



UTILITIES CO.

A Subsidiary of MDU Resources Group, Inc.

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

January 22, 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 – November 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 December 2018.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of November 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 November 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,

A handwritten signature in black ink that reads 'Tamie Aberle'.

Tamie Aberle
Director of Regulatory Affairs

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
Dec-18

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1325
MDU-308-ARNEGARD	025	1.1325
MDU-314-APPLE VALLEY	271	1.1366
MDU-318-BEACH	032	1.0258
MDU-319-BELFIELD	032	1.0333
MDU-323-BERTHOLD	262	1.1136
MDU-324-BEULAH	032	1.0333
MDU-327-BISMARCK	028	1.1125
MDU-330-BOWMAN	034	0.9751
MDU-337-BURLINGTON	262	1.1376
MDU-343-CARRINGTON	273	1.1357
MDU-344-CLEVELAND	272	1.1277
MDU-364-CAVALIER	273	1.1596
MDU-365-DAWSON	271	1.1286
MDU-368-DES LACS	262	1.1216
MDU-369-DICKINSON	031	1.0634
MDU-374-FT TOTTEN	273	1.1436
MDU-375-DEVILS LAKE	273	1.1436
MDU-379-BARLOW	273	1.1357
MDU-384-EPPING	264	1.0758
MDU-387-ELDRIDGE	272	1.1357
MDU-407-GLADSTONE	031	1.0634
MDU-411-GLEN ULLIN	031	1.0711
MDU-413-GOLVA	032	1.0107
MDU-416-GARRISON	262	1.1216
MDU-417-GRAFTON	273	1.1676
MDU-429-HEBRON	031	1.0711
MDU-432-HETTINGER	903	2.4049
MDU-449-JAMESTOWN	272	1.1436
MDU-459-KILLDEER	033	1.1070
MDU-463-LANGDON	273	1.1357
MDU-469-LEFOR	031	1.0634
MDU-474-LIGNITE	263	1.0845
MDU-475-LINTON	802	1.0536
MDU-478-LINCOLN	028	1.1125
MDU-488-MCKENZIE	271	1.1366
MDU-494-MEDINA	271	1.1286
MDU-498-MANDAN	028	1.1125
MDU-500-MARMARTH	034	0.9824
MDU-505-MINOT	262	1.1376
MDU-510-MOTT	031	1.0634
MDU-512-MAX	262	1.1136
MDU-522-NEW ENGLAND	031	1.0557
MDU-524-NEW SALEM	028	1.0890
MDU-532-NEW ROCKFORD	273	1.1357
MDU-539-PARK RIVER	273	1.1596
MDU-540-PALERMO	262	1.1136
MDU-558-RAY	264	1.0758
MDU-561-REGENT	031	1.0634

MDU-563-RHAME	034	0.9679
MDU-564-RICHARDTON	031	1.0557
MDU-568-ROSS	261	1.1093
MDU-572-RUTHVILLE	262	1.1376
MDU-574-SANBORN	272	1.1436
MDU-583-SENTINEL BUTTE	032	1.0258
MDU-588-SOUTH HEART	031	1.0557
MDU-717-SPIRITWOOD	272	1.1436
MDU-590-SPRINGBROOK	264	1.0758
MDU-591-STANLEY	261	1.1173
MDU-593-STEELE	271	1.1286
MDU-594-STERLING	028	1.1125
MDU-598-SHEYENNE	273	1.1436
MDU-605-SURREY	262	1.1376
MDU-610-TAPPEN	271	1.1286
MDU-611-TAYLOR	031	1.0557
MDU-616-TIOGA	260	1.0334
MDU-619-TURTLE LAKE	262	1.1216
MDU-620-TRENTON	024	1.0845
MDU-624-UNDERWOOD	262	1.1216
MDU-625-VALLEY CITY	272	1.1516
MDU-629-WALHALLA	273	1.1596
MDU-632-WATFORD CITY	610	1.1145
MDU-636-WHEELOCK	264	1.0681
MDU-637-WHITE EARTH	261	1.1155
MDU-642-WILLISTON	024	1.0845
MDU-646-WASHBURN	262	1.1296
MDU-647-WILTON	262	1.1136
MDU-664-RIVERDALE	262	1.1216
MDU-691-FAIRVIEW	241	1.1178
MDU-712-MINOT AFB	262	1.1376
MDU-718-FAIRMOUNT	600	1.1356
MDU-732-NEKOMA	273	1.1357
MDU-732-MSR SITE	273	1.1357

Source Daily Summary

November 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	0.7300	1178.1	1199.0	1195.3	1.225	3.565	69.117	22.297	3.339	0.145	0.279	0.018	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1399.89
2	0.7367	1184.7	1205.7	1202.1	1.306	3.673	68.047	22.951	3.546	0.155	0.290	0.017	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1401.29
3	0.7330	1181.8	1202.8	1199.1	1.251	3.582	68.685	22.546	3.460	0.153	0.291	0.018	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1401.41
4	0.7309	1180.3	1201.2	1197.5	1.216	3.533	68.960	22.450	3.390	0.142	0.275	0.017	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1401.58
5	0.7342	1182.3	1203.2	1199.6	1.270	3.644	68.377	22.780	3.496	0.141	0.263	0.015	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1400.76
6	0.7304	1180.1	1201.0	1197.4	1.207	3.511	69.067	22.318	3.483	0.134	0.252	0.015	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1401.86
7	0.7329	1174.9	1195.7	1192.1	1.309	3.909	68.922	21.962	3.695	0.158	0.288	0.015	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.23
8	0.7190	1183.5	1204.4	1201.1	0.466	3.360	70.442	21.960	3.450	0.111	0.194	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1417.15
9	0.7193	1178.4	1199.3	1195.9	0.650	3.414	70.532	21.671	3.399	0.114	0.200	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1410.83
10	0.7232	1175.3	1196.1	1192.7	0.884	3.621	70.053	21.594	3.507	0.118	0.204	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1403.18
11	0.7291	1179.2	1200.1	1196.6	1.035	3.701	69.731	21.104	3.940	0.165	0.297	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1402.13
12	0.7206	1186.3	1207.4	1203.9	0.436	3.383	70.034	22.406	3.438	0.104	0.182	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1419.06
13	0.7359	1188.1	1209.1	1205.5	1.123	3.670	68.324	22.572	3.821	0.161	0.298	0.017	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1406.09
14	0.7382	1195.1	1216.2	1212.7	1.050	3.573	67.642	23.518	3.777	0.145	0.266	0.015	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1412.19
15	0.7337	1181.8	1202.7	1199.3	1.214	3.704	68.309	22.918	3.446	0.136	0.248	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1400.87
16	0.7308	1186.1	1207.1	1203.7	0.924	3.609	68.966	22.338	3.736	0.144	0.260	0.013	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1408.78
17	0.7173	1185.3	1206.3	1202.9	0.348	3.272	70.509	22.219	3.379	0.096	0.162	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1421.01
18	0.7109	1185.4	1206.4	1203.2	0.073	3.082	71.235	22.207	3.207	0.073	0.116	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1427.51
19	0.7141	1190.4	1211.5	1208.2	0.060	3.099	70.785	22.437	3.418	0.075	0.119	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1430.28
20	0.7346	1185.6	1206.6	1203.1	1.176	3.618	68.129	23.202	3.473	0.135	0.243	0.013	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1404.43
21	0.7195	1189.0	1210.1	1206.8	0.312	3.306	69.941	22.824	3.386	0.083	0.137	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1423.34
22	0.7217	1193.9	1215.1	1211.7	0.336	3.178	69.677	23.055	3.516	0.086	0.141	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1426.99
23	0.7240	1185.6	1206.6	1203.2	0.656	3.413	69.475	22.796	3.359	0.104	0.180	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1414.85
24	0.7376	1184.5	1205.5	1202.0	1.340	3.717	67.767	23.215	3.536	0.143	0.180	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1400.25
25	0.7194	1193.8	1214.9	1211.6	0.209	3.159	70.171	22.555	3.679	0.084	0.133	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1429.11
26	0.7132	1189.6	1210.7	1207.5	0.064	3.053	70.871	22.484	3.350	0.068	0.103	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1430.27
27	0.7118	1186.6	1207.6	1204.4	0.060	3.113	71.065	22.325	3.250	0.070	0.110	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1428.03
28	0.7139	1190.5	1211.5	1208.3	0.060	3.077	70.760	22.549	3.364	0.070	0.113	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1430.53
29	0.7163	1194.4	1215.6	1212.3	0.056	3.057	70.414	22.797	3.474	0.074	0.118	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1432.98
30	0.7162	1194.1	1215.2	1211.9	0.059	3.071	70.474	22.687	3.495	0.078	0.127	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1432.59
Avg	0.7250	1185.0	1206.5	1203.1	0.712	3.422	69.549	22.482	3.494	0.115	0.205	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1413.75

Zone 2/1

Source Daily Summary

November 2018

Number: 571

Name: WILLISTON BDR-CHARBN STN

Pressure Base: 14.730

Contract Day: 1

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	0.6921	1140.2	1160.4	1156.8	0.811	2.941	75.296	18.308	2.306	0.090	0.205	0.019	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1391.45		
2	0.6965	1147.4	1167.8	1164.3	0.844	2.864	74.491	19.091	2.378	0.091	0.203	0.018	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1395.91		
3	0.6976	1149.6	1169.9	1166.5	0.853	2.821	74.333	19.252	2.394	0.093	0.211	0.018	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1397.42		
4	0.6985	1150.4	1170.7	1167.2	0.861	2.845	74.208	19.311	2.418	0.095	0.214	0.021	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1397.46		
5	0.6977	1149.3	1169.7	1166.2	0.862	2.834	74.239	19.378	2.355	0.091	0.201	0.017	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1397.00		
6	0.6984	1150.5	1170.9	1167.5	0.860	2.831	74.162	19.403	2.401	0.094	0.209	0.018	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1397.74		
7	0.6938	1143.6	1163.9	1160.5	0.847	2.841	74.854	18.886	2.279	0.083	0.178	0.015	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1393.96		
8	0.6946	1145.7	1165.0	1162.6	0.847	2.789	74.773	18.972	2.310	0.085	0.188	0.015	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.68		
9	0.6957	1147.5	1167.9	1164.4	0.847	2.776	74.510	19.291	2.276	0.082	0.182	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1396.83		
10	0.6943	1145.5	1165.8	1162.3	0.844	2.777	74.839	18.925	2.308	0.084	0.187	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.71		
11	0.6959	1148.2	1168.6	1165.1	0.851	2.752	74.616	19.086	2.366	0.089	0.199	0.018	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1397.39		
12	0.6957	1147.6	1168.0	1164.5	0.843	2.775	74.616	19.095	2.357	0.086	0.191	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1396.97		
13	0.6941	1145.1	1165.4	1162.0	0.843	2.781	74.846	18.935	2.292	0.083	0.183	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.47		
14	0.6940	1145.1	1165.4	1162.0	0.843	2.781	74.846	18.935	2.292	0.083	0.183	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.53		
15	0.6944	1145.5	1165.8	1162.4	0.842	2.789	74.744	19.065	2.262	0.082	0.180	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.64		
16	0.6899	1140.8	1161.0	1157.7	0.815	2.791	74.844	18.938	2.296	0.082	0.177	0.014	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1394.46		
17	0.6892	1139.9	1160.1	1156.8	0.819	2.692	75.629	18.310	2.262	0.083	0.177	0.014	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1394.15		
18	0.6863	1136.0	1156.1	1152.8	0.819	2.673	75.584	18.524	2.142	0.072	0.156	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1392.26		
19	0.6869	1137.2	1157.3	1154.0	0.805	2.650	76.035	18.120	2.129	0.073	0.158	0.013	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1393.04		
20	0.6873	1137.8	1158.0	1154.7	0.807	2.642	75.843	18.425	2.039	0.068	0.147	0.012	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1392.26		
21	0.6883	1140.6	1160.8	1157.6	0.804	2.575	75.650	18.671	2.050	0.069	0.150	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1393.50		
22	0.6874	1138.3	1158.4	1155.2	0.798	2.618	75.975	18.358	2.012	0.068	0.148	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1393.83		
23	0.6880	1139.3	1159.5	1156.4	0.796	2.637	75.669	18.556	2.001	0.068	0.148	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1393.66		
24	0.6885	1140.2	1160.3	1157.2	0.802	2.623	75.592	18.693	2.039	0.070	0.151	0.013	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1394.60		
25	0.6890	1142.9	1163.1	1159.9	0.815	2.582	75.399	18.834	2.039	0.070	0.152	0.013	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1395.11		
26	0.6842	1134.0	1154.1	1150.8	0.780	2.623	76.351	18.057	1.952	0.065	0.143	0.012	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1396.86		
27	0.6859	1132.8	1152.9	1149.7	0.792	2.837	76.026	18.107	2.002	0.065	0.144	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1391.93		
28	0.6916	1142.5	1162.7	1159.5	0.817	2.749	75.176	18.767	2.222	0.076	0.164	0.013	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1388.80		
29	0.6907	1141.2	1161.4	1158.2	0.831	2.719	75.302	18.745	2.132	0.077	0.163	0.014	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1394.82		
30	0.6918	1143.0	1163.0	1159.6	0.825	2.738	75.179	18.765	2.205	0.079	0.174	0.015	0.019	0.000	0.000	0.000	0.000	0.000	0.000	1394.17		
Avg																					1394.91	

