



MONTANA-DAKOTA

UTILITIES CO.

A Division of MDU Resources Group, Inc.

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

January 13, 2014

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

Re: Case No. 11,006 (Therm Billing)
Monthly Report – November 2013

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 2013.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our supplier for the month of November 2013. 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 2013.

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

Sincerely,

Tamie Aberle
Director of Regulatory Affairs

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
December 2013

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.130568
MDU-308-ARNEGARD	025	1.117345
MDU-314-APPLE VALLEY	271	1.123106
MDU-318-BEACH	032	1.012851
MDU-319-BELFIELD	032	1.020292
MDU-323-BERTHOLD	262	1.125845
MDU-327-BISMARCK	028	1.058677
MDU-330-BOWMAN	034	1.025593
MDU-337-BURLINGTON	262	1.150123
MDU-343-CARRINGTON	273	1.123106
MDU-344-CLEVELAND	272	1.115204
MDU-364-CAVALIER	273	1.146812
MDU-365-DAWSON	271	1.115204
MDU-368-DES LACS	262	1.133938
MDU-369-DICKINSON	031	1.038047
MDU-374-FT TOTTEN	273	1.131008
MDU-375-DEVILS LAKE	273	1.131008
MDU-379-BARLOW	273	1.123106
MDU-384-EPPING	264	1.140013
MDU-387-ELDRIDGE	272	1.123106
MDU-407-GLADSTONE	031	1.038047
MDU-411-GLEN ULLIN	311	1.042729
MDU-413-GOLVA	032	0.997970
MDU-416-GARRISON	262	1.133938
MDU-417-GRAFTON	273	1.154715
MDU-429-HEBRON	311	1.042729
MDU-432-HETTINGER	903	2.387549
MDU-449-JAMESTOWN	272	1.131008
MDU-459-KILLDEER	033	1.114511
MDU-463-LANGDON	273	1.123106
MDU-469-LEFOR	031	1.038047
MDU-474-LIGNITE	263	1.042614
MDU-475-LINTON	802	1.000568
MDU-478-LINCOLN	028	1.066179
MDU-494-MEDINA	271	1.115204
MDU-498-MANDAN	028	1.066179
MDU-500-MARMARTH	034	1.033182
MDU-505-MINOT	262	1.150123
MDU-510-MOTT	031	1.038047
MDU-512-MAX	262	1.125845
MDU-522-NEW ENGLAND	031	1.030532
MDU-524-NEW SALEM	028	1.043674
MDU-532-NEW ROCKFORD	273	1.123106
MDU-539-PARK RIVER	273	1.146812
MDU-540-PALERMO	262	1.125845
MDU-558-RAY	264	1.140013
MDU-561-REGENT	031	1.038047
MDU-563-RHAME	034	1.018003
MDU-564-RICHARDTON	311	1.027739

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
December 2013

Town	Heat Zone	Therm Factor
MDU-568-ROSS	261	1.093372
MDU-572-RUTHVILLE	262	1.150123
MDU-574-SANBORN	272	1.131008
MDU-583-SENTINEL BUTTE	032	1.012851
MDU-588-SOUTH HEART	031	1.030532
MDU-717-SPIRITWOOD	272	1.131008
MDU-590-SPRINGBROOK	264	1.140013
MDU-591-STANLEY	261	1.101288
MDU-593-STEELE	271	1.115204
MDU-598-SHEYENNE	273	1.131008
MDU-605-SURREY	262	1.150123
MDU-610-TAPPEN	271	1.115204
MDU-611-TAYLOR	031	1.048219
MDU-616-TIOGA	261	1.093372
MDU-619-TURTLE LAKE	262	1.133938
MDU-620-TRENTON	024	1.148207
MDU-624-UNDERWOOD	262	1.133938
MDU-625-VALLEY CITY	272	1.138910
MDU-629-WALHALLA	273	1.146812
MDU-632-WATFORD CITY	025	1.130568
MDU-636-WHEELOCK	264	1.131818
MDU-637-WHITE EARTH	261	1.101288
MDU-642-WILLISTON	024	1.148207
MDU-646-WASHBURN	262	1.142030
MDU-647-WILTON	262	1.125845
MDU-664-RIVERDALE	262	1.133938
MDU-691-FAIRVIEW	241	1.131084
MDU-712-MINOT AFB	262	1.150123
MDU-732-MSR SITE	273	1.142404

