

November 6, 2013

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

Re: Case No. 11,006 (Therm Billing)
Monthly Report – September 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 October 2013.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our supplier for the month of September 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 September 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
October 2013

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.131512
MDU-308-ARNEGARD	025	1.126790
MDU-314-APPLE VALLEY	271	1.156877
MDU-318-BEACH	032	1.030409
MDU-319-BELFIELD	032	1.037979
MDU-323-BERTHOLD	262	1.129623
MDU-327-BISMARCK	028	1.156877
MDU-330-BOWMAN	034	1.050361
MDU-337-BURLINGTON	262	1.153982
MDU-343-CARRINGTON	273	1.156877
MDU-344-CLEVELAND	272	1.148737
MDU-364-CAVALIER	273	1.181296
MDU-365-DAWSON	271	1.148737
MDU-368-DES LACS	262	1.137743
MDU-369-DICKINSON	031	1.011791
MDU-374-FT TOTTEN	273	1.165016
MDU-375-DEVILS LAKE	273	1.165016
MDU-379-BARLOW	273	1.156877
MDU-384-EPPING	264	1.132457
MDU-387-ELDRIDGE	272	1.156877
MDU-407-GLADSTONE	031	1.011791
MDU-411-GLEN ULLIN	311	1.033284
MDU-413-GOLVA	032	1.015271
MDU-416-GARRISON	262	1.137743
MDU-417-GRAFTON	273	1.189436
MDU-429-HEBRON	311	1.033284
MDU-432-HETTINGER	903	2.387549
MDU-449-JAMESTOWN	272	1.165016
MDU-459-KILLDEER	033	1.117345
MDU-463-LANGDON	273	1.156877
MDU-469-LEFOR	031	1.011791
MDU-474-LIGNITE	263	1.074958
MDU-475-LINTON	802	0.995744
MDU-478-LINCOLN	028	1.156877
MDU-494-MEDINA	271	1.148737
MDU-498-MANDAN	028	1.156877
MDU-500-MARMARTH	034	1.058133
MDU-505-MINOT	262	1.153982
MDU-510-MOTT	031	1.011791
MDU-512-MAX	262	1.153982
MDU-522-NEW ENGLAND	031	1.004466
MDU-524-NEW SALEM	028	1.132457
MDU-532-NEW ROCKFORD	273	1.156877
MDU-539-PARK RIVER	273	1.181296
MDU-540-PALERMO	262	1.129623
MDU-558-RAY	264	1.132457
MDU-561-REGENT	031	1.011791
MDU-563-RHAME	034	1.042588
MDU-564-RICHARDTON	311	1.018430
MDU-568-ROSS	261	1.106500
MDU-572-RUTHVILLE	262	1.153982
MDU-574-SANBORN	272	1.165016

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

MDU-583-SENTINEL BUTTE	032	1.030409
MDU-588-SOUTH HEART	031	1.004466
MDU-717-SPIRITWOOD	272	1.165016
MDU-590-SPRINGBROOK	264	1.132457
MDU-591-STANLEY	261	1.114511
MDU-593-STEELE	271	1.148737
MDU-598-SHEYENNE	273	1.165016
MDU-605-SURREY	262	1.153982
MDU-610-TAPPEN	271	1.148737
MDU-611-TAYLOR	031	1.004466
MDU-616-TIOGA	261	1.106500
MDU-619-TURTLE LAKE	262	1.137743
MDU-620-TRENTON	024	1.140597
MDU-624-UNDERWOOD	262	1.137743
MDU-625-VALLEY CITY	272	1.173156
MDU-629-WALHALLA	273	1.181296
MDU-632-WATFORD CITY	025	1.131512
MDU-636-WHEELOCK	264	1.124317
MDU-637-WHITE EARTH	261	1.114511
MDU-642-WILLISTON	024	1.140597
MDU-646-WASHBURN	262	1.145862
MDU-647-WILTON	262	1.129623
MDU-664-RIVERDALE	262	1.137743
MDU-691-FAIRVIEW	241	1.143451
MDU-712-MINOT AFB	262	1.153982
MDU-732-MSR SITE	273	1.146263