Zone 24

Gas Composition and Properties

Effective November 1, 2018

Source #: 0602160
Name: FAIRVIEW BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	1.2050		2.5291
Nitrogen, N2	3.5735		4.7742
Methane, C1	70.0035		53.5589
Ethane, C2	21.2493	5.6873	30.4721
Propane, C3	3.5236	0.9715	7.4100
iso-Butane, iC4	0.1398	0.0458	0.3875
n-Butane, nC4	0.2746	0.0866	0.7612
iso-Pentane, iC5	0.0155	0.0057	0.0533
n-Pentane, nC5	0.0131	0.0048	0.0451
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0021	0.0009	0.0086
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	-10.747	
Cricondentherm	2.846	
HV, Dry @ Base P, T	1193.25	
HV, Sat @ Base P, T	1172.48	
HV, Sat @ Sample P, T	1193.25	
Relative Density	0.7261	

C6+: 100

Totals	100.0000	6.8040	100.0000
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Sample		
Date: 11/01/2018	Pressure:	452.0
Type:	Temperature:	
Tech: Kevin Moos	H2O:	lbs/mm
	H2S:	ppm
Remarks:		

Analysis	
Date: 11/01/2018	Instrument:
	Cylinder:
Tech: Kevin Moos	
Remarks:	

Zone 241

Gas Composition and Properties

Effective November 1, 2018

Source #: 0602225
Name: WATFORD CITY WEST BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	1.1392		2.3979
Nitrogen, N2	3.1280		4.1909
Methane, C1	70.9970		54.4744
Ethane, C2	20.4467	5.4725	29.4050
Propane, C3	3.6380	1.0031	7.6725
iso-Butane, iC4	0.1810	0.0593	0.5032
n-Butane, nC4	0.4025	0.1270	1.1189
iso-Pentane, iC5	0.0311	0.0114	0.1073
n-Pentane, nC5	0.0305	0.0111	0.1052
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0060	0.0025	0.0247
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	-2.349	
Cricodentherm	7.020	
HV, Dry @ Base P, T	1199.04	
HV, Sat @ Base P, T	1178.17	
HV, Sat @ Sample P, T	1199.04	
Relative Density	0.7241	

C6+: 100

Totals 100.0000 6.6860 100.0000

Sample
Date: 11/01/2018
Type:
Tech: Kevin Moos
Remarks:

Pressure: 490.0
Temperature:
H2O: lbs/mm
H2S: ppm

Analysis
Date: 11/01/2018
Instrument:
Cylinder:
Tech: Kevin Moos
Remarks:

Zone 25

Source Daily Summary

November 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	0.6795	1114.9	1134.6		0.681	3.507	77.412	15.997	2.026	0.096	0.224	0.022	0.027	0.008					1373.19	
2	0.6824	1119.6	1139.4		0.700	3.460	76.807	16.632	2.050	0.092	0.210	0.019	0.023	0.005					1376.11	
3	0.6840	1121.9	1141.7		0.715	3.446	76.588	16.797	2.083	0.095	0.222	0.021	0.026	0.006					1377.32	
4	0.6849	1122.8	1142.7		0.726	3.455	76.450	16.878	2.119	0.096	0.222	0.021	0.026	0.007					1377.61	
5	0.6858	1124.1	1144.0		0.742	3.439	76.198	17.180	2.098	0.091	0.205	0.018	0.023	0.005					1378.26	
6	0.6851	1123.4	1143.3		0.734	3.428	76.376	17.003	2.101	0.094	0.216	0.020	0.024	0.005					1378.08	
7	0.6802	1115.7	1135.4		0.719	3.465	76.917	16.756	1.885	0.072	0.157	0.013	0.015	0.002					1373.52	
8	0.6724	1105.4	1124.9		0.630	3.497	78.190	15.753	1.684	0.066	0.148	0.013	0.016	0.003					1368.67	
9	0.6776	1112.9	1132.6		0.681	3.449	77.445	16.289	1.847	0.075	0.170	0.017	0.021	0.007					1372.71	
10	0.6727	1105.5	1125.1		0.643	3.491	78.272	15.562	1.776	0.069	0.152	0.014	0.017	0.004					1368.60	
11	0.6760	1110.6	1130.3		0.654	3.477	77.862	15.781	1.912	0.080	0.184	0.018	0.023	0.009					1371.52	
12	0.6754	1109.6	1129.3		0.637	3.503	77.888	15.785	1.908	0.075	0.165	0.015	0.019	0.006					1370.94	
13	0.6750	1108.5	1128.2		0.655	3.505	77.839	15.949	1.791	0.069	0.153	0.015	0.018	0.006					1370.02	
14	0.6752	1109.1	1128.7		0.637	3.523	77.799	15.952	1.828	0.070	0.155	0.014	0.017	0.005					1370.42	
15	0.6742	1107.3	1127.0		0.644	3.525	77.861	16.007	1.723	0.065	0.142	0.013	0.016	0.004					1369.31	
16	0.6191	1024.7	1042.8		0.228	4.013	87.320	7.643	0.702	0.027	0.057	0.005	0.005	0.001					1322.28	
17	0.6342	1048.9	1067.5		0.328	3.805	84.618	10.205	0.933	0.034	0.067	0.005	0.005	0.000					1337.31	
18	0.6361	1052.5	1071.1		0.323	3.771	84.246	10.604	0.946	0.034	0.066	0.005	0.005	0.000					1322.28	
19	0.6165	1022.0	1040.1		0.180	4.005	87.620	7.548	0.579	0.021	0.041	0.003	0.003	0.000					1339.92	
20	0.6156	1019.4	1037.5		0.180	4.073	87.802	7.305	0.574	0.021	0.040	0.003	0.003	0.000					1321.63	
21	0.6030	1002.9	1020.6		0.052	4.095	89.863	5.699	0.259	0.009	0.019	0.002	0.002	0.000					1319.31	
22	0.6180	1028.0	1046.2		0.212	3.962	86.971	8.099	0.674	0.024	0.048	0.004	0.005	0.001					1311.32	
23	0.6330	1042.3	1060.8		0.281	3.882	85.281	9.636	0.823	0.029	0.058	0.004	0.005	0.001					1330.87	
24	0.6339	1047.7	1066.2		0.306	3.824	84.718	10.171	0.879	0.031	0.061	0.004	0.005	0.001					1333.32	
25	0.6184	1025.3	1043.4		0.198	3.959	87.281	7.893	0.598	0.022	0.043	0.003	0.003	0.000					1339.17	
26	0.5961	990.7	1008.3		0.052	4.191	91.203	4.307	0.217	0.009	0.018	0.001	0.002	0.000					1323.78	
27	0.5989	995.6	1013.2		0.068	4.132	90.729	4.758	0.277	0.011	0.021	0.002	0.002	0.000					1302.85	
28	0.6641	1092.4	1111.7		0.560	3.611	79.601	14.424	1.621	0.055	0.113	0.007	0.008	0.000					1306.19	
29	0.6660	1095.9	1115.3		0.558	3.581	79.338	14.597	1.732	0.058	0.119	0.008	0.009	0.000					1361.06	
30	0.6629	1090.6	1109.9		0.550	3.618	79.827	14.218	1.603	0.055	0.113	0.008	0.009	0.001					1363.47	
Avg	0.6552	1076.0	1095.4		0.476	3.690	81.544	12.714	1.375	0.055	0.120	0.011	0.013	0.003					1360.14	1352.30

Zone 260

Source Daily Summary

November 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 Del	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT	
1	0.7116	1163.7	1184.3	1180.8	0.911	3.196	71.936	20.850	2.681	0.115	0.258	0.023	0.030	0.000	0.000	0.000	0.000	0.000	0.000	1400.41	
2	0.7140	1166.3	1186.9	1183.3	0.938	3.217	71.847	20.663	2.799	0.137	0.327	0.031	0.041	0.000	0.000	0.000	0.000	0.000	0.000	1401.13	
3	0.7121	1164.0	1184.6	1181.1	0.925	3.196	71.909	20.840	2.680	0.120	0.274	0.024	0.031	0.000	0.000	0.000	0.000	0.000	0.000	1400.34	
4	0.7131	1165.5	1186.2	1182.7	0.936	3.179	71.764	20.970	2.686	0.123	0.284	0.026	0.033	0.000	0.000	0.000	0.000	0.000	0.000	1401.22	
5	0.7118	1163.6	1184.2	1180.7	0.929	3.190	72.020	20.710	2.687	0.121	0.281	0.027	0.035	0.000	0.000	0.000	0.000	0.000	0.000	1400.07	
6	0.7122	1163.4	1184.0	1180.6	0.928	3.239	71.811	20.937	2.655	0.116	0.261	0.023	0.030	0.000	0.000	0.000	0.000	0.000	0.000	1399.56	
7	0.7097	1160.0	1180.0	1177.3	0.932	3.206	72.067	20.881	2.544	0.105	0.227	0.018	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1398.04	
8	0.7099	1160.1	1180.6	1177.4	0.943	3.203	71.975	21.011	2.513	0.100	0.216	0.017	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1397.93	
9	0.7090	1158.8	1179.3	1176.1	0.920	3.233	72.104	20.917	2.462	0.098	0.221	0.019	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1397.21	
10	0.7067	1155.8	1176.2	1172.9	0.909	3.219	72.372	20.845	2.330	0.089	0.196	0.017	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1395.77	
11	0.7092	1159.6	1180.2	1176.8	0.914	3.209	72.143	20.859	2.510	0.098	0.220	0.020	0.027	0.000	0.000	0.000	0.000	0.000	0.000	1397.93	
12	0.7119	1163.5	1184.1	1180.5	0.922	3.219	71.871	20.920	2.649	0.110	0.252	0.024	0.033	0.000	0.000	0.000	0.000	0.000	0.000	1399.78	
13	0.7104	1161.2	1181.7	1178.3	0.901	3.246	71.996	20.876	2.610	0.102	0.224	0.020	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1398.61	
14	0.7080	1157.5	1178.0	1174.5	0.906	3.244	72.222	20.854	2.444	0.091	0.197	0.018	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1396.48	
15	0.7070	1156.7	1177.2	1173.8	0.868	3.256	72.398	20.689	2.456	0.094	0.200	0.017	0.023	0.000	0.000	0.000	0.000	0.000	0.000	1396.57	
16	0.7082	1158.2	1178.7	1175.3	0.894	3.232	72.180	20.927	2.430	0.093	0.201	0.018	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1397.22	
17	0.7101	1162.5	1183.1	1179.8	0.898	3.148	71.638	21.638	2.389	0.085	0.173	0.013	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1400.55	
18	0.7036	1153.2	1173.7	1170.5	0.819	3.225	72.626	20.840	2.238	0.078	0.153	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1395.83	
19	0.7004	1150.1	1170.5	1167.3	0.766	3.196	73.076	20.615	2.111	0.075	0.142	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1395.21	
20	0.6987	1148.8	1169.1	1165.9	0.734	3.157	73.408	20.350	2.123	0.074	0.136	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1395.37	
21	0.6984	1147.7	1168.1	1164.9	0.736	3.192	73.440	20.300	2.106	0.073	0.134	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1394.37	
22	0.6973	1146.1	1166.4	1163.2	0.715	3.225	73.689	19.978	2.166	0.074	0.134	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1393.44	
23	0.6966	1144.7	1165.0	1161.7	0.718	3.239	73.833	19.840	2.134	0.075	0.140	0.010	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1392.41	
24	0.6983	1145.9	1166.2	1162.9	0.757	3.263	73.472	20.208	2.066	0.072	0.139	0.010	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1392.15	
25	0.6990	1147.3	1167.7	1164.5	0.767	3.229	73.332	20.354	2.085	0.073	0.139	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.25	
26	0.6997	1148.4	1168.7	1165.6	0.777	3.212	73.200	20.540	2.074	0.073	0.141	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.88	
27	0.6993	1148.3	1168.6	1165.5	0.770	3.193	73.273	20.450	2.081	0.073	0.140	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1394.15	
28	0.6987	1148.2	1168.5	1165.3	0.738	3.189	73.410	20.318	2.111	0.074	0.140	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1394.63	
29	0.7055	1155.4	1175.8	1172.7	0.871	3.191	72.397	20.957	2.331	0.078	0.154	0.010	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1396.57	
30	0.7135	1167.6	1188.3	1185.2	0.897	3.157	71.381	21.444	2.805	0.096	0.195	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1403.45	
Avg	0.7081	1156.0	1176.9	1173.6	0.855	3.210	72.493	20.718	2.399	0.093	0.197	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1397.12	