GQ Source Analysis

GQ Source Number:	0602160	Specific Gravity:	0.7298
GQ Source Name:	FAIRVIEW BORDER	Dry Heat Value:	1189.04
Effective Date:	11/1/2013 9:00:00 AM	Wet Heat Value:	1168.34
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1189.04
Pressure Base:	14.730	Sample Pressure:	457.00
Viscosity:		Sample Temperature:	0.00

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	69.184		CO2	Carbon Dioxide	1.184
C2	Ethane	20.985	5.5955	N2	Nitrogen	4.170
C3	Propane	4.130	1.1347	O2	Oxygen	0.000
IC4	Isobutane	0.114	0.0372	He	Helium	
NC4	n-Butane	0.213	0.0669	H2	Hydrogen	
IC5	Isopentane	0.011	0.0039	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.009	0.0032	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%		6.841	GPM	

Sample Date: 12/2/2013 9:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 241

GQ Source Analysis

GQ Source Number:	0602230	Specific Gravity:	0.7194
GQ Source Name:	WATFORD CITY BORDER	Dry Heat Value:	1196.81
Effective Date:	11/1/2013 9:00:00 AM	Wet Heat Value:	1175.99
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1196.81
Pressure Base:	14.730	Sample Pressure:	383.00
Viscosity:		Sample Temperature:	0.00

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	71.770		CO2	Carbon Dioxide	0.793
C2	Ethane	19.527	5.2068	N2	Nitrogen	3.306
C3	Propane	3.814	1.0478	O2	Oxygen	0.000
IC4	Isobutane	0.196	0.0639	He	Helium	
NC4	n-Butane	0.476	0.1498	H2	Hydrogen	
IC5	Isopentane	0.044	0.0159	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.052	0.0189	Ar	Argon	
C6	Hexanes	0.022	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
Totals		100.000%	6.503 GPM			

Sample Date: 12/2/2013 9:00:00 AM
Sample Type: Composite
Sample Tech: PP
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 25

GQ Source Analysis

GQ Source Number:	2501030	Specific Gravity:	0.6517
GQ Source Name:	LIGNITE PLANT	Dry Heat Value:	1095.53
Effective Date:	11/1/2013 9:00:00 AM	Wet Heat Value:	1076.47
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1095.53
Pressure Base:	14.730	Sample Pressure:	337.00
Viscosity:		Sample Temperature:	0.00

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	80.285		CO2	Carbon Dioxide	0.071
C2	Ethane	14.698	3.9192	N2	Nitrogen	4.142
C3	Propane	0.771	0.2118	O2	Oxygen	0.000
IC4	Isobutane	0.000	0.0000	He	Helium	
NC4	n-Butane	0.000	0.0000	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.000	0.0000	Ar	Argon	
C6	Hexanes	0.032	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
Totals		100.000%		4.131	GPM	

Sample Date: 12/2/2013 9:00:00 AM
Sample Type: Composite
Sample Tech: 0
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 263

*** End of Report ***

GQ Source Daily Summary

November 2013

Number: 061

Pressure Base: 14.730

Contract Day: 1

Name: CLEVELAND STATION-GRAFTON BORDER

Temperature Base:

