



MONTANA-DAKOTA

UTILITIES CO.

A Subsidiary of MDU Resources Group, Inc.

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

February 13, 2019

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

Re: Case No. PU-18-002 (Therm Billing)
Monthly Report – December 2018

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

1. Attachment A is a schedule showing the thermal billing factors by community that reflect the BTU values shown on Attachment B and were used for billing purposes in January 2019.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of December 2018.
3. Attachment C is a listing which states the type of measuring device in place at each zone.
4. Attachment D is a monthly list of the heating value data, by zone, for the most recent 12-month period and an average thereof. It is being provided pursuant to a Staff request.
5. Attachment E provides a brief explanation of the thermal variances, where applicable, for the month of December 2018.

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

Sincerely,

Tamie Aberle
Director of Regulatory Affairs

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
Jan-19

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1325
MDU-308-ARNEGARD	025	1.1325
MDU-314-APPLE VALLEY	271	1.1385
MDU-318-BEACH	032	0.9870
MDU-319-BELFIELD	032	0.9942
MDU-323-BERTHOLD	262	1.1164
MDU-324-BEULAH	032	0.9942
MDU-327-BISMARCK	028	1.0729
MDU-330-BOWMAN	034	1.0062
MDU-337-BURLINGTON	262	1.1405
MDU-343-CARRINGTON	273	1.1376
MDU-344-CLEVELAND	272	1.1296
MDU-364-CAVALIER	273	1.1616
MDU-365-DAWSON	271	1.1305
MDU-368-DES LACS	262	1.1244
MDU-369-DICKINSON	031	1.0409
MDU-374-FT TOTTEN	273	1.1456
MDU-375-DEVILS LAKE	273	1.1456
MDU-379-BARLOW	273	1.1376
MDU-384-EPPING	264	1.0833
MDU-387-ELDRIDGE	272	1.1376
MDU-407-GLADSTONE	031	1.0409
MDU-411-GLEN ULLIN	031	1.0484
MDU-413-GOLVA	032	0.9725
MDU-416-GARRISON	262	1.1244
MDU-417-GRAFTON	273	1.1696
MDU-429-HEBRON	031	1.0484
MDU-432-HETTINGER	903	2.3875
MDU-449-JAMESTOWN	272	1.1456
MDU-459-KILLDEER	033	1.1088
MDU-463-LANGDON	273	1.1376
MDU-469-LEFOR	031	1.0409
MDU-474-LIGNITE	263	1.0721
MDU-475-LINTON	802	1.0478
MDU-478-LINCOLN	028	1.0729
MDU-488-MCKENZIE	271	1.1385
MDU-494-MEDINA	271	1.1305
MDU-498-MANDAN	028	1.0729
MDU-500-MARMARTH	034	0.9916
MDU-505-MINOT	262	1.1405
MDU-510-MOTT	031	1.1409
MDU-512-MAX	262	1.1164
MDU-522-NEW ENGLAND	031	1.0333
MDU-524-NEW SALEM	028	1.0729
MDU-532-NEW ROCKFORD	273	1.1376
MDU-539-PARK RIVER	273	1.1616
MDU-540-PALERMO	262	1.1164
MDU-558-RAY	264	1.0890
MDU-561-REGENT	031	1.0409

MDU-563-RHAME	034	0.9770
MDU-564-RICHARDTON	031	1.0333
MDU-568-ROSS	261	1.1037
MDU-572-RUTHVILLE	262	1.1405
MDU-574-SANBORN	272	1.1456
MDU-583-SENTINEL BUTTE	032	0.9870
MDU-588-SOUTH HEART	031	1.0333
MDU-717-SPIRITWOOD	272	1.1456
MDU-590-SPRINGBROOK	264	1.0890
MDU-591-STANLEY	261	1.1197
MDU-593-STEELE	271	1.1305
MDU-594-STERLING	028	1.0729
MDU-598-SHEYENNE	273	1.1456
MDU-605-SURREY	262	1.1405
MDU-610-TAPPEN	271	1.1305
MDU-611-TAYLOR	031	1.0333
MDU-616-TIOGA	260	1.0268
MDU-619-TURTLE LAKE	262	1.1244
MDU-620-TRENTON	024	1.1064
MDU-624-UNDERWOOD	262	1.1244
MDU-625-VALLEY CITY	272	1.1536
MDU-629-WALHALLA	273	1.1616
MDU-632-WATFORD CITY	610	1.0682
MDU-636-WHEELOCK	264	1.0812
MDU-637-WHITE EARTH	261	1.1117
MDU-642-WILLISTON	024	1.1064
MDU-646-WASHBURN	262	1.1324
MDU-647-WILTON	262	1.1164
MDU-664-RIVERDALE	262	1.1244
MDU-691-FAIRVIEW	241	1.1349
MDU-712-MINOT AFB	262	1.1405
MDU-718-FAIRMOUNT	600	1.1356
MDU-732-NEKOMA	273	1.1376
MDU-732-MSR SITE	273	1.1376

Source Daily Summary

December 2018

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	0.7181	1198.3	1219.6	1216.3	0.056	2.992	70.193	22.949	3.602	0.077	0.123	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1435.82
2	0.7174	1197.0	1218.2	1214.9	0.060	3.007	70.260	22.940	3.521	0.078	0.126	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1434.83
3	0.7181	1192.1	1213.2	1209.9	0.171	3.198	70.151	22.813	3.447	0.080	0.131	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1428.36
4	0.7184	1196.7	1217.9	1214.6	0.068	3.098	70.250	22.669	3.688	0.083	0.134	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1433.58
5	0.7180	1195.7	1216.9	1213.6	0.060	3.142	70.191	22.768	3.649	0.072	0.111	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1432.71
6	0.7188	1197.9	1219.1	1215.9	0.059	3.078	70.059	22.973	3.625	0.076	0.122	0.005	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1434.64
7	0.7129	1187.6	1208.6	1205.4	0.060	3.157	70.856	22.471	3.267	0.069	0.112	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1428.08
8	0.7186	1197.0	1218.2	1215.0	0.058	3.120	70.100	22.872	3.648	0.075	0.120	0.005	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1433.71
9	0.7147	1190.1	1211.2	1207.9	0.061	3.167	70.623	22.557	3.406	0.069	0.108	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1429.34
10	0.7171	1191.9	1213.0	1209.7	0.131	3.176	70.623	22.163	3.624	0.098	0.171	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1429.09
11	0.7334	1188.2	1209.2	1205.8	1.029	3.575	68.197	23.332	3.477	0.131	0.236	0.012	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1408.63
12	0.7343	1181.9	1202.8	1199.4	1.255	3.694	68.104	23.212	3.344	0.131	0.237	0.012	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1400.33
13	0.7365	1183.2	1204.2	1200.7	1.331	3.708	67.773	23.417	3.365	0.136	0.247	0.013	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1399.75
14	0.7273	1170.3	1191.0	1187.6	1.253	3.749	69.527	21.754	3.306	0.136	0.250	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.15
15	0.7232	1165.1	1185.7	1182.3	1.217	3.732	70.246	21.167	3.236	0.132	0.245	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1390.94
16	0.7190	1162.0	1182.6	1179.2	1.161	3.610	70.922	20.801	3.117	0.126	0.236	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1391.31
17	0.7230	1163.7	1184.3	1180.8	1.234	3.780	70.342	20.957	3.274	0.137	0.250	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1389.37
18	0.7195	1166.0	1186.6	1183.2	1.156	3.427	70.674	21.387	2.985	0.119	0.226	0.014	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1395.54
19	0.7206	1169.2	1189.9	1186.4	1.149	3.349	70.412	21.756	2.976	0.114	0.217	0.013	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1398.24
20	0.7179	1167.7	1188.4	1185.0	1.071	3.295	70.793	21.611	2.884	0.109	0.210	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1399.24
21	0.7172	1166.1	1186.7	1183.3	1.099	3.294	70.967	21.397	2.896	0.110	0.212	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1397.86
22	0.7214	1170.0	1190.7	1187.3	1.149	3.373	70.323	21.747	3.051	0.115	0.218	0.013	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1398.48
23	0.7219	1170.6	1191.3	1188.0	1.144	3.387	70.158	21.965	2.986	0.116	0.219	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1398.78
24	0.7205	1170.3	1191.1	1187.7	1.061	3.398	70.430	21.687	3.067	0.116	0.217	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1399.83
25	0.7269	1180.8	1201.7	1198.4	1.018	3.423	69.676	21.918	3.542	0.139	0.257	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1406.17
26	0.7209	1171.6	1192.3	1189.0	1.067	3.349	70.497	21.533	3.185	0.120	0.224	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1400.95
27	0.7162	1164.0	1184.7	1181.4	1.085	3.341	71.322	20.879	2.984	0.115	0.241	0.018	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1396.46
28	0.7231	1170.6	1191.3	1188.0	1.188	3.437	70.179	21.605	3.231	0.118	0.220	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1397.57
29	0.7265	1173.9	1194.7	1191.2	1.216	3.510	69.567	22.082	3.241	0.126	0.233	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1398.24
30	0.7251	1174.9	1195.7	1192.4	1.111	3.478	69.648	22.185	3.241	0.113	0.204	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1400.81
31	0.7211	1170.9	1191.6	1188.3	1.099	3.369	70.406	21.607	3.186	0.110	0.203	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1399.83
Avg	0.7215	1179.0	1199.8	1196.4	0.802	3.368	70.112	22.102	3.292	0.108	0.196	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1409.08

Zone 211

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6939	1144.3	1164.5	1161.1	0.821	2.851	74.951	18.765	2.249	0.096	0.217	0.022	0.028	0.000	0.000	0.000	0.000	0.000	1394.52	
2	0.6949	1147.8	1168.1	1164.8	0.848	2.690	74.724	19.137	2.281	0.085	0.194	0.018	0.023	0.000	0.000	0.000	0.000	0.000	1397.87	
3	0.6955	1148.9	1169.3	1165.8	0.841	2.686	74.763	19.012	2.333	0.092	0.222	0.022	0.029	0.000	0.000	0.000	0.000	0.000	1398.60	
4	0.7072	1167.3	1188.0	1184.5	0.934	2.520	72.744	20.877	2.542	0.099	0.233	0.022	0.029	0.000	0.000	0.000	0.000	0.000	1409.23	
5	0.6987	1156.4	1176.9	1173.5	0.867	2.496	74.036	19.965	2.313	0.086	0.196	0.018	0.023	0.000	0.000	0.000	0.000	0.000	1404.47	
6	0.6898	1141.0	1161.2	1157.9	0.822	2.667	75.446	18.688	2.114	0.073	0.159	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1394.73	
7	0.6895	1139.6	1159.8	1156.6	0.829	2.704	75.488	18.628	2.098	0.071	0.154	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1393.46	
8	0.6897	1139.8	1160.0	1156.9	0.830	2.711	75.361	18.811	2.040	0.069	0.150	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1393.52	
9	0.6911	1142.5	1162.7	1159.5	0.831	2.686	75.169	18.951	2.102	0.073	0.158	0.013	0.017	0.000	0.000	0.000	0.000	0.000	1395.23	
10	0.6914	1142.3	1162.5	1159.3	0.828	2.728	75.124	18.936	2.118	0.074	0.161	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1394.73	
11	0.6900	1140.7	1160.9	1157.7	0.818	2.701	75.342	18.820	2.068	0.070	0.151	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1394.28	
12	0.6917	1142.7	1162.9	1159.7	0.812	2.753	75.083	18.930	2.160	0.074	0.158	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1394.93	
13	0.6916	1141.5	1161.7	1158.5	0.810	2.822	75.143	18.757	2.197	0.077	0.164	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1393.54	
14	0.6939	1144.1	1164.3	1161.1	0.818	2.867	74.758	19.016	2.266	0.078	0.166	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1394.40	
15	0.6919	1142.0	1162.2	1159.0	0.818	2.803	75.112	18.790	2.202	0.077	0.166	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1393.92	
16	0.6920	1143.1	1163.4	1160.2	0.828	2.731	75.055	18.957	2.156	0.077	0.166	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1395.17	
17	0.6885	1139.7	1159.8	1156.6	0.809	2.640	75.769	18.363	2.143	0.076	0.168	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1394.49	
18	0.6909	1142.2	1162.5	1159.3	0.811	2.703	75.262	18.804	2.158	0.074	0.159	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1395.26	
19	0.6922	1143.8	1164.0	1160.9	0.825	2.711	75.109	18.845	2.233	0.078	0.169	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1395.80	
20	0.6917	1143.2	1163.4	1160.3	0.829	2.701	75.151	18.865	2.173	0.078	0.170	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1395.50	
21	0.6917	1143.1	1163.3	1160.2	0.821	2.720	75.119	18.891	2.176	0.077	0.165	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1395.38	
22	0.6931	1145.2	1165.5	1162.3	0.833	2.702	74.905	19.068	2.216	0.077	0.168	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1396.58	
23	0.6899	1140.6	1160.8	1157.7	0.819	2.695	75.462	18.614	2.142	0.075	0.163	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1394.31	
24	0.6899	1140.7	1160.9	1157.8	0.817	2.695	75.513	18.521	2.175	0.078	0.170	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1394.38	
25	0.6891	1139.9	1160.1	1157.0	0.811	2.677	75.641	18.445	2.153	0.076	0.166	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1394.22	
26	0.6889	1139.3	1159.5	1156.4	0.812	2.698	75.628	18.471	2.122	0.075	0.163	0.014	0.016	0.000	0.000	0.000	0.000	0.000	1393.63	
27	0.6910	1142.2	1162.5	1159.4	0.824	2.697	75.318	18.666	2.227	0.076	0.163	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1395.11	
28	0.6894	1140.3	1160.4	1157.3	0.819	2.677	75.614	18.428	2.190	0.076	0.165	0.014	0.017	0.000	0.000	0.000	0.000	0.000	1394.28	
29	0.6898	1140.1	1160.3	1157.1	0.827	2.709	75.473	18.590	2.136	0.074	0.160	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1393.69	
30	0.6894	1139.2	1159.3	1156.3	0.826	2.732	75.518	18.534	2.133	0.073	0.156	0.013	0.015	0.000	0.000	0.000	0.000	0.000	1392.97	
31	0.6912	1143.6	1163.8	1160.7	0.827	2.634	75.244	18.841	2.182	0.076	0.167	0.013	0.016	0.000	0.000	0.000	0.000	0.000	1396.51	
Avg	0.6919	1143.0	1163.7	1160.5	0.828	2.703	75.130	18.871	2.187	0.078	0.171	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1395.64	