Zone 261

Source Daily Summary

November 2018

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	0.7318	1152.4	1172.8	1169.7	0.895	5.799	68.969	19.535	4.402	0.128	0.256	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1367.79	
2	0.7323	1154.0	1174.5	1171.4	0.900	5.741	68.924	19.595	4.424	0.133	0.266	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1369.24	
3	0.7320	1156.9	1173.3	1174.2	0.902	5.539	69.013	19.738	4.378	0.135	0.273	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1372.83	
4	0.7327	1156.2	1176.6	1173.5	0.900	5.645	68.911	19.686	4.428	0.135	0.275	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1371.39	
5	0.7317	1152.2	1172.6	1169.4	0.896	5.804	68.997	19.505	4.390	0.129	0.260	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1367.56	
6	0.7329	1152.1	1172.5	1169.4	0.899	5.913	68.830	19.427	4.550	0.124	0.244	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1366.44	
7	0.7318	1151.9	1172.3	1169.2	0.895	5.831	68.983	19.427	4.491	0.121	0.239	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1367.19	
8	0.7353	1162.0	1182.5	1179.3	0.902	5.537	68.578	19.930	4.629	0.137	0.267	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1375.78	
9	0.7440	1175.2	1196.0	1192.7	0.899	5.550	67.493	20.387	5.178	0.158	0.310	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1383.27	
10	0.7387	1169.9	1190.6	1187.4	0.899	5.379	68.186	20.265	4.791	0.152	0.302	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1381.93	
11	0.7349	1164.1	1184.7	1181.5	0.899	5.375	68.638	20.098	4.559	0.134	0.272	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1378.66	
12	0.7349	1164.3	1184.9	1181.7	0.903	5.355	68.637	20.132	4.536	0.133	0.278	0.013	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1378.89	
13	0.7359	1164.7	1185.3	1182.1	0.900	5.435	68.445	20.213	4.568	0.135	0.279	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1378.37	
14	0.7371	1165.2	1185.8	1182.6	0.898	5.510	68.294	20.202	4.646	0.139	0.286	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1376.70	
15	0.7366	1163.8	1184.4	1181.2	0.901	5.551	68.343	20.155	4.600	0.140	0.285	0.011	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1381.86	
16	0.7291	1162.1	1182.7	1179.5	0.898	4.947	69.240	20.545	3.981	0.117	0.247	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1376.96	
17	0.7372	1168.6	1189.3	1186.1	0.902	5.309	68.208	20.576	4.565	0.134	0.282	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1381.87	
18	0.7357	1165.9	1186.5	1183.1	0.880	5.366	68.462	20.303	4.550	0.135	0.281	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1380.08	
19	0.7321	1162.5	1183.1	1179.9	0.871	5.255	68.901	20.248	4.316	0.127	0.262	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1379.39	
20	0.7336	1165.4	1186.0	1182.9	0.864	5.229	68.691	20.415	4.378	0.130	0.272	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1381.41	
21	0.7303	1160.6	1181.2	1178.1	0.861	5.212	69.094	20.258	4.186	0.120	0.250	0.009	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1379.94	
22	0.7329	1162.9	1183.5	1180.4	0.862	5.311	68.811	20.213	4.383	0.129	0.269	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1379.23	
23	0.7336	1162.3	1182.9	1179.8	0.873	5.399	68.730	20.146	4.417	0.136	0.277	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1377.83	
24	0.7329	1161.1	1181.6	1178.5	0.878	5.405	68.800	20.131	4.363	0.134	0.266	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1376.94	
25	0.7316	1160.7	1181.2	1178.1	0.877	5.309	68.933	20.219	4.262	0.124	0.258	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1377.73	
26	0.7292	1160.2	1180.8	1177.7	0.864	5.132	69.152	20.276	4.133	0.119	0.248	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1378.78	
27	0.7313	1161.6	1182.2	1179.1	0.871	5.232	68.991	20.248	4.112	0.118	0.248	0.009	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1379.46	
28	0.7348	1164.8	1185.4	1182.3	0.908	5.307	68.490	20.469	4.253	0.125	0.259	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1379.13	
29	0.7361	1166.8	1187.5	1184.4	0.902	5.315	68.354	20.480	4.411	0.128	0.267	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1379.66	
30	0.7338	1162.0	1182.3	1179.1	0.889	5.429	68.711	20.103	4.446	0.131	0.269	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1380.83	
Avg																					

Zone 262

Gas Composition and Properties

Effective November 1, 2018

Source #: 2501030
Name: LIGNITE PLANT

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.1510		0.3382
Nitrogen, N2	4.8567		6.9232
Methane, C1	76.0639		62.0939
Ethane, C2	16.6835	4.4631	25.5273
Propane, C3	2.1508	0.5927	4.8261
iso-Butane, iC4	0.0498	0.0163	0.1473
n-Butane, nC4	0.0352	0.0111	0.1041
iso-Pentane, iC5			
n-Pentane, nC5			
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0091	0.0037	0.0399
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
Carbon Monoxide, CO			
Hydrogen, H2			
Helium, He			
Argon, Ar			
Totals	100.0000	5.0870	100.0000

Property	Total Sample	C6 Plus Fraction
Pressure Base	14.730	
Temperature Base	60.00	
HCDP @ Sample Pressure	-29.643	
Cricondentherm	-25.460	
HV, Dry @ Base P, T	1126.67	
HV, Sat @ Base P, T	1107.06	
HV, Sat @ Sample P, T	1126.67	
Relative Density	0.6802	

C6+: 100

Sample		
Date: 11/01/2018	Pressure:	570.0
Type:	Temperature:	
Tech: Kevin Moos	H2O:	lbs/mm
	H2S:	ppm
Remarks:		

Analysis	
Date: 11/01/2018	Instrument:
	Cylinder:
Tech: Kevin Moos	
Remarks:	

Zone 263

Gas Composition and Properties

Effective November 1, 2018

Source #: 3002013
Name: EPPING BORDER

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	0.8024		1.7850
Nitrogen, N2	2.7358		3.8739
Methane, C1	76.4906		62.0273
Ethane, C2	17.5511	4.6958	26.6762
Propane, C3	2.1279	0.5865	4.7429
iso-Butane, iC4	0.0718	0.0235	0.2109
n-Butane, nC4	0.1777	0.0560	0.5221
iso-Pentane, iC5	0.0155	0.0057	0.0565
n-Pentane, nC5	0.0187	0.0068	0.0682
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	0.0085	0.0035	0.0370
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	-20.822	
Cricodentherm	-16.282	
HV, Dry @ Base P, T	1152.76	
HV, Sat @ Base P, T	1132.70	
HV, Sat @ Sample P, T	1152.76	
Relative Density	0.6849	

C6+: 100

Totals	100.0000	5.3780	100.0000
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Sample

Date: 11/01/2018
Type:
Tech: Kevin Moos
Remarks:

Pressure: 540.0
Temperature:
H2O: lbs/mm
H2S: ppm

Analysis

Date: 11/01/2018
Tech: Kevin Moos
Remarks:

Instrument:
Cylinder:

*** End of Report ***

Zone 264

Source Daily Summary

November 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	0.7078	1159.9	1180.4	1176.9	0.839	3.177	72.366	20.713	2.544	0.102	0.220	0.017	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1399.64	
2	0.7117	1163.4	1184.0	1180.4	0.921	3.205	71.996	20.751	2.665	0.122	0.280	0.026	0.034	0.000	0.000	0.000	0.000	0.000	0.000	1399.95	
3	0.7122	1164.4	1185.0	1181.3	0.919	3.194	71.907	20.841	2.685	0.120	0.276	0.025	0.033	0.000	0.000	0.000	0.000	0.000	0.000	1400.64	
4	0.7127	1165.2	1185.8	1182.2	0.929	3.175	71.810	20.950	2.677	0.121	0.279	0.026	0.032	0.000	0.000	0.000	0.000	0.000	0.000	1401.19	
5	0.7123	1164.3	1184.9	1181.3	0.935	3.184	71.954	20.756	2.698	0.123	0.287	0.028	0.036	0.000	0.000	0.000	0.000	0.000	0.000	1400.46	
6	0.7127	1164.2	1184.8	1181.3	0.929	3.239	71.749	20.974	2.664	0.118	0.270	0.025	0.032	0.000	0.000	0.000	0.000	0.000	0.000	1399.97	
7	0.7100	1160.3	1180.8	1177.4	0.928	3.221	72.083	20.808	2.573	0.108	0.235	0.019	0.024	0.000	0.000	0.000	0.000	0.000	0.000	1398.00	
8	0.7086	1158.2	1178.7	1175.2	0.920	3.237	72.266	20.700	2.491	0.105	0.235	0.020	0.026	0.000	0.000	0.000	0.000	0.000	0.000	1396.77	
9	0.7095	1159.5	1180.1	1176.7	0.931	3.221	71.973	21.065	2.466	0.095	0.210	0.017	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1397.60	
10	0.7054	1153.6	1174.0	1170.6	0.906	3.239	72.542	20.716	2.281	0.087	0.192	0.017	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1394.44	
11	0.7112	1162.6	1183.2	1179.5	0.918	3.208	71.950	20.917	2.597	0.107	0.247	0.024	0.033	0.000	0.000	0.000	0.000	0.000	0.000	1399.47	
12	0.7093	1159.5	1180.0	1176.4	0.917	3.222	72.170	20.784	2.533	0.100	0.225	0.021	0.028	0.000	0.000	0.000	0.000	0.000	0.000	1399.65	
13	0.7114	1162.6	1183.2	1179.5	0.913	3.241	71.870	20.955	2.626	0.105	0.238	0.022	0.029	0.000	0.000	0.000	0.000	0.000	0.000	1399.23	
14	0.7080	1158.0	1178.5	1175.0	0.889	3.240	72.255	20.783	2.501	0.094	0.199	0.017	0.022	0.000	0.000	0.000	0.000	0.000	0.000	1397.12	
15	0.7101	1161.2	1181.7	1178.1	0.895	3.226	72.004	20.964	2.536	0.101	0.223	0.022	0.029	0.000	0.000	0.000	0.000	0.000	0.000	1398.90	
16	0.7062	1155.2	1175.6	1172.2	0.878	3.260	72.445	20.718	2.389	0.088	0.187	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1395.54	
17	0.7094	1160.9	1181.4	1178.0	0.901	3.173	71.851	21.375	2.388	0.088	0.188	0.016	0.021	0.000	0.000	0.000	0.000	0.000	0.000	1399.31	
18	0.7083	1159.3	1179.9	1176.5	0.879	3.202	71.915	21.361	2.366	0.083	0.168	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1398.56	
19	0.7003	1149.6	1170.0	1166.7	0.768	3.213	73.084	20.600	2.100	0.074	0.142	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1394.72	
20	0.6991	1148.8	1169.1	1165.8	0.743	3.184	73.355	20.348	2.138	0.075	0.139	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1394.95	
21	0.6993	1149.1	1169.5	1166.1	0.751	3.169	73.278	20.472	2.103	0.073	0.135	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1395.16	
22	0.6973	1146.2	1166.5	1163.2	0.716	3.209	73.666	20.053	2.131	0.073	0.134	0.008	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1393.68	
23	0.6965	1144.4	1164.7	1161.4	0.711	3.254	73.884	19.739	2.177	0.076	0.140	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1392.23	
24	0.6978	1145.3	1165.6	1162.1	0.749	3.263	73.590	20.081	2.079	0.073	0.139	0.011	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1391.94	
25	0.6976	1145.1	1165.4	1162.1	0.750	3.252	73.585	20.121	2.063	0.071	0.137	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1392.01	
26	0.6999	1148.1	1168.7	1165.4	0.783	3.221	73.185	20.484	2.090	0.074	0.143	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.69	
27	0.6992	1148.1	1168.4	1165.1	0.774	3.190	73.274	20.477	2.056	0.071	0.139	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.99	
28	0.6984	1147.2	1167.5	1164.2	0.747	3.215	73.460	20.234	2.109	0.075	0.141	0.009	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.65	
29	0.7005	1149.4	1169.8	1166.5	0.802	3.185	73.082	20.601	2.103	0.072	0.137	0.009	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1394.36	
30	0.7141	1168.4	1189.1	1185.8	0.894	3.166	71.389	21.322	2.896	0.100	0.206	0.013	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1403.82	
Avg	0.7059	1156.0	1176.5	1173.1	0.851	3.213	72.531	20.689	2.391	0.092	0.196	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	1396.96	