Contract Hour: 9

Day	Relative Density	Heating Value Wet	Heating Value Dry	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.7322	1176.8	1197.7	0.574	4.834	68.745	21.316	4.028	0.130	0.312	0.027	0.033	0.000	0.000	0.000	0.000	0.000	1399.68	
2	0.7205	1163.0	1183.6	0.515	4.673	70.232	20.728	3.528	0.086	0.195	0.019	0.024	0.000	0.000	0.000	0.000	0.000	1394.43	
3	0.7275	1172.6	1193.3	0.508	4.761	69.131	21.322	3.973	0.088	0.193	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1399.05	
4	0.7235	1167.2	1187.8	0.500	4.723	69.763	20.911	3.809	0.086	0.185	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1396.51	
5	0.7191	1162.7	1183.3	0.497	4.590	70.572	20.341	3.709	0.084	0.182	0.013	0.012	0.000	0.000	0.000	0.000	0.000	1395.36	
6	0.7063	1147.2	1167.5	0.465	4.384	72.560	19.190	3.141	0.076	0.160	0.013	0.012	0.000	0.000	0.000	0.000	0.000	1389.18	
7	0.6997	1138.2	1158.4	0.475	4.290	73.653	18.479	2.842	0.076	0.158	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1384.86	
8	0.7030	1142.7	1162.9	0.477	4.325	73.083	18.891	2.966	0.076	0.156	0.013	0.012	0.000	0.000	0.000	0.000	0.000	1387.00	
9	0.7096	1150.8	1171.2	0.476	4.454	71.971	19.599	3.250	0.074	0.154	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1390.32	
10	0.7111	1152.3	1172.7	0.493	4.479	71.693	19.831	3.241	0.077	0.162	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1390.68	
11	0.6912	1128.9	1148.9	0.451	4.098	74.934	17.823	2.472	0.067	0.130	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1381.90	
12	0.6989	1138.0	1158.2	0.477	4.223	73.654	18.708	2.689	0.073	0.149	0.014	0.012	0.000	0.000	0.000	0.000	0.000	1385.42	
13	0.7014	1141.5	1161.7	0.456	4.284	73.264	18.875	2.880	0.072	0.145	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1387.11	
14	0.7026	1143.9	1164.2	0.441	4.270	73.115	18.937	2.997	0.072	0.145	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1388.89	
15	0.7076	1148.1	1168.4	0.452	4.464	72.330	19.270	3.240	0.074	0.149	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1389.03	
16	0.7072	1146.8	1167.1	0.487	4.459	72.350	19.299	3.161	0.074	0.149	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1387.81	
17	0.7040	1144.0	1164.2	0.471	4.351	72.909	18.952	3.080	0.073	0.143	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1387.57	
18	0.6967	1136.3	1156.4	0.431	4.198	74.085	18.248	2.815	0.070	0.132	0.012	0.009	0.000	0.000	0.000	0.000	0.000	1385.40	
19	0.6970	1135.8	1155.9	0.438	4.247	73.821	18.660	2.612	0.069	0.132	0.011	0.009	0.000	0.000	0.000	0.000	0.000	1384.51	
20	0.6875	1126.0	1145.9	0.402	4.007	75.376	17.756	2.251	0.066	0.121	0.012	0.009	0.000	0.000	0.000	0.000	0.000	1381.99	
21	0.6847	1121.1	1140.9	0.456	3.954	75.915	17.308	2.173	0.062	0.113	0.011	0.008	0.000	0.000	0.000	0.000	0.000	1378.85	
22	0.6876	1124.9	1144.8	0.441	4.018	75.446	17.610	2.265	0.067	0.128	0.012	0.011	0.000	0.000	0.000	0.000	0.000	1380.61	
23	0.6914	1130.2	1150.2	0.445	4.048	74.815	18.097	2.355	0.070	0.140	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1383.28	
24	0.6979	1138.2	1158.4	0.441	4.173	73.699	18.867	2.575	0.072	0.147	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1386.65	
25	0.6995	1137.6	1157.8	0.455	4.338	73.438	18.833	2.714	0.068	0.134	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1384.33	
26	0.6936	1129.0	1149.0	0.446	4.331	74.400	18.084	2.531	0.065	0.125	0.010	0.008	0.000	0.000	0.000	0.000	0.000	1379.56	
27	0.6943	1129.4	1149.4	0.443	4.372	74.254	18.215	2.489	0.069	0.136	0.011	0.010	0.000	0.000	0.000	0.000	0.000	1379.43	
28	0.7022	1137.1	1157.2	0.539	4.496	73.204	18.611	2.874	0.084	0.169	0.012	0.010	0.000	0.000	0.000	0.000	0.000	1380.99	
29	0.7143	1152.3	1172.7	0.640	4.555	71.632	19.352	3.409	0.113	0.254	0.022	0.023	0.000	0.000	0.000	0.000	0.000	1387.53	
30	0.7175	1156.4	1176.9	0.643	4.600	71.157	19.629	3.537	0.116	0.265	0.025	0.027	0.000	0.000	0.000	0.000	0.000	1389.35	
Avg	0.7043	1144.0	1164.2	0.481	4.367	72.840	19.058	2.987	0.078	0.162	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1387.24	

Zune 273

GQ Source Analysis

GQ Source Number:	0202080	Specific Gravity:	0.6532
GQ Source Name:	RICHARDTON-GLEN ULLIN COMPRE	Dry Heat Value:	1104.42
Effective Date:	11/1/2013 9:00:00 AM	Wet Heat Value:	1085.20
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1104.42
Pressure Base:	14.730	Sample Pressure:	336.00
Viscosity:		Sample Temperature:	0.00