Zone 24

Gas Composition and Properties

Effective December 1, 2018

Source #: 0602160
Name: FAIRVIEW BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.9344		2.0075
Nitrogen, N2	3.1137		4.2582
Methane, C1	72.2680		56.5979
Ethane, C2	20.5688	5.5045	30.1932
Propane, C3	2.7978	0.7713	6.0227
iso-Butane, iC4	0.0948	0.0310	0.2690
n-Butane, nC4	0.1953	0.0616	0.5541
iso-Pentane, iC5	0.0127	0.0046	0.0447
n-Pentane, nC5	0.0121	0.0044	0.0426
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0024	0.0010	0.0101
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
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	-21.665	
Cricondentherm	-6.064	
HV, Dry @ Base P, T	1181.41	
HV, Sat @ Base P, T	1160.85	
HV, Sat @ Sample P, T	1181.41	
Relative Density	0.7093	

C6+: 100

Totals	100.0000	6.3780	100.0000
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Sample

Date: 12/01/2018 Pressure: 410.0
 Type: Temperature:
 Tech: Kevin Moos H2O: lbs/mm
 H2S: ppm

Remarks:

Analysis

Date: 12/01/2018 Instrument:
 Cylinder: 359
 Tech: Kevin Moos

Remarks:

Zone 241

Gas Composition and Properties

Effective December 1, 2018

Source #: 0602225
Name: WATFORD CITY WEST BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	1.1469		2.4126
Nitrogen, N2	3.3091		4.4310
Methane, C1	71.4984		54.8264
Ethane, C2	19.3594	5.1815	27.8248
Propane, C3	3.8687	1.0667	8.1542
iso-Butane, iC4	0.2154	0.0705	0.5984
n-Butane, nC4	0.4953	0.1563	1.3760
iso-Pentane, iC5	0.0461	0.0169	0.1590
n-Pentane, nC5	0.0484	0.0176	0.1669
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0123	0.0051	0.0507
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
Carbon Monoxide, CO			
Hydrogen, H2			
Helium, He			
Argon, Ar			
Totals	100.0000	6.5150	100.0000

Property	Total Sample	C6 Plus Fraction
Pressure Base	14.730	
Temperature Base	60.00	
HCDP @ Sample Pressure	3.454	
Cricondentherm	11.136	
HV, Dry @ Base P, T	1196.43	
HV, Sat @ Base P, T	1175.61	
HV, Sat @ Sample P, T	1196.43	
Relative Density	0.7245	

C6+: 100

Sample		
Date: 12/01/2018	Pressure:	498.0
Type:	Temperature:	
Tech: Kevin Moos	H2O:	lbs/mm
	H2S:	ppm
Remarks:		

Analysis	
Date: 12/01/2018	Instrument:
	Cylinder: 328
Tech: Kevin Moos	
Remarks:	

Zone 25

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6708	1102.0	1121.5		0.644	3.530	78.239	15.858	1.553	0.052	0.107	0.008	0.009	0.000					1366.16	
2	0.6738	1107.3	1126.9		0.618	3.528	78.437	15.107	1.929	0.091	0.226	0.024	0.031	0.009					1369.60	
3	0.6857	1125.0	1144.9		0.712	3.424	76.311	17.064	2.088	0.096	0.237	0.025	0.032	0.010					1379.42	
4	0.7168	1170.3	1191.0		0.928	3.253	71.420	20.974	2.800	0.144	0.368	0.041	0.052	0.019					1403.47	
5	0.6229	1035.8	1054.2		0.234	3.679	86.728	8.499	0.721	0.034	0.082	0.009	0.011	0.003					1332.58	
6	0.6522	1074.9	1093.9		0.509	3.643	81.460	13.042	1.212	0.039	0.079	0.006	0.007	0.004					1351.44	
7	0.6554	1079.5	1098.6		0.524	3.640	80.861	13.588	1.258	0.040	0.079	0.005	0.006	0.000					1353.85	
8	0.6586	1084.2	1103.4		0.555	3.608	80.349	14.016	1.322	0.044	0.091	0.007	0.008	0.001					1356.42	
9	0.6549	1079.1	1098.2		0.501	3.651	81.010	13.384	1.322	0.041	0.080	0.006	0.006	0.000					1353.87	
10	0.6638	1092.2	1111.5		0.575	3.574	79.519	14.667	1.503	0.049	0.098	0.007	0.008	0.001					1361.12	
11	0.6609	1089.0	1108.3		0.548	3.537	79.972	14.389	1.399	0.046	0.092	0.007	0.008	0.002					1360.15	
12	0.6647	1094.2	1113.6		0.562	3.558	79.287	14.948	1.492	0.048	0.092	0.006	0.007	0.000					1362.70	
13	0.6729	1105.8	1125.4		0.634	3.510	77.911	16.113	1.652	0.054	0.107	0.008	0.009	0.001					1368.75	
14	0.6708	1102.4	1121.9		0.624	3.541	78.246	15.812	1.612	0.051	0.100	0.007	0.007	0.000					1366.58	
15	0.6664	1095.6	1115.0		0.599	3.579	79.055	15.071	1.524	0.050	0.102	0.008	0.010	0.002					1362.65	
16	0.6454	1065.3	1084.1		0.424	3.712	82.647	11.971	1.134	0.035	0.068	0.004	0.005	0.000					1346.38	
17	0.6363	1052.4	1071.1		0.355	3.748	84.267	10.543	0.979	0.032	0.064	0.005	0.007	0.001					1339.59	
18	0.6608	1090.4	1109.7		0.518	3.486	80.016	14.360	1.483	0.045	0.082	0.005	0.005	0.000					1361.99	
19	0.6586	1084.5	1103.7		0.537	3.614	80.383	13.934	1.388	0.044	0.085	0.006	0.007	0.001					1356.84	
20	0.6577	1083.3	1102.5		0.516	3.628	80.460	13.940	1.326	0.041	0.078	0.005	0.006	0.000					1356.37	
21	0.6633	1091.2	1110.6		0.562	3.604	79.475	14.800	1.418	0.045	0.085	0.005	0.006	0.000					1360.46	
22	0.6600	1086.2	1105.5		0.553	3.611	80.082	14.255	1.361	0.042	0.082	0.006	0.007	0.001					1357.64	
23	0.6511	1072.5	1091.5		0.473	3.736	81.674	12.729	1.254	0.042	0.080	0.005	0.006	0.000					1349.56	
24	0.6480	1067.8	1086.7		0.459	3.754	82.251	12.206	1.191	0.041	0.083	0.006	0.007	0.001					1346.81	
25	0.6437	1061.4	1080.2		0.410	3.807	82.981	11.554	1.125	0.038	0.074	0.005	0.006	0.000					1343.30	
26	0.6540	1077.4	1096.5		0.503	3.670	81.200	13.177	1.303	0.044	0.087	0.007	0.008	0.001					1352.64	
27	0.6556	1079.7	1098.9		0.521	3.647	80.870	13.515	1.314	0.041	0.080	0.005	0.006	0.000					1353.97	
28	0.6474	1066.9	1085.8		0.468	3.737	82.298	12.224	1.154	0.037	0.072	0.005	0.005	0.000					1346.35	
29	0.6596	1085.8	1105.0		0.548	3.605	80.216	14.080	1.407	0.044	0.087	0.006	0.006	0.000					1357.52	
30	0.6508	1071.9	1090.9		0.500	3.705	81.716	12.739	1.217	0.038	0.076	0.005	0.005	0.000					1349.09	
31	0.6395	1055.8	1074.5		0.401	3.772	83.686	11.016	1.019	0.033	0.065	0.004	0.005	0.000					1340.55	
Avg	0.6588	1085.0	1104.0		0.533	3.616	80.420	13.857	1.402	0.049	0.103	0.008	0.010	0.002					1357.03	

Zone 260

Source Daily Summary

December 2018

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 Dry	Heating Value As Def	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7099	1160.8	1181.3	1178.2	0.898	3.237	71.850	21.122	2.603	0.088	0.178	0.011	0.013	0.000	0.000	0.000	0.000	0.000	1398.74	
2	0.7068	1156.0	1176.4	1173.3	0.924	3.200	71.999	21.438	2.207	0.071	0.142	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1396.02	
3	0.7157	1169.5	1190.3	1186.7	0.948	3.163	71.261	21.480	2.684	0.116	0.282	0.028	0.037	0.000	0.000	0.000	0.000	0.000	1403.38	
4	0.7158	1169.7	1190.4	1186.7	0.933	3.190	71.408	21.205	2.750	0.125	0.312	0.033	0.044	0.000	0.000	0.000	0.000	0.000	1403.32	
5	0.7151	1168.4	1189.1	1185.3	0.913	3.230	71.628	20.938	2.727	0.135	0.341	0.037	0.050	0.000	0.000	0.000	0.000	0.000	1402.42	
6	0.7094	1160.6	1181.1	1177.6	0.879	3.228	72.096	20.946	2.443	0.103	0.248	0.024	0.032	0.000	0.000	0.000	0.000	0.000	1398.76	
7	0.7052	1153.5	1174.0	1170.9	0.917	3.204	72.227	21.306	2.128	0.067	0.132	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1394.70	
8	0.7040	1151.1	1171.5	1168.4	0.910	3.254	72.432	21.071	2.120	0.065	0.129	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1392.89	
9	0.7036	1149.8	1170.2	1167.2	0.916	3.283	72.481	21.021	2.085	0.066	0.131	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1391.81	
10	0.7056	1153.6	1174.1	1170.9	0.903	3.257	72.256	21.122	2.232	0.070	0.138	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1394.38	
11	0.7047	1152.9	1173.3	1170.2	0.883	3.249	72.436	20.947	2.257	0.070	0.138	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1394.38	
12	0.7020	1149.2	1169.5	1166.4	0.854	3.266	72.830	20.691	2.139	0.068	0.131	0.009	0.012	0.000	0.000	0.000	0.000	0.000	1392.53	
13	0.7035	1151.5	1171.9	1168.8	0.860	3.256	72.625	20.798	2.237	0.072	0.136	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1393.92	
14	0.7044	1152.3	1172.7	1169.5	0.887	3.247	72.516	20.868	2.250	0.072	0.139	0.009	0.012	0.000	0.000	0.000	0.000	0.000	1393.98	
15	0.7047	1152.8	1173.2	1170.1	0.884	3.258	72.449	20.901	2.278	0.072	0.139	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1394.21	
16	0.7012	1147.3	1167.6	1164.4	0.869	3.287	73.078	20.349	2.186	0.070	0.138	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1390.94	
17	0.7028	1150.7	1171.0	1168.0	0.866	3.230	72.718	20.773	2.202	0.068	0.127	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1393.61	
18	0.7006	1148.2	1168.6	1165.4	0.841	3.212	73.106	20.486	2.141	0.066	0.128	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1392.75	
19	0.7021	1152.6	1173.0	1169.9	0.815	3.123	72.901	20.680	2.274	0.068	0.124	0.007	0.009	0.000	0.000	0.000	0.000	0.000	1396.62	
20	0.7016	1148.4	1168.7	1165.6	0.860	3.265	72.965	20.486	2.216	0.067	0.126	0.007	0.008	0.000	0.000	0.000	0.000	0.000	1392.03	
21	0.7012	1147.4	1167.7	1164.5	0.861	3.289	72.982	20.519	2.131	0.067	0.128	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1391.13	
22	0.7023	1149.8	1170.1	1167.1	0.853	3.258	72.684	20.899	2.107	0.064	0.119	0.007	0.008	0.000	0.000	0.000	0.000	0.000	1393.01	
23	0.7039	1151.5	1171.9	1168.8	0.894	3.244	72.485	21.001	2.164	0.066	0.127	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1393.47	
24	0.6978	1141.9	1162.1	1159.1	0.833	3.349	73.621	19.846	2.136	0.068	0.129	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1387.85	
25	0.6962	1138.9	1159.1	1155.9	0.839	3.365	73.965	19.512	2.088	0.071	0.138	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1385.84	
26	0.6954	1138.4	1158.6	1155.5	0.805	3.372	74.101	19.378	2.118	0.071	0.136	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1386.06	
27	0.6988	1143.5	1163.7	1160.6	0.851	3.319	73.507	19.938	2.152	0.072	0.138	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1388.75	
28	0.7050	1153.8	1174.2	1171.2	0.897	3.198	72.345	21.114	2.227	0.069	0.132	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1395.21	
29	0.7042	1152.5	1172.9	1169.9	0.912	3.186	72.416	21.125	2.152	0.066	0.126	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1394.41	
30	0.7055	1154.9	1175.3	1172.3	0.908	3.169	72.261	21.204	2.236	0.069	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1395.97	
31	0.7048	1153.3	1173.7	1170.7	0.917	3.184	72.376	21.098	2.211	0.068	0.130	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1394.78	
Avg	0.7043	1152.0	1172.8	1169.6	0.882	3.244	72.581	20.783	2.254	0.076	0.155	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1394.13	