Zone 265

Source Daily Summary

November 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	0.7301	1152.3	1172.7	1168.9	0.877	5.672	69.267	19.455	4.326	0.127	0.253	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1369.21
2	0.7313	1153.3	1173.7	1170.0	0.880	5.718	69.119	19.463	4.405	0.131	0.262	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1369.30
3	0.7310	1156.4	1176.9	1173.1	0.883	5.497	69.194	19.649	4.345	0.134	0.272	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1373.25
4	0.7319	1157.1	1177.6	1173.7	0.882	5.545	69.087	19.629	4.415	0.137	0.278	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1373.16
5	0.7280	1150.9	1171.2	1167.5	0.853	5.603	69.594	19.302	4.245	0.128	0.254	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1369.49
6	0.7306	1150.7	1171.1	1167.4	0.877	5.817	69.175	19.338	4.409	0.123	0.242	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1366.89
7	0.7323	1152.9	1173.3	1169.7	0.881	5.833	68.960	19.415	4.518	0.126	0.248	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1367.94
8	0.7305	1154.3	1174.8	1171.0	0.882	5.582	69.223	19.538	4.394	0.121	0.237	0.011	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1371.23
9	0.7413	1172.6	1193.4	1189.6	0.882	5.473	67.914	20.201	5.040	0.155	0.304	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1382.80
10	0.7372	1169.2	1189.9	1186.1	0.866	5.324	68.482	20.056	4.798	0.149	0.294	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1382.56
11	0.7350	1165.7	1186.3	1182.5	0.879	5.315	68.728	20.020	4.600	0.143	0.285	0.015	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1380.42
12	0.7286	1158.6	1179.1	1175.3	0.861	5.173	69.636	19.625	4.291	0.126	0.260	0.014	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.08
13	0.7277	1158.1	1178.6	1174.8	0.829	5.167	69.742	19.603	4.246	0.126	0.260	0.014	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.33
14	0.7347	1164.2	1184.8	1181.1	0.870	5.395	68.702	20.014	4.566	0.137	0.285	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.92
15	0.7353	1163.3	1183.9	1180.2	0.882	5.487	68.568	20.052	4.558	0.139	0.284	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.31
16	0.7177	1147.9	1168.2	1164.6	0.806	4.889	71.201	18.991	3.744	0.113	0.230	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1375.71
17	0.7247	1158.1	1178.6	1174.9	0.821	4.896	70.096	19.798	4.001	0.117	0.245	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1381.23
18	0.7307	1162.5	1183.0	1179.3	0.850	5.150	69.340	19.837	4.386	0.133	0.276	0.014	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1380.70
19	0.7276	1157.1	1177.6	1173.9	0.844	5.199	69.680	19.683	4.193	0.123	0.253	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1377.24
20	0.7336	1166.6	1187.3	1183.5	0.847	5.175	68.762	20.364	4.412	0.132	0.279	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1382.89
21	0.7265	1157.9	1178.4	1174.6	0.832	5.067	69.724	19.957	4.035	0.118	0.243	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1379.20
22	0.7314	1162.7	1183.3	1179.4	0.846	5.211	69.052	20.169	4.303	0.127	0.265	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1380.29
23	0.7324	1162.3	1182.9	1179.0	0.855	5.307	68.951	20.080	4.378	0.130	0.272	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.00
24	0.7322	1161.2	1181.7	1177.8	0.862	5.353	68.933	20.094	4.335	0.128	0.268	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1377.75
25	0.7311	1160.9	1181.5	1177.6	0.859	5.276	69.052	20.140	4.259	0.125	0.261	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1378.42
26	0.7260	1156.1	1176.6	1172.8	0.845	5.100	69.845	19.789	4.030	0.118	0.245	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1377.59
27	0.7210	1152.3	1172.7	1169.0	0.825	4.901	70.623	19.449	3.837	0.112	0.230	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1377.79
28	0.7257	1156.9	1177.4	1173.7	0.835	5.041	69.929	19.755	4.050	0.119	0.246	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1378.85
29	0.7312	1161.7	1182.3	1178.5	0.878	5.209	69.049	20.203	4.252	0.125	0.259	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1379.27
30	0.7354	1167.1	1187.8	1184.0	0.884	5.252	68.525	20.395	4.501	0.134	0.281	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1381.86
Avg	0.7304	1159.0	1179.6	1175.8	0.859	5.321	69.272	19.802	4.329	0.128	0.262	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.89

Zone 271

Source Daily Summary

November 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	0.7370	1163.9	1184.5	1180.3	0.887	5.600	68.481	19.813	4.735	0.149	0.302	0.016	0.017	0.000	0.000	0.000	0.000	0.000	0.000	1376.29
2	0.7314	1152.6	1173.0	1169.6	0.885	5.770	69.088	19.442	4.409	0.129	0.255	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1368.22
3	0.7317	1154.3	1174.8	1171.6	0.890	5.679	69.075	19.538	4.396	0.133	0.264	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1370.05
4	0.7317	1157.1	1177.6	1174.4	0.892	5.503	69.122	19.673	4.375	0.135	0.272	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1373.37
5	0.7288	1153.6	1174.0	1170.8	0.854	5.511	69.520	19.431	4.266	0.131	0.262	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1371.87
6	0.7309	1152.3	1172.7	1169.5	0.888	5.740	69.167	19.434	4.359	0.131	0.259	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1368.26
7	0.7285	1148.3	1168.6	1165.4	0.870	5.785	69.500	19.170	4.293	0.122	0.240	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1365.77
8	0.7312	1150.6	1171.0	1167.8	0.885	5.866	69.126	19.287	4.452	0.124	0.241	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1366.11
9	0.7306	1153.8	1174.2	1171.0	0.889	5.617	69.224	19.488	4.401	0.122	0.236	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1370.37
10	0.7407	1172.0	1192.7	1189.4	0.879	5.462	68.001	20.180	4.998	0.153	0.298	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1382.49
11	0.7364	1167.9	1188.6	1185.3	0.879	5.314	68.575	20.056	4.703	0.149	0.292	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1381.64
12	0.7340	1163.4	1184.0	1180.8	0.887	5.346	68.826	19.976	4.530	0.135	0.270	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.65
13	0.7267	1156.7	1177.2	1173.9	0.843	5.142	69.930	19.467	4.210	0.123	0.254	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.44
14	0.7303	1159.6	1180.1	1176.9	0.849	5.288	69.347	19.751	4.343	0.129	0.263	0.014	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.58
15	0.7365	1165.3	1185.9	1182.6	0.888	5.469	68.431	20.131	4.628	0.138	0.284	0.015	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1378.44
16	0.7353	1162.8	1183.4	1180.1	0.888	5.505	68.589	20.023	4.547	0.139	0.280	0.015	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1376.67
17	0.7134	1144.7	1165.0	1161.8	0.788	4.703	71.823	18.849	3.499	0.104	0.210	0.012	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1375.93
18	0.7281	1159.8	1180.4	1177.1	0.847	5.078	69.626	19.857	4.189	0.123	0.254	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.87
19	0.7298	1160.5	1181.0	1177.9	0.850	5.187	69.437	19.781	4.318	0.130	0.268	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.14
20	0.7294	1159.4	1179.9	1176.7	0.856	5.206	69.387	19.929	4.220	0.124	0.254	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1378.21
21	0.7326	1164.9	1185.5	1182.2	0.850	5.182	68.920	20.270	4.350	0.130	0.268	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1381.65
22	0.7274	1158.1	1178.7	1175.4	0.842	5.121	69.594	19.994	4.067	0.117	0.241	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1378.21
23	0.7324	1163.0	1183.5	1180.3	0.854	5.279	68.931	20.156	4.359	0.129	0.266	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1381.65
24	0.7329	1161.9	1182.5	1179.3	0.864	5.370	68.878	20.066	4.392	0.130	0.271	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1378.56
25	0.7323	1160.6	1181.2	1178.0	0.869	5.348	68.932	20.040	4.351	0.128	0.265	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.54
26	0.7294	1158.5	1179.1	1175.9	0.863	5.248	69.350	19.943	4.194	0.123	0.253	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1377.88
27	0.7251	1155.2	1175.7	1172.5	0.850	5.070	69.977	19.742	3.983	0.116	0.238	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1377.21
28	0.7219	1152.8	1173.2	1170.0	0.830	4.941	70.497	19.508	3.859	0.113	0.229	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1377.30
29	0.7277	1158.3	1178.8	1175.6	0.848	5.129	69.621	19.883	4.123	0.122	0.249	0.013	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1377.51
30	0.7335	1163.7	1184.3	1181.1	0.896	5.268	68.740	20.325	4.354	0.127	0.263	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1378.46
AVG	0.7306	1159.0	1179.0	1175.8	0.865	5.359	69.257	19.773	4.330	0.129	0.260	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.03

Zone 272

Source Daily Summary

November 2018

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	0.7378	1165.3	1185.9	1182.3	0.888	5.588	68.396	19.848	4.784	0.151	0.309	0.017	0.018	0.000	0.000	0.000	0.000	0.000	0.000	1377.19
2	0.7314	1152.6	1173.0	1169.7	0.885	5.765	69.098	19.436	4.410	0.129	0.254	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1368.26
3	0.7317	1154.3	1174.7	1171.6	0.891	5.685	69.069	19.535	4.399	0.133	0.265	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1369.95
4	0.7316	1157.0	1177.5	1174.3	0.893	5.507	69.131	19.661	4.373	0.135	0.272	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1373.24
5	0.7297	1154.0	1174.5	1171.3	0.865	5.547	69.393	19.471	4.303	0.132	0.264	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1371.59
6	0.7315	1153.2	1173.6	1170.4	0.889	5.735	69.093	19.475	4.390	0.132	0.262	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1368.82
7	0.7291	1148.8	1169.1	1166.0	0.874	5.796	69.426	19.203	4.317	0.123	0.241	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1365.87
8	0.7318	1151.4	1171.8	1168.6	0.887	5.870	69.039	19.339	4.477	0.125	0.243	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1366.48
9	0.7310	1154.0	1174.4	1171.3	0.890	5.635	69.172	19.499	4.419	0.123	0.239	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1370.32
10	0.7406	1171.6	1192.3	1189.1	0.881	5.472	68.004	20.177	4.988	0.152	0.296	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1382.13
11	0.7367	1168.1	1188.8	1185.6	0.880	5.321	68.538	20.071	4.716	0.150	0.292	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1381.70
12	0.7342	1163.6	1184.2	1181.1	0.887	5.349	68.807	19.979	4.539	0.136	0.271	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1378.71
13	0.7269	1156.8	1177.3	1174.1	0.845	5.148	69.907	19.477	4.215	0.124	0.254	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.43
14	0.7306	1160.0	1180.5	1177.3	0.851	5.294	69.297	19.775	4.359	0.129	0.264	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	1377.69
15	0.7365	1165.3	1185.9	1182.8	0.888	5.465	68.439	20.126	4.628	0.138	0.284	0.015	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1378.48
16	0.7356	1163.1	1183.7	1180.5	0.890	5.515	68.544	20.039	4.560	0.139	0.281	0.015	0.016	0.000	0.000	0.000	0.000	0.000	0.000	1376.68
17	0.7140	1145.3	1165.6	1162.4	0.792	4.716	71.738	18.885	3.526	0.105	0.212	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.06
18	0.7281	1160.1	1180.6	1177.4	0.846	5.061	69.624	19.885	4.181	0.123	0.253	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1380.21
19	0.7306	1161.4	1182.0	1178.9	0.852	5.206	69.320	19.824	4.366	0.124	0.254	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.44
20	0.7293	1159.3	1179.8	1176.6	0.856	5.205	69.404	19.913	4.217	0.124	0.250	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1378.13
21	0.7330	1165.3	1186.0	1182.8	0.852	5.191	68.855	20.300	4.370	0.130	0.272	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1381.81
22	0.7274	1158.1	1178.6	1175.4	0.842	5.126	69.595	19.983	4.071	0.118	0.241	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1378.45
23	0.7323	1162.8	1183.4	1180.2	0.854	5.277	68.938	20.158	4.351	0.128	0.266	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.49
24	0.7329	1162.0	1182.5	1179.3	0.865	5.366	68.886	20.060	4.393	0.131	0.271	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1377.92
25	0.7323	1160.5	1181.1	1177.9	0.870	5.391	68.936	20.034	4.348	0.128	0.265	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1376.81
26	0.7298	1158.9	1179.4	1176.4	0.865	5.262	69.278	19.974	4.210	0.123	0.254	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1377.27
27	0.7252	1155.2	1175.7	1172.6	0.851	5.074	69.966	19.744	3.986	0.116	0.238	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1377.25
28	0.7226	1153.7	1174.1	1171.0	0.834	4.954	70.375	19.583	3.886	0.113	0.231	0.012	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1377.83
29	0.7278	1158.6	1179.1	1175.9	0.849	5.120	69.605	19.905	4.125	0.121	0.249	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1378.70
30	0.7335	1163.7	1184.3	1181.1	0.896	5.269	68.745	20.320	4.352	0.127	0.264	0.014	0.014	0.000	0.000	0.000	0.000	0.000	0.000	1379.40
Avg	0.7308	1159.0	1179.3	1176.1	0.867	5.364	69.221	19.790	4.342	0.129	0.261	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1376.11

