.6	0.768	4.970	70.557	19.771	3.446	0.137	0.309	0.020	0.022	0.000						1377.64	
20	0.7241	1158.3	1178.8	1175.2	0.794	4.870	70.003	20.295	3.529	0.141	0.321	0.022	0.024	0.000						1381.92	
21	0.7149	1148.8	1169.2	1165.7	0.717	4.707	71.379	19.528	3.221	0.127	0.283	0.019	0.020	0.000						1379.39	
22	0.7184	1153.5	1173.9	1170.2	0.769	4.669	70.880	19.895	3.312	0.133	0.299	0.020	0.022	0.000						1381.62	
23	0.7325	1167.3	1187.9	1184.0	0.847	5.034	68.836	20.805	3.889	0.162	0.372	0.026	0.028	0.000						1384.57	
24	0.7351	1170.1	1190.8	1187.0	0.862	5.090	68.339	21.193	3.932	0.161	0.370	0.026	0.028	0.000						1385.41	
25	0.7369	1171.1	1191.9	1188.0	0.854	5.204	68.044	21.281	4.037	0.160	0.367	0.025	0.027	0.000						1384.95	
26	0.7365	1171.6	1192.4	1188.5	0.855	5.132	68.106	21.317	4.017	0.159	0.362	0.025	0.027	0.000						1385.97	
27	0.7335	1168.5	1189.2	1185.3	0.840	5.063	68.603	20.997	3.939	0.156	0.353	0.024	0.026	0.000						1385.11	
28	0.7329	1167.6	1188.3	1184.4	0.832	5.070	68.705	20.921	3.913	0.155	0.353	0.024	0.026	0.000						1384.62	
29	0.7299	1165.2	1185.8	1181.9	0.801	4.988	69.240	20.542	3.877	0.155	0.349	0.023	0.025	0.000						1384.54	
30	0.7286	1163.1	1183.7	1179.9	0.812	4.976	69.320	20.634	3.727	0.149	0.335	0.022	0.024	0.000						1383.31	
Avg	0.7243	1158.0	1178.8	1175.0	0.789	4.897	69.965	20.301	3.547	0.140	0.317	0.021	0.023	0.000						1381.73	

Zone 272

Source Daily Summary

November 2017

Number: 061

Pressure Base: 14.730

Contract Day: 1

Name: CLEVELAND STN-GRAFTON BDR

Temperature Base:

Contract Hour: 9

Day	Relative Densitv	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7310	1165.7	1186.3	1182.8	0.834	5.012	68.778	21.183	3.680	0.143	0.324	0.022	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1384.06
2	0.7299	1164.9	1185.6	1182.0	0.824	4.971	68.946	21.121	3.621	0.144	0.326	0.022	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1384.18
3	0.7261	1160.3	1180.8	1177.3	0.797	4.938	69.574	20.659	3.532	0.141	0.316	0.021	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1382.28
4	0.7283	1163.7	1184.3	1180.8	0.818	4.899	69.260	20.912	3.593	0.144	0.326	0.022	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1384.31
5	0.7287	1164.3	1184.9	1181.5	0.829	4.885	69.187	20.983	3.603	0.144	0.324	0.021	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1384.62
6	0.7225	1157.6	1178.1	1174.7	0.795	4.762	70.169	20.391	3.408	0.135	0.300	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1382.58
7	0.7161	1150.1	1170.5	1167.0	0.756	4.678	71.257	19.604	3.249	0.129	0.286	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1379.70
8	0.7075	1140.5	1160.7	1157.3	0.717	4.520	72.684	18.642	3.014	0.119	0.264	0.019	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1376.42
9	0.7071	1140.9	1161.1	1157.8	0.727	4.435	72.746	18.688	2.992	0.117	0.259	0.018	0.019	0.000	0.000	0.000	0.000	0.000	0.000	1377.45
10	0.7085	1142.5	1162.8	1159.4	0.702	4.514	72.378	19.022	2.981	0.114	0.253	0.017	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1377.94
11	0.7116	1144.9	1165.2	1161.8	0.711	4.638	71.905	19.222	3.106	0.118	0.263	0.018	0.019	0.000	0.000	0.000	0.000	0.000	0.000	1377.89
12	0.7188	1152.0	1172.4	1168.8	0.751	4.825	70.798	19.817	3.341	0.131	0.295	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1379.32
13	0.7265	1161.4	1181.9	1178.6	0.789	4.916	69.668	20.454	3.639	0.147	0.337	0.024	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1383.31
14	0.7275	1162.3	1182.8	1179.4	0.809	4.929	69.463	20.628	3.648	0.144	0.330	0.023	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1383.35
15	0.7231	1159.1	1179.6	1176.3	0.756	4.786	70.012	20.539	3.431	0.133	0.300	0.021	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1383.86
16	0.7181	1153.6	1174.1	1170.8	0.756	4.654	70.829	20.054	3.251	0.127	0.287	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1382.06
17	0.7268	1155.5	1176.0	1172.7	0.780	5.321	69.580	20.052	3.759	0.145	0.323	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1376.00
18	0.7248	1149.0	1169.4	1166.2	0.772	5.537	69.871	19.631	3.679	0.145	0.324	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1370.21
19	0.7206	1151.8	1172.2	1168.9	0.768	4.976	70.544	19.774	3.449	0.137	0.309	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1377.55
20	0.7240	1158.1	1178.6	1175.3	0.795	4.874	70.011	20.288	3.524	0.141	0.321	0.022	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1381.78
21	0.7148	1148.5	1168.9	1165.7	0.717	4.716	71.391	19.512	3.217	0.126	0.282	0.019	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1379.13
22	0.7184	1153.4	1173.8	1170.5	0.770	4.675	70.879	19.889	3.312	0.133	0.300	0.020	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1381.49
23	0.7326	1167.4	1188.1	1184.5	0.847	5.035	68.826	20.808	3.894	0.162	0.373	0.026	0.028	0.000	0.000	0.000	0.000	0.000	0.000	1384.64
24	0.7354	1170.3	1191.0	1187.4	0.862	5.098	68.296	21.219	3.939	0.161	0.371	0.026	0.028	0.000	0.000	0.000	0.000	0.000	0.000	1385.46
25	0.7368	1170.9	1191.6	1188.1	0.854	5.208	68.058	21.271	4.030	0.160	0.366	0.025	0.027	0.000	0.000	0.000	0.000	0.000	0.000	1384.78
26	0.7363	1171.2	1191.9	1188.5	0.855	5.137	68.139	21.292	4.006	0.158	0.361	0.025	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1385.67
27	0.7334	1168.2	1188.9	1185.5	0.841	5.070	68.619	20.979	3.934	0.155	0.353	0.024	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1384.85
28	0.7327	1167.2	1187.9	1184.5	0.833	5.078	68.729	20.898	3.907	0.155	0.352	0.024	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1384.32
29	0.7297	1164.8	1185.4	1182.0	0.801	4.994	69.271	20.514	3.869	0.155	0.349	0.024	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1384.25
30	0.7285	1162.9	1183.4	1180.1	0.813	4.979	69.340	20.616	3.722	0.148	0.335	0.022	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1383.14
Avg	0.7242	1158.0	1178.6	1175.2	0.789	4.902	69.974	20.289	3.544	0.140	0.317	0.021	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1381.55