Zone 261

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7359	1165.5	1186.1	1183.0	0.908	5.372	68.371	20.424	4.491	0.133	0.278	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1379.37	
2	0.7339	1164.3	1184.9	1181.8	0.918	5.237	68.589	20.546	4.294	0.128	0.266	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1379.88	
3	0.7393	1170.8	1191.5	1188.3	0.919	5.350	68.024	20.548	4.650	0.149	0.322	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1382.39	
4	0.7377	1165.1	1185.8	1182.6	0.920	5.537	68.195	20.298	4.571	0.141	0.305	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1377.30	
5	0.7304	1164.8	1185.5	1182.1	0.916	4.879	69.240	20.503	3.970	0.136	0.310	0.021	0.025	0.000	0.000	0.000	0.000	0.000	1383.75	
6	0.7308	1158.5	1179.1	1175.9	0.917	5.302	68.864	20.508	4.030	0.115	0.245	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1375.96	
7	0.7315	1158.8	1179.3	1176.2	0.921	5.347	68.803	20.448	4.093	0.118	0.250	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1375.58	
8	0.7324	1159.2	1179.7	1176.6	0.916	5.415	68.730	20.337	4.200	0.123	0.260	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1375.24	
9	0.7345	1165.2	1185.9	1182.7	0.922	5.232	68.491	20.647	4.274	0.130	0.280	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1380.40	
10	0.7334	1160.4	1181.0	1177.9	0.911	5.435	68.612	20.374	4.257	0.125	0.265	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1375.81	
11	0.7347	1160.9	1181.4	1178.3	0.912	5.531	68.391	20.446	4.292	0.129	0.275	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1375.09	
12	0.7343	1162.5	1183.1	1179.9	0.906	5.402	68.514	20.444	4.304	0.130	0.276	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1377.38	
13	0.7361	1165.2	1185.9	1182.8	0.903	5.409	68.295	20.519	4.425	0.136	0.288	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1378.94	
14	0.7360	1162.9	1183.5	1180.4	0.907	5.538	68.290	20.393	4.424	0.135	0.289	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1376.27	
15	0.7362	1163.3	1183.9	1180.8	0.908	5.526	68.248	20.462	4.408	0.135	0.289	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1376.60	
16	0.7340	1160.2	1180.7	1177.6	0.907	5.513	68.510	20.379	4.267	0.127	0.274	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1374.93	
17	0.7312	1167.4	1188.1	1184.9	0.893	4.834	69.012	20.749	4.068	0.131	0.286	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1386.14	
18	0.7350	1165.0	1185.6	1182.5	0.902	5.329	68.415	20.586	4.324	0.133	0.286	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1379.61	
19	0.7321	1162.2	1182.8	1179.7	0.895	5.233	68.819	20.450	4.191	0.124	0.266	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1379.08	
20	0.7315	1159.5	1180.0	1176.9	0.911	5.318	68.883	20.335	4.153	0.122	0.259	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1376.44	
21	0.7344	1164.0	1184.6	1181.5	0.903	5.329	68.524	20.481	4.330	0.131	0.279	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1379.00	
22	0.7310	1159.0	1179.5	1176.4	0.908	5.303	68.957	20.315	4.120	0.123	0.255	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1376.33	
23	0.7312	1159.3	1179.8	1176.7	0.913	5.294	68.908	20.372	4.120	0.122	0.253	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1376.54	
24	0.7293	1158.9	1177.4	1174.3	0.899	5.284	69.282	20.035	4.092	0.128	0.260	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1375.45	
25	0.7281	1155.6	1176.1	1173.0	0.899	5.251	69.436	19.995	4.025	0.121	0.253	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1375.06	
26	0.7281	1155.0	1175.4	1172.4	0.896	5.298	69.401	19.986	4.033	0.118	0.249	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1374.30	
27	0.7288	1157.7	1178.2	1175.1	0.915	5.173	69.340	20.150	4.003	0.124	0.272	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1376.77	
28	0.7273	1156.0	1176.4	1173.4	0.919	5.125	69.486	20.212	3.852	0.125	0.261	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1376.26	
29	0.7313	1161.5	1182.1	1179.0	0.924	5.149	69.012	20.372	4.089	0.137	0.291	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1379.12	
30	0.7296	1158.7	1177.2	1174.1	0.924	5.288	69.220	20.117	4.023	0.131	0.276	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1374.94	
31	0.7273	1156.2	1176.6	1173.6	0.930	5.102	69.448	20.294	3.830	0.122	0.255	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1376.43	
Avg	0.7325	1161.0	1181.8	1178.7	0.911	5.301	68.784	20.378	4.200	0.128	0.273	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1377.62	

Zone 2b2

Gas Composition and Properties

Effective December 1, 2018

Source #: 2501030
Name: LIGNITE PLANT

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.1350		0.3057
Nitrogen, N2	2.9964		4.3194
Methane, C1	77.7750		64.2046
Ethane, C2	16.9352	4.5306	26.2037
Propane, C3	2.0818	0.5737	4.7238
iso-Butane, iC4	0.0428	0.0140	0.1280
n-Butane, nC4	0.0243	0.0077	0.0727
iso-Pentane, iC5			
n-Pentane, nC5			
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0095	0.0039	0.0421
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
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	-30.745	
Cricondentherm	-25.819	
HV, Dry @ Base P, T	1146.27	
HV, Sat @ Base P, T	1126.32	
HV, Sat @ Sample P, T	1146.27	
Relative Density	0.6727	

C6+: 100

Totals 100.0000 5.1310 100.0000

Sample

Date: 12/01/2018 Pressure: 550.0
 Type: Temperature:
 Tech: Kevin Moos H2O: lbs/mm
 H2S: ppm

Remarks:

Analysis

Date: 12/01/2018 Instrument:
 Cylinder: 310
 Tech: Kevin Moos

Remarks:

Zone 263

Gas Composition and Properties

Effective December 1, 2018

Source #: 3002013
Name: EPPING BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.7855		1.7590
Nitrogen, N2	2.6912		3.8360
Methane, C1	77.0010		62.8549
Ethane, C2	17.4034	4.6561	26.6270
Propane, C3	1.9169	0.5283	4.3009
iso-Butane, iC4	0.0538	0.0176	0.1591
n-Butane, nC4	0.1211	0.0382	0.3581
iso-Pentane, iC5	0.0094	0.0034	0.0345
n-Pentane, nC5	0.0099	0.0036	0.0363
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0078	0.0032	0.0342
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
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	-23.464	
Cricodentherm	-21.252	
HV, Dry @ Base P, T	1146.85	
HV, Sat @ Base P, T	1126.89	
HV, Sat @ Sample P, T	1146.85	
Relative Density	0.6803	

C6+: 100

Totals	100.0000	5.2500	100.0000
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Sample		
Date: 12/01/2018	Pressure:	630.0
Type:	Temperature:	
Tech: Kevin Moos	H2O:	lbs/mm
	H2S:	ppm
Remarks:		

Analysis	
Date: 12/01/2018	Instrument:
	Cylinder: 353
Tech: Kevin Moos	
Remarks:	

*** End of Report ***

Zone 264

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7113	1163.3	1183.9	1180.7	0.901	3.205	71.625	21.336	2.643	0.088	0.178	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1400.45	
2	0.7072	1156.7	1177.2	1174.0	0.908	3.211	72.035	21.297	2.302	0.075	0.151	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1396.56	
3	0.7110	1162.0	1182.6	1179.2	0.946	3.186	71.642	21.480	2.398	0.092	0.212	0.019	0.024	0.000	0.000	0.000	0.000	0.000	1399.09	
4	0.7184	1173.7	1194.5	1190.6	0.944	3.165	71.105	21.373	2.866	0.133	0.332	0.035	0.047	0.000	0.000	0.000	0.000	0.000	1405.62	
5	0.7150	1168.1	1188.8	1185.0	0.926	3.216	71.532	21.114	2.687	0.128	0.319	0.033	0.044	0.000	0.000	0.000	0.000	0.000	1402.28	
6	0.7155	1169.1	1189.8	1185.8	0.910	3.226	71.598	20.950	2.744	0.135	0.348	0.038	0.051	0.000	0.000	0.000	0.000	0.000	1402.87	
7	0.7040	1152.2	1172.6	1169.4	0.886	3.221	72.415	21.151	2.114	0.066	0.129	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1394.22	
8	0.7052	1153.0	1173.5	1170.2	0.919	3.233	72.265	21.216	2.141	0.067	0.137	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1394.04	
9	0.7028	1149.0	1169.4	1166.2	0.904	3.274	72.604	20.950	2.058	0.065	0.127	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1391.62	
10	0.7059	1153.4	1173.8	1170.6	0.923	3.267	72.185	21.199	2.193	0.070	0.141	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1393.83	
11	0.7051	1153.5	1173.9	1170.7	0.879	3.255	72.385	20.968	2.283	0.071	0.139	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1394.71	
12	0.7042	1152.0	1172.4	1169.2	0.883	3.251	72.511	20.920	2.203	0.071	0.139	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1393.82	
13	0.7025	1150.2	1170.6	1167.4	0.849	3.261	72.743	20.749	2.179	0.070	0.132	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1393.29	
14	0.7038	1151.7	1172.1	1168.9	0.876	3.252	72.574	20.847	2.219	0.071	0.139	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1393.78	
15	0.7048	1153.1	1173.5	1170.3	0.883	3.251	72.449	20.891	2.295	0.073	0.140	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1394.47	
16	0.7024	1148.9	1169.2	1166.0	0.875	3.293	72.851	20.532	2.219	0.071	0.139	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1391.75	
17	0.7031	1151.0	1171.4	1168.1	0.876	3.227	72.684	20.808	2.183	0.068	0.131	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1393.59	
18	0.7007	1147.8	1168.1	1165.0	0.842	3.242	73.079	20.467	2.159	0.066	0.127	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1392.24	
19	0.7021	1152.1	1172.5	1169.2	0.831	3.131	72.887	20.715	2.221	0.067	0.127	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1395.94	
20	0.7024	1151.3	1171.7	1168.5	0.838	3.196	72.853	20.628	2.272	0.069	0.127	0.007	0.008	0.000	0.000	0.000	0.000	0.000	1394.75	
21	0.7023	1148.9	1169.2	1166.0	0.877	3.274	72.826	20.633	2.171	0.068	0.130	0.009	0.012	0.000	0.000	0.000	0.000	0.000	1391.90	
22	0.7012	1148.2	1168.6	1165.4	0.839	3.276	72.857	20.745	2.085	0.065	0.119	0.007	0.008	0.000	0.000	0.000	0.000	0.000	1392.17	
23	0.7039	1151.5	1171.9	1168.7	0.887	3.255	72.496	20.975	2.170	0.067	0.130	0.009	0.011	0.000	0.000	0.000	0.000	0.000	1393.45	
24	0.7013	1147.5	1167.8	1164.7	0.863	3.291	72.952	20.526	2.160	0.067	0.125	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1391.21	
25	0.6961	1138.7	1158.9	1155.7	0.839	3.373	73.990	19.470	2.093	0.071	0.141	0.010	0.013	0.000	0.000	0.000	0.000	0.000	1385.65	
26	0.6956	1138.6	1158.7	1155.6	0.813	3.373	74.062	19.412	2.113	0.071	0.137	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1386.01	
27	0.6958	1138.8	1159.0	1155.8	0.819	3.365	74.003	19.490	2.105	0.070	0.130	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1386.14	
28	0.7045	1152.8	1173.2	1169.9	0.897	3.216	72.481	20.949	2.223	0.071	0.139	0.010	0.012	0.000	0.000	0.000	0.000	0.000	1394.38	
29	0.7045	1153.0	1173.4	1170.3	0.902	3.193	72.383	21.137	2.176	0.067	0.127	0.008	0.009	0.000	0.000	0.000	0.000	0.000	1394.78	
30	0.7050	1153.9	1174.4	1171.2	0.914	3.172	72.330	21.163	2.203	0.068	0.132	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1395.31	
31	0.7054	1154.5	1175.0	1171.8	0.909	3.179	72.298	21.141	2.251	0.069	0.134	0.008	0.010	0.000	0.000	0.000	0.000	0.000	1395.65	
Avg	0.7046	1153.0	1173.3	1170.0	0.883	3.243	72.539	20.814	2.262	0.076	0.157	0.012	0.015	0.000	0.000	0.000	0.000	0.000	1394.37	