Zone 273

Source Daily Summary

November 2018

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	0.6705	1108.9	1128.5	1125.3	0.243	3.688	78.072	16.062	1.787	0.053	0.086	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1374.95	
2	0.6694	1105.8	1125.4	1122.2	0.289	3.703	78.324	15.780	1.744	0.056	0.092	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1372.23	
3	0.6817	1118.1	1137.9	1134.7	0.439	3.888	76.383	16.969	2.119	0.068	0.122	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1374.88	
4	0.6777	1120.1	1140.0	1136.8	0.306	3.590	76.903	17.065	1.953	0.061	0.108	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1381.42	
5	0.6773	1118.8	1138.6	1135.4	0.310	3.622	76.966	16.991	1.928	0.063	0.108	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1380.29	
6	0.6853	1118.9	1138.7	1135.6	0.447	4.155	75.881	16.941	2.366	0.070	0.127	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1372.37	
7	0.6967	1127.7	1147.6	1144.4	0.549	4.546	74.194	17.556	2.904	0.084	0.155	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1371.66	
8	0.6783	1115.9	1135.7	1132.6	0.372	3.802	76.910	16.677	2.061	0.061	0.107	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1375.67	
9	0.6729	1109.4	1129.1	1125.9	0.320	3.765	77.815	16.012	1.921	0.057	0.098	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1373.17	
10	0.6631	1097.3	1116.7	1113.6	0.324	3.583	79.487	14.842	1.629	0.047	0.078	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1368.05	
11	0.6558	1087.8	1107.1	1104.0	0.469	3.249	80.952	13.784	1.427	0.042	0.068	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1363.82	
12	0.6546	1085.7	1104.9	1101.8	0.506	3.212	81.212	13.546	1.405	0.042	0.068	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1362.38	
13	0.6608	1084.4	1113.8	1110.7	0.295	3.585	79.781	14.715	1.502	0.043	0.071	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1366.87	
14	0.6583	1089.2	1108.5	1105.4	0.251	3.735	80.117	14.373	1.407	0.040	0.068	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1361.80	
15	0.6573	1087.4	1106.7	1103.6	0.418	3.490	80.560	13.988	1.420	0.043	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1362.95	
16	0.6537	1082.4	1101.6	1098.6	0.473	3.379	81.311	13.337	1.380	0.042	0.070	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1359.20	
17	0.6653	1099.6	1119.0	1116.0	0.449	3.456	79.335	14.864	1.744	0.053	0.089	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1368.67	
18	0.6504	1075.9	1095.0	1091.9	0.512	3.396	82.111	12.435	1.400	0.049	0.084	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1354.51	
19	0.6505	1077.1	1096.2	1093.2	0.551	3.274	82.038	12.664	1.362	0.040	0.064	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1355.97	
20	0.6523	1079.7	1098.8	1095.7	0.506	3.362	81.677	12.918	1.412	0.044	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1357.23	
21	0.6578	1090.5	1109.8	1106.8	0.444	3.308	80.601	14.014	1.510	0.044	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1365.17	
22	0.6560	1087.7	1107.0	1103.9	0.510	3.210	81.037	13.624	1.493	0.044	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1363.54	
23	0.6588	1084.7	1103.9	1100.9	0.668	3.418	80.864	13.177	1.717	0.052	0.093	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1356.85	
24	0.6506	1080.4	1099.5	1096.5	0.531	3.121	82.054	12.782	1.396	0.042	0.066	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1359.87	
25	0.6461	1073.2	1092.2	1089.2	0.584	3.055	82.896	12.079	1.280	0.038	0.060	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1355.55	
26	0.6438	1070.0	1088.9	1085.9	0.603	3.003	83.357	11.697	1.237	0.037	0.060	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1353.92	
27	0.6441	1070.0	1088.9	1085.9	0.526	3.065	83.243	11.738	1.251	0.038	0.060	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1353.65	
28	0.6449	1071.5	1091.5	1088.4	0.526	3.065	83.070	11.993	1.235	0.039	0.062	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1355.97	
29	0.6513	1081.9	1101.0	1097.9	0.638	2.927	82.124	12.775	1.389	0.051	0.083	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1361.05	
30	0.6516	1081.5	1100.6	1097.5	0.660	2.946	82.116	12.714	1.415	0.051	0.084	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1360.21	
Avg	0.6612	1093.0	1112.4	1109.3	0.458	3.455	80.046	14.270	1.626	0.050	0.084	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1364.80	

Zone 28

Source Daily Summary

November 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	0.6701	1106.9	1126.5	1123.6	0.310	3.669	78.208	15.888	1.767	0.056	0.094	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1373.00	
2	0.6754	1116.1	1135.9	1133.0	0.318	3.595	77.306	16.711	1.897	0.058	0.105	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1378.95	
3	0.6777	1121.1	1141.0	1138.1	0.279	3.562	76.878	17.142	1.961	0.062	0.106	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1382.82	
4	0.6752	1115.8	1135.6	1132.7	0.313	3.601	77.303	16.744	1.871	0.056	0.102	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1378.82	
5	0.6721	1109.6	1129.3	1126.4	0.322	3.673	77.849	16.187	1.815	0.053	0.093	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1374.32	
6	0.6749	1114.6	1134.4	1131.5	0.328	3.626	77.417	16.531	1.940	0.055	0.096	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1377.59	
7	0.6713	1108.9	1128.6	1125.7	0.322	3.641	78.017	16.056	1.809	0.054	0.093	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1374.28	
8	0.6685	1105.5	1125.0	1122.2	0.280	3.651	78.455	15.731	1.741	0.051	0.084	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1372.85	
9	0.6648	1100.5	1120.0	1117.2	0.266	3.631	79.093	15.209	1.667	0.048	0.079	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1370.47	
10	0.6547	1086.7	1106.0	1103.1	0.447	3.244	81.116	13.659	1.423	0.041	0.065	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1363.70	
11	0.6544	1086.6	1105.9	1103.0	0.476	3.175	81.227	13.590	1.419	0.041	0.066	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1363.93	
12	0.6578	1091.3	1110.7	1107.8	0.366	3.383	80.418	14.256	1.462	0.041	0.067	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1366.19	
13	0.6579	1089.8	1109.1	1106.3	0.228	3.695	80.154	14.401	1.413	0.039	0.065	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1364.21	
14	0.6569	1088.2	1107.5	1104.7	0.387	3.449	80.603	14.012	1.430	0.042	0.070	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1363.32	
15	0.6520	1080.5	1099.7	1096.9	0.461	3.343	81.582	13.172	1.330	0.040	0.066	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1358.79	
16	0.6624	1096.6	1116.0	1113.2	0.387	3.463	79.733	14.610	1.676	0.046	0.078	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1367.99	
17	0.6535	1081.8	1101.0	1098.2	0.511	3.337	81.518	13.012	1.481	0.048	0.084	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1356.74	
18	0.6500	1077.4	1096.5	1093.6	0.526	3.258	82.088	12.655	1.364	0.039	0.065	0.004	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1357.34	
19	0.6511	1078.7	1097.8	1094.9	0.501	3.313	81.871	12.814	1.387	0.041	0.067	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1356.95	
20	0.6568	1089.5	1108.8	1106.0	0.436	3.293	80.753	13.894	1.507	0.042	0.068	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1362.62	
21	0.6526	1084.1	1103.3	1100.6	0.522	3.091	81.609	13.277	1.390	0.040	0.066	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1364.95	
22	0.6455	1072.0	1091.0	1088.2	0.553	3.120	82.925	12.055	1.244	0.037	0.060	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1354.65	
23	0.6506	1081.5	1100.7	1097.9	0.535	3.047	82.063	12.818	1.426	0.041	0.064	0.004	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1361.38	
24	0.6437	1072.8	1091.5	1088.9	0.591	3.002	83.050	11.977	1.280	0.037	0.058	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1355.74	
25	0.6453	1070.6	1089.8	1087.0	0.586	2.973	83.317	11.795	1.231	0.036	0.058	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1355.10	
26	0.6453	1071.5	1090.4	1087.6	0.582	3.084	83.059	11.893	1.279	0.037	0.058	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1354.24	
27	0.6449	1073.4	1092.4	1089.7	0.507	3.047	83.023	12.063	1.254	0.038	0.060	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1357.13	
28	0.6500	1080.8	1099.9	1097.2	0.615	2.911	82.292	12.673	1.372	0.046	0.079	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1361.08	
29	0.6513	1081.8	1101.0	1098.2	0.654	2.909	82.129	12.750	1.415	0.048	0.082	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1361.05	
30	0.6565	1080.1	1109.4	1106.6	0.729	2.779	81.344	13.422	1.571	0.052	0.090	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1365.98	
Avg	0.6581	1091.0	1110.1	1107.3	0.445	3.319	80.547	14.033	1.527	0.046	0.076	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	1365.27	

Zone 31

Source Daily Summary

November 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	0.6608	1088.1	1107.3	1104.0	0.361	3.869	80.098	13.784	1.721	0.056	0.098	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1358.99	
2	0.6664	1098.1	1117.6	1114.2	0.351	3.792	79.202	14.554	1.914	0.063	0.111	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1365.81	
3	0.6760	1113.6	1133.3	1129.9	0.361	3.734	77.686	15.733	2.256	0.077	0.137	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1375.22	
4	0.6688	1101.7	1121.2	1117.8	0.380	3.756	78.762	14.980	1.938	0.062	0.110	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1367.84	
5	0.6639	1094.0	1113.4	1110.1	0.362	3.794	79.569	14.300	1.809	0.057	0.099	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1363.29	
6	0.6716	1106.9	1126.5	1123.1	0.383	3.703	78.320	15.344	2.063	0.064	0.112	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1371.35	
7	0.6570	1083.2	1102.4	1099.1	0.342	3.834	80.750	13.296	1.625	0.052	0.091	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1356.87	
8	0.6647	1096.6	1116.0	1112.6	0.337	3.753	79.446	14.431	1.865	0.058	0.100	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1365.61	
9	0.6409	1058.5	1077.2	1074.0	0.842	3.068	84.298	10.345	1.318	0.044	0.076	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	1342.24	
10	0.6161	1023.5	1041.6	1038.3	1.398	2.025	89.585	6.043	0.836	0.039	0.062	0.007	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1323.75	
11	0.6178	1024.7	1042.8	1039.5	1.455	2.022	89.322	6.228	0.862	0.038	0.062	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1323.51	
12	0.6353	1050.3	1068.9	1065.6	0.811	3.086	85.289	9.502	1.186	0.043	0.073	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1337.81	
13	0.6375	1052.9	1071.5	1068.2	0.572	3.497	84.560	10.032	1.213	0.043	0.073	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1338.86	
14	0.6142	1019.6	1037.7	1034.4	1.515	1.895	90.106	5.554	0.816	0.039	0.063	0.007	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1320.91	
15	0.6177	1025.5	1043.6	1040.3	1.415	2.020	89.401	6.116	0.921	0.043	0.070	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1324.70	
16	0.6308	1044.3	1062.8	1059.5	1.150	2.514	86.657	8.347	1.197	0.046	0.077	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1334.84	
17	0.6196	1026.9	1045.1	1041.8	1.382	2.166	88.990	6.371	0.963	0.043	0.072	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1324.49	
18	0.6121	1013.7	1031.7	1028.5	1.602	1.925	90.536	5.064	0.769	0.035	0.058	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1315.55	
19	0.6222	1031.1	1049.4	1046.1	1.359	2.182	88.535	6.749	1.036	0.047	0.079	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1327.21	
20	0.6214	1029.8	1048.0	1044.7	1.375	2.170	88.683	6.617	1.020	0.046	0.077	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1326.30	
21	0.6196	1028.2	1046.4	1043.1	1.345	2.147	88.976	6.416	0.985	0.044	0.075	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1326.12	
22	0.6314	1048.4	1067.0	1063.6	1.080	2.420	86.660	8.376	1.291	0.058	0.098	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1339.56	
23	0.6214	1031.2	1049.5	1046.2	1.315	2.166	88.668	6.675	1.033	0.049	0.080	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1328.24	
24	0.6215	1030.8	1049.0	1045.7	1.344	2.168	88.646	6.675	1.025	0.048	0.080	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1327.44	
25	0.6152	1023.1	1041.2	1037.9	1.350	2.031	89.791	5.823	0.883	0.041	0.069	0.007	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1324.31	
26	0.6167	1027.9	1046.1	1042.8	1.222	2.079	89.416	6.212	0.941	0.044	0.073	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1328.84	
27	0.6175	1031.2	1049.4	1046.1	1.181	2.008	89.315	6.373	0.979	0.049	0.079	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1332.27	
28	0.6224	1035.6	1054.0	1050.6	1.289	2.031	88.553	6.903	1.063	0.055	0.086	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1332.70	
29	0.6193	1030.0	1048.2	1044.8	1.409	1.907	89.211	6.335	0.993	0.051	0.078	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1328.68	
30	0.6164	1024.9	1043.1	1039.8	1.442	1.889	89.731	5.904	0.901	0.046	0.072	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1325.32	
Avg	0.6339	1050.0	1068.4	1065.1	1.024	2.655	85.959	8.969	1.247	0.049	0.083	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1338.62	

Zone 32

Source Daily Summary

November 2018

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	0.6839	1149.9	1170.3	1165.4	0.000	2.830	73.780	22.751	0.625	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.87	-27.52
2	0.6842	1150.3	1170.7	1165.8	0.000	2.838	73.708	22.815	0.625	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.02	-27.36
3	0.6856	1152.6	1173.0	1167.9	0.000	2.833	73.420	23.100	0.634	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.37	-26.57
4	0.6894	1154.6	1175.1	1170.5	0.000	3.069	72.639	23.615	0.663	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.92	-25.04
5	0.6890	1152.7	1173.1	1168.9	0.000	3.145	72.687	23.525	0.628	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1409.99	-25.57
6	0.6890	1153.7	1174.2	1169.5	0.000	3.081	72.684	23.607	0.613	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.28	-25.48
7	0.6900	1154.9	1175.4	1170.3	0.000	3.103	72.525	23.695	0.662	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.71	-24.85
8	0.6899	1153.7	1174.2	1169.3	0.000	3.168	72.545	23.605	0.667	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.29	-25.04
9	0.6919	1157.9	1178.4	1173.3	0.000	3.099	72.392	23.587	0.906	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.33	-23.07
10	0.6867	1152.7	1173.1	1168.2	0.000	2.933	73.207	23.191	0.656	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.31	-26.15
11	0.6857	1151.5	1171.9	1166.9	0.000	2.910	73.396	23.040	0.641	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.91	-26.66
12	0.6859	1152.3	1172.7	1167.3	0.000	2.878	73.382	23.067	0.659	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.71	-26.43
13	0.6865	1153.7	1174.1	1168.7	0.000	2.854	73.374	23.023	0.711	0.011	0.023	0.002	0.003	0.000	0.000	0.000	0.000	0.000	1413.67	-25.44
14	0.6859	1152.3	1172.7	1167.8	0.000	2.909	73.288	23.087	0.702	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.65	-26.38
15	0.6866	1152.8	1173.2	1168.6	0.000	2.907	73.256	23.489	0.669	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.64	-26.01
16	0.6889	1153.8	1174.2	1169.8	0.000	3.072	72.756	23.649	0.658	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.39	-25.31
17	0.6898	1154.0	1174.5	1170.0	0.000	3.122	72.580	23.601	0.681	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1410.68	-25.00
18	0.6898	1154.3	1174.8	1170.3	0.000	3.122	72.580	23.601	0.681	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1411.16	-24.91
19	0.6887	1155.1	1175.5	1170.6	0.000	2.972	72.813	23.532	0.668	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.22	-25.17
20	0.6867	1153.3	1173.7	1168.8	0.000	2.892	73.269	23.114	0.709	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.11	-25.85
21	0.6863	1152.3	1172.7	1167.9	0.000	2.908	73.360	23.010	0.707	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.37	-26.16
22	0.6874	1153.8	1174.2	1169.0	0.000	2.925	73.170	23.147	0.743	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.99	-25.49
23	0.6870	1153.2	1173.7	1168.7	0.000	2.920	73.231	23.108	0.726	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.75	-25.74
24	0.6870	1153.4	1173.8	1169.0	0.000	2.912	73.211	23.157	0.705	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.92	-25.80
25	0.6870	1152.7	1173.1	1168.0	0.000	2.831	73.359	23.043	0.699	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.83	-26.13
26	0.6863	1152.7	1173.1	1168.0	0.000	2.831	73.359	23.043	0.699	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.81	-26.74
27	0.6852	1151.5	1171.9	1166.8	0.000	2.855	73.578	22.856	0.696	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.81	-26.13
28	0.6859	1152.8	1173.2	1168.0	0.000	2.845	73.455	22.967	0.718	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.51	-26.62
29	0.6866	1153.6	1174.0	1168.5	0.000	2.868	73.326	23.053	0.735	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.33	-26.15
30	0.6867	1153.0	1173.5	1168.4	0.000	2.905	73.291	23.066	0.724	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1413.51	-25.69
Avg	0.6873	1153.0	1173.6	1168.6	0.000	2.953	73.132	23.213	0.686	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.80	-25.86

Number: 111

Name: LITTLE KNIFE PLANT

Pressure Base: 14.730

Contract Day: 1

Temperature Base:

Contract Hour: 9

Zone 33

Source Daily Summary

November 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	0.6367	1041.2	1059.7	1056.5	0.265	4.600	84.219	9.620	1.167	0.046	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1324.88
2	0.6410	1048.1	1066.7	1063.6	0.276	4.573	83.457	10.293	1.257	0.048	0.082	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1329.13
3	0.6427	1051.7	1070.4	1067.3	0.285	4.501	83.139	10.656	1.281	0.048	0.079	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1331.93
4	0.6433	1053.3	1072.0	1068.9	0.291	4.442	83.061	10.777	1.292	0.048	0.078	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1333.40
5	0.6497	1064.4	1083.3	1080.3	0.313	4.335	81.891	11.926	1.394	0.049	0.081	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1340.82
6	0.6471	1060.1	1078.9	1075.8	0.313	4.353	82.381	11.461	1.351	0.048	0.080	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1338.04
7	0.6433	1053.6	1072.3	1069.2	0.304	4.411	83.060	10.798	1.288	0.047	0.078	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1333.70
8	0.6425	1052.2	1070.9	1067.9	0.306	4.413	83.219	10.650	1.275	0.048	0.077	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1332.84
9	0.6424	1052.2	1070.8	1067.7	0.310	4.408	83.240	10.627	1.278	0.047	0.077	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1332.77
10	0.6417	1051.1	1069.8	1066.7	0.310	4.401	83.380	10.504	1.268	0.047	0.077	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1332.23
11	0.6412	1050.5	1069.1	1066.1	0.313	4.387	83.480	10.423	1.261	0.047	0.077	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1331.98
12	0.6429	1053.4	1072.1	1069.0	0.320	4.354	83.192	10.698	1.296	0.048	0.078	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1333.93
13	0.6426	1053.2	1071.9	1068.8	0.321	4.345	83.239	10.659	1.298	0.048	0.078	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1333.91
14	0.6372	1043.7	1062.2	1059.1	0.303	4.440	84.210	9.720	1.197	0.046	0.073	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1327.47
15	0.6377	1044.5	1063.0	1060.0	0.307	4.426	84.133	9.797	1.205	0.046	0.073	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1328.04
16	0.6408	1050.3	1068.9	1066.0	0.319	4.350	83.576	10.358	1.262	0.047	0.076	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1332.17
17	0.6423	1052.9	1071.6	1068.6	0.325	4.329	83.309	10.604	1.295	0.048	0.078	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1333.82
18	0.6434	1054.9	1073.6	1070.5	0.331	4.300	83.123	10.791	1.316	0.048	0.079	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1335.21
19	0.6423	1053.4	1072.1	1069.1	0.330	4.292	83.319	10.624	1.297	0.047	0.077	0.007	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1334.44
20	0.6434	1057.2	1076.0	1073.0	0.355	4.118	83.241	10.767	1.380	0.048	0.078	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1338.19
21	0.6405	1053.5	1072.2	1069.1	0.407	3.994	83.843	10.281	1.343	0.046	0.074	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1336.51
22	0.6409	1053.4	1072.0	1068.9	0.294	4.209	83.551	11.037	1.402	0.044	0.069	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1335.95
23	0.6441	1059.1	1077.9	1074.8	0.248	4.229	82.960	11.037	1.402	0.044	0.069	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1339.92
24	0.6463	1062.3	1081.1	1078.1	0.288	4.180	82.588	11.399	1.415	0.046	0.073	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1341.66
25	0.6510	1070.2	1089.1	1086.1	0.258	4.197	81.755	12.070	1.588	0.048	0.076	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1346.63
26	0.6474	1063.4	1082.2	1079.2	0.309	4.193	82.404	11.524	1.432	0.048	0.077	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1341.80
27	0.6485	1066.0	1084.9	1081.7	0.260	4.203	82.232	11.644	1.528	0.047	0.074	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1344.00
28	0.6452	1061.0	1079.8	1076.7	0.337	4.091	82.880	11.133	1.427	0.047	0.075	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1341.04
29	0.6435	1058.4	1077.1	1074.1	0.378	4.023	83.219	10.893	1.354	0.047	0.074	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1339.55
30	0.6399	1052.9	1071.6	1068.4	0.442	3.926	83.922	10.325	1.256	0.045	0.072	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	1336.30
Avg	0.6431	1055.0	1073.4	1070.4	0.314	4.301	83.174	10.753	1.323	0.047	0.076	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	1335.41

Zone 34

Source Daily Summary

November 2018

Number: 471

Name: SPRING CREEK I - SAX VALVE I

Pressure Base: 14.730

Contract Day:

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	0.6700	1101.4	1120.9	1118.0	1.050	2.893	77.150	18.738	0.167	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1366.17	-40.59
2	0.6698	1102.2	1121.7	1118.8	1.042	2.835	77.170	18.804	0.148	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.40	-40.63
3	0.6700	1101.7	1121.2	1118.3	1.046	2.879	77.144	18.760	0.169	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1366.59	-40.52
4	0.6699	1100.5	1120.0	1117.2	1.052	2.927	77.248	18.526	0.243	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1365.27	-40.44
5	0.6411	1049.2	1067.8	1065.0	1.054	3.337	83.288	11.887	0.415	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1330.32	-60.01
6	0.6401	1048.1	1066.6	1063.9	1.078	3.279	83.629	11.475	0.507	0.011	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1330.05	-58.86
7	0.6268	1028.0	1046.2	1043.5	1.083	3.239	86.330	8.852	0.466	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1318.34	-68.88
8	0.6244	1023.2	1041.3	1038.6	1.117	3.258	86.848	8.275	0.471	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1314.67	-70.76
9	0.6231	1021.1	1039.2	1036.6	1.077	3.318	87.043	8.088	0.447	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.45	-72.13
10	0.6349	1039.1	1057.5	1054.8	1.168	3.195	84.918	10.077	0.603	0.015	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1324.07	-61.89
11	0.6224	1018.3	1036.4	1033.7	1.157	3.298	87.269	7.806	0.443	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1310.64	-72.95
12	0.6242	1021.6	1039.7	1037.1	1.163	3.260	86.915	8.182	0.452	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1312.96	-71.32
13	0.6237	1020.8	1038.9	1036.2	1.170	3.251	87.008	8.114	0.430	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1312.45	-71.92
14	0.6288	1029.5	1047.8	1045.1	1.148	3.230	86.124	8.882	0.578	0.015	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1318.19	-67.64
15	0.6258	1023.7	1041.9	1039.2	1.163	3.283	86.616	8.433	0.477	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.98	-69.92
16	0.6263	1023.5	1041.7	1039.0	1.167	3.339	86.503	8.480	0.480	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.16	-69.67
17	0.6266	1023.7	1041.8	1039.2	1.185	3.327	86.448	8.552	0.459	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.07	-69.74
18	0.6262	1023.6	1041.8	1039.1	1.166	3.320	86.532	8.475	0.477	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1313.45	-69.72
19	0.6324	1034.1	1052.4	1049.7	1.178	3.252	85.357	9.637	0.540	0.013	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1320.25	-64.53
20	0.6406	1051.9	1070.5	1067.8	1.138	2.991	83.830	11.338	0.656	0.017	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1334.39	-57.02
21	0.6416	1051.8	1070.4	1067.7	1.119	3.125	83.629	11.372	0.704	0.019	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1333.22	-56.27
22	0.6477	1061.4	1080.2	1077.4	1.119	3.118	82.410	12.566	0.736	0.019	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1338.95	-52.24
23	0.6314	1033.8	1052.1	1049.5	1.125	3.254	85.544	9.464	0.574	0.014	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1320.95	-64.92
24	0.6424	1054.3	1073.0	1070.3	1.142	3.011	83.440	11.712	0.652	0.016	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1335.66	-55.49
25	0.6504	1068.7	1087.6	1084.9	1.110	2.907	81.927	13.199	0.773	0.020	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1345.44	-49.06
26	0.6535	1074.0	1093.0	1090.3	1.110	2.900	81.369	13.733	0.830	0.021	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1349.02	-46.76
27	0.6238	1020.1	1038.2	1035.5	1.130	3.368	86.936	8.099	0.438	0.010	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1311.39	-71.99
28	0.6210	1018.3	1036.4	1033.8	1.085	3.282	87.446	7.742	0.418	0.010	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1312.05	-73.87
29	0.6240	1021.3	1039.3	1036.7	1.175	3.245	86.977	8.122	0.452	0.011	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1312.68	-71.47
30	0.6189	1014.1	1032.1	1029.5	1.114	3.294	87.886	7.283	0.397	0.009	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1308.89	-75.99
Avg	0.6367	1043.0	1061.9	1059.2	1.121	3.174	84.365	10.822	0.487	0.011	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1327.57	-61.91

Zone 43

November-18

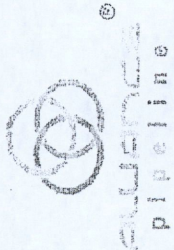
MANDAN BORDER

NBPL - St Anthony

Begin Date	End Date	MCF	DK	BTU	MCF	DK	BTU	Weighted	AVG	BTU
11/1/2018	11/2/2018	1870	2036	1.0892	1285	1448	1.1285	1.105	11/1/2018	
11/2/2018	11/3/2018	1890	2062	1.0906	1371	1543	1.1254	1.105	11/2/2018	
11/3/2018	11/4/2018	1878	2058	1.0958	1563	1778	1.1379	1.115	11/3/2018	
11/4/2018	11/5/2018	1887	2061	1.0922	1628	1855	1.1400	1.114	11/4/2018	
11/5/2018	11/6/2018	1864	2024	1.0862	2763	3143	1.1386	1.117	11/5/2018	
11/6/2018	11/7/2018	1797	1937	1.0779	4387	4995	1.1387	1.121	11/6/2018	
11/7/2018	11/8/2018	1906	2072	1.0872	3967	4552	1.1476	1.128	11/7/2018	
11/8/2018	11/9/2018	1916	2082	1.0864	4632	5254	1.1357	1.121	11/8/2018	
11/9/2018	11/10/2018	1911	2077	1.0865	4323	4881	1.1291	1.116	11/9/2018	
11/10/2018	11/11/2018	1868	2026	1.0849	3673	4098	1.1167	1.106	11/10/2018	
11/11/2018	11/12/2018	1826	1988	1.0884	4243	4697	1.1071	1.101	11/11/2018	
11/12/2018	11/13/2018	1837	1984	1.0801	4716	5211	1.1049	1.098	11/12/2018	
11/13/2018	11/14/2018	1899	2048	1.0789	3197	3559	1.1138	1.101	11/13/2018	
11/14/2018	11/15/2018	1840	1984	1.0785	1524	1690	1.1085	1.092	11/14/2018	
11/15/2018	11/16/2018	1884	2030	1.0775	2318	2564	1.1067	1.094	11/15/2018	
11/16/2018	11/17/2018	1944	2090	1.0749	4044	4456	1.1016	1.093	11/16/2018	
11/17/2018	11/18/2018	1892	2030	1.0733	4670	5223	1.1190	1.106	11/17/2018	
11/18/2018	11/19/2018	1881	2023	1.0753	3447	3775	1.0950	1.088	11/18/2018	
11/19/2018	11/20/2018	1922	2070	1.0771	4372	4792	1.0962	1.090	11/19/2018	
11/20/2018	11/21/2018	3350	3642	1.0870	2233	2454	1.0988	1.092	11/20/2018	
11/21/2018	11/22/2018	1976	2147	1.0861	3072	3407	1.1098	1.101	11/21/2018	
11/22/2018	11/23/2018	1839	2005	1.0900	2499	2766	1.1070	1.100	11/22/2018	
11/23/2018	11/24/2018	1899	2089	1.1003	1913	2108	1.1039	1.102	11/23/2018	
11/24/2018	11/25/2018	1890	2074	1.0974	2840	3123	1.0995	1.099	11/24/2018	
11/25/2018	11/26/2018	1886	2069	1.0968	3788	4137	1.0922	1.094	11/25/2018	
11/26/2018	11/27/2018	1759	1926	1.0949	4317	4702	1.0889	1.091	11/26/2018	
11/27/2018	11/28/2018	1867	2033	1.0885	3847	4189	1.0889	1.089	11/27/2018	
11/28/2018	11/29/2018	1806	1949	1.0790	2228	2433	1.0915	1.086	11/28/2018	
11/29/2018	11/30/2018	1871	2032	1.0865	2456	2703	1.1010	1.095	11/29/2018	
11/30/2018	12/1/2018	1851	2027	1.0950	2464	2712	1.1006	1.098	11/30/2018	
								1.1019		
								93,780	104,248	1.1124
								57,706	62,675	1.0861

Alliance Pipeline

DAILY ANALYSIS — USA
ND07MD1 — Hankinson Sales
November 2018



DAY	Heating Value (Btu/hrs)	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	1,149.840	0.6592	84.3316	9.7437	3.4716	0.3200	0.5383	0.0448	0.0371	0.0222	1.0730	0.4057	0.0120
2	1,152.528	0.6610	84.1085	9.8421	3.5674	0.3262	0.5531	0.0461	0.0381	0.0218	1.0793	0.4054	0.0121
3	1,153.326	0.6608	84.1648	9.8362	3.5523	0.3313	0.5648	0.0478	0.0397	0.0223	1.0339	0.3949	0.0119
4	1,156.821	0.6630	83.9311	9.9075	3.6656	0.3487	0.5911	0.0504	0.0418	0.0242	1.0453	0.3829	0.0115
5	1,154.957	0.6617	83.9716	10.0003	3.6038	0.3299	0.5559	0.0443	0.0364	0.0217	1.0474	0.3769	0.0117
6	1,153.195	0.6602	84.1576	9.9415	3.5385	0.3208	0.5387	0.0434	0.0357	0.0215	1.0229	0.3678	0.0117
7	1,153.158	0.6600	84.2183	9.8961	3.5433	0.3199	0.5345	0.0450	0.0373	0.0230	1.0014	0.3692	0.0120
8	1,152.665	0.6599	84.2342	9.8241	3.5849	0.3172	0.5310	0.0432	0.0357	0.0213	1.0270	0.3697	0.0118
9	1,154.933	0.6622	83.9220	9.9653	3.6491	0.3289	0.5549	0.0448	0.0369	0.0213	1.0828	0.3820	0.0119
10	1,161.593	0.6665	83.4201	10.1930	3.8353	0.3524	0.6011	0.0526	0.0438	0.0228	1.0747	0.3925	0.0118
11	1,160.632	0.6658	83.6248	9.9619	3.8607	0.3557	0.6080	0.0537	0.0452	0.0228	1.0537	0.4014	0.0122
12	1,159.757	0.6651	83.6633	9.9982	3.8259	0.3486	0.5947	0.0498	0.0414	0.0218	1.0590	0.3856	0.0117
13	1,160.047	0.6655	83.5557	10.0877	3.8303	0.3464	0.5902	0.0486	0.0402	0.0217	1.0821	0.3852	0.0118
14	1,160.723	0.6670	83.4140	10.0601	3.9134	0.3536	0.5953	0.0505	0.0413	0.0211	1.1009	0.4373	0.0126
15	1,161.914	0.6679	83.3004	10.0530	3.9840	0.3601	0.6147	0.0485	0.0399	0.0203	1.1508	0.4153	0.0130
16	1,161.524	0.6666	83.4910	10.0174	3.9220	0.3635	0.6049	0.0486	0.0400	0.0220	1.0885	0.3896	0.0123
17	1,156.020	0.6625	84.0328	9.7882	3.7006	0.3490	0.5782	0.0492	0.0406	0.0225	1.0398	0.3866	0.0125
18	1,151.300	0.6598	84.3287	9.6431	3.5792	0.3256	0.5466	0.0473	0.0383	0.0210	1.0628	0.3952	0.0122
19	1,153.186	0.6606	84.2399	9.6973	3.6157	0.3354	0.5624	0.0477	0.0394	0.0208	1.0565	0.3734	0.0115
20	1,152.326	0.6600	84.2873	9.7277	3.5690	0.3290	0.5530	0.0455	0.0378	0.0203	1.0353	0.3828	0.0123
21	1,152.808	0.6602	84.2783	9.7286	3.5698	0.3327	0.5588	0.0476	0.0396	0.0217	1.0382	0.3723	0.0124
22	1,153.092	0.6603	84.2313	9.8038	3.5482	0.3308	0.5622	0.0467	0.0388	0.0214	1.0246	0.3796	0.0127
23	1,152.882	0.6605	84.2296	9.7662	3.5562	0.3315	0.5713	0.0465	0.0387	0.0207	1.0413	0.3854	0.0127
24	1,157.542	0.6633	83.8828	9.9351	3.7080	0.3455	0.5868	0.0498	0.0412	0.0228	1.0406	0.3755	0.0119
25	1,151.690	0.6601	84.3248	9.6173	3.5937	0.3283	0.5620	0.0464	0.0381	0.0204	1.0644	0.3923	0.0123
26	1,151.514	0.6597	84.3683	9.6146	3.5664	0.3300	0.5640	0.0459	0.0378	0.0212	1.0566	0.3839	0.0114
27	1,152.557	0.6603	84.2806	9.7187	3.5618	0.3316	0.5574	0.0493	0.0412	0.0228	1.0317	0.3938	0.0111
28	1,152.939	0.6606	84.2801	9.6373	3.6143	0.3366	0.5662	0.0498	0.0413	0.0233	1.0539	0.3854	0.0117
29	1,152.505	0.6603	84.3234	9.6411	3.5808	0.3351	0.5651	0.0498	0.0411	0.0235	1.0369	0.3915	0.0117
30	1,152.514	0.6603	84.3003	9.7126	3.4958	0.3420	0.5920	0.0507	0.0412	0.0229	1.0489	0.3820	0.0116
Volume	1,155.042	0.6620	84.0261	9.8493	3.6539	0.3367	0.5697	0.0478	0.0395	0.0219	1.0551	0.3880	0.0120
Weight Avg Energy	1,155.053	0.6620	84.0252	9.8497	3.6543	0.3368	0.5697	0.0478	0.0395	0.0219	1.0552	0.3880	0.0120

Zone 600

November-18

ZONE 610

Watford City

Watford City West Border

Watford City East Border

Weighted

Begin Date	End Date	MCF	DK	BTU Zone 25	MCF	DK	BTU Zone 43	AVG BTU	
11/1/2018	11/2/2018	434	520	1.1990	271	304	1.1209	1.169	11/1/2018
11/2/2018	11/3/2018	432	518	1.1990	292	328	1.1217	1.168	11/2/2018
11/3/2018	11/4/2018	461	553	1.1990	282	316	1.1212	1.169	11/3/2018
11/4/2018	11/5/2018	445	533	1.1990	274	307	1.1200	1.169	11/4/2018
11/5/2018	11/6/2018	539	646	1.1990	577	615	1.0678	1.131	11/5/2018
11/6/2018	11/7/2018	598	717	1.1990	821	876	1.0666	1.122	11/6/2018
11/7/2018	11/8/2018	589	706	1.1990	743	777	1.0462	1.114	11/7/2018
11/8/2018	11/9/2018	621	745	1.1990	876	912	1.0413	1.107	11/8/2018
11/9/2018	11/10/2018	586	703	1.1990	658	684	1.0392	1.114	11/9/2018
11/10/2018	11/11/2018	555	666	1.1990	546	578	1.0575	1.129	11/10/2018
11/11/2018	11/12/2018	590	707	1.1990	767	795	1.0364	1.107	11/11/2018
11/12/2018	11/13/2018	574	688	1.1990	689	716	1.0397	1.112	11/12/2018
11/13/2018	11/14/2018	494	592	1.1990	518	538	1.0389	1.117	11/13/2018
11/14/2018	11/15/2018	452	542	1.1990	397	415	1.0478	1.128	11/14/2018
11/15/2018	11/16/2018	466	559	1.1990	326	339	1.0419	1.134	11/15/2018
11/16/2018	11/17/2018	576	690	1.1990	643	669	1.0417	1.116	11/16/2018
11/17/2018	11/18/2018	590	707	1.1990	748	779	1.0418	1.111	11/17/2018
11/18/2018	11/19/2018	533	639	1.1990	505	527	1.0418	1.123	11/18/2018
11/19/2018	11/20/2018	536	642	1.1990	642	674	1.0524	1.119	11/19/2018
11/20/2018	11/21/2018	461	553	1.1990	337	362	1.0705	1.145	11/20/2018
11/21/2018	11/22/2018	488	585	1.1990	448	480	1.0704	1.137	11/21/2018
11/22/2018	11/23/2018	450	540	1.1990	324	351	1.0802	1.149	11/22/2018
11/23/2018	11/24/2018	455	545	1.1990	272	287	1.0521	1.144	11/23/2018
11/24/2018	11/25/2018	516	618	1.1990	449	481	1.0730	1.140	11/24/2018
11/25/2018	11/26/2018	551	661	1.1990	506	550	1.0876	1.146	11/25/2018
11/26/2018	11/27/2018	568	680	1.1990	586	640	1.0930	1.145	11/26/2018
11/27/2018	11/28/2018	519	622	1.1990	446	463	1.0382	1.125	11/27/2018
11/28/2018	11/29/2018	482	578	1.1990	455	472	1.0364	1.120	11/28/2018
11/29/2018	11/30/2018	401	481	1.1990	476	495	1.0393	1.112	11/29/2018
11/30/2018	12/1/2018	379	455	1.1990	577	596	1.0321	1.098	11/30/2018
		15,341	18,391		15,451	16,326	1.0619	1.1307	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/GF)	SPECIFIC GRAVITY	WOBBE (cal)	CRICONDENTHERM (deg F)	NITROGEN (mole percent)	CARBON DIOXIDE (mole percent)	METHANE (mole percent)	ETHANE (mole percent)	PROPANE (mole percent)	NORMAL BUTANE (mole percent)	ISO BUTANE (mole percent)	PENTANE (mole percent)	ISO PENTANE (mole percent)	NEO PENTANE (mole percent)	HEXANES PLUS (mole percent)	HYDROGEN (mole percent)	HELIUM (mole percent)	PRODUCTION DATE	POSTING DATE	Changestamp	NOTES
11587	GLEN ULLIN	1093.6	0.6374	1369.8	-51	1.7343	0.8773	84.6332	11.7761	0.8961	0.0429	0.0237	0.0032	0.0032	0	0.0009	0.0387	0	10/31/2018	11/1/2018	11/2018 3:38:49 PM	
11587	GLEN ULLIN	1091.4	0.6358	1368.7	-52.2	1.7049	0.8644	84.8712	11.682	0.7755	0.0443	0.0226	0.004	0.0037	0	0.0013	0.0297	0.0011	11/1/2018	11/2/2018	11/2018 3:40:58 PM	
11587	GLEN ULLIN	1093.2	0.6369	1369.8	-51.1	1.6978	0.8707	84.6695	11.8342	0.8096	0.0464	0.0267	0.0039	0.0039	0	0.0013	0.0443	0.0034	11/2/2018	11/3/2018	11/3/2018 3:36:37 PM	
11587	GLEN ULLIN	1091.1	0.6357	1368.5	-51.4	1.6915	0.8789	84.9667	11.5214	0.8223	0.0505	0.0288	0.0042	0.0043	0	0.0016	0.0392	0.0054	11/3/2018	11/4/2018	11/4/2018 3:35:41 PM	
11587	GLEN ULLIN	1093.2	0.6373	1369.3	-48.4	1.711	0.8829	84.7885	11.6149	0.8838	0.0581	0.033	0.0065	0.0065	0	0.0029	0.017	0	11/4/2018	11/5/2018	11/5/2018 3:37:04 PM	
11587	GLEN ULLIN	1082.2	0.6294	1364.1	-57.3	1.6316	0.8808	86.1404	10.5788	0.6964	0.0383	0.021	0.0031	0.0031	0	0.001	0.0105	0	11/5/2018	11/6/2018	11/6/2018 3:41:05 PM	
11587	GLEN ULLIN	1080.9	0.6289	1363	-58	1.6509	0.8894	86.2512	10.4159	0.7278	0.0331	0.0187	0.0022	0.0023	0	0.0008	0.0103	0	11/6/2018	11/7/2018	11/7/2018 3:43:22 PM	
11587	GLEN ULLIN	1086.8	0.6327	1366.3	-54.4	1.6813	0.8686	85.4706	11.1639	0.7332	0.0391	0.0207	0.0034	0.0031	0	0.0017	0.0212	0.0316	11/7/2018	11/8/2018	11/8/2018 3:39:22 PM	
11587	GLEN ULLIN	1085.3	0.6313	1365.9	-55.1	1.6847	0.8429	85.7704	10.831	0.773	0.0447	0.0229	0.0037	0.0035	0	0.0011	0.0409	0.0155	11/8/2018	11/9/2018	11/9/2018 3:38:58 PM	
11587	GLEN ULLIN	1085.5	0.6324	1365	-54.7	1.7006	0.8897	85.5943	10.9543	0.7598	0.0454	0.0258	0.0034	0.0039	0	0.0011	0.0348	0.0226	11/9/2018	11/10/2018	11/10/2018 3:38:17 PM	
11587	GLEN ULLIN	1088.2	0.6344	1366.3	-53.6	1.7095	0.901	85.2589	11.2258	0.8218	0.0444	0.023	0.0031	0.003	0	0.0005	0.0156	0	11/10/2018	11/11/2018	11/11/2018 3:38:11 PM	
11587	GLEN ULLIN	1085.2	0.6325	1364.5	-55.6	1.713	0.8994	85.5652	11.0001	0.7501	0.0387	0.0206	0.0026	0.0026	0	0.0005	0.0125	0	11/11/2018	11/12/2018	11/12/2018 3:39:02 PM	
11587	GLEN ULLIN	1079.9	0.6287	1361.9	-60.1	1.6443	0.9217	86.1436	10.6619	0.575	0.0261	0.015	0.0016	0.0017	0	0	0.0135	0	11/12/2018	11/13/2018	11/13/2018 3:39:03 PM	
11587	GLEN ULLIN	1079.3	0.6284	1361.6	-58.8	1.6516	0.9198	86.2033	10.5879	0.5685	0.0308	0.0159	0.0029	0.0026	0	0.0018	0.0208	0.019	11/13/2018	11/14/2018	11/14/2018 3:46:18 PM	
11587	GLEN ULLIN	1078.2	0.6281	1360.5	-59.9	1.696	0.912	86.2776	10.4822	0.5766	0.0286	0.016	0.0022	0.0021	0	0.0011	0.0084	0	11/14/2018	11/15/2018	11/15/2018 3:39:32 PM	
11587	GLEN ULLIN	1077.3	0.6275	1360.4	-60.8	1.7055	0.9034	86.3701	10.3976	0.5677	0.0266	0.0151	0.0018	0.0019	0	0.0005	0.0129	0.0103	11/15/2018	11/16/2018	11/16/2018 3:41:42 PM	
11587	GLEN ULLIN	1075.2	0.6254	1359.6	-59.6	1.6024	0.9251	86.8141	10.075	0.5225	0.0285	0.0187	0.0031	0.0037	0	0.0029	0.0115	0	11/16/2018	11/17/2018	11/17/2018 3:38:58 PM	
11587	GLEN ULLIN	1072	0.6238	1357.3	-64.2	1.6835	0.9012	87.0164	9.8697	0.4856	0.0212	0.0124	0.0013	0.0013	0	0.0003	0.0117	0	11/17/2018	11/18/2018	11/18/2018 3:39:09 PM	
11587	GLEN ULLIN	1077	0.6268	1360.4	-61	1.6674	0.8992	86.495	10.3425	0.5395	0.0291	0.0161	0.0022	0.0023	0	0.0008	0.011	0	11/18/2018	11/19/2018	11/19/2018 3:36:36 PM	
11587	GLEN ULLIN	1083.1	0.6308	1363.7	-56.9	1.6947	0.8882	85.7863	10.91	0.6375	0.0388	0.0226	0.003	0.0034	0	0.001	0.0231	0	11/18/2018	11/19/2018	11/19/2018 3:37:43 PM	
11587	GLEN ULLIN	1087.3	0.633	1366.6	-53.5	1.6753	0.8766	85.4065	11.2751	0.6841	0.0433	0.0219	0.0051	0.0044	0	0.0025	0.0081	0	11/20/2018	11/21/2018	11/21/2018 3:38:37 PM	
11587	GLEN ULLIN	1089.7	0.6348	1367.7	-53.2	1.6817	0.8834	85.0955	11.5293	0.7346	0.0427	0.0221	0.0037	0.0035	0	0.0014	0.0061	0	11/21/2018	11/22/2018	11/22/2018 3:37:45 PM	
11587	GLEN ULLIN	1095.6	0.6389	1370.6	-47.9	1.7045	0.8946	84.4679	11.9469	0.8806	0.0565	0.0321	0.0057	0.0058	0	0.0028	0.007	0	11/22/2018	11/23/2018	11/23/2018 3:36:49 PM	
11587	GLEN ULLIN	1100.7	0.6422	1373.6	-43.4	1.697	0.8946	84.069	12.1302	1.068	0.0716	0.0479	0.0072	0.0086	0	0.0031	0.0069	0	11/23/2018	11/24/2018	11/24/2018 3:38:17 PM	
11587	GLEN ULLIN	1096.4	0.6395	1371.1	-47.7	1.7134	0.8915	84.3676	12.0203	0.9003	0.0569	0.035	0.0052	0.006	0	0.0023	0.0067	0	11/24/2018	11/25/2018	11/25/2018 3:41:16 PM	
11587	GLEN ULLIN	1094.6	0.6383	1370.1	-50.4	1.6972	0.8961	84.4975	11.996	0.831	0.0439	0.025	0.0037	0.0039	0	0.0016	0.0079	0	11/25/2018	11/26/2018	11/26/2018 3:43:41 PM	
11587	GLEN ULLIN	1094.6	0.6376	1370.9	-50.4	1.6434	0.8901	84.676	11.8335	0.8738	0.0447	0.0253	0.0037	0.0038	0	0.0014	0.0073	0	11/26/2018	11/27/2018	11/27/2018 3:49:40 PM	
11587	GLEN ULLIN	1083.4	0.6298	1365.2	-56.7	1.5986	0.8762	86.0669	10.6938	0.6946	0.0391	0.0207	0.003	0.0027	0	0.0014	0.0078	0.0145	11/27/2018	11/28/2018	11/28/2018 3:42:53 PM	
11587	GLEN ULLIN	1081.9	0.6292	1363.9	-58.4	1.626	0.8852	86.0989	10.6918	0.6325	0.0344	0.0191	0.0023	0.0024	0	0.0007	0.0094	0.0069	11/28/2018	11/29/2018	11/29/2018 3:46:18 PM	
11587	GLEN ULLIN	1091.4	0.6358	1368.8	-50.4	1.6483	0.8993	85.058	11.4621	0.8315	0.0519	0.0334	0.0045	0.0055	0	0.0023	0.008	0.0282	11/29/2018	11/30/2018	11/30/2018 3:41:15 PM	
11587	GLEN ULLIN	1090.7	0.6355	1368.1	-51.8	1.6449	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	

31 record(s) retrieved

Zone 802

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	NOV 18	OCT 18	SEPT 18	AUG 18	JULY 18	JUNE 18	MAY 18	APRIL 18	MARCH 18	FEB 18	JAN 18	DEC 17	ZONE
MT/ND	211	Sidney Border - Mondak Trf - Sidney Pit	1195	1207	1202	1191	1203	1202	1171	1193	1191	1211	1195	1185	1193	211
ND	24	Williston Border - Charbonneau Station	1144	1163	1140	1152	1136	1158	1141	1135	1136	1140	1140	1138	1143	24
ND	25	Watford City West Border	1190	1199	1199	1200	1197	1204	1202	1192	1185	1179	1184	1174	1165	25
ND	28	Bismarck Station - Glen Ullin Station	1141	1112	1153	1173	1162	1153	1173	1172	1163	1121	1098	1096	1114	28
ND	31	Dickinson Bdr - Belfield Trf - G Ullin Stn	1127	1110	1134	1144	1132	1147	1139	1158	1134	1122	1102	1095	1111	31
ND/MT	32	Cabin Creek Station - Belfield Transfer	1105	1068	1110	1106	1133	1136	1133	1113	1116	1104	1080	1072	1096	32
ND	33	Little Knife Plant	1175	1174	1172	1172	1176	1175	1174	1176	1175	1175	1176	1175	1174	33
ND	34	Badlands Plant/Bowman Border	1006	1073	1063	1018	979	983	984	996	996	996	996	996	996	34
ND	43	Spring Creek I - Sax Valve I	1149	1062	1144	1158	1172	1152	1155	1160	1164	1158	1148	1153	1165	43
ND/MT	241	Fairview Border	1187	1193	1175	1186	1195	1196	1180	1168	1151	1205	1206	1203	1190	241
ND	260	North Tioga Transfer - Nesson Plant	1050	1095	1102	1101	1101	1127	1089	989	989	987	986	1021	998	260
ND	261	Tioga Comp Station - Robinson Lake Plant	1175	1177	1183	1181	1175	1177	1178	1169	1176	1173	1171	1173	1167	261
ND	262	Minot Bdr - Palermo Bdr - Bismarck Stn	1182	1182	1179	1175	1160	1156	1175	1180	1198	1199	1191	1193	1196	262
ND	263	Lignite Plant	1131	1127	1140	1146	1162	1135	1115	1115	1135	1115	1135	1114	1120	263
ND	264	Epping Border	1153	1153	1139	1135	1135	1148	1148	1129	1128	1118	1144	1161	1142	264
ND	265	Tioga Comp Station - County Line Plant	1140	1177	1183	1182	1178	1176	1178	1175	1176	1173	1171	1174	1167	265
ND	266	County Line Plant	1176	1177	1183	1180	1178	1181	1181	1180	1181	1182	1185	1183	1181	266
ND	271	Bismarck Station - Cleveland Station	1181	1180	1178	1173	1162	1153	1173	1173	1194	1187	1159	1161	1176	271
ND	272	Cleveland Station - Mapleton	1172	1180	1178	1173	1160	1154	1173	1172	1194	1187	1158	1160	1177	272
ND	273	Cleveland Station - Grafton Border	1172	1179	1177	1173	1160	1154	1173	1171	1192	1187	1158	1160	1177	273
ND	550	Mandan Border / NBPL-St Anthony	1172	1179	1177	1173	1160	1154	1173	1171	1192	1187	1158	1160	1177	550
ND	610	MDU-Watford City BTU	1165	1102	1145	1181	1162	1150	1173	1172	1163	1170	1090	1088	1099	610
ND	802	Linton	1083	1131	1180	1181	1175	1152	1156	1164	1174	1100	1168	1164	1165	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903
ND	600	Alliance Pipeline - Hankinson	1155	1155	1155	1160	1159	1159	1153	1148	1152	1153	1152	1160	1159	600



UTILITIES CO.

A Subsidiary of MDU Resources Group, Inc.

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

January 22, 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 – November 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 December 2018.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of November 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 November 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,

A handwritten signature in black ink that reads 'Tamie Aberle'.

Tamie Aberle
Director of Regulatory Affairs

**THERMAL ZONE VARIANCE
DOCUMENTATION**

November 2018

ZONE	<i>BTU VARIANCE</i>	<i>REASON</i>
24	23	Operational Change
28	-41	Operational / Maintenance
31	-24	Direction of Flow & Source of Gas
32	-42	Direction of Flow & Source of Gas
43	-82	Operational / Maintenance