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	81.146		CO2	Carbon Dioxide	0.308
C2	Ethane	13.779	3.6740	N2	Nitrogen	3.409
C3	Propane	1.226	0.3370	O2	Oxygen	
IC4	Isobutane	0.045	0.0150	He	Helium	
NC4	n-Butane	0.052	0.0160	H2	Hydrogen	
IC5	Isopentane	0.012	0.0040	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.006	0.0020	Ar	Argon	
C6	Hexanes	0.017	0.0070	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 4.055 GPM

Sample Date: 12/2/2013 7:31:00 PM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 311

GQ Source Daily Summary

November 2013

Number: 111

Pressure Base: 14.730

Contract Day: 1

Name: LITTLE KNIFE-BELFIELD TRANSFER

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	0.6879	1160.8	1181.3	0.000	2.551	72.939	23.920	0.579	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.31	
2	0.6899	1164.0	1184.6	0.001	2.540	72.666	24.085	0.692	0.006	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1426.19	
3	0.6877	1160.2	1180.7	0.000	2.568	72.957	23.906	0.559	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.81	
4	0.6882	1161.4	1182.0	0.000	2.536	72.872	24.017	0.564	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.83	
5	0.6890	1162.3	1182.9	0.000	2.562	72.968	23.669	0.754	0.014	0.027	0.002	0.003	0.000	0.000	0.000	0.000	0.000	1424.97	
6	0.6882	1161.1	1181.6	0.000	2.562	72.893	23.934	0.599	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.34	
7	0.6881	1161.0	1181.5	0.000	2.558	72.907	23.938	0.586	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.34	
8	0.6877	1160.2	1180.8	0.000	2.559	72.990	23.863	0.576	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.90	
9	0.6876	1159.9	1180.4	0.000	2.577	73.015	23.805	0.592	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.51	
10	0.6870	1158.8	1179.3	0.000	2.580	73.118	23.727	0.563	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.87	
11	0.6864	1157.8	1178.3	0.000	2.586	73.241	23.597	0.566	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.26	
12	0.6867	1158.6	1179.1	0.000	2.565	73.201	23.639	0.583	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.92	
13	0.6862	1157.8	1178.3	0.000	2.565	73.293	23.558	0.572	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.50	
14	0.6874	1160.0	1180.6	0.000	2.547	73.119	23.680	0.638	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.91	
15	0.6875	1160.3	1180.9	0.000	2.537	73.110	23.721	0.597	0.009	0.020	0.002	0.003	0.000	0.000	0.000	0.000	0.000	1424.19	
16	0.6863	1158.3	1178.8	0.000	2.551	73.234	23.658	0.546	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.93	
17	0.6859	1157.6	1178.1	0.000	2.552	73.308	23.595	0.533	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.53	
18	0.6857	1157.1	1177.6	0.000	2.561	73.360	23.528	0.539	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.17	
19	0.6863	1158.0	1178.5	0.001	2.565	73.243	23.635	0.546	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.58	
20	0.6854	1156.9	1177.4	0.000	2.552	73.360	23.584	0.492	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.13	
21	0.6857	1157.7	1178.2	0.000	2.528	73.314	23.653	0.493	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.82	
22	0.6864	1158.8	1179.3	0.000	2.529	73.176	23.779	0.505	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.46	
23	0.6864	1158.3	1178.8	0.000	2.555	73.212	23.688	0.534	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.87	
24	0.6875	1160.2	1180.7	0.000	2.544	73.021	23.860	0.563	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.03	
25	0.6868	1159.3	1179.8	0.000	2.538	73.132	23.775	0.544	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.63	
26	0.6875	1160.3	1180.9	0.000	2.541	72.998	23.892	0.558	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.16	
27	0.6879	1160.9	1181.4	0.000	2.542	73.010	23.830	0.583	0.009	0.019	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1424.44	
28	0.6863	1158.2	1178.7	0.000	2.554	73.218	23.691	0.527	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.85	
29	0.6866	1158.8	1179.3	0.000	2.547	73.184	23.707	0.552	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.25	
30	0.6870	1159.5	1180.1	0.000	2.542	73.107	23.779	0.561	0.005	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.71	
Avg	0.6871	1159.0	1180.0	0.000	2.553	73.106	23.757	0.570	0.005	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.55	