Zone 265

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7353	1166.0	1186.7	1182.9	0.886	5.308	68.508	20.378	4.478	0.133	0.279	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1380.63	
2	0.7333	1164.5	1185.1	1181.3	0.899	5.205	68.708	20.469	4.298	0.128	0.266	0.013	0.014	0.000	0.000	0.000	0.000	0.000	1380.59	
3	0.7365	1169.4	1190.1	1186.1	0.902	5.194	68.394	20.554	4.471	0.142	0.305	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1383.40	
4	0.7377	1166.8	1187.5	1183.5	0.902	5.469	68.263	20.267	4.599	0.145	0.316	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1379.15	
5	0.7276	1156.0	1176.5	1172.6	0.885	5.200	69.726	19.660	4.082	0.127	0.280	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1375.94	
6	0.7256	1159.8	1180.3	1176.4	0.878	4.797	69.851	20.266	3.789	0.120	0.265	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1382.30	
7	0.7244	1152.3	1172.7	1169.0	0.865	5.157	69.913	19.887	3.812	0.109	0.232	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1374.61	
8	0.7253	1153.8	1174.2	1170.5	0.858	5.166	69.885	19.763	3.945	0.115	0.244	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1375.45	
9	0.7269	1158.5	1179.0	1175.2	0.874	5.005	69.677	20.069	3.964	0.121	0.261	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1379.51	
10	0.7314	1160.2	1180.8	1177.0	0.891	5.294	68.979	20.221	4.197	0.124	0.265	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1377.35	
11	0.7333	1160.9	1181.4	1177.6	0.892	5.433	68.655	20.331	4.258	0.129	0.273	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1376.32	
12	0.7329	1160.3	1180.9	1177.0	0.889	5.432	68.714	20.295	4.243	0.127	0.272	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1376.06	
13	0.7342	1164.3	1185.0	1181.0	0.886	5.309	68.594	20.438	4.326	0.133	0.284	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1379.66	
14	0.7364	1165.8	1186.4	1182.5	0.888	5.425	68.326	20.415	4.474	0.140	0.300	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1379.28	
15	0.7348	1162.5	1183.1	1179.2	0.888	5.474	68.495	20.327	4.366	0.133	0.288	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1376.91	
16	0.7329	1160.7	1181.3	1177.4	0.893	5.402	68.737	20.291	4.239	0.128	0.279	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1376.54	
17	0.7300	1164.5	1185.1	1181.2	0.876	4.926	69.181	20.560	4.020	0.127	0.280	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1383.75	
18	0.7352	1166.3	1187.0	1183.1	0.883	5.283	68.474	20.535	4.358	0.136	0.298	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1381.08	
19	0.7316	1163.1	1183.7	1179.7	0.881	5.152	68.955	20.407	4.180	0.125	0.271	0.014	0.015	0.000	0.000	0.000	0.000	0.000	1380.57	
20	0.7304	1159.6	1180.1	1176.2	0.888	5.248	69.082	20.253	4.122	0.122	0.260	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1377.52	
21	0.7317	1161.3	1181.9	1178.0	0.889	5.263	68.927	20.299	4.200	0.126	0.269	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1378.31	
22	0.7316	1161.2	1181.8	1178.0	0.887	5.256	68.930	20.326	4.181	0.127	0.266	0.013	0.014	0.000	0.000	0.000	0.000	0.000	1378.38	
23	0.7298	1158.8	1179.3	1175.5	0.895	5.227	69.155	20.252	4.073	0.121	0.253	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1377.17	
24	0.7290	1157.6	1178.1	1174.4	0.885	5.239	69.322	20.066	4.085	0.123	0.256	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1376.53	
25	0.7275	1156.0	1176.5	1172.7	0.885	5.194	69.557	19.960	4.006	0.121	0.252	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1376.04	
26	0.7166	1145.2	1165.5	1161.8	0.876	4.845	71.357	18.935	3.634	0.108	0.224	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1373.49	
27	0.7162	1147.2	1167.5	1163.9	0.857	4.711	71.356	19.188	3.530	0.108	0.227	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1376.30	
28	0.7195	1152.8	1173.3	1169.6	0.784	4.795	70.549	20.026	3.480	0.110	0.233	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1379.84	
29	0.7235	1155.9	1176.4	1172.7	0.846	4.889	70.132	19.978	3.749	0.121	0.259	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1379.66	
30	0.7235	1154.7	1175.2	1171.5	0.835	4.972	70.135	19.886	3.765	0.121	0.259	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1378.33	
31	0.7178	1150.4	1170.8	1167.2	0.776	4.792	70.841	19.784	3.456	0.107	0.223	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1378.61	
Avg	0.7291	1159.0	1179.8	1176.0	0.875	5.163	69.335	20.132	4.077	0.124	0.266	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1378.36	

Zone 271

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7354	1166.4	1187.0	1183.8	0.892	5.290	68.509	20.393	4.480	0.133	0.275	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1380.81
2	0.7355	1165.3	1185.9	1182.7	0.895	5.358	68.494	20.335	4.480	0.133	0.276	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1379.46
3	0.7335	1164.1	1184.7	1181.5	0.909	5.227	68.689	20.475	4.283	0.127	0.263	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.88
4	0.7368	1165.1	1185.7	1182.5	0.892	5.502	68.301	20.282	4.580	0.134	0.279	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.95
5	0.7378	1166.2	1186.9	1183.6	0.910	5.501	68.235	20.270	4.594	0.143	0.308	0.019	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1378.31
6	0.7213	1153.8	1174.2	1170.8	0.881	4.751	70.699	19.571	3.657	0.122	0.273	0.021	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1379.13
7	0.7275	1156.1	1176.5	1173.3	0.883	5.192	69.483	20.117	3.946	0.114	0.240	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1376.01
8	0.7236	1151.3	1171.7	1168.5	0.864	5.148	70.083	19.739	3.804	0.109	0.229	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1374.03
9	0.7248	1152.0	1172.4	1169.2	0.861	5.222	69.982	19.626	3.930	0.114	0.239	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1373.69
10	0.7289	1160.3	1180.9	1177.6	0.895	5.044	69.374	20.264	4.007	0.122	0.263	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1379.76
11	0.7327	1160.3	1180.8	1177.6	0.900	5.395	68.769	20.286	4.235	0.125	0.263	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.14
12	0.7338	1160.4	1180.9	1177.7	0.901	5.497	68.563	20.357	4.255	0.128	0.270	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1375.15
13	0.7338	1161.9	1182.5	1179.2	0.896	5.413	68.626	20.341	4.290	0.130	0.275	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1376.93
14	0.7353	1165.2	1185.8	1182.5	0.893	5.356	68.467	20.440	4.392	0.136	0.286	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1379.43
15	0.7355	1162.9	1183.4	1180.2	0.896	5.509	68.431	20.298	4.411	0.136	0.287	0.015	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1376.52
16	0.7358	1163.4	1184.0	1180.7	0.897	5.506	68.355	20.389	4.401	0.134	0.289	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1376.85
17	0.7329	1159.8	1180.4	1177.1	0.893	5.458	68.733	20.253	4.236	0.127	0.271	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1375.33
18	0.7309	1165.7	1186.3	1183.0	0.884	4.923	69.110	20.561	4.073	0.131	0.284	0.017	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1384.22
19	0.7345	1164.7	1185.3	1182.1	0.892	5.307	68.550	20.498	4.304	0.132	0.284	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1379.68
20	0.7315	1162.1	1182.7	1179.4	0.886	5.201	68.953	20.375	4.170	0.124	0.263	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.34
21	0.7309	1159.2	1179.8	1176.5	0.899	5.292	69.031	20.242	4.132	0.122	0.256	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.58
22	0.7335	1163.3	1183.9	1180.6	0.895	5.301	68.701	20.383	4.287	0.130	0.274	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.85
23	0.7305	1158.7	1179.2	1176.0	0.897	5.292	69.076	20.221	4.111	0.123	0.254	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.33
24	0.7303	1158.9	1179.4	1176.1	0.903	5.259	69.086	20.268	4.088	0.121	0.250	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.63
25	0.7288	1156.8	1177.3	1174.1	0.889	5.264	69.373	19.995	4.078	0.122	0.253	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1375.63
26	0.7252	1153.2	1173.6	1170.4	0.889	5.141	69.966	19.689	3.926	0.118	0.244	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1374.77
27	0.7184	1146.2	1166.5	1163.4	0.889	4.926	71.087	19.051	3.687	0.110	0.225	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1372.94
28	0.7182	1150.5	1170.8	1167.7	0.831	4.740	70.926	19.627	3.512	0.109	0.230	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1378.21
29	0.7194	1151.1	1171.5	1168.3	0.811	4.845	70.663	19.792	3.525	0.111	0.230	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1377.80
30	0.7263	1158.1	1178.6	1175.4	0.867	4.984	69.746	20.110	3.870	0.126	0.269	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.54
31	0.7229	1153.1	1173.5	1170.3	0.829	5.024	70.190	19.839	3.724	0.118	0.250	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.90
Avg	0.7289	1159.0	1179.7	1176.5	0.884	5.222	69.234	20.132	4.112	0.125	0.263	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1377.51

Zone 272

Source Daily Summary

December 2018

Number: 061

Pressure Base: 14.730

Contract Day: 1

Name: CLEVELAND STN-GRAFTON BDR

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	0.7354	1166.4	1187.1	1183.9	0.892	5.286	68.516	20.388	4.480	0.133	0.275	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1380.87
2	0.7357	1165.7	1186.3	1183.1	0.896	5.358	68.461	20.349	4.497	0.134	0.278	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1379.69
3	0.7336	1164.2	1184.8	1181.6	0.909	5.230	68.678	20.474	4.290	0.128	0.263	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.90
4	0.7339	1164.7	1185.3	1182.1	0.913	5.226	68.664	20.462	4.297	0.131	0.275	0.016	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1380.17
5	0.7381	1166.5	1187.1	1183.8	0.910	5.507	68.212	20.272	4.605	0.144	0.310	0.019	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1378.37
6	0.7221	1154.5	1174.9	1171.6	0.887	4.772	70.599	19.591	3.702	0.125	0.278	0.022	0.025	0.000	0.000	0.000	0.000	0.000	0.000	1379.25
7	0.7280	1156.9	1177.4	1174.3	0.884	5.187	69.434	20.131	3.976	0.116	0.246	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.52
8	0.7239	1151.7	1172.1	1169.0	0.866	5.150	70.028	19.778	3.815	0.110	0.230	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1374.21
9	0.7251	1152.4	1172.8	1169.7	0.862	5.222	69.940	19.647	3.948	0.115	0.241	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1373.96
10	0.7300	1161.5	1182.1	1178.8	0.893	5.086	69.236	20.262	4.099	0.125	0.268	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1380.02
11	0.7327	1160.4	1181.0	1177.8	0.901	5.388	68.769	20.290	4.237	0.125	0.264	0.014	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.29
12	0.7335	1160.0	1180.5	1177.3	0.902	5.492	68.603	20.340	4.239	0.127	0.268	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1374.97
13	0.7339	1161.7	1182.2	1179.0	0.897	5.427	68.620	20.331	4.290	0.130	0.275	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1376.65
14	0.7352	1165.0	1185.6	1182.4	0.894	5.352	68.487	20.437	4.380	0.135	0.285	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1379.34
15	0.7357	1163.1	1183.7	1180.5	0.896	5.506	68.415	20.304	4.421	0.137	0.289	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1376.72
16	0.7358	1163.2	1183.8	1180.6	0.897	5.514	68.361	20.376	4.399	0.134	0.289	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1376.64
17	0.7330	1159.8	1180.3	1177.1	0.895	5.461	68.728	20.250	4.239	0.127	0.272	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1375.26
18	0.7314	1166.3	1187.0	1183.8	0.886	4.930	69.032	20.602	4.098	0.131	0.286	0.016	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1384.49
19	0.7347	1165.1	1185.7	1182.5	0.893	5.310	68.517	20.512	4.317	0.133	0.287	0.016	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1379.83
20	0.7315	1162.0	1182.6	1179.4	0.887	5.204	68.957	20.367	4.170	0.124	0.264	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.25
21	0.7308	1159.0	1179.5	1176.4	0.899	5.296	69.045	20.226	4.128	0.122	0.257	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.41
22	0.7336	1163.3	1183.9	1180.7	0.896	5.301	68.693	20.390	4.287	0.130	0.275	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.87
23	0.7307	1159.0	1179.5	1176.4	0.897	5.295	69.047	20.234	4.122	0.123	0.255	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.46
24	0.7306	1159.2	1179.7	1176.5	0.904	5.259	69.053	20.288	4.098	0.121	0.251	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.81
25	0.7290	1157.0	1177.5	1174.4	0.890	5.265	69.348	20.010	4.085	0.123	0.253	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1375.73
26	0.7262	1154.2	1174.7	1171.5	0.891	5.174	69.790	19.788	3.964	0.119	0.247	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1375.03
27	0.7184	1146.3	1166.6	1163.5	0.889	4.926	71.076	19.060	3.690	0.110	0.226	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1373.02
28	0.7183	1150.3	1170.7	1167.6	0.839	4.750	70.930	19.580	3.536	0.110	0.231	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1377.91
29	0.7195	1151.3	1171.7	1168.6	0.809	4.841	70.638	19.827	3.521	0.111	0.230	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1378.03
30	0.7263	1158.1	1178.6	1175.4	0.867	4.979	69.750	20.121	3.861	0.126	0.268	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.58
31	0.7234	1153.3	1173.7	1170.6	0.833	5.048	70.131	19.838	3.752	0.119	0.252	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.71
Avg	0.7300	1159.0	1180.0	1176.8	0.886	5.217	69.218	20.146	4.114	0.125	0.264	0.014	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.64