GQ Source Daily Summary

September 2013

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	0.7145	1174.9	1195.7	0.793	2.963	72.161	20.241	3.316	0.137	0.320	0.030	0.039	0.000	0.000	0.000	0.000	0.000	1414.48	
2	0.7156	1175.5	1196.3	0.789	3.035	71.907	20.425	3.338	0.133	0.308	0.029	0.037	0.000	0.000	0.000	0.000	0.000	1414.13	
3	0.7168	1177.0	1197.9	0.779	3.060	71.821	20.366	3.458	0.135	0.313	0.029	0.038	0.000	0.000	0.000	0.000	0.000	1414.88	
4	0.7186	1179.1	1200.0	0.791	3.088	71.582	20.527	3.423	0.149	0.360	0.035	0.045	0.000	0.000	0.000	0.000	0.000	1415.59	
5	0.7095	1175.2	1196.0	0.802	2.456	73.598	18.739	4.003	0.133	0.242	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1419.83	
6	0.7214	1183.7	1204.7	0.791	3.069	71.299	20.556	3.705	0.149	0.351	0.034	0.045	0.000	0.000	0.000	0.000	0.000	1418.35	
7	0.7181	1178.1	1198.9	0.785	3.111	71.629	20.468	3.442	0.145	0.346	0.032	0.041	0.000	0.000	0.000	0.000	0.000	1414.86	
8	0.7213	1182.6	1203.5	0.781	3.145	71.327	20.537	3.540	0.162	0.408	0.042	0.056	0.000	0.000	0.000	0.000	0.000	1417.03	
9	0.7216	1183.6	1204.6	0.791	3.092	71.289	20.603	3.570	0.161	0.398	0.041	0.054	0.000	0.000	0.000	0.000	0.000	1418.04	
10	0.7004	1159.8	1180.3	0.792	2.557	74.580	18.447	3.298	0.105	0.194	0.012	0.014	0.000	0.000	0.000	0.000	0.000	1410.34	
11	0.7188	1180.2	1201.1	0.701	3.177	71.505	20.544	3.504	0.140	0.346	0.035	0.046	0.000	0.000	0.000	0.000	0.000	1416.67	
12	0.7182	1179.3	1200.1	0.699	3.182	71.519	20.547	3.543	0.130	0.312	0.029	0.037	0.000	0.000	0.000	0.000	0.000	1416.14	
13	0.7185	1179.8	1200.7	0.683	3.201	71.493	20.493	3.651	0.125	0.291	0.026	0.034	0.000	0.000	0.000	0.000	0.000	1416.53	
14	0.7181	1176.9	1197.8	0.749	3.241	71.379	20.752	3.385	0.127	0.302	0.028	0.036	0.000	0.000	0.000	0.000	0.000	1413.45	
15	0.7197	1179.1	1200.0	0.782	3.208	71.278	20.747	3.410	0.144	0.351	0.034	0.044	0.000	0.000	0.000	0.000	0.000	1414.48	
16	0.7195	1179.0	1199.9	0.780	3.193	71.458	20.521	3.443	0.150	0.367	0.037	0.049	0.000	0.000	0.000	0.000	0.000	1414.57	
17	0.7171	1176.6	1197.4	0.780	3.122	71.577	20.598	3.463	0.127	0.283	0.023	0.028	0.000	0.000	0.000	0.000	0.000	1414.01	
18	0.7098	1165.9	1186.5	0.679	3.245	72.336	20.314	3.085	0.095	0.209	0.016	0.020	0.000	0.000	0.000	0.000	0.000	1408.31	
19	0.7167	1174.4	1195.2	0.787	3.200	72.124	19.787	3.448	0.162	0.400	0.040	0.051	0.000	0.000	0.000	0.000	0.000	1411.76	
20	0.7178	1177.1	1197.9	0.796	3.128	71.388	20.934	3.244	0.132	0.312	0.029	0.037	0.000	0.000	0.000	0.000	0.000	1413.95	
21	0.7208	1181.3	1202.2	0.785	3.167	71.088	20.914	3.487	0.145	0.343	0.031	0.039	0.000	0.000	0.000	0.000	0.000	1416.08	
22	0.7207	1181.1	1202.0	0.783	3.181	70.993	21.033	3.493	0.137	0.317	0.027	0.035	0.000	0.000	0.000	0.000	0.000	1415.85	
23	0.7208	1180.8	1201.7	0.763	3.229	71.101	20.865	3.466	0.145	0.352	0.034	0.044	0.000	0.000	0.000	0.000	0.000	1415.52	
24	0.7187	1178.4	1199.3	0.769	3.176	71.336	20.821	3.347	0.140	0.337	0.032	0.041	0.000	0.000	0.000	0.000	0.000	1414.63	
25	0.7133	1173.0	1193.7	0.791	2.962	72.386	19.947	3.448	0.130	0.285	0.023	0.029	0.000	0.000	0.000	0.000	0.000	1413.48	
26	0.7190	1178.9	1199.7	0.773	3.168	71.297	20.840	3.375	0.141	0.336	0.031	0.039	0.000	0.000	0.000	0.000	0.000	1414.91	
27	0.7206	1180.8	1201.7	0.772	3.199	71.115	20.870	3.474	0.147	0.349	0.032	0.041	0.000	0.000	0.000	0.000	0.000	1415.68	
28	0.7188	1177.9	1198.8	0.771	3.210	71.170	21.017	3.334	0.131	0.307	0.026	0.033	0.000	0.000	0.000	0.000	0.000	1413.98	
29	0.7193	1178.4	1199.3	0.774	3.224	71.135	20.942	3.437	0.131	0.300	0.025	0.031	0.000	0.000	0.000	0.000	0.000	1414.07	
30	0.7204	1180.5	1201.4	0.770	3.199	71.127	20.872	3.486	0.142	0.334	0.030	0.038	0.000	0.000	0.000	0.000	0.000	1415.56	
Avg	0.7175	1178.0	1198.5	0.769	3.106	71.667	20.476	3.454	0.138	0.323	0.030	0.038	0.000	0.000	0.000	0.000	0.000	1414.90	