Zone 33

GQ Source Analysis

GQ Source Number:	1202160	Specific Gravity:	0.7801
GQ Source Name:	BOWMAN BORDER	Dry Heat Value:	1118.44
Effective Date:	10/1/2013 9:00:00 AM	Wet Heat Value:	1098.97
Effective End Date:	12/2/2013 9:00:00 AM	As Deliv. Heat Value:	1118.44
Pressure Base:	14.730	Sample Pressure:	
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	58.073		CO2	Carbon Dioxide	2.793
C2	Ethane	25.632	6.8350	N2	Nitrogen	10.747
C3	Propane	2.437	0.6690	O2	Oxygen	
IC4	Isobutane	0.071	0.0230	He	Helium	
NC4	n-Butane	0.209	0.0660	H2	Hydrogen	
IC5	Isopentane	0.010	0.0040	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.024	0.0090	Ar	Argon	
C6	Hexanes	0.004	0.0020	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	0.000
C9	Nonanes					
C10	Decanes					

Totals 100.000% 7.608 GPM

Sample Date: 11/1/2013 11:42:00 AM
Sample Type: Composite
Sample Tech: MIKE GENTILINI
H2S: ppm

Sample Remarks:

Analysis Tech: MIKE GENTILINI

Analysis Remarks:

Zone 34

NORTH DAKOTA HEATING VALUE ZONES		
ZONES	MEASURING DEVICE	LOCATION
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
311	Monthly Sampler	Taylor Take-Off – Glen Ullin Comp
32	Chromatograph	Cabin Creek – Dickinson
33	Chromatograph	Killdeer
34	Monthly Sampler	Bowman Area

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 13	OCT 13	SEPT 13	AUG 13	JULY 13	JUNE 13	MAY 13	APR 13	MAR 13	FEB 13	JAN 13	DEC 12	ZONE
MT/ND	211	Sidney Area	1207	1209	1211	1206	1208	1209	1212	1201	1213	1206	1202	1203	1200	211
ND	24	Williston Area	1202	1207	1204	1199	1196	1198	1196	1197	1216	1204	1204	1204	1203	24
ND	25	Watford City Area	1191	1197	1183	1198	1193	1193	1188	1154	1200	1201	1196	1192	1192	25
ND/MT	241	Fairview Area	1198	1189	1198	1202	1203	1205	1205	1203	1203	1195	1196	1191	1191	241
ND	261	Williston - Tioga - Minot Line	1160	1166	1175	1180	1165	1172	1156	1159	1163	1123	1139	1160	1162	261
ND	262	Minot Area	1180	1192	1197	1196	1185	1191	1181	1177	1172	1170	1168	1163	1165	262
ND	263	Tioga - Portal	1112	1096	1125	1130	1130	1130	1127	1123	1117	1116	1116	1069	1069	263
ND	264	Williston - Ray	1202	1207	1204	1199	1196	1198	1196	1197	1216	1204	1204	1204	1203	264
ND	271	Bismarck - Cleveland	1169	1164	1184	1199	1187	1191	1183	1175	1167	1145	1144	1137	1147	271
ND	272	Cleveland - Mapleton	1170	1164	1184	1199	1187	1192	1183	1178	1169	1147	1145	1138	1148	272
ND	273	Cleveland - Grafton	1170	1164	1184	1199	1188	1192	1184	1177	1169	1146	1145	1138	1149	273
ND	28	Bismarck - Cabin Creek	1144	1105	1147	1199	1187	1191	1182	1173	1117	1102	1100	1108	1114	28
ND	31	Dickinson Area	1112	1107	1126	1079	1098	1112	1130	1163	1117	1103	1098	1105	1110	31
ND	311	Taylor Take-Off - Glen Ullin Comp		1104	1108	1094	1135	1188	1097	1163	1117	1103	1098	1105	1110	
ND/MT	32	Cabin Creek - Dickinson	1103	1096	1095	1115	1135	1142	1094	1100	1088	1089	1086	1094	1099	32
ND	33	Killdeer	1179	1180	1182	1183	1182	1183	1180	1179	1177	1176	1177	1177	1176	33
ND	34	Bowman Area	1136	1118	1118	1145	1127	1140	1121	1136	1146	1144	1147	1143	1142	34
ND	35	Baker Field - North Dakota	979	0	0	0	0	0	0	0	0	0	0	979	979	35

**THERMAL ZONE VARIANCE
DOCUMENTATION**

November 2013

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
28	-52	Mix of gas in the area
31	47	Mix of gas in the area
32	-20	Mix of gas in the area
34	-27	Mix of gas in the area