Zone 273

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6558	1088.3	1107.6	1104.4	0.732	2.814	81.498	13.257	1.539	0.055	0.090	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1364.41	
2	0.6570	1089.6	1108.9	1105.7	0.742	2.841	81.253	13.456	1.543	0.055	0.094	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1364.68	
3	0.6532	1080.5	1099.6	1096.5	0.685	3.122	81.905	12.606	1.522	0.053	0.093	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1357.29	
4	0.6544	1087.0	1106.3	1103.2	0.637	2.906	81.537	13.324	1.459	0.048	0.077	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1364.32	
5	0.6555	1088.6	1107.9	1104.8	0.607	2.958	81.295	13.522	1.483	0.047	0.076	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1365.13	
6	0.6545	1086.3	1105.5	1102.4	0.557	3.089	81.411	13.339	1.463	0.049	0.081	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1363.18	
7	0.6517	1080.6	1099.8	1096.7	0.416	3.387	81.536	13.272	1.282	0.038	0.060	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1359.02	
8	0.6542	1086.1	1105.4	1102.3	0.428	3.268	81.122	13.732	1.342	0.039	0.062	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1363.35	
9	0.6585	1092.8	1112.2	1109.1	0.499	3.151	80.543	14.189	1.481	0.047	0.078	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1367.27	
10	0.6526	1084.5	1103.8	1100.7	0.540	3.037	81.701	13.202	1.393	0.044	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1363.05	
11	0.6535	1087.0	1106.3	1103.2	0.488	3.054	81.449	13.472	1.427	0.040	0.062	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1365.20	
12	0.6716	1106.7	1126.3	1123.1	0.497	3.543	78.400	15.366	2.022	0.057	0.103	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1371.06	
13	0.6827	1117.0	1136.7	1133.6	0.601	3.794	76.825	16.044	2.488	0.079	0.152	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1372.57	
14	0.6991	1132.7	1152.8	1149.6	0.731	4.178	74.122	17.710	2.962	0.092	0.185	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1375.59	
15	0.6889	1120.4	1140.2	1137.0	0.610	4.158	75.542	16.923	2.524	0.076	0.152	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1370.55	
16	0.6863	1124.5	1144.4	1141.2	0.574	3.726	75.647	17.679	2.173	0.064	0.122	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1378.08	
17	0.6744	1122.7	1142.6	1139.4	0.355	3.054	76.869	18.341	1.286	0.033	0.055	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1387.95	
18	0.6851	1133.7	1153.8	1150.6	0.365	3.369	75.063	19.450	1.623	0.042	0.080	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1390.67	
19	0.6854	1123.3	1143.2	1140.0	0.641	3.607	75.950	17.415	2.179	0.065	0.128	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1377.61	
20	0.6783	1115.3	1135.0	1131.9	0.696	3.343	77.191	16.677	1.907	0.059	0.113	0.008	0.007	0.000	0.000	0.000	0.000	0.000	1374.94	
21	0.6777	1127.7	1147.7	1144.5	0.361	3.051	76.222	18.970	1.295	0.033	0.060	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1390.77	
22	0.6432	1082.2	1101.4	1098.4	0.676	2.094	83.103	13.308	0.770	0.017	0.029	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1370.01	
23	0.6310	1065.8	1084.7	1081.8	0.858	1.667	85.662	11.157	0.624	0.012	0.020	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1362.31	
24	0.6313	1065.9	1084.8	1081.9	0.864	1.684	85.555	11.278	0.591	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1362.07	
25	0.6313	1066.0	1084.9	1082.0	0.856	1.690	85.565	11.254	0.603	0.011	0.020	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1362.20	
26	0.6308	1065.4	1084.3	1081.5	0.864	1.666	85.675	11.169	0.589	0.013	0.022	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1361.99	
27	0.6421	1083.4	1102.5	1099.6	0.698	1.890	83.199	13.552	0.626	0.012	0.021	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1372.55	
28	0.6845	1137.7	1157.8	1154.8	0.209	3.306	74.794	20.139	1.458	0.033	0.055	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1396.20	
29	0.6840	1128.1	1148.1	1145.0	0.379	3.586	75.689	18.172	2.021	0.054	0.090	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1384.90	
30	0.6835	1128.7	1148.7	1145.6	0.344	3.556	75.661	18.357	1.941	0.050	0.083	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1386.13	
31	0.6823	1128.3	1148.2	1145.2	0.311	3.519	75.738	18.482	1.822	0.047	0.074	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1386.82	
Avg	0.6637	1101.0	1120.4	1117.3	0.575	3.036	79.604	15.123	1.530	0.044	0.078	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1371.88	

Zone 28

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6570	1090.1	1109.4	1106.6	0.723	2.832	81.218	13.517	1.550	0.054	0.092	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1365.53	
2	0.6492	1078.1	1097.2	1094.5	0.661	2.923	82.490	12.431	1.363	0.046	0.076	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1358.62	
3	0.6544	1087.8	1107.1	1104.3	0.634	2.859	81.516	13.393	1.467	0.046	0.075	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1365.44	
4	0.6564	1091.0	1110.4	1107.6	0.580	2.944	81.058	13.781	1.509	0.046	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1367.26	
5	0.6543	1086.6	1105.8	1103.1	0.630	2.937	81.578	13.204	1.503	0.051	0.085	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1363.91	
6	0.6511	1080.6	1099.7	1097.0	0.410	3.337	81.649	13.217	1.283	0.037	0.061	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1359.73	
7	0.6530	1085.0	1104.2	1101.4	0.421	3.236	81.323	13.587	1.330	0.038	0.060	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1363.21	
8	0.6566	1090.3	1109.6	1106.8	0.465	3.174	80.812	13.982	1.443	0.044	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1366.25	
9	0.6533	1086.4	1105.6	1102.8	0.540	2.992	81.558	13.367	1.419	0.044	0.071	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1364.71	
10	0.6535	1088.0	1107.3	1104.5	0.479	3.000	81.413	13.587	1.420	0.038	0.058	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1366.62	
11	0.6573	1094.2	1113.6	1110.8	0.411	3.087	80.716	14.119	1.548	0.043	0.070	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1370.36	
12	0.6611	1099.5	1119.0	1116.2	0.554	2.902	80.176	14.657	1.569	0.050	0.084	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1373.07	
13	0.6578	1093.6	1113.0	1110.2	0.396	3.198	80.253	14.783	1.273	0.035	0.058	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1369.07	
14	0.6681	1111.3	1131.0	1128.2	0.413	3.065	78.276	16.781	1.371	0.035	0.057	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1380.45	
15	0.6769	1129.5	1149.5	1146.6	0.277	2.995	76.107	19.384	1.160	0.027	0.046	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1393.85	
16	0.6744	1125.9	1145.9	1143.0	0.270	2.982	76.557	19.005	1.118	0.025	0.041	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1392.12	
17	0.6563	1097.2	1116.7	1113.9	0.567	2.579	80.517	15.265	0.990	0.030	0.048	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1375.17	
18	0.6610	1108.4	1128.1	1125.2	0.452	2.513	79.264	16.871	0.838	0.024	0.035	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1384.24	
19	0.6736	1125.9	1145.8	1143.0	0.252	2.945	76.664	18.985	1.089	0.025	0.039	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1392.81	
20	0.6768	1128.7	1148.7	1145.8	0.248	3.075	76.145	19.235	1.224	0.028	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1393.03	
21	0.6810	1139.6	1159.8	1156.9	0.151	2.952	74.927	20.937	0.980	0.019	0.031	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1402.20	
22	0.6848	1149.4	1169.8	1166.9	0.000	2.943	73.638	22.719	0.684	0.007	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.37	
23	0.6851	1149.4	1169.8	1166.9	0.000	2.977	73.574	22.737	0.698	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.00	
24	0.6841	1147.6	1167.9	1165.0	0.022	2.957	73.852	22.420	0.730	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1408.82	
25	0.6656	1114.4	1134.1	1131.3	0.397	2.665	78.390	17.489	1.002	0.022	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1386.86	
26	0.6853	1149.7	1170.1	1167.2	0.000	2.979	73.519	22.800	0.687	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.15	
27	0.6840	1141.9	1162.1	1159.2	0.123	3.141	74.441	21.089	1.147	0.022	0.035	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1401.86	
28	0.6832	1127.8	1147.8	1145.0	0.357	3.563	75.837	18.047	2.049	0.053	0.088	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1385.39	
29	0.6827	1128.7	1148.7	1145.8	0.314	3.525	75.754	18.348	1.925	0.048	0.079	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1386.99	
30	0.6802	1125.8	1145.7	1142.9	0.291	3.505	76.042	18.294	1.749	0.045	0.071	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1385.94	
31	0.6820	1128.8	1148.8	1146.0	0.312	3.457	75.911	18.242	1.954	0.046	0.073	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1387.83	
Avg	0.6677	1112.0	1132.0	1129.2	0.368	3.040	78.231	16.977	1.293	0.034	0.055	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1382.00	

Zone 31

Source Daily Summary

December 2018

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 Dry	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6164	1024.9	1043.1	1039.8	1.376	1.989	89.602	6.019	0.890	0.042	0.070	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1325.42
2	0.6213	1033.3	1051.6	1048.3	1.310	2.043	88.683	6.805	1.013	0.049	0.080	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1330.91
3	0.6210	1032.1	1050.4	1046.9	1.363	2.005	88.805	6.687	0.995	0.049	0.080	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1329.64
4	0.6223	1035.2	1053.5	1050.1	1.274	2.077	88.467	7.003	1.033	0.050	0.082	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1332.26
5	0.6260	1041.2	1059.6	1056.2	1.137	2.272	87.631	7.693	1.117	0.051	0.083	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1335.93
6	0.6269	1042.2	1060.6	1057.3	1.118	2.324	87.400	7.899	1.112	0.049	0.081	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1336.29
7	0.6238	1037.8	1056.2	1052.8	1.208	2.156	88.101	7.338	1.052	0.049	0.081	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1334.06
8	0.6263	1041.9	1060.3	1057.0	1.156	2.228	87.598	7.745	1.123	0.051	0.084	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1336.56
9	0.6211	1035.0	1053.3	1049.8	1.246	2.019	88.664	6.926	0.998	0.050	0.081	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1333.23
10	0.6175	1028.6	1046.8	1043.4	1.320	1.957	89.346	6.348	0.900	0.044	0.072	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1328.92
11	0.6453	1072.1	1091.1	1087.6	0.736	2.811	83.829	10.743	1.698	0.061	0.107	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1354.91
12	0.6249	1040.6	1059.0	1055.6	1.168	2.147	87.874	7.593	1.068	0.051	0.084	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1336.50
13	0.6204	1034.7	1053.0	1049.5	1.255	1.953	88.820	6.854	0.970	0.050	0.081	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1333.65
14	0.6197	1033.1	1051.3	1047.9	1.264	1.979	88.900	6.773	0.946	0.047	0.077	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1332.27
15	0.6197	1033.6	1051.9	1048.7	1.252	1.965	88.903	6.787	0.951	0.048	0.078	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1332.93
16	0.6198	1035.0	1053.3	1049.9	1.240	1.905	88.964	6.758	0.974	0.054	0.086	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1334.60
17	0.6228	1038.8	1057.2	1053.8	1.246	1.949	88.410	7.189	1.043	0.055	0.088	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1336.22
18	0.6256	1043.8	1062.3	1058.9	1.154	2.040	87.801	7.746	1.091	0.057	0.090	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1339.74
19	0.6204	1034.7	1053.0	1049.4	1.260	1.945	88.846	6.828	0.970	0.051	0.082	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1333.59
20	0.6753	1112.4	1132.1	1128.6	0.611	3.365	77.851	15.928	2.059	0.062	0.111	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1374.33
21	0.7043	1159.6	1180.1	1176.9	1.011	2.607	73.694	19.401	2.908	0.121	0.222	0.018	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1402.76
22	0.7138	1175.4	1196.3	1193.0	1.238	2.188	72.530	20.363	3.218	0.147	0.270	0.023	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1412.45
23	0.6893	1134.3	1154.4	1151.4	0.578	3.394	75.371	18.033	2.400	0.077	0.131	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1387.17
24	0.6765	1114.9	1134.7	1131.6	0.590	3.358	77.626	16.137	2.099	0.065	0.112	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1376.27
25	0.6853	1137.9	1158.0	1154.9	0.264	3.290	74.932	19.727	1.665	0.043	0.072	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1395.57
26	0.6871	1138.4	1158.5	1155.5	0.280	3.397	74.853	19.417	1.916	0.048	0.082	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1394.46
27	0.6816	1122.5	1142.4	1138.8	0.429	3.617	76.504	17.023	2.250	0.061	0.105	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1380.52
28	0.6816	1122.4	1142.3	1138.7	0.433	3.621	76.481	17.053	2.238	0.061	0.104	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1380.38
29	0.6778	1116.1	1135.8	1132.0	0.411	3.678	77.140	16.451	2.153	0.060	0.097	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1376.44
30	0.6831	1125.6	1145.5	1141.9	0.414	3.592	76.208	17.330	2.286	0.060	0.099	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1382.80
31	0.6768	1116.2	1135.9	1132.5	0.425	3.564	77.320	16.399	2.140	0.054	0.089	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1377.53
Avg	0.6475	1074.0	1093.0	1089.6	0.960	2.562	83.457	11.322	1.525	0.059	0.099	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1354.78