Zone 24, 264

GQ Source Analysis

GQ Source Number:	0602230	Specific Gravity:	0.7178
GQ Source Name:	WATFORD CITY BORDER	Dry Heat Value:	1198.28
Effective Date:	9/1/2013 9:00:00 AM	Wet Heat Value:	1177.42
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1198.28
Pressure Base:	14.730	Sample Pressure:	347.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	71.551		CO2	Carbon Dioxide	0.782
C2	Ethane	20.316	5.4172	N2	Nitrogen	3.088
C3	Propane	3.655	1.0039	O2	Oxygen	0.000
IC4	Isobutane	0.156	0.0508	He	Helium	
NC4	n-Butane	0.370	0.1162	H2	Hydrogen	
IC5	Isopentane	0.039	0.0143	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.040	0.0145	Ar	Argon	
C6	Hexanes	0.005	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
		Totals	100.000%	6.617 GPM		

Sample Date:
Sample Type: Composite
Sample Tech: PP
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 25

GQ Source Analysis

GQ Source Number:	0602160	Specific Gravity:	0.7319
GQ Source Name:	FAIRVIEW BORDER	Dry Heat Value:	1201.76
Effective Date:	9/1/2013 9:00:00 AM	Wet Heat Value:	1180.84
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1201.76
Pressure Base:	14.730	Sample Pressure:	404.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>		<u>Mol %</u>	
C1	Methane	68.950	CO2	Carbon Dioxide	1