Zone 273

Source Daily Summary

November 2017

Number:	041	Pressure Base:	14.730	Contract Day:	1
Name:	BISMARCK STN-GLEN ULLIN STN	Temperature Base:		Contract Hour:	9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6640	1093.2	1112.6	1109.5	0.345	3.880	79.011	15.253	1.393	0.041	0.070	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1362.19
2	0.6653	1094.1	1113.5	1110.4	0.368	3.918	78.827	15.312	1.445	0.044	0.077	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1361.90
3	0.6651	1096.0	1115.4	1112.3	0.369	3.778	78.901	15.375	1.453	0.042	0.073	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1364.47
4	0.6583	1085.8	1105.1	1101.9	0.370	3.762	80.189	14.199	1.353	0.043	0.075	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1358.73
5	0.6565	1082.2	1101.4	1098.1	0.362	3.822	80.544	13.795	1.353	0.042	0.073	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1356.10
6	0.6564	1083.1	1102.3	1099.2	0.377	3.729	80.628	13.761	1.382	0.041	0.073	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1357.40
7	0.6582	1084.1	1103.3	1100.2	0.371	3.857	80.296	13.905	1.440	0.044	0.077	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1356.63
8	0.6543	1082.9	1102.1	1099.0	0.498	3.369	81.231	13.400	1.366	0.045	0.079	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1359.16
9	0.6581	1088.2	1107.4	1104.4	0.413	3.527	80.335	14.239	1.359	0.042	0.074	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1361.92
10	0.6547	1082.1	1101.3	1098.2	0.382	3.625	80.884	13.711	1.280	0.039	0.070	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1357.86
11	0.6545	1081.8	1101.0	1097.9	0.351	3.675	80.846	13.751	1.265	0.037	0.066	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1357.67
12	0.6560	1084.9	1104.1	1101.0	0.335	3.659	80.536	14.075	1.291	0.035	0.062	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1359.89
13	0.6604	1090.1	1109.4	1106.3	0.404	3.643	79.914	14.470	1.437	0.043	0.078	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1361.93
14	0.6599	1089.5	1108.8	1105.7	0.368	3.688	79.896	14.549	1.378	0.040	0.071	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1361.68
15	0.6710	1110.8	1130.4	1127.4	0.313	3.517	77.527	17.207	1.329	0.036	0.064	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1376.81
16	0.6543	1081.9	1101.1	1098.0	0.355	3.638	80.847	13.844	1.208	0.036	0.063	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1358.06
17	0.6607	1090.2	1109.5	1106.5	0.385	3.690	79.766	14.652	1.384	0.041	0.073	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1361.81
18	0.6601	1090.3	1109.6	1106.5	0.390	3.630	79.858	14.645	1.355	0.041	0.073	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1362.42
19	0.6601	1090.6	1109.9	1106.9	0.372	3.632	79.822	14.718	1.337	0.040	0.071	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1362.92
20	0.6606	1091.4	1110.7	1107.6	0.345	3.674	79.654	14.897	1.316	0.037	0.067	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1363.34
21	0.6626	1095.0	1114.4	1111.3	0.328	3.665	79.219	15.371	1.308	0.036	0.065	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1365.82
22	0.6578	1085.8	1105.0	1102.0	0.358	3.732	80.216	14.288	1.285	0.040	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1359.25
23	0.6626	1095.0	1114.4	1110.7	0.308	3.699	79.173	15.417	1.294	0.036	0.065	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1365.82
24	0.6661	1101.6	1121.1	1117.8	0.279	3.677	78.440	16.173	1.328	0.034	0.060	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1370.32
25	0.6681	1102.8	1122.4	1119.2	0.326	3.710	78.172	16.289	1.389	0.038	0.068	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1369.91
26	0.6645	1095.8	1115.2	1112.0	0.333	3.793	78.846	15.575	1.338	0.038	0.068	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1364.79
27	0.6656	1097.2	1116.6	1113.4	0.343	3.795	78.713	15.621	1.408	0.040	0.071	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1365.41
28	0.6677	1100.6	1120.1	1117.0	0.344	3.780	78.335	15.974	1.445	0.041	0.073	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1367.55
29	0.6755	1113.5	1133.3	1130.1	0.362	3.700	76.859	17.431	1.514	0.045	0.080	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1375.60
30	0.6567	1083.8	1103.0	1100.0	0.336	3.779	80.401	14.088	1.278	0.039	0.070	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1357.88
Avg	0.6612	1091.0	1110.8	1107.7	0.360	3.701	79.596	14.866	1.357	0.040	0.071	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1362.84

Zone 28

Source Daily Summary

November 2017

Number: 271

Pressure Base: 14.730

Contract Day: 1

Name: DCKSN BRD-BLFD TSF-G.U. STN

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6640	1093.0	1112.3	1109.4	0.346	3.892	79.088	15.088	1.461	0.042	0.076	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1361.92	
2	0.6626	1092.5	1111.8	1108.9	0.347	3.787	79.361	14.938	1.451	0.040	0.070	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1362.76	
3	0.6614	1091.6	1110.9	1108.0	0.353	3.721	79.613	14.766	1.419	0.043	0.077	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1362.86	
4	0.6530	1078.4	1097.5	1094.6	0.348	3.739	81.167	13.347	1.284	0.038	0.069	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1355.10	
5	0.6542	1079.2	1098.3	1095.4	0.354	3.793	81.009	13.361	1.362	0.040	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1354.86	
6	0.6571	1083.8	1103.0	1100.0	0.367	3.772	80.504	13.799	1.434	0.041	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1357.51	
7	0.6544	1080.4	1099.5	1096.6	0.420	3.646	81.080	13.348	1.378	0.042	0.076	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1356.04	
8	0.6523	1080.6	1099.7	1096.9	0.463	3.367	81.547	13.170	1.325	0.042	0.076	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1358.52	
9	0.6566	1086.1	1105.3	1102.5	0.381	3.568	80.554	14.027	1.351	0.039	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1360.87	
10	0.6530	1080.4	1099.6	1096.7	0.343	3.630	81.141	13.509	1.267	0.036	0.066	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1357.53	
11	0.6537	1081.8	1101.0	1098.1	0.320	3.649	80.964	13.687	1.278	0.034	0.063	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1358.53	
12	0.6583	1088.1	1107.3	1104.5	0.368	3.624	80.258	14.211	1.418	0.040	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1361.64	
13	0.6615	1094.7	1114.1	1111.3	0.315	3.598	79.461	15.166	1.354	0.035	0.065	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1366.67	
14	0.6704	1111.3	1130.9	1128.1	0.284	3.478	77.577	17.245	1.316	0.033	0.062	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1378.06	
15	0.6522	1080.1	1099.3	1096.5	0.336	3.581	81.200	13.607	1.175	0.034	0.062	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1358.05	
16	0.6594	1088.8	1108.1	1105.2	0.358	3.695	79.984	14.456	1.388	0.039	0.072	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1361.43	
17	0.6591	1089.2	1108.5	1105.7	0.367	3.632	80.041	14.471	1.371	0.039	0.072	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1362.24	
18	0.6572	1087.0	1106.2	1103.4	0.359	3.602	80.363	14.244	1.318	0.038	0.070	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1361.39	
19	0.6592	1090.1	1109.4	1106.6	0.328	3.651	79.909	14.675	1.329	0.036	0.067	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1363.18	
20	0.6608	1093.2	1112.5	1109.7	0.303	3.645	79.490	15.191	1.272	0.033	0.061	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1365.47	
21	0.6579	1086.8	1106.1	1103.3	0.347	3.698	80.194	14.324	1.321	0.038	0.071	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1360.45	
22	0.6620	1095.6	1115.0	1112.1	0.264	3.672	79.219	15.458	1.290	0.032	0.059	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1367.21	
23	0.6652	1099.5	1119.0	1116.1	0.307	3.672	78.698	15.846	1.370	0.036	0.066	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1368.78	
24	0.6652	1098.6	1118.1	1115.2	0.312	3.714	78.747	15.712	1.405	0.037	0.068	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1367.73	
25	0.6622	1092.8	1112.2	1109.3	0.315	3.783	79.278	15.176	1.340	0.037	0.067	0.004	0.001	0.000	0.000	0.000	0.000	0.000	1363.55	
26	0.6639	1095.4	1114.8	1112.0	0.318	3.783	79.010	15.360	1.415	0.038	0.070	0.004	0.001	0.000	0.000	0.000	0.000	0.000	1365.00	
27	0.6656	1098.0	1117.4	1114.6	0.327	3.769	78.715	15.629	1.443	0.039	0.072	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1366.50	
28	0.6747	1114.0	1133.8	1130.9	0.331	3.646	76.923	17.494	1.483	0.041	0.076	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1377.04	
29	0.6574	1086.3	1105.5	1102.7	0.310	3.735	80.203	14.369	1.273	0.037	0.067	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1360.31	
30	0.6685	1102.8	1122.3	1119.5	0.357	3.703	78.255	16.046	1.511	0.043	0.078	0.005	0.003	0.000	0.000	0.000	0.000	0.000	1369.50	
Avg	0.6601	1091.0	1110.0	1107.1	0.341	3.675	79.785	14.724	1.360	0.038	0.070	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1363.02	

Zone 31

Source Daily Summary

November 2017

Number: 051

Pressure Base: 14.730

Contract Day: 1

Name: CABIN CRK STN-BELFIELD TRSFR

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6526	1072.1	1091.1	1087.7	0.517	3.833	81.765	12.155	1.575	0.052	0.092	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1347.47
2	0.6597	1083.7	1102.9	1099.4	0.472	3.863	80.317	13.572	1.619	0.052	0.093	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1354.69
3	0.6564	1078.5	1097.6	1094.5	0.441	3.918	80.892	13.033	1.557	0.052	0.095	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1351.54
4	0.6541	1075.6	1094.7	1091.6	0.411	3.924	81.251	12.762	1.508	0.048	0.086	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1350.32
5	0.6426	1061.3	1080.1	1077.0	0.439	3.667	83.398	11.110	1.260	0.041	0.075	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1344.25
6	0.6524	1073.4	1092.4	1089.1	0.406	3.909	81.552	12.519	1.474	0.047	0.083	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1349.24
7	0.6387	1059.2	1078.0	1074.7	0.739	2.971	84.628	10.277	1.236	0.050	0.086	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1345.70
8	0.6391	1061.4	1080.2	1076.9	0.581	3.117	84.249	10.761	1.166	0.042	0.074	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1347.99
9	0.6396	1060.7	1079.4	1076.2	0.465	3.385	83.954	10.927	1.153	0.038	0.070	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1346.58
10	0.6398	1060.8	1079.6	1076.3	0.446	3.419	83.891	10.979	1.152	0.037	0.068	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1346.64
11	0.6453	1068.5	1087.4	1084.1	0.423	3.506	82.834	11.862	1.258	0.038	0.070	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1350.55
12	0.6425	1064.7	1083.5	1080.2	0.470	3.406	83.444	11.332	1.224	0.040	0.074	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1348.63
13	0.6594	1087.7	1107.0	1103.6	0.484	3.573	80.356	13.878	1.559	0.049	0.090	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1359.98
14	0.6526	1076.4	1095.5	1092.6	0.463	3.648	81.576	12.746	1.429	0.045	0.083	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1352.91
15	0.6484	1069.5	1088.5	1085.3	0.436	3.720	82.307	12.038	1.367	0.043	0.079	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1348.56
16	0.6464	1068.2	1087.1	1084.0	0.457	3.581	82.711	11.802	1.317	0.043	0.079	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1348.97
17	0.6509	1074.2	1093.2	1090.1	0.460	3.631	81.884	12.489	1.398	0.045	0.083	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1351.87
18	0.6467	1068.7	1087.6	1084.4	0.440	3.604	82.622	11.888	1.315	0.042	0.078	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1349.29
19	0.6456	1066.5	1085.4	1082.1	0.424	3.656	82.819	11.674	1.292	0.042	0.076	0.005	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1347.72
20	0.6512	1073.7	1092.7	1089.4	0.424	3.748	81.781	12.495	1.416	0.044	0.082	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1350.87
21	0.6433	1061.5	1080.3	1077.1	0.398	3.782	83.188	11.255	1.251	0.041	0.076	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1343.81
22	0.6515	1074.0	1093.0	1089.6	0.409	3.776	81.711	12.549	1.421	0.044	0.080	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1351.00
23	0.6533	1074.0	1093.0	1089.6	0.422	3.927	81.430	12.574	1.504	0.047	0.086	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1349.12
24	0.6481	1065.4	1084.3	1080.9	0.400	3.992	82.303	11.809	1.362	0.044	0.080	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1343.73
25	0.6452	1060.4	1079.2	1075.9	0.397	4.032	82.866	11.222	1.346	0.044	0.082	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1340.41
26	0.6481	1064.8	1083.6	1080.2	0.401	4.028	82.369	11.645	1.414	0.046	0.085	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1342.93
27	0.6584	1080.6	1099.8	1096.4	0.457	3.954	80.534	13.295	1.598	0.053	0.098	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1352.15
28	0.6678	1093.8	1113.1	1110.3	0.513	3.949	78.884	14.693	1.788	0.058	0.104	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1358.95
29	0.6539	1076.4	1095.4	1092.3	0.430	3.830	81.305	12.800	1.490	0.048	0.086	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1351.46
30	0.6501	1070.9	1089.8	1086.5	0.421	3.824	81.991	12.209	1.414	0.047	0.085	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1348.45
Avg	0.6495	1071.0	1089.8	1086.6	0.455	3.706	82.160	12.145	1.395	0.045	0.083	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1349.19

Zone 32

Source Daily Summary

November 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 Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6893	1152.1	1172.5	1168.2	0.000	3.211	72.747	23.266	0.757	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1408.94	
2	0.6884	1154.4	1174.8	1170.5	0.000	2.986	72.965	23.275	0.755	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.67	
3	0.6900	1153.5	1173.9	1169.7	0.000	3.191	72.685	23.275	0.827	0.009	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.92	
4	0.6895	1152.6	1173.0	1168.8	0.000	3.203	72.680	23.362	0.737	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.31	
5	0.6897	1152.7	1173.1	1168.7	0.000	3.208	72.675	23.340	0.759	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.32	
6	0.6898	1152.9	1173.3	1168.9	0.000	3.204	72.656	23.362	0.759	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.47	
7	0.6901	1153.7	1174.1	1169.5	0.000	3.185	72.615	23.401	0.780	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.13	
8	0.6897	1153.4	1173.9	1169.3	0.000	3.161	72.688	23.371	0.761	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.24	
9	0.6894	1152.9	1173.4	1169.1	0.000	3.163	72.733	23.338	0.747	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.94	
10	0.6895	1153.3	1173.7	1169.1	0.000	3.160	72.719	23.335	0.768	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.16	
11	0.6895	1154.9	1175.3	1170.6	0.000	3.054	72.778	23.357	0.792	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.20	
12	0.6899	1154.8	1175.2	1170.6	0.000	3.103	72.689	23.385	0.804	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.60	
13	0.6902	1154.7	1175.1	1170.6	0.000	3.134	72.622	23.429	0.796	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.23	
14	0.6896	1152.7	1173.1	1169.0	0.000	3.198	72.693	23.331	0.759	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.44	
15	0.6897	1152.9	1173.4	1169.0	0.000	3.193	72.676	23.353	0.758	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.62	
16	0.6896	1152.3	1172.7	1168.1	0.000	3.207	72.746	23.271	0.758	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.02	
17	0.6893	1152.5	1172.9	1168.5	0.000	3.181	72.773	23.261	0.766	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.48	
18	0.6895	1153.3	1173.7	1169.0	0.000	3.156	72.727	23.325	0.773	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.23	
19	0.6893	1152.9	1173.4	1168.9	0.000	3.155	72.785	23.262	0.778	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.01	
20	0.6894	1152.7	1173.1	1168.9	0.000	3.180	72.723	23.334	0.744	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.63	
21	0.6897	1152.7	1173.1	1168.2	0.000	3.207	72.687	23.320	0.767	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.32	
22	0.6895	1153.6	1174.0	1169.3	0.000	3.133	72.758	23.300	0.790	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.64	
23	0.6900	1154.4	1174.9	1170.4	0.000	3.134	72.661	23.381	0.806	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.10	
24	0.6897	1153.7	1174.1	1169.8	0.000	3.146	72.709	23.345	0.781	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.54	
25	0.6895	1153.2	1173.6	1168.8	0.000	3.166	72.741	23.285	0.790	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.03	
26	0.6897	1153.5	1173.9	1169.3	0.000	3.158	72.714	23.320	0.789	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.31	
27	0.6897	1153.9	1174.4	1170.0	0.000	3.133	72.705	23.365	0.778	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.81	
28	0.6896	1153.5	1173.9	1169.6	0.000	3.148	72.709	23.364	0.761	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.42	
29	0.6892	1153.5	1174.0	1169.5	0.000	3.114	72.784	23.321	0.762	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.80	
30	0.6891	1154.0	1174.4	1169.7	0.000	3.078	72.813	23.320	0.770	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.46	
Avg	0.6896	1153.0	1173.8	1169.3	0.000	3.155	72.722	23.332	0.772	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.27	

Zone 33

Gas Composition and Properties

Effective June 1, 2016 09:00 - January 18, 2038 21:14

Attachment B
Page 18 of 22

Source #: 1202160
Name: BOWMAN BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.2321		0.6048
Nitrogen, N2	3.4604		5.7399
Methane, C1	94.0188		89.3085
Ethane, C2	1.9955	0.5321	3.5530
Propane, C3	0.2261	0.0621	0.5904
iso-Butane, iC4	0.0203	0.0066	0.5904
n-Butane, nC4	0.0216	0.0068	0.0743
iso-Pentane, iC5	0.0028	0.0010	0.0120
n-Pentane, nC5	0.0020	0.0007	0.0085
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0000	0.0000	0.0000
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2	0.0204		
Carbon Monoxide, CO			
Hydrogen, H2			
Helium, He			
Argon, Ar			

Property	Total Sample	C6 Plus Fraction
Pressure Base	14.730	
Temperature Base	60.00	
HCDP @ Sample Pressure		
Cricondentherm		
HV, Dry @ Base P, T	996.12	
HV, Sat @ Base P, T	978.78	
HV, Sat @ Sample P, T	996.12	
Relative Density	0.5840	

C6+: 100

Totals 100.0000 0.6100 100.4818

Sample

Date: 07/01/2016 Pressure: 380.0
Type: Spot Temperature:
Tech: MG H2O: lbs/mm
H2S: ppm

Remarks:

Analysis

Date: 07/05/2016 Instrument: WBI- 447
Cylinder: 100

Tech: MB

Remarks: Inactive

Zone 34

Source Daily Summary

November 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 Drv	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6821	1120.6	1140.4	1137.4	1.001	2.929	74.902	20.727	0.437	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1377.67
2	0.6890	1132.1	1152.1	1149.1	0.983	2.901	74.002	21.158	0.945	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1384.81
3	0.7082	1164.2	1184.8	1181.7	0.957	2.788	71.095	23.198	1.920	0.017	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1404.63
4	0.6952	1142.3	1162.5	1159.5	0.972	2.879	72.780	22.372	0.979	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1391.07
5	0.6915	1135.2	1155.3	1152.2	0.981	2.952	74.155	20.281	1.608	0.011	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1385.98
6	0.6891	1130.9	1151.0	1147.9	0.987	2.977	73.751	21.547	0.732	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1383.32
7	0.6814	1117.3	1137.1	1134.1	1.010	3.048	75.308	19.920	0.709	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1374.36
8	0.6807	1116.1	1135.8	1132.9	1.007	3.063	75.195	20.272	0.460	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1373.53
9	0.6815	1118.1	1137.9	1135.0	1.008	3.011	75.128	20.303	0.546	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1375.26
10	0.6874	1129.7	1149.8	1146.7	0.994	2.880	74.469	20.562	1.085	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1383.51
11	0.6940	1140.3	1160.5	1157.5	0.973	2.887	72.903	22.340	0.888	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1389.87
12	0.6943	1141.3	1161.5	1158.4	0.967	2.871	72.802	22.496	0.856	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1390.69
13	0.6941	1142.6	1162.8	1159.8	0.977	2.761	72.648	22.964	0.644	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1392.44
14	0.6860	1126.9	1146.9	1143.9	0.998	2.910	74.829	20.104	1.148	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1381.51
15	0.6850	1126.0	1145.9	1143.0	1.000	2.871	74.961	20.086	1.071	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1381.37
16	0.6892	1135.9	1156.0	1152.9	0.981	2.694	74.155	21.046	1.111	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1389.21
17	0.6943	1139.6	1159.8	1156.8	0.986	2.941	73.169	21.682	1.209	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1388.67
18	0.6928	1138.0	1158.2	1155.1	0.978	2.906	73.303	21.771	1.032	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1388.24
19	0.6907	1135.7	1155.8	1152.7	0.978	2.858	73.395	22.061	0.701	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1387.44
20	0.6970	1146.6	1166.9	1163.8	0.976	2.786	72.485	22.677	1.063	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1394.45
21	0.6939	1140.3	1160.5	1157.4	0.974	2.883	72.827	22.514	0.791	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1389.88
22	0.6911	1138.1	1158.2	1155.2	0.971	2.752	73.538	21.834	0.891	0.005	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1390.04
23	0.6882	1133.5	1153.6	1150.6	0.984	2.739	73.871	21.762	0.639	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1387.40
24	0.6911	1142.0	1162.2	1159.2	0.964	2.529	73.539	22.073	0.885	0.004	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1394.78
25	0.6942	1147.0	1167.3	1164.2	0.958	2.525	73.201	22.133	1.163	0.006	0.012	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1397.71
26	0.6940	1146.8	1167.1	1164.0	0.956	2.519	73.052	22.480	0.978	0.005	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1397.71
27	0.6955	1149.4	1169.8	1166.7	0.953	2.497	72.941	22.452	1.124	0.009	0.020	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1399.48
28	0.6936	1146.7	1167.0	1163.9	0.954	2.491	73.107	22.474	0.969	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1397.98
29	0.6986	1155.5	1176.0	1172.9	0.953	2.423	72.659	22.429	1.522	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1403.70
30	0.6987	1154.9	1175.3	1172.2	0.955	2.466	72.620	22.455	1.478	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1402.82
Avg	0.6914	1138.0	1157.9	1154.9	0.978	2.791	73.560	21.672	0.986	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1389.32

Zone 43



Alliance Pipeline

DAILY ANALYSIS — USA
 ND07MD1 — Hankinson Sales
 November 2017

DAY	Heating Value (BTU/ft3)	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	1,156.482	0.6673	83.6504	9.3837	3.9948	0.3717	0.6518	0.0598	0.0494	0.0253	1.3261	0.4746	0.0122
2	1,155.164	0.6652	83.8640	9.4717	3.8393	0.3629	0.6264	0.0604	0.0496	0.0250	1.2149	0.4733	0.0125
3	1,155.541	0.6658	83.6755	9.6546	3.8535	0.3454	0.6047	0.0590	0.0489	0.0259	1.2389	0.4811	0.0125
4	1,151.340	0.6629	84.1656	9.2930	3.7402	0.3456	0.6086	0.0588	0.0491	0.0263	1.2368	0.4638	0.0122
5	1,157.053	0.6665	83.7200	9.5309	3.8663	0.3780	0.6514	0.0631	0.0522	0.0266	1.2445	0.4551	0.0119
6	1,150.510	0.6625	84.2761	9.1711	3.7310	0.3583	0.6153	0.0580	0.0477	0.0244	1.2293	0.4769	0.0119
7	1,155.828	0.6650	83.9382	9.4220	3.8429	0.3736	0.6339	0.0615	0.0509	0.0251	1.1837	0.4560	0.0120
8	1,156.124	0.6656	83.8067	9.5525	3.7980	0.3751	0.6440	0.0627	0.0513	0.0252	1.2211	0.4518	0.0116
9	1,156.589	0.6655	83.8883	9.4594	3.8290	0.3798	0.6510	0.0633	0.0523	0.0264	1.1956	0.4436	0.0114
10	1,155.716	0.6650	83.8918	9.4941	3.8226	0.3711	0.6306	0.0586	0.0478	0.0256	1.1992	0.4468	0.0116
11	1,148.470	0.6600	84.5032	9.2730	3.5030	0.3570	0.6006	0.0588	0.0490	0.0259	1.1857	0.4328	0.0111
12	1,145.753	0.6580	84.7083	9.3017	3.2851	0.3560	0.6069	0.0587	0.0490	0.0270	1.1675	0.4276	0.0123
13	1,145.984	0.6585	84.6244	9.3471	3.2764	0.3598	0.6142	0.0608	0.0503	0.0267	1.1981	0.4298	0.0123
14	1,146.913	0.6588	84.5995	9.3781	3.2777	0.3627	0.6218	0.0635	0.0531	0.0274	1.1792	0.4251	0.0120
15	1,147.168	0.6584	84.6938	9.3277	3.2776	0.3643	0.6264	0.0630	0.0528	0.0278	1.1312	0.4232	0.0121
16	1,144.267	0.6548	85.1875	9.1665	3.1919	0.3409	0.5577	0.0644	0.0546	0.0288	0.9750	0.4206	0.0123
17	1,142.366	0.6497	86.1164	8.6830	3.1784	0.3286	0.4952	0.0654	0.0551	0.0294	0.6347	0.4012	0.0126
18	1,144.330	0.6524	85.7262	8.8113	3.2904	0.3375	0.5155	0.0644	0.0534	0.0281	0.7396	0.4208	0.0127
19	1,150.630	0.6611	84.3948	9.3215	3.6011	0.3622	0.5771	0.0651	0.0534	0.0274	1.1340	0.4515	0.0120
20	1,157.001	0.6660	83.8535	9.4675	3.7962	0.3940	0.6758	0.0651	0.0533	0.0276	1.1889	0.4663	0.0118
21	1,157.430	0.6655	83.8639	9.5964	3.7261	0.3942	0.6692	0.0646	0.0532	0.0284	1.1515	0.4410	0.0115
22	1,157.398	0.6657	83.7756	9.6737	3.7495	0.3840	0.6488	0.0640	0.0525	0.0273	1.1689	0.4439	0.0116
23	1,157.153	0.6657	83.7478	9.6926	3.7440	0.3814	0.6484	0.0635	0.0521	0.0268	1.1887	0.4429	0.0117
24	1,155.475	0.6640	84.0691	9.4579	3.7040	0.3849	0.6548	0.0625	0.0518	0.0267	1.1544	0.4225	0.0115
25	1,151.337	0.6609	84.4236	9.3162	3.6075	0.3575	0.6078	0.0591	0.0493	0.0252	1.1228	0.4188	0.0122
26	1,155.224	0.6631	84.1887	9.4155	3.7114	0.3743	0.6331	0.0632	0.0532	0.0283	1.1059	0.4140	0.0124
27	1,154.615	0.6630	84.2039	9.3957	3.7123	0.3711	0.6280	0.0615	0.0523	0.0272	1.1137	0.4221	0.0122
28	1,153.265	0.6624	84.3024	9.3058	3.6923	0.3677	0.6243	0.0618	0.0523	0.0269	1.1206	0.4335	0.0124
29	1,152.803	0.6624	84.3307	9.2283	3.7110	0.3710	0.6306	0.0616	0.0513	0.0247	1.1344	0.4437	0.0128
30	1,155.384	0.6642	84.0871	9.3707	3.7892	0.3751	0.6387	0.0623	0.0519	0.0261	1.1369	0.4492	0.0129
Volume	1,152.485	0.6623	84.2669	9.3669	3.6422	0.3661	0.6201	0.0619	0.0514	0.0266	1.1435	0.4423	0.0121
Weight Avg Energy	1,152.503	0.6623	84.2648	9.3676	3.6430	0.3662	0.6202	0.0619	0.0514	0.0266	1.1438	0.4424	0.0121

Zone 100

Nov-17

ZONE 610

Watford City

01325

Watford City West Border

01312

Watford City East Border

Weighted

Begin Date	End Date	01325			01312			Weighted	AVG	
		MCF	DK	BTU	MCF	DK	BTU			
		Watford City West Border			Watford City East Border					
		Zone 25			Zone 43			BTU		
11/1/2017	11/2/2017	578	676	1.169	240	274	1.140	1.160	11/1/2017	
11/2/2017	11/3/2017	467	546	1.169	434	503	1.152	1.161	11/2/2017	
11/3/2017	11/4/2017	698	816	1.169	349	414	1.185	1.174	11/3/2017	
11/4/2017	11/5/2017	762	890	1.169	320	373	1.163	1.167	11/4/2017	
11/5/2017	11/6/2017	767	897	1.169	407	470	1.155	1.164	11/5/2017	
11/6/2017	11/7/2017	806	942	1.169	486	558	1.151	1.162	11/6/2017	
11/7/2017	11/8/2017	787	919	1.169	393	447	1.137	1.158	11/7/2017	
11/8/2017	11/9/2017	826	966	1.169	512	582	1.136	1.156	11/8/2017	
11/9/2017	11/10/2017	811	948	1.169	407	463	1.138	1.159	11/9/2017	
11/10/2017	11/11/2017	660	772	1.169	260	299	1.150	1.164	11/10/2017	
11/11/2017	11/12/2017	675	789	1.169	247	287	1.161	1.167	11/11/2017	
11/12/2017	11/13/2017	642	750	1.169	307	356	1.162	1.167	11/12/2017	
11/13/2017	11/14/2017	528	617	1.169	237	276	1.163	1.167	11/13/2017	
11/14/2017	11/15/2017	647	756	1.169	293	336	1.147	1.162	11/14/2017	
11/15/2017	11/16/2017	768	898	1.169	460	527	1.146	1.160	11/15/2017	
11/16/2017	11/17/2017	694	811	1.169	377	436	1.156	1.164	11/16/2017	
11/17/2017	11/18/2017	711	831	1.169	388	450	1.160	1.166	11/17/2017	
11/18/2017	11/19/2017	702	820	1.169	411	476	1.158	1.165	11/18/2017	
11/19/2017	11/20/2017	596	697	1.169	261	301	1.156	1.165	11/19/2017	
11/20/2017	11/21/2017	719	840	1.169	384	449	1.167	1.168	11/20/2017	
11/21/2017	11/22/2017	807	944	1.169	427	496	1.161	1.166	11/21/2017	
11/22/2017	11/23/2017	577	674	1.169	275	319	1.158	1.165	11/22/2017	
11/23/2017	11/24/2017	328	383	1.169	247	285	1.154	1.163	11/23/2017	
11/24/2017	11/25/2017	504	589	1.169	190	221	1.162	1.167	11/24/2017	
11/25/2017	11/26/2017	518	606	1.169	119	139	1.167	1.169	11/25/2017	
11/26/2017	11/27/2017	424	496	1.169	70	81	1.167	1.169	11/26/2017	
11/27/2017	11/28/2017	549	641	1.169	256	299	1.170	1.169	11/27/2017	
11/28/2017	11/29/2017	562	657	1.169	151	177	1.167	1.169	11/28/2017	
11/29/2017	11/30/2017	616	720	1.169	234	276	1.176	1.171	11/29/2017	
11/30/2017	12/1/2017	592	692	1.169	241	283	1.175	1.171	11/30/2017	
		19,321	22,583		9,383	10,853	1.1580	1.1652		

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/GCF)	SPECIFIC GRAVITY	WOBBE (calc)	CRICONDENTHERM (deg F)	NITROGEN (mole percent)	CARBON DIOXIDE (mole percent)	METHANE (mole percent)	ETHANE (mole percent)	PROPANE (mole percent)	NORMAL BUTANE (mole percent)	ISO BUTANE (mole percent)	PENTANE (mole percent)	ISO PENTANE (mole percent)	NEO PENTANE (mole percent)	HEXANES PLUS (mole percent)	HYDROGEN (mole percent)	HELIUM (mole percent)	PRODUCTION DATE	POSTING DATE	Changestimestamp	NOTES
11587	GLEN ULLIN	1114.6	0.6642	1367.7	-20.4	3.7728	0.3459	78.9756	15.4262	1.376	0.0683	0.0395	0.0031	0.0039	0	0.0222	0	0	10/31/2017	11/1/2017	11/1/2017 3:13:13 PM	
11587	GLEN ULLIN	1114.6	0.6642	1367.7	-20.4	3.7728	0.3459	78.9756	15.4262	1.376	0.0683	0.0395	0.0031	0.0039	0	0.0222	0	0	10/31/2017	11/2/2017	11/2/2017 3:18:01 PM	
11587	GLEN ULLIN	1075.4	0.6245	1360.8	-62.5	1.5579	0.8608	86.5302	10.1952	0.602	0.0131	0.0085	0	0.0001	0	0	0.0217	0.2109	11/2/2017	11/3/2017	11/3/2017 3:18:01 PM	
11587	GLEN ULLIN	1080	0.6271	1363.8	-59.5	1.586	0.8423	86.1646	10.4299	0.7446	0.0175	0.0119	0.0002	0.0007	0	0	0.079	0.1245	11/3/2017	11/4/2017	11/4/2017 3:17:03 PM	
11587	GLEN ULLIN	1082.4	0.6285	1365.4	-59	1.6097	0.8242	86.1491	10.5748	0.7548	0.0162	0.0113	0.0002	0.0005	0	0	0.0232	0.0315	11/4/2017	11/5/2017	11/5/2017 3:14:40 PM	
11587	GLEN ULLIN	1081.6	0.6282	1364.6	-59.2	1.6046	0.8459	86.3269	10.4159	0.7559	0.0192	0.0138	0.0006	0.0016	0	0.0001	0	0.0171	11/5/2017	11/6/2017	11/6/2017 3:18:41 PM	
11587	GLEN ULLIN	1084.2	0.6301	1365.8	-58.8	1.6258	0.8474	85.8589	10.9394	0.6903	0.0147	0.0097	0	0	0	0	0	0.0176	11/6/2017	11/7/2017	11/7/2017 3:15:48 PM	
11587	GLEN ULLIN	1075.5	0.6241	1361.4	-63.1	1.5614	0.8491	86.8297	10.0234	0.607	0.0137	0.0088	0	0	0	0	0.0003	0.1067	11/7/2017	11/8/2017	11/8/2017 3:20:51 PM	
11587	GLEN ULLIN	1069.9	0.6197	1359.1	-66.7	1.4888	0.8366	87.5032	9.5151	0.4735	0.0129	0.009	0.0001	0.0006	0	0.0001	0.0013	0.157	11/8/2017	11/9/2017	11/9/2017 3:18:35 PM	
11587	GLEN ULLIN	1072.8	0.6217	1360.6	-63.8	1.5048	0.8433	87.2597	9.6805	0.5406	0.0205	0.0154	0.0016	0.0025	0	0.0008	0.0454	0.0853	11/9/2017	11/10/2017	11/10/2017 3:20:26 PM	
11587	GLEN ULLIN	1078.9	0.6257	1363.9	-60.1	1.5336	0.8431	86.6115	10.2336	0.633	0.0249	0.0195	0.002	0.0031	0	0.0011	0.0646	0.0296	11/10/2017	11/11/2017	11/11/2017 3:18:52 PM	
11587	GLEN ULLIN	1078.8	0.6256	1363.9	-61.4	1.5261	0.8461	86.629	10.3145	0.5853	0.0197	0.0144	0.0013	0.0021	0	0.0004	0.0378	0.023	11/11/2017	11/12/2017	11/12/2017 3:18:41 PM	
11587	GLEN ULLIN	1074	0.6226	1361.2	-62	1.4781	0.8495	86.9467	9.8287	0.6049	0.0246	0.0174	0.0019	0.0028	0	0.0008	0.0072	0.2383	11/12/2017	11/13/2017	11/13/2017 3:16:53 PM	
11587	GLEN ULLIN	1074.1	0.6229	1361	-62.2	1.4446	0.8762	86.796	9.9825	0.5722	0.02	0.015	0.0015	0.0025	0	0.0008	0	0.2873	11/13/2017	11/14/2017	11/14/2017 3:19:26 PM	
11587	GLEN ULLIN	1071	0.6216	1358.4	-64.1	1.4983	0.883	86.9918	9.6937	0.587	0.0169	0.0112	0.0002	0.0005	0	0	0.0134	0.3041	11/14/2017	11/15/2017	11/15/2017 3:19:30 PM	
11587	GLEN ULLIN	1071.1	0.6214	1358.8	-64.9	1.52	0.8851	87.1004	9.6683	0.5613	0.0119	0.008	0	0.0001	0	0	0.1373	0.1073	11/15/2017	11/16/2017	11/16/2017 3:19:53 PM	
11587	GLEN ULLIN	1070	0.6202	1358.7	-66.4	1.4984	0.8762	87.4976	9.4468	0.5172	0.0114	0.0078	0.0001	0.0002	0	0	0.1192	0.026	11/16/2017	11/17/2017	11/17/2017 3:19:13 PM	
11587	GLEN ULLIN	1073.8	0.6229	1360.5	-63.8	1.5232	0.8798	87.0777	9.8091	0.5703	0.0159	0.0112	0.0005	0.001	0	0.0002	0.0881	0.0246	11/17/2017	11/18/2017	11/18/2017 3:18:31 PM	
11587	GLEN ULLIN	1070.7	0.6215	1358.1	-65	1.5583	0.8652	86.9528	9.7865	0.5309	0.0122	0.0079	0	0	0	0	0.0532	0.2338	11/18/2017	11/19/2017	11/19/2017 3:19:40 PM	
11587	GLEN ULLIN	1071.3	0.6223	1358	-64.4	1.569	0.8675	86.7432	9.9511	0.5317	0.012	0.0078	0	0	0	0	0	0.3182	11/19/2017	11/20/2017	11/20/2017 3:22:42 PM	
11587	GLEN ULLIN	1072.8	0.6226	1359.6	-63.8	1.5049	0.8704	86.7865	9.9657	0.5612	0.0129	0.0082	0	0	0	0	0.0027	0.2879	11/20/2017	11/21/2017	11/21/2017 3:20:30 PM	
11587	GLEN ULLIN	1072.8	0.6219	1360.4	-64.7	1.489	0.8685	87.0467	9.839	0.5338	0.0119	0.008	0	0	0	0	0.1072	0.0963	11/21/2017	11/22/2017	11/22/2017 3:22:43 PM	
11587	GLEN ULLIN	1070.6	0.6203	1359.4	-66.3	1.4966	0.8577	87.4129	9.5739	0.4884	0.0119	0.0076	0	0.0001	0	0	0.1085	0.0425	11/22/2017	11/23/2017	11/23/2017 3:08:21 PM	
11587	GLEN ULLIN	1074.3	0.6231	1361	-63.9	1.5385	0.8599	87.0029	9.9032	0.563	0.0148	0.0098	0.0002	0.0005	0	0.0001	0.0704	0.035	11/23/2017	11/24/2017	11/24/2017 3:04:29 PM	
11587	GLEN ULLIN	1074.6	0.6237	1360.7	-62.9	1.554	0.8466	86.6254	10.1237	0.5798	0.0144	0.0096	0.0002	0.0005	0	0	0.0176	0.2278	11/24/2017	11/25/2017	11/25/2017 3:07:17 PM	
11587	GLEN ULLIN	1076.7	0.625	1361.9	-61.9	1.5304	0.853	86.4064	10.3339	0.6009	0.0149	0.0099	0.0003	0.0005	0	0	0	0.2493	11/25/2017	11/26/2017	11/26/2017 3:07:48 PM	
11587	GLEN ULLIN	1077	0.625	1362.3	-61.8	1.5242	0.8558	86.4203	10.3269	0.6086	0.0146	0.0098	0.0002	0.0005	0	0	0.0281	0.2101	11/26/2017	11/27/2017	11/27/2017 3:07:31 PM	
11587	GLEN ULLIN	1076.4	0.624	1362.7	-63.1	1.5155	0.8507	86.7241	10.1812	0.5602	0.0137	0.0083	0.0003	0.0003	0	0	0.1171	0.0288	11/27/2017	11/28/2017	11/28/2017 3:08:28 PM	
11587	GLEN ULLIN	1074.5	0.6229	1361.4	-64.4	1.5016	0.8635	86.9562	10.0269	0.5113	0.0108	0.0069	0	0	0	0	0.0741	0.0496	11/28/2017	11/29/2017	11/29/2017 3:07:41 PM	
11587	GLEN ULLIN	1075.6	0.6233	1362.4	-63.6	1.4805	0.8586	86.9322	10.0026	0.5765	0.0122	0.008	0	0.0002	0	0	0.0924	0.0369	11/29/2017	11/30/2017	11/30/2017 3:15:35 PM	
11587	GLEN ULLIN	1076.9	0.6249	1362.4	-61.5	1.4999	0.8577	86.4471	10.273	0.6344	0.0165	0.0109	0.0001	0.0005	0	0	0.0044	0.2563	11/30/2017	12/1/2017	12/1/2017 3:08:03 PM	

31 record(s) retrieved

FORM 802

NORTH DAKOTA HEATING VALUE ZONES		
ZONES	MEASURING DEVICE	LOCATION
211	Chromatograph	Sidney Border
24	Monthly Sampler	Williston Border
241	Monthly Sampler	Fairview Border
25	Monthly Sampler	Watford City West Border
260	Chromatograph	North Tioga Transfer
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
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	NOV 17	OCT 17	SEPT 17	AUG 17	JULY 17	JUNE 17	MAY 17	APRIL 17	MAR 17	FEB 17	JAN 17	DEC 16	ZONE
MT/ND	211	Sidney Border - MonDak Tfr - Sidney Pit	1199	1210	1201	1200	1204	1201	1191	1206	1191	1194	1195	1199	1199	211
ND	24	Williston Border - Charbonneau Station	1157	1144	1144	1142	1142	1141	1141	1148	1158	1171	1173	1189	1190	24
ND	25	Watford City West Border	1199	1169	1204	1205	1202	1206	1204	1204	1200	1199	1202	1198	1193	25
ND	28	Bismarck Station - Glen Ullin Station	1156	1111	1173	1196	1195	1194	1188	1191	1161	1118	1121	1115	1112	28
ND	31	Mandan Border / NBPL-St Anthony	1134	1110	1132	1100	1169	1179	1171	1137	1147	1118	1119	1113	1110	31
ND/MT	32	Cabin Creek Station - Belfield Transfer	1115	1090	1113	1103	1136	1157	1122	1097	1104	1112	1114	1118	1118	32
ND	33	Little Knife Plant	1179	1174	1174	1177	1181	1180	1177	1177	1178	1176	1177	1181	1200	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	1130	1158	1143	1147	1151	1141	1126	1136	1141	1102	1075	1121	1122	43
ND/MT	241	Fairview Border	1180	1204	1196	1175	1169	1165	1161	1168	1167	1179	1181	1196	1200	241
ND	260	North Tioga Transfer - Nesson Plant		992	996	987	993	1002	1087	1090	1082	0				260
ND	261	Tioga Comp Station - Robinson Lake Plan	1147	1170	1176	1175	1177	1183	1181	1176	1170	1065	1089	1105	1096	261
ND	262	Minot Bdr - Palermo Bdr - Bismarck Stn	1183	1190	1194	1196	1195	1193	1189	1192	1189	1181	1178	1152	1144	262
ND	263	Lignite Plant	1124	1143	1141	1123	1143	1146	1135	1115	1103	1115	1112	1103	1110	263
ND	264	Epping Border	1151	1133	1134	1136	1133	1138	1133	1145	1154	1158	1172	1186	1186	264
ND	265	Tioga Comp Station - County Line Plant	1176	1170	1176	1176	1177	1184	1181	1176	1170	1174	1175	1184	1170	265
ND	266	County Line Plant		1184	1185	1189	1184	1191	1183	1185	1185	1173	1182	0		266
ND	271	Bismarck Station - Cleveland Station	1175	1179	1192	1196	1195	1194	1188	1192	1189	1163	1155	1129	1127	271
ND	272	Cleveland Station - Mapleton	1174	1179	1192	1196	1195	1193	1188	1191	1187	1161	1153	1128	1126	272
ND	273	Cleveland Station - Grafton Border	1175	1179	1192	1196	1195	1194	1189	1192	1187	1162	1154	1128	1127	273
ND	610	MDU-Watford City BTU	1177	1165	1189	1190	1183	1185	1176	1183	1188	1171	1163	1170	1162	610
ND	802	Linton	1059	1075	1064	1065	1062	1057	1054	1063	1059	1054	1052	1049	1051	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

**THERMAL ZONE VARIANCE
DOCUMENTATION**

November 2017

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
25	-35	Operational Change
28	-62	Blend of Gas
31	-22	Blend of Gas
32	-23	Blend of Gas