Zone 32

Source Daily Summary

December 2018

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	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6875	1153.4	1173.8	1168.8	0.000	2.965	73.107	23.188	0.725	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.34	-25.55
2	0.6874	1153.3	1173.7	1168.6	0.000	2.954	73.141	23.169	0.721	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.42	-25.63
3	0.6868	1152.8	1173.3	1168.3	0.000	2.930	73.239	23.111	0.705	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.42	-25.91
4	0.6865	1152.6	1173.0	1167.8	0.000	2.917	73.290	23.088	0.690	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.42	-26.10
5	0.6854	1151.5	1171.9	1166.9	0.000	2.874	73.489	22.971	0.652	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.31	-26.72
6	0.6859	1152.7	1173.1	1168.3	0.000	2.856	73.409	23.038	0.683	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.15	-26.28
7	0.6868	1153.3	1173.7	1168.8	0.000	2.902	73.230	23.163	0.690	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.98	-25.91
8	0.6860	1152.5	1172.9	1167.9	0.000	2.871	73.401	23.031	0.682	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.87	-26.31
9	0.6860	1152.7	1173.2	1167.9	0.000	2.861	73.413	23.007	0.705	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.13	-26.17
10	0.6863	1153.5	1173.9	1168.8	0.000	2.840	73.365	23.066	0.713	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.78	-25.94
11	0.6859	1152.9	1173.3	1168.3	0.000	2.842	73.446	22.981	0.716	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.43	-26.13
12	0.6867	1153.2	1173.7	1168.9	0.000	2.893	73.326	23.007	0.759	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.05	-25.70
13	0.6866	1152.8	1173.3	1168.4	0.000	2.909	73.351	22.957	0.767	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.65	-25.74
14	0.6864	1153.1	1173.5	1168.5	0.000	2.875	73.407	22.929	0.773	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.13	-25.76
15	0.6860	1152.5	1172.9	1168.2	0.000	2.869	73.465	22.902	0.749	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.91	-26.05
16	0.6861	1151.9	1172.3	1167.1	0.000	2.931	73.434	22.864	0.755	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.78	-26.09
17	0.6857	1152.3	1172.7	1167.6	0.000	2.857	73.528	22.848	0.753	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.92	-26.15
18	0.6846	1151.2	1171.6	1166.5	0.000	2.821	73.748	22.677	0.739	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.67	-26.69
19	0.6844	1150.7	1171.1	1166.2	0.000	2.831	73.752	22.698	0.705	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.32	-26.94
20	0.6854	1151.5	1171.9	1166.9	0.000	2.878	73.546	22.847	0.713	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.23	-26.50
21	0.6853	1151.1	1171.5	1166.9	0.000	2.889	73.544	22.868	0.684	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.90	-26.70
22	0.6859	1151.2	1171.6	1166.5	0.000	2.943	73.389	22.980	0.674	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.38	-26.53
23	0.6863	1152.1	1172.5	1167.1	0.000	2.931	73.344	22.996	0.714	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.99	-26.13
24	0.6867	1152.5	1172.9	1167.6	0.000	2.940	73.272	23.053	0.721	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.14	-25.93
25	0.6865	1152.1	1172.5	1167.8	0.000	2.943	73.293	23.056	0.693	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.87	-26.16
26	0.6859	1152.4	1172.9	1168.0	0.000	2.871	73.413	23.010	0.691	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.85	-26.29
27	0.6882	1153.5	1173.9	1169.4	0.000	3.023	72.873	23.452	0.637	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.79	-25.64
28	0.6898	1154.4	1174.8	1170.0	0.000	3.121	72.518	23.713	0.634	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.25	-25.05
29	0.6887	1153.6	1174.1	1168.9	0.000	3.061	72.810	23.431	0.683	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.44	-25.32
30	0.6858	1151.5	1171.9	1167.1	0.000	2.916	73.378	23.054	0.638	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.85	-26.66
31	0.6852	1151.2	1171.6	1166.6	0.000	2.882	73.470	23.031	0.604	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.03	-27.01
Avg	0.6864	1152.0	1172.9	1167.9	0.000	2.910	73.335	23.038	0.702	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.43	-26.12

Zone 33

Source Daily Summary

December 2018

Number: 351

Pressure Base: 14.730

Contract Day: 1

Name: BADLANDS PLANT

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	0.6405	1053.5	1072.2	1069.2	0.406	4.000	83.754	10.447	1.264	0.045	0.071	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1336.43
2	0.6414	1054.8	1073.5	1070.6	0.362	4.062	83.560	10.598	1.289	0.045	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1337.30
3	0.6434	1059.1	1077.9	1075.0	0.341	4.030	83.200	10.927	1.373	0.046	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1340.53
4	0.6399	1054.4	1073.0	1070.1	0.460	3.806	84.032	10.246	1.326	0.046	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1338.17
5	0.6407	1052.0	1070.7	1067.8	0.325	4.227	83.620	10.431	1.266	0.046	0.073	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1334.43
6	0.6384	1047.1	1065.6	1062.8	0.320	4.321	84.034	9.963	1.227	0.046	0.074	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1330.52
7	0.6392	1048.5	1067.0	1064.1	0.320	4.307	83.893	10.112	1.234	0.046	0.074	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1331.48
8	0.6411	1052.0	1070.6	1067.8	0.330	4.262	83.543	10.462	1.269	0.047	0.075	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1333.94
9	0.6435	1053.2	1071.8	1068.9	0.328	4.421	83.095	10.692	1.320	0.049	0.082	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1332.87
10	0.6369	1046.4	1064.9	1061.9	0.483	3.980	84.521	9.683	1.200	0.045	0.075	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1331.10
11	0.6347	1046.9	1065.4	1062.5	0.598	3.556	85.314	9.068	1.317	0.051	0.083	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1334.11
12	0.6530	1074.0	1093.0	1090.1	0.263	4.135	81.596	12.100	1.740	0.058	0.097	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1349.43
13	0.6311	1041.3	1059.7	1056.8	0.353	3.935	85.521	8.911	1.164	0.042	0.065	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1330.81
14	0.5750	965.1	982.2	979.6	0.117	3.654	95.508	0.643	0.064	0.010	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1292.38
15	0.5727	962.2	979.3	976.6	0.109	3.630	95.916	0.318	0.019	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1291.05
16	0.5726	962.2	979.2	976.6	0.108	3.628	95.927	0.311	0.018	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1291.05
17	0.5726	962.1	979.2	976.6	0.108	3.630	95.927	0.309	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1291.01
18	0.5726	962.1	979.2	976.5	0.108	3.630	95.926	0.310	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1291.01
19	0.5727	961.9	979.0	976.3	0.108	3.649	95.907	0.310	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1290.66
20	0.5729	961.4	978.4	975.8	0.106	3.707	95.856	0.307	0.016	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1289.65
21	0.5728	961.6	978.7	976.1	0.107	3.678	95.883	0.308	0.016	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1290.17
22	0.5729	961.2	978.2	975.6	0.105	3.726	95.839	0.306	0.016	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1289.32
23	0.5726	962.1	979.2	976.6	0.108	3.630	95.927	0.310	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1291.01
24	0.5728	961.7	978.7	976.1	0.107	3.678	95.882	0.308	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1290.17
25	0.5727	961.9	978.9	976.4	0.108	3.653	95.905	0.309	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1290.60
26	0.6460	1064.3	1083.2	1080.3	0.279	4.050	82.783	11.202	1.554	0.048	0.076	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1344.15
27	0.6644	1088.0	1107.2	1104.4	0.343	4.236	79.504	13.823	1.925	0.059	0.098	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1355.24
28	0.6649	1089.1	1108.4	1105.5	0.369	4.180	79.362	14.056	1.865	0.059	0.097	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1356.08
29	0.6671	1092.3	1111.7	1108.7	0.398	4.143	79.002	14.392	1.891	0.060	0.101	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1357.88
30	0.6682	1095.7	1115.1	1112.1	0.401	4.039	78.811	14.659	1.924	0.059	0.097	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1360.90
31	0.6617	1084.7	1103.9	1101.0	0.413	4.079	79.979	13.604	1.759	0.056	0.095	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1353.83
Avg	0.6184	1024.0	1042.1	1039.3	0.271	3.925	87.727	7.078	0.908	0.034	0.050	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1321.85

Zone 34

Source Daily Summary

December 2018

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	Heating Value As Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6393	1046.7	1065.2	1062.5	1.157	3.160	84.051	10.958	0.631	0.016	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1329.20	-58.25
2	0.6319	1036.3	1054.6	1052.0	1.059	3.251	85.331	9.794	0.532	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1323.56	-65.05
3	0.6276	1026.2	1044.3	1041.7	1.169	3.295	86.238	8.805	0.464	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1315.21	-68.68
4	0.6307	1032.1	1050.4	1047.7	1.174	3.210	85.710	9.339	0.530	0.013	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1319.65	-65.45
5	0.6183	1015.6	1033.6	1030.9	1.007	3.308	87.889	7.393	0.378	0.009	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1311.41	-76.25
6	0.6215	1019.6	1037.6	1035.0	1.076	3.263	87.326	7.912	0.398	0.009	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.16	-73.59
7	0.6221	1021.4	1039.5	1036.9	1.028	3.276	87.132	8.169	0.373	0.008	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1314.95	-73.23
8	0.6353	1040.6	1059.1	1056.4	1.121	3.212	84.501	10.787	0.358	0.007	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1325.64	-63.39
9	0.6425	1054.2	1072.9	1070.1	1.048	3.173	83.032	12.298	0.431	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.40	-57.46
10	0.6444	1057.4	1076.1	1073.3	1.041	3.166	82.640	12.706	0.428	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1337.46	-56.15
11	0.6470	1060.3	1079.0	1076.3	1.088	3.164	82.214	13.034	0.475	0.009	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1338.38	-54.35
12	0.6282	1028.4	1046.7	1044.0	1.120	3.291	85.949	9.248	0.369	0.008	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1317.41	-69.13
13	0.6330	1037.1	1055.5	1052.8	1.115	3.219	85.230	9.810	0.591	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1323.42	-63.89
14	0.6325	1035.0	1053.4	1050.7	1.158	3.230	85.338	9.687	0.551	0.013	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1321.45	-63.96
15	0.6228	1021.3	1039.4	1036.7	1.077	3.275	87.093	8.108	0.421	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1314.04	-72.62
16	0.6262	1025.9	1044.0	1041.4	1.118	3.261	86.483	8.636	0.472	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1316.26	-69.53
17	0.6246	1023.0	1041.1	1038.4	1.118	3.289	86.758	8.375	0.432	0.010	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1314.19	-71.24
18	0.6188	1013.7	1031.7	1029.1	1.114	3.309	87.893	7.275	0.385	0.009	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1308.45	-76.23
19	0.6247	1021.2	1039.3	1036.6	1.179	3.312	86.810	8.228	0.444	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1311.79	-71.40
20	0.6262	1023.8	1041.9	1039.3	1.179	3.296	86.539	8.478	0.477	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.58	-69.66
21	0.6275	1027.7	1045.9	1043.3	1.172	3.188	86.290	8.843	0.476	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1317.25	-68.45
22	0.6406	1051.8	1070.5	1067.8	1.134	3.002	83.787	11.403	0.631	0.015	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1334.40	-56.83
23	0.6417	1051.8	1070.4	1067.7	1.141	3.103	83.537	11.550	0.629	0.015	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1333.13	-56.58
24	0.6383	1044.1	1062.6	1059.9	1.155	3.229	84.190	10.798	0.591	0.013	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1326.91	-59.60
25	0.6349	1038.5	1056.9	1054.2	1.165	3.233	84.850	10.166	0.551	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1323.37	-62.48
26	0.6358	1039.7	1058.1	1055.5	1.161	3.254	84.660	10.329	0.561	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1323.93	-61.73
27	0.6219	1017.7	1035.7	1033.1	1.112	3.361	87.286	7.801	0.416	0.009	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1310.29	-73.86
28	0.6212	1015.9	1033.9	1031.3	1.123	3.386	87.454	7.584	0.427	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1308.75	-74.32
29	0.6279	1026.1	1044.3	1041.6	1.169	3.328	86.187	8.803	0.482	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1314.77	-68.67
30	0.6301	1030.2	1048.4	1045.8	1.151	3.311	85.771	9.214	0.520	0.012	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1317.73	-66.37
31	0.6260	1023.3	1041.5	1038.8	1.170	3.318	86.553	8.470	0.461	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.22	-70.06
Avg	0.6304	1032.0	1050.8	1048.1	1.123	3.248	85.636	9.484	0.480	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1320.27	-66.40

Zone 43

December-18

ZONE 550

MANDAN BORDER

NBPL - St Anthony

Weighted

Begin Date	End Date	MCF	DK	BTU	MCF	DK	BTU Zone 28	AVG BTU	
12/1/2018	12/2/2018	1841	2001	1.0869	3079	3408	1.1076	1.100	12/1/2018
12/2/2018	12/3/2018	1845	1999	1.0837	3148	3491	1.1089	1.100	12/2/2018
12/3/2018	12/4/2018	1849	2000	1.0816	2860	3150	1.0996	1.093	12/3/2018
12/4/2018	12/5/2018	1851	1999	1.0803	3430	3794	1.1063	1.097	12/4/2018
12/5/2018	12/6/2018	1841	2001	1.0865	3912	4332	1.1079	1.101	12/5/2018
12/6/2018	12/7/2018	3761	4077	1.0842	4579	5060	1.1055	1.096	12/6/2018
12/7/2018	12/8/2018	1856	2001	1.0779	4074	4481	1.0998	1.093	12/7/2018
12/8/2018	12/9/2018	1850	2000	1.0812	3874	4280	1.1054	1.098	12/8/2018
12/9/2018	12/10/2018	3894	4216	1.0828	3492	3880	1.1122	1.097	12/9/2018
12/10/2018	12/11/2018	1846	1999	1.0831	2957	3267	1.1038	1.096	12/10/2018
12/11/2018	12/12/2018	1842	2000	1.0857	3097	3429	1.1063	1.099	12/11/2018
12/12/2018	12/13/2018	1852	2000	1.0799	2504	2819	1.1263	1.107	12/12/2018
12/13/2018	12/14/2018	1841	1999	1.0860	2121	2407	1.1367	1.113	12/13/2018
12/14/2018	12/15/2018	1843	2000	1.0851	1955	2246	1.1528	1.120	12/14/2018
12/15/2018	12/16/2018	1837	2000	1.0889	1952	2220	1.1402	1.115	12/15/2018
12/16/2018	12/17/2018	1834	1999	1.0901	2607	2981	1.1444	1.122	12/16/2018
12/17/2018	12/18/2018	1834	2001	1.0908	2579	2952	1.1426	1.121	12/17/2018
12/18/2018	12/19/2018	1842	2000	1.0855	1696	1956	1.1538	1.118	12/18/2018
12/19/2018	12/20/2018	1842	2000	1.0857	2191	2497	1.1432	1.117	12/19/2018
12/20/2018	12/21/2018	1843	2000	1.0851	2335	2642	1.1350	1.113	12/20/2018
12/21/2018	12/22/2018	1847	2000	1.0832	2550	2926	1.1477	1.121	12/21/2018
12/22/2018	12/23/2018	1846	1999	1.0834	3198	3525	1.1014	1.095	12/22/2018
12/23/2018	12/24/2018	1845	2000	1.0838	3470	3764	1.0847	1.084	12/23/2018
12/24/2018	12/25/2018	1842	2000	1.0855	3471	3766	1.0848	1.085	12/24/2018
12/25/2018	12/26/2018	1847	2000	1.0832	4391	4763	1.0849	1.084	12/25/2018
12/26/2018	12/27/2018	1846	1999	1.0834	5038	5463	1.0843	1.084	12/26/2018
12/27/2018	12/28/2018	1844	2001	1.0852	5805	6409	1.1025	1.098	12/27/2018
12/28/2018	12/29/2018	1843	2001	1.0853	5810	6720	1.1578	1.140	12/28/2018
12/29/2018	12/30/2018	1843	2000	1.0848	3681	4226	1.1481	1.127	12/29/2018
12/30/2018	12/31/2018	1846	2001	1.0836	4200	4827	1.1487	1.129	12/30/2018
12/31/2018	1/1/2019	1846	2001	1.0839	6682	7673	1.1482	1.134	12/31/2018
		61,139	66,294	1.0844	106,738	119,354	1.1204	1.1063	



Alliance Pipeline

DAILY ANALYSIS — USA
 ND07MD1 — Hankinson Sales
 December 2018

DAY	Heating Value (BTU/#3)	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	1,148.744	0.6580	84.6082	9.5968	3.2543	0.3601	0.6104	0.0514	0.0423	0.0236	1.0512	0.3898	0.0120
2	1,148.371	0.6579	84.6158	9.5917	3.2332	0.3635	0.6171	0.0495	0.0409	0.0230	1.0554	0.3979	0.0118
3	1,143.016	0.6545	84.9935	9.4255	3.1164	0.3261	0.5703	0.0451	0.0373	0.0197	1.0515	0.4026	0.0119
4	1,150.358	0.6585	84.6466	9.5662	3.2233	0.3998	0.6609	0.0480	0.0396	0.0200	0.9751	0.4087	0.0117
5	1,155.043	0.6605	84.4780	9.6979	3.2889	0.4274	0.6922	0.0523	0.0433	0.0224	0.8743	0.4113	0.0120
6	1,149.898	0.6580	84.7903	9.4563	3.1562	0.4302	0.6757	0.0502	0.0415	0.0221	0.9677	0.3981	0.0117
7	1,149.936	0.6585	84.7332	9.4085	3.2823	0.3975	0.6472	0.0538	0.0432	0.0235	0.9874	0.4121	0.0113
8	1,156.189	0.6627	84.1845	9.5740	3.6955	0.3781	0.6145	0.0563	0.0432	0.0231	1.0114	0.4083	0.0110
9	1,155.750	0.6623	84.1752	9.6517	3.5957	0.3849	0.6358	0.0567	0.0416	0.0217	1.0402	0.3851	0.0115
10	1,148.291	0.6578	84.6110	9.6361	3.2280	0.3589	0.5979	0.0549	0.0399	0.0214	1.0390	0.4013	0.0117
11	1,151.981	0.6596	84.3586	9.7782	3.3377	0.3647	0.6102	0.0575	0.0435	0.0231	1.0544	0.3612	0.0109
12	1,153.158	0.6605	84.2883	9.7712	3.3951	0.3773	0.6232	0.0534	0.0412	0.0225	1.0395	0.3766	0.0117
13	1,156.017	0.6622	84.2306	9.6193	3.5806	0.4026	0.6426	0.0519	0.0413	0.0231	1.0118	0.3844	0.0118
14	1,156.618	0.6628	84.1753	9.6099	3.6182	0.3841	0.6498	0.0601	0.0475	0.0265	1.0232	0.3937	0.0117
15	1,151.737	0.6599	84.5077	9.4371	3.5234	0.3534	0.6015	0.0602	0.0454	0.0247	1.0373	0.3976	0.0116
16	1,151.676	0.6600	84.4706	9.4979	3.5282	0.3389	0.5793	0.0614	0.0480	0.0282	1.0191	0.4170	0.0115
17	1,147.267	0.6561	84.8740	9.3853	3.4247	0.3121	0.5220	0.0504	0.0390	0.0221	0.9808	0.3773	0.0121
18	1,148.573	0.6579	84.6509	9.4403	3.4843	0.3221	0.5442	0.0511	0.0387	0.0222	1.0373	0.3967	0.0122
19	1,148.711	0.6578	84.6630	9.4498	3.4719	0.3211	0.5498	0.0530	0.0385	0.0209	1.0312	0.3887	0.0120
20	1,148.699	0.6580	84.6432	9.4402	3.4842	0.3225	0.5542	0.0497	0.0381	0.0211	1.0331	0.4014	0.0124
21	1,152.846	0.6612	84.3041	9.5528	3.5861	0.3502	0.5971	0.0575	0.0435	0.0238	1.0382	0.4340	0.0127
22	1,151.741	0.6609	84.4673	9.3293	3.5882	0.3724	0.6205	0.0548	0.0405	0.0217	1.0275	0.4653	0.0124
23	1,153.122	0.6619	84.4332	9.2806	3.5596	0.4018	0.6676	0.0617	0.0478	0.0265	1.0505	0.4587	0.0120
24	1,159.829	0.6651	84.0135	9.5404	3.7275	0.4225	0.7096	0.0626	0.0483	0.0254	1.0447	0.3942	0.0112
25	1,159.098	0.6645	84.0849	9.5364	3.7108	0.4111	0.6882	0.0641	0.0492	0.0260	1.0186	0.3987	0.0121
26	1,158.974	0.6647	84.0274	9.5637	3.7155	0.4094	0.6889	0.0629	0.0483	0.0253	1.0447	0.4018	0.0120
27	1,158.273	0.6644	84.1006	9.4835	3.6859	0.4172	0.7040	0.0630	0.0480	0.0252	1.0601	0.4001	0.0124
28	1,158.164	0.6639	84.2215	9.4258	3.6060	0.4386	0.7297	0.0639	0.0502	0.0263	1.0383	0.3879	0.0119
29	1,160.117	0.6650	84.1607	9.3959	3.6490	0.4598	0.7614	0.0670	0.0519	0.0278	1.0295	0.3852	0.0118
30	1,161.671	0.6660	84.0338	9.4904	3.6702	0.4511	0.7766	0.0700	0.0556	0.0305	1.0205	0.3895	0.0119
31	1,155.508	0.6620	84.3379	9.4792	3.6140	0.3690	0.6382	0.0672	0.0527	0.0277	1.0050	0.3974	0.0117
Volume	1,153.188	0.6607	84.4166	9.5200	3.4844	0.3814	0.6378	0.0568	0.0442	0.0239	1.0225	0.4006	0.0118
Weight Avg Energy	1,153.206	0.6607	84.4156	9.5200	3.4850	0.3815	0.6380	0.0568	0.0442	0.0239	1.0225	0.4006	0.0118

*None
1000*

December-18

ZONE 610

Watford City

Watford City West Border

Watford City East Border

Weighted

Begin Date	End Date	Watford City West Border			Watford City East Border			AVG BTU	
		MCF	DK	BTU Zone 25	MCF	DK	BTU Zone 43		
12/1/2018	12/2/2018	394	472	1.1964	554	590	1.0652	1.120	12/1/2018
12/2/2018	12/3/2018	406	486	1.1964	586	618	1.0546	1.113	12/2/2018
12/3/2018	12/4/2018	438	524	1.1964	707	738	1.0443	1.102	12/3/2018
12/4/2018	12/5/2018	475	568	1.1964	719	755	1.0504	1.108	12/4/2018
12/5/2018	12/6/2018	496	593	1.1964	830	858	1.0336	1.094	12/5/2018
12/6/2018	12/7/2018	515	617	1.1964	928	963	1.0376	1.094	12/6/2018
12/7/2018	12/8/2018	476	570	1.1964	779	810	1.0395	1.099	12/7/2018
12/8/2018	12/9/2018	478	572	1.1964	782	828	1.0591	1.111	12/8/2018
12/9/2018	12/10/2018	440	527	1.1964	682	730	1.0729	1.121	12/9/2018
12/10/2018	12/11/2018	406	486	1.1964	585	630	1.0761	1.125	12/10/2018
12/11/2018	12/12/2018	402	482	1.1964	565	610	1.0790	1.128	12/11/2018
12/12/2018	12/13/2018	400	478	1.1964	528	551	1.0467	1.111	12/12/2018
12/13/2018	12/14/2018	406	486	1.1964	595	628	1.0555	1.113	12/13/2018
12/14/2018	12/15/2018	370	443	1.1964	519	547	1.0534	1.113	12/14/2018
12/15/2018	12/16/2018	379	454	1.1964	465	483	1.0394	1.110	12/15/2018
12/16/2018	12/17/2018	406	486	1.1964	546	570	1.0440	1.109	12/16/2018
12/17/2018	12/18/2018	373	446	1.1964	545	568	1.0411	1.104	12/17/2018
12/18/2018	12/19/2018	356	425	1.1964	411	424	1.0317	1.108	12/18/2018
12/19/2018	12/20/2018	391	468	1.1964	569	590	1.0393	1.103	12/19/2018
12/20/2018	12/21/2018	381	456	1.1964	561	584	1.0419	1.104	12/20/2018
12/21/2018	12/22/2018	394	472	1.1964	562	587	1.0459	1.108	12/21/2018
12/22/2018	12/23/2018	440	527	1.1964	628	673	1.0705	1.122	12/22/2018
12/23/2018	12/24/2018	404	484	1.1964	543	581	1.0704	1.124	12/23/2018
12/24/2018	12/25/2018	395	473	1.1964	546	580	1.0626	1.119	12/24/2018
12/25/2018	12/26/2018	444	531	1.1964	651	688	1.0569	1.113	12/25/2018
12/26/2018	12/27/2018	479	574	1.1964	743	786	1.0581	1.112	12/26/2018
12/27/2018	12/28/2018	510	610	1.1964	858	889	1.0357	1.096	12/27/2018
12/28/2018	12/29/2018	535	640	1.1964	949	981	1.0339	1.092	12/28/2018
12/29/2018	12/30/2018	408	489	1.1964	693	725	1.0443	1.101	12/29/2018
12/30/2018	12/31/2018	486	581	1.1964	855	896	1.0484	1.102	12/30/2018
12/31/2018	1/1/2019	609	729	1.1964	1113	1158	1.0415	1.096	12/31/2018
		13,492	16,149		20,597	21,619	1.0508	1.1090	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (cal/c)	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	Change timestamp	NOTES
11587	GLEN ULLIN	1090.7	0.6355	1368.1	-51.8	1.6849	0.8902	85.048	11.4824	0.8142	0.0451	0.0259	0.0038	0.004	0	0.0017	0.0054	0	11/30/2018	12/1/2018	12/1/2018 3:49:06 PM	
11587	GLEN ULLIN	1086.4	0.6322	1366.3	-55.6	1.6334	0.8884	85.3994	11.089	0.7265	0.0354	0.0194	0.0027	0.0026	0	0.0008	0.0282	0.0042	12/1/2018	12/2/2018	12/2/2018 3:39:24 PM	
11587	GLEN ULLIN	1082	0.6291	1364.2	-58.3	1.6034	0.8855	86.1742	10.5949	0.6814	0.032	0.0172	0.0021	0.002	0	0.0005	0.0457	0	12/2/2018	12/3/2018	12/3/2018 3:46:46 PM	
11587	GLEN ULLIN	1080	0.6274	1363.4	-59.5	1.5882	0.8727	86.4382	10.3862	0.6391	0.0328	0.0174	0.0023	0.0022	0	0.0007	0.0584	0.0507	12/3/2018	12/4/2018	12/4/2018 3:41:52 PM	
11587	GLEN ULLIN	1083.7	0.6297	1365.6	-56.1	1.5771	0.8786	86.1307	10.6133	0.7243	0.0424	0.0225	0.0037	0.0034	0	0.0014	0.0134	0.006	12/4/2018	12/5/2018	12/5/2018 3:42:56 PM	
11587	GLEN ULLIN	1082.5	0.6288	1365.1	-58	1.603	0.8518	86.1494	10.6168	0.6865	0.0325	0.0195	0.0021	0.0021	0	0.0009	0.0791	0.0563	12/5/2018	12/6/2018	12/6/2018 3:45:52 PM	
11587	GLEN ULLIN	1082.4	0.6293	1364.4	-58.2	1.6658	0.8492	85.8943	10.7999	0.6562	0.0316	0.0176	0.0017	0.0019	0	0.0003	0.0922	0.0173	12/6/2018	12/7/2018	12/7/2018 3:45:43 PM	
11587	GLEN ULLIN	1076.2	0.6244	1362	-62.2	1.584	0.8418	86.8609	9.9952	0.6056	0.0267	0.0153	0.0012	0.0014	0	0	0.0844	0	12/7/2018	12/8/2018	12/8/2018 3:40:28 PM	
11587	GLEN ULLIN	1081.8	0.6289	1364.1	-59	1.663	0.8482	86.0117	10.7182	0.6517	0.0292	0.0166	0.0013	0.0016	0	0	0.0836	0.0162	12/8/2018	12/9/2018	12/9/2018 3:41:57 PM	
11587	GLEN ULLIN	1083.1	0.63	1364.6	-58.3	1.6667	0.8571	85.8452	10.8697	0.6695	0.0279	0.0163	0.0011	0.0012	0	0	0.0757	0	12/9/2018	12/10/2018	12/10/2018 3:42:37 PM	
11587	GLEN ULLIN	1082.6	0.6289	1365.1	-58.2	1.6018	0.8519	86.0792	10.6252	0.7111	0.0334	0.0188	0.0016	0.0018	0	0	0.1096	0	12/10/2018	12/11/2018	12/11/2018 3:44:44 PM	
11587	GLEN ULLIN	1083.3	0.6292	1365.7	-57.3	1.59	0.8567	85.9525	10.6809	0.7301	0.0389	0.0213	0.0021	0.0023	0	0	0.1338	0	12/11/2018	12/12/2018	12/12/2018 3:47:53 PM	
11587	GLEN ULLIN	1082.1	0.6282	1365.3	-57.6	1.5547	0.8601	86.1649	10.5375	0.6936	0.0421	0.0225	0.0026	0.0027	0	0.0005	0.1253	0	12/12/2018	12/13/2018	12/13/2018 3:54:43 PM	
11587	GLEN ULLIN	1082	0.628	1365.3	-57.7	1.5553	0.8582	86.2297	10.4636	0.7101	0.0444	0.0238	0.0028	0.0029	0	0.0002	0.1228	0	12/13/2018	12/14/2018	12/14/2018 3:46:36 PM	
11587	GLEN ULLIN	1085.2	0.6306	1366.5	-56.1	1.5979	0.8639	85.6227	10.9564	0.7353	0.0405	0.0221	0.0024	0.0024	0	0.0002	0.1564	0	12/14/2018	12/15/2018	12/15/2018 3:43:36 PM	
11587	GLEN ULLIN	1087.9	0.6324	1368	-55	1.6133	0.8554	85.286	11.2945	0.7492	0.0375	0.0205	0.0022	0.0022	0	0.0003	0.1391	0	12/15/2018	12/16/2018	12/16/2018 3:46:44 PM	
11587	GLEN ULLIN	1091.1	0.6349	1369.3	-52.5	1.6695	0.8521	84.734	11.6606	0.8211	0.0428	0.023	0.0025	0.0026	0	0.0003	0.1859	0.5411	12/16/2018	12/17/2018	12/17/2018 3:48:27 PM	
11587	GLEN ULLIN	1087.5	0.6318	1368.2	-54.3	1.5949	0.8454	85.3368	11.2599	0.7276	0.0407	0.0207	0.0037	0.0033	0	0.0013	0.1425	0.0237	12/17/2018	12/18/2018	12/18/2018 3:43:41 PM	
11587	GLEN ULLIN	1085.4	0.6307	1366.7	-56.2	1.6074	0.8498	85.5246	11.1243	0.682	0.0337	0.0178	0.0026	0.0025	0	0.001	0.137	0.0178	12/18/2018	12/19/2018	12/19/2018 3:46:27 PM	
11587	GLEN ULLIN	1085.5	0.6311	1366.4	-56.3	1.6234	0.8637	85.4687	11.1302	0.7177	0.0279	0.0156	0.0017	0.0016	0	0.0008	0.1322	0.0178	12/19/2018	12/20/2018	12/20/2018 3:48:19 PM	
11587	GLEN ULLIN	1084.7	0.6307	1365.8	-56.9	1.6392	0.8604	85.5117	11.0936	0.6962	0.0284	0.0157	0.0016	0.0016	0	0.0004	0.1341	0.018	12/20/2018	12/21/2018	12/21/2018 3:49:32 PM	
11587	GLEN ULLIN	1081.2	0.6286	1363.7	-59	1.6438	0.8642	85.8397	10.846	0.6089	0.0239	0.0133	0.0018	0.0016	0	0.0005	0.1397	0.0182	12/21/2018	12/22/2018	12/22/2018 3:44:56 PM	
11587	GLEN ULLIN	1083.3	0.6297	1365.2	-57.8	1.6105	0.8701	85.6802	10.9768	0.6713	0.0215	0.0125	0.002	0.0016	0	0.0005	0.1375	0.0182	12/22/2018	12/23/2018	12/23/2018 3:46:05 PM	
11587	GLEN ULLIN	1082.8	0.6296	1364.6	-59.1	1.6446	0.8653	85.5903	11.103	0.608	0.0162	0.01	0	0	0	0.1444	0.0182	12/23/2018	12/24/2018	12/24/2018 3:42:30 PM		
11587	GLEN ULLIN	1084.5	0.6307	1365.6	-57.8	1.6416	0.8682	85.4118	11.2137	0.6618	0.0195	0.0115	0.001	0.0006	0	0	0.1536	0.018	12/24/2018	12/25/2018	12/25/2018 3:44:41 PM	
11587	GLEN ULLIN	1082.5	0.6296	1364.3	-58.9	1.6528	0.8674	85.5801	11.1007	0.5963	0.0192	0.0113	0.0013	0.0008	0	0	0.1538	0.0181	12/25/2018	12/26/2018	12/26/2018 3:45:52 PM	
11587	GLEN ULLIN	1084	0.6299	1365.8	-58.2	1.59	0.8699	85.591	11.1093	0.6332	0.0239	0.014	0.0011	0.0009	0	0	0.1504	0.0177	12/26/2018	12/27/2018	12/27/2018 3:46:15 PM	
11587	GLEN ULLIN	1085.4	0.6308	1366.7	-56.9	1.5958	0.8649	85.4401	11.2317	0.6582	0.0266	0.015	0.002	0.0018	0	0.0007	0.1476	0.0177	12/27/2018	12/28/2018	12/28/2018 3:54:22 PM	
11587	GLEN ULLIN	1084.8	0.6302	1366.5	-57.6	1.5791	0.8647	85.5314	11.1419	0.6682	0.0228	0.0138	0.0008	0.0007	0	0.0002	0.1602	0.0177	12/28/2018	12/29/2018	12/29/2018 3:46:12 PM	
11587	GLEN ULLIN	1084.6	0.6302	1366.3	-57.6	1.615	0.8509	85.4887	11.1474	0.6653	0.0255	0.0149	0.001	0.0011	0	0	0.1732	0.0179	12/29/2018	12/30/2018	12/30/2018 3:49:23 PM	
11587	GLEN ULLIN	1083.9	0.6299	1365.7	-58	1.6072	0.8593	85.5573	11.0984	0.6465	0.0252	0.0148	0.0011	0.001	0	0	0.1725	0.0179	12/30/2018	12/31/2018	12/31/2018 3:50:26 PM	
11587	GLEN ULLIN	1081.5	0.6278	1365	-60	1.554	0.8579	85.9932	10.8265	0.5832	0.0211	0.0129	0.001	0.0006	0	0	0.133	0.0179	12/31/2018	1/1/2019	1/1/2019 3:54:17 PM	

32 record(s) retrieved

None

NORTH DAKOTA HEATING VALUE ZONES		
ZONES	MEASURING DEVICE	LOCATION
211	Chromatograph	Sidney Border
24	Chromatograph	Williston Border
241	Accumulated Sample	Fairview Border
25	Accumulated Sample	Watford City West Border
260	Chromatograph	North Tioga Transfer
261	Chromatograph	Tioga Comp Station – Robinson Lake Plant
262	Chromatograph	Minot Border
263	Accumulated Sample	Lignite Plant
264	Accumulated Sample	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	Chromatograph	Bowman Border
43	Chromatograph	Spring Creek
550	Accumulated Sample & Chromatograph	Mandan Border
600	Chromatograph	Hankinson Area
610	Accumulated Sample & Chromatograph	Watford City
802	Chromatograph	Linton

MONTANA DAKOTA UTILITIES CO
NORTH DAKOTA
HEATING VALUE DATA

STATE	ZONE	ZONE BOUNDARY	12 MONTH AVERAGE	DEC 18	NOV 18	OCT 18	SEPT 18	AUG 18	JULY 18	JUNE 18	MAY 18	APRIL 18	MARCH 18	FEB 18	JAN 18	ZONE
MT/ND	211	Sidney Border - MonDak Trf - Sidney Pll	1196	1200	1207	1202	1191	1203	1202	1171	1193	1191	1211	1195	1185	211
ND	24	Williston Border - Charbonneau Station	1145	1164	1163	1140	1152	1136	1158	1141	1135	1136	1140	1140	1138	24
ND	25	Watford City West Border	1193	1195	1199	1199	1200	1197	1204	1202	1192	1185	1179	1184	1174	25
ND	28	Bismarck Station - Glen Ullin Station	1141	1120	1112	1153	1173	1162	1153	1173	1172	1163	1121	1098	1096	28
ND	31	Dickinson Brd - Bellfield Trf - G Ullin Stn	1129	1132	1110	1134	1144	1132	1147	1139	1158	1134	1122	1102	1095	31
ND/MT	32	Cabin Creek Station - Bellfed Transfer	1105	1093	1068	1110	1106	1133	1136	1127	1113	1116	1104	1080	1072	32
ND	33	Little Knife Plant	1174	1173	1174	1172	1172	1176	1175	1174	1176	1175	1175	1176	1175	33
ND	34	Badlands Plant/Bowman Border	1010	1042	1073	1063	1018	979	983	984	996	996	996	996	996	34
ND	43	Spring Creek I - Sax Valve I	1140	1051	1062	1144	1158	1172	1152	1155	1160	1164	1158	1148	1153	43
ND/MT	241	Fairview Border	1187	1181	1193	1175	1186	1195	1196	1180	1168	1151	1205	1206	1203	241
ND	260	North Tioga Transfer - Nesson Plant	1059	1104	1095	1102	1120	1101	1127	1089	989	989	987	986	1021	260
ND	261	Tioga Comp Station - Robinson Lake Plant	1176	1173	1177	1183	1181	1175	1177	1178	1169	1176	1173	1171	1173	261
ND	262	Minot Bdr - Palermo Bdr - Bismarck Stn	1181	1182	1182	1179	1175	1160	1156	1175	1180	1198	1199	1191	1193	262
ND	263	Lignite Plant	1133	1146	1127	1140	1146	1162	1135	1115	1128	1135	1115	1135	1114	263
ND	264	Epping Border	1140	1147	1153	1139	1135	1135	1148	1148	1129	1128	1118	1144	1161	264
ND	265	Tioga Comp Station - County Line Plant	1176	1173	1177	1183	1182	1178	1176	1178	1175	1176	1173	1171	1174	265
ND	265	County Line Plant	1181	1179	1180	1181	1180	1178	1181	1181	1180	1181	1182	1185	1183	265
ND	271	Bismarck Station - Cleveland Station	1173	1180	1180	1178	1173	1162	1153	1173	1173	1194	1187	1159	1161	271
ND	272	Cleveland Station - Mapleton	1172	1180	1179	1177	1173	1160	1154	1173	1172	1194	1187	1158	1160	272
ND	273	Cleveland Station - Grallon Border	1172	1180	1179	1177	1173	1161	1153	1173	1171	1192	1187	1158	1160	273
ND	550	Mandan Border / NBPL-St Anthony	1135	1106	1102	1145	1173	1162	1150	1173	1172	1163	1100	1090	1098	550
ND	610	MDU-Watford City BTU	1160	1109	1131	1180	1181	1175	1152	1156	1164	1174	1170	1168	1164	610
ND	802	Linton	1084	1084	1086	1092	1097	1092	1097	1097	1083	1074	1069	1068	1069	802
ND	903	Hellinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903
ND	600	Alliance Pipeline - Hankinson	1155	1153	1155	1155	1160	1159	1159	1153	1148	1152	1153	1152	1160	600

**THERMAL ZONE VARIANCE
DOCUMENTATION**

December 2018

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
31	22	Direction of Flow and Source of Gas
32	25	Direction of Flow and Source of Gas
34	-31	Source of Gas