



# MONTANA-DAKOTA

UTILITIES CO.

A Division of MDU Resources Group, Inc.

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

December 28, 2012

**RECEIVED**

DEC 31 2012

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

**PUBLIC SERVICE COMMISSION**

Re: Case No. 11,006 (Therm Billing)  
Monthly Report – November 2012

Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc., herewith submits the following information, pursuant to the Ordering paragraphs one and two of the Order issued in the above-referenced docket, dated October 20, 1987:

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 2012.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our supplier for the month of November 2012. There is a report for each of the 17 thermal zones for the month.
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 2012.

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

Sincerely,

Tamie Aberle  
Director of Regulatory Affairs

MONTANA-DAKOTA UTILITIES CO.  
Therm Billing Factor  
DEC 2012

Div Nbr	Off Code	City Name	Heat Zone Nbr	Therm Billing Factor
12	314	APPLE VALLEY	271	1.1135
12	323	BERTHOLD	262	1.1003
12	327	BISMARCK	28	1.0652
12	337	BURLINGTON	262	1.1241
12	343	CARRINGTON	273	1.1145
12	344	CLEVELAND	272	1.1066
12	364	CAVALIER	273	1.1379
12	365	DAWSON	271	1.1056
12	368	DES LACS	262	1.1083
12	374	FT TOTTEN	273	1.1223
12	375	DEVILS LAKE	273	1.1223
12	379	BARLOW	273	1.1145
12	387	ELDRIDGE	272	1.1145
12	411	GLEN ULLIN	31	1.0493
12	416	GARRISON	262	1.1083
12	417	GRAFTON	273	1.1458
12	439	HANKINSON	600	1.0916
12	449	JAMESTOWN	272	1.1223
12	463	LANGDON	273	1.1145
12	475	LINTON	802	.9852
12	478	LINCOLN	28	1.0652
12	494	MEDINA	271	1.1056
12	498	MANDAN	28	1.0652
12	505	MINOT	262	1.1241
12	512	MAX	262	1.1003
12	524	NEW SALEM	28	1.0427
12	532	NEW ROCKFORD	273	1.1145
12	539	PARK RIVER	273	1.1379
12	572	RUTHVILLE	262	1.1241
12	574	SANBORN	272	1.1223
12	593	STEELE	271	1.1056
12	598	SHEYENNE	273	1.1223
12	605	SURREY	262	1.1241
12	610	TAPPEN	271	1.1056
12	619	TURTLE LAKE	262	1.1083

MONTANA-DAKOTA UTILITIES CO.  
Therm Billing Factor  
DEC 2012

Div Nbr	Off Code	City Name	Heat Zone Nbr	Therm Billing Factor
12	624	UNDERWOOD	262	1.1083
12	625	VALLEY CITY	272	1.1301
12	629	WALHALLA	273	1.1379
12	646	WASHBURN	262	1.1162
12	647	WILTON	262	1.1003
12	664	RIVERDALE	262	1.1083
12	712	MINOT AFB	262	1.1241
12	717	SPIRITWOOD	272	1.1223
12	718	FAIRMOUNT	600	1.0894
12	732	MSR SITE	273	1.1145
12	733	PAR SITE	273	1.1145
15	303	ALEXANDER	25	1.1221
15	308	ARNEGARD	25	1.1221
15	318	BEACH	32	.9758
15	319	BELFIELD	32	.9830
15	330	BOWMAN	34	1.0476
15	369	DICKINSON	31	1.0418
15	384	EPPING	264	1.1325
15	407	GLADSTONE	31	1.0418
15	413	GOLVA	32	.9616
15	429	HEBRON	31	1.0493
15	459	KILLDEER	33	1.1117
15	469	LEFOR	31	1.0418
15	474	LIGNITE	263	1.0797
15	500	MARMARTH	34	1.0553
15	510	MOTT	31	1.0418
15	522	NEW ENGLAND	31	1.0342
15	540	PALERMO	262	1.1003
15	558	RAY	264	1.1325
15	561	REGENT	31	1.0418
15	563	RHAME	34	1.0399
15	564	RICHARDTON	31	1.0342
15	568	ROSS	261	1.0896
15	583	SENTINEL BUTTE	32	.9758
15	588	SOUTH HEART	31	1.0342

MONTANA-DAKOTA UTILITIES CO.  
Therm Billing Factor  
DEC 2012

Div Nbr	Off Code	City Name	Heat Zone Nbr	Therm Billing Factor
15	590	SPRINGBROOK	264	1.1325
15	591	STANLEY	261	1.0975
15	611	TAYLOR	31	1.0342
15	616	TIOGA	261	1.0896
15	620	TRENTON	24	1.1406
15	632	WATFORD CITY	25	1.1221
15	636	WHEELLOCK	264	1.1243
15	637	WHITE EARTH	261	1.0975
15	642	WILLISTON	24	1.1406
15	691	FAIRVIEW	241	1.1339
15	743	BAKER FIELD	35	.8980

\* \* \* E N D O F R E P O R T \* \* \*



## GQ Source Daily Summary

November 2012

Number: 372	Pressure Base: 14.730	Contract Day: 1
Name: NESSON PLANT-CHARBONNEAU STATION	Temperature Base:	Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7059	1160.8	1181.3	0.951	2.795	70.321	25.242	0.632	0.019	0.036	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1406.08	
2	0.7160	1167.6	1188.2	1.033	3.202	69.735	23.980	1.886	0.056	0.100	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1404.26	
3	0.7235	1174.5	1195.3	0.966	3.573	69.455	22.688	3.052	0.089	0.161	0.008	0.006	0.001	0.000	0.000	0.000	0.000	1405.30	
4	0.7282	1179.9	1200.8	1.024	3.592	69.114	22.410	3.582	0.094	0.168	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1407.18	
5	0.7259	1176.6	1197.5	1.030	3.571	69.247	22.636	3.234	0.094	0.171	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1405.49	
6	0.7264	1176.8	1197.7	1.045	3.585	69.175	22.664	3.247	0.095	0.173	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1405.23	
7	0.7284	1177.4	1198.2	1.117	3.628	69.030	22.531	3.375	0.105	0.194	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1403.96	
8	0.7289	1177.2	1198.1	1.128	3.673	68.981	22.457	3.446	0.103	0.191	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1403.22	
9	0.7292	1176.5	1197.3	1.136	3.730	69.068	22.169	3.571	0.107	0.198	0.011	0.009	0.001	0.000	0.000	0.000	0.000	1402.12	
10	0.7281	1176.7	1197.6	1.047	3.744	69.307	21.890	3.704	0.103	0.187	0.010	0.007	0.001	0.000	0.000	0.000	0.000	1403.47	
11	0.7264	1177.6	1198.4	0.934	3.706	69.437	21.997	3.644	0.096	0.171	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1406.12	
12	0.7240	1177.2	1198.0	0.832	3.664	69.556	22.258	3.444	0.084	0.149	0.008	0.006	0.001	0.000	0.000	0.000	0.000	1407.94	
13	0.7236	1174.1	1194.9	0.911	3.687	69.613	22.232	3.290	0.090	0.162	0.008	0.007	0.001	0.000	0.000	0.000	0.000	1404.73	
14	0.7297	1178.0	1198.9	1.106	3.723	68.917	22.382	3.557	0.104	0.190	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1403.49	
15	0.7289	1182.0	1203.0	0.974	3.613	68.846	22.768	3.519	0.093	0.170	0.009	0.008	0.001	0.000	0.000	0.000	0.000	1409.00	
16	0.7291	1182.0	1202.9	0.993	3.597	68.851	22.743	3.538	0.093	0.167	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1408.83	
17	0.7296	1182.4	1203.4	1.017	3.586	68.761	22.833	3.516	0.096	0.174	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1408.81	
18	0.7304	1180.9	1201.8	1.107	3.623	68.727	22.709	3.527	0.102	0.186	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1406.13	
19	0.7278	1178.0	1198.9	1.072	3.599	68.986	22.769	3.266	0.102	0.186	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1405.31	
20	0.7287	1178.0	1198.9	1.124	3.604	68.836	22.881	3.244	0.103	0.188	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1404.49	
21	0.7300	1180.7	1201.6	1.110	3.590	68.688	22.918	3.383	0.103	0.189	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1406.35	
22	0.7290	1178.9	1199.8	1.113	3.599	68.797	22.901	3.274	0.104	0.191	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1405.18	
23	0.7306	1180.0	1200.9	1.130	3.656	68.717	22.662	3.526	0.104	0.187	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1404.95	
24	0.7350	1187.2	1208.2	1.105	3.667	68.347	22.566	3.930	0.128	0.234	0.012	0.010	0.001	0.000	0.000	0.000	0.000	1409.27	
25	0.7297	1179.3	1200.2	1.109	3.647	68.771	22.740	3.426	0.102	0.186	0.010	0.008	0.001	0.000	0.000	0.000	0.000	1405.00	
26	0.7312	1181.2	1202.1	1.112	3.665	68.692	22.564	3.675	0.099	0.177	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1405.80	
27	0.7319	1182.6	1203.5	1.101	3.668	68.557	22.677	3.703	0.099	0.178	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1406.73	
28	0.7318	1182.0	1202.9	1.127	3.648	68.619	22.611	3.698	0.100	0.180	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1406.21	
29	0.7325	1183.3	1204.2	1.130	3.632	68.545	22.632	3.766	0.099	0.179	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1407.03	
30	0.7278	1184.6	1205.6	0.863	3.520	68.962	22.840	3.565	0.085	0.151	0.008	0.006	0.001	0.000	0.000	0.000	0.000	1413.13	
Avg	0.7276	1178.0	1199.3	1.048	3.593	69.022	22.712	3.341	0.095	0.172	0.009	0.007	0.001	0.000	0.000	0.000	0.000	1406.03	

Zone 24, 264

**GQ Source Analysis**

WBI Energy Transmission, Inc.

<b>GQ Source Number:</b>	0602160	<b>Specific Gravity:</b>	0.7255
<b>GQ Source Name:</b>	FAIRVIEW BORDER	<b>Dry Heat Value:</b>	1192.34
<b>Effective Date:</b>	11/1/2012 9:00:00 AM	<b>Wet Heat Value:</b>	1171.59
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1192.34
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	242.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	

	<u>Mol %</u>	<u>Liquid Content</u>		<u>Mol %</u>
C1 Methane	69.636		CO2 Carbon Dioxide	1.043
C2 Ethane	21.393	0.0000	N2 Nitrogen	3.782
C3 Propane	3.821	1.0496	O2 Oxygen	0.000
IC4 Isobutane	0.108	0.0351	He Helium	
NC4 n-Butane	0.198	0.0624	H2 Hydrogen	
IC5 Isopentane	0.010	0.0037	H2S Hydrogen Sulfide	
NC5 n-Pentane	0.008	0.0030	Ar Argon	
C6 Hexanes	0.000	0.0000	CO Carbon Monoxide	
C7 Heptanes			H2 Water	
C8 Octanes			Neo-C5 Neopentane	
C9 Nonanes				
C10 Decanes				

**Totals**      100.000%      1.154 GPM

**Sample Date:** 12/3/2012 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** Sampler  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** Lab

**Analysis Remarks:**

Zone 241

**GQ Source Analysis**

WBI Energy Transmission, Inc.

<b>GQ Source Number:</b>	0602230	<b>Specific Gravity:</b>	0.7206
<b>GQ Source Name:</b>	WATFORD CITY BORDER	<b>Dry Heat Value:</b>	1188.15
<b>Effective Date:</b>	11/1/2012 9:00:00 AM	<b>Wet Heat Value:</b>	1167.47
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1188.15
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	440.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	69.875		CO2	Carbon Dioxide	1.034
C2	Ethane	22.069	5.8847	N2	Nitrogen	3.597
C3	Propane	3.158	0.8676	O2	Oxygen	0.000
IC4	Isobutane	0.089	0.0289	He	Helium	
NC4	n-Butane	0.163	0.0514	H2	Hydrogen	
IC5	Isopentane	0.008	0.0030	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.006	0.0023	Ar	Argon	
C6	Hexanes	0.000	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

**Totals**      100.000%      6.838 GPM

**Sample Date:** 12/3/2012 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** Sampler  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** Lab

**Analysis Remarks:**

Zone 25





# GQ Source Analysis

WBI Energy Transmission, Inc.

<b>GQ Source Number:</b>	2501030	<b>Specific Gravity:</b>	0.6729
<b>GQ Source Name:</b>	LIGNITE PLANT	<b>Dry Heat Value:</b>	1134.67
<b>Effective Date:</b>	11/1/2012 9:00:00 AM	<b>Wet Heat Value:</b>	1114.93
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	1134.67
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	500.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	76.318		CO2	Carbon Dioxide	0.120
C2	Ethane	18.723	4.9925	N2	Nitrogen	3.708
C3	Propane	1.109	0.3045	O2	Oxygen	0.000
IC4	Isobutane	0.002	0.0005	He	Helium	
NC4	n-Butane	0.000	0.0000	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.001	0.0005	Ar	Argon	
C6	Hexanes	0.019	0.0089	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

**Totals**      100.000%      5.307 GPM

**Sample Date:** 12/3/2012 12:00:00 AM  
**Sample Type:** Composite  
**Sample Tech:** Sampler  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** Lab

**Analysis Remarks:**

Zone 263

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











## GQ Source Daily Summary

November 2012

Number: 051	Pressure Base: 14.730	Contract Day: 1
Name: CABIN CREEK STATION-BELFIELD TRANSFER	Temperature Base:	Contract Hour: 9

Day	Relative Density	Heating Value		CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
		Wet	Dry																
1	0.5952	987.2	1004.7	0.414	3.759	91.968	3.473	0.355	0.013	0.014	0.001	0.001	0.001	0.000	0.000	0.000	0.000	1302.21	
2	0.6106	1012.3	1030.3	0.389	3.719	89.063	6.186	0.591	0.019	0.027	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1318.47	
3	0.6117	1014.8	1032.7	0.382	3.686	88.869	6.392	0.617	0.020	0.029	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1320.44	
4	0.6128	1016.4	1034.4	0.368	3.712	88.657	6.556	0.653	0.020	0.028	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1321.37	
5	0.5998	993.7	1011.3	0.480	3.703	91.161	4.202	0.417	0.015	0.018	0.002	0.001	0.002	0.000	0.000	0.000	0.000	1305.70	
6	0.5845	968.4	985.5	0.573	3.662	94.098	1.500	0.148	0.009	0.007	0.001	0.000	0.001	0.000	0.000	0.000	0.000	1289.09	
7	0.5832	973.4	990.6	0.189	3.822	93.981	1.813	0.174	0.011	0.008	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1297.15	
8	0.5806	970.0	987.2	0.165	3.820	94.443	1.421	0.134	0.011	0.006	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1295.55	
9	0.5960	989.8	1007.4	0.351	3.774	91.766	3.690	0.386	0.014	0.015	0.002	0.001	0.001	0.000	0.000	0.000	0.000	1304.82	
10	0.6143	1023.4	1041.5	0.207	3.674	88.235	7.144	0.680	0.022	0.032	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1328.77	
11	0.6321	1052.6	1071.2	0.208	3.561	84.962	10.212	0.975	0.029	0.045	0.003	0.003	0.002	0.000	0.000	0.000	0.000	1347.38	
12	0.6384	1061.4	1080.2	0.207	3.628	83.742	11.269	1.071	0.028	0.046	0.003	0.003	0.002	0.000	0.000	0.000	0.000	1351.85	
13	0.6492	1077.2	1096.3	0.174	3.728	81.605	13.207	1.215	0.025	0.040	0.003	0.002	0.002	0.000	0.000	0.000	0.000	1360.58	
14	0.6482	1075.0	1094.0	0.178	3.762	81.852	12.883	1.250	0.026	0.042	0.003	0.003	0.002	0.000	0.000	0.000	0.000	1358.83	
15	0.6528	1082.6	1101.8	0.186	3.716	81.006	13.706	1.305	0.028	0.046	0.003	0.003	0.002	0.000	0.000	0.000	0.000	1363.64	
16	0.6527	1081.2	1100.4	0.159	3.833	81.068	13.459	1.394	0.031	0.049	0.003	0.002	0.001	0.000	0.000	0.000	0.000	1361.98	
17	0.6418	1064.6	1083.4	0.123	3.880	83.071	11.608	1.248	0.027	0.038	0.002	0.001	0.001	0.000	0.000	0.000	0.000	1352.24	
18	0.6265	1040.7	1059.1	0.097	3.926	85.970	8.893	1.056	0.024	0.031	0.001	0.001	0.001	0.000	0.000	0.000	0.000	1338.11	
19	0.6254	1040.0	1058.5	0.097	3.871	86.178	8.747	1.050	0.024	0.031	0.001	0.001	0.001	0.000	0.000	0.000	0.000	1338.35	
20	0.6596	1090.8	1110.1	0.109	3.969	80.009	14.017	1.807	0.035	0.050	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1366.85	
21	0.6446	1065.4	1084.3	0.140	4.056	82.852	11.273	1.617	0.026	0.033	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1350.47	
22	0.6211	1031.3	1049.5	0.140	3.926	86.986	7.967	0.923	0.023	0.030	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1331.74	
23	0.6298	1047.0	1065.5	0.155	3.772	85.301	9.736	0.969	0.025	0.037	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1342.60	
24	0.6289	1046.0	1064.5	0.161	3.740	85.497	9.559	0.975	0.026	0.038	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1342.30	
25	0.6336	1053.6	1072.3	0.167	3.707	84.667	10.305	1.077	0.028	0.042	0.003	0.002	0.001	0.000	0.000	0.000	0.000	1347.06	
26	0.6329	1052.8	1071.5	0.184	3.665	84.766	10.294	1.015	0.027	0.042	0.003	0.002	0.002	0.000	0.000	0.000	0.000	1346.78	
27	0.6361	1058.1	1076.9	0.179	3.650	84.156	10.883	1.055	0.027	0.043	0.003	0.002	0.002	0.000	0.000	0.000	0.000	1350.16	
28	0.6395	1063.1	1081.9	0.166	3.682	83.575	11.322	1.174	0.029	0.045	0.003	0.002	0.001	0.000	0.000	0.000	0.000	1352.94	
29	0.6296	1047.0	1065.6	0.181	3.705	85.391	9.691	0.959	0.026	0.040	0.003	0.002	0.002	0.000	0.000	0.000	0.000	1342.97	
30	0.6354	1055.8	1074.5	0.195	3.696	84.331	10.635	1.063	0.028	0.045	0.003	0.003	0.002	0.000	0.000	0.000	0.000	1348.01	
Avg	0.6249	1038.0	1056.2	0.224	3.760	86.308	8.735	0.912	0.023	0.033	0.002	0.002	0.001	0.000	0.000	0.000	0.000	1335.95	

Zone 32





### GQ Source Analysis

WBI Energy Transmission, Inc.

<b>GQ Source Number:</b>	1201140	<b>Specific Gravity:</b>	0.5728
<b>GQ Source Name:</b>	EAGLE 8B ND LMD	<b>Dry Heat Value:</b>	979.13
<b>Effective Date:</b>	6/8/2012 9:00:00 AM	<b>Wet Heat Value:</b>	962.09
<b>Effective End Date:</b>	1/18/2038 9:14:07 PM	<b>As Deliv. Heat Value:</b>	979.13
<b>Pressure Base:</b>	14.730	<b>Sample Pressure:</b>	28.00
<b>Viscosity:</b>		<b>Sample Temperature:</b>	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	95.902		CO2	Carbon Dioxide	0.106
C2	Ethane	0.323	0.0860	N2	Nitrogen	3.640
C3	Propane	0.020	0.0054	O2	Oxygen	0.000
IC4	Isobutane	0.008	0.0026	He	Helium	
NC4	n-Butane	0.001	0.0002	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NCS	n-Pentane	0.000	0.0000	Ar	Argon	
C6	Hexanes	0.000	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
<b>Totals</b>			100.000%		0.094 GPM	

**Sample Date:** 6/8/2012 12:00:00 AM  
**Sample Type:** Spot  
**Sample Tech:** MG  
**H2S:** ppm

**Sample Remarks:**

**Analysis Tech:** M. Barney

**Analysis Remarks:**

Zone 35

<b>NORTH DAKOTA HEATING VALUE ZONES</b>		
<b>ZONES</b>	<b>MEASURING DEVICE</b>	<b>LOCATION</b>
211	Chromatograph	Sidney Area
24	Chromatograph	Williston Area
241	Monthly Sampler	Fairview Area
25	Monthly Sampler	Watford City Area
261	Chromatograph	Williston – Tioga – Minot Line
262	Chromatograph	Minot Area
263	Monthly Sampler	Tioga – Portal
264	Chromatograph	Williston – Ray
271	Chromatograph	Bismarck – Cleveland
272	Chromatograph	Cleveland – Mapleton
273	Chromatograph	Cleveland – Grafton
28	Chromatograph	Bismarck
31	Chromatograph	Dickinson
32	Chromatograph	Cabin Creek – Dickinson
33	Chromatograph	Killdeer
34	Chromatograph	Bowman Area
35	Yearly Sampler	Baker Field – North Dakota

MONTANA DAKOTA UTILITIES CO  
 NORTH DAKOTA  
 HEATING VALUE DATA  
 12 MONTH ACCUMULATIVE AT 14.73 psia, 60 f. DRY

STATE	ZONE	ZONE BOUNDARY	12 MONTH AVERAGE	NOV 12	OCT 12	SEPT 12	AUG 12	JULY 12	JUNE 12	MAY 12	APR 12	MAR 12	FEB 12	JAN 12	DEC 11	ZONE
MT/ND	211	Sidney Area	1201	1201	1200	1202	1197	1197	1200	1194	1196	1199	1206	1210	1212	211
ND	24	Williston Area	1196	1199	1195	1197	1198	1203	1197	1196	1194	1199	1195	1184	1199	24
ND	25	Watford City Area	1159	1188	1176	1183	1184	1176	1151	1159	1139	1138	1132	1140	1140	25
ND/MT	241	Fairview Area	1190	1192	1189	1191	1187	1185	1191	1184	1185	1189	1193	1194	1194	241
ND	261	Williston - Tioga - Minot Line	1160	1162	1164	1170	1151	1161	1157	1157	1155	1162	1156	1160	1163	261
ND	262	Minot Area	1165	1165	1171	1175	1179	1163	1160	1159	1157	1162	1158	1161	1165	262
ND	263	Tioga - Portal	1118	1135	1140	1142	1143	1132	1136	1126	1099	1135	1081	1075	1074	263
ND	264	Williston - Ray	1196	1199	1195	1197	1198	1203	1197	1196	1194	1199	1195	1184	1199	264
ND	271	Bismarck - Cleveland	1153	1154	1170	1173	1178	1161	1157	1157	1157	1154	1123	1124	1130	271
ND	272	Cleveland - Mapleton	1153	1155	1171	1175	1180	1162	1159	1158	1156	1153	1121	1122	1129	272
ND	273	Cleveland - Grafton	1154	1155	1171	1175	1180	1162	1159	1158	1157	1153	1121	1123	1129	273
ND	28	Bismarck - Cabin Creek	1130	1104	1149	1173	1178	1160	1157	1157	1143	1117	1065	1073	1078	28
ND	31	Dickinson Area	1099	1111	1152	1074	1102	1150	1092	1070	1111	1114	1064	1072	1077	31
ND/MT	32	Cabin Creek - Dickinson	1100	1056	1121	1131	1135	1164	1152	1142	1092	1047	1044	1057	1063	32
ND	33	Killdeer	1181	1177	1177	1180	1179	1181	1184	1181	1181	1183	1182	1179	1183	33
ND	34	Bowman Area	1130	1142	1140	1136	1130	1126	1098	1134	1130	1126	1126	1147	1129	34
ND	35	Baker Field - North Dakota	979	979	979	979	979	979	979	979	979	979	979	979	979	35

**THERMAL ZONE VARIANCE  
DOCUMENTATION**

**November 2012**

<b><i>ZONE</i></b>	<b><i>BTU VARIANCE</i></b>	<b><i>REASON</i></b>
28	-45	Mix of gas in the area.
31	-41	Mix of gas in the area.
32	-65	Mix of gas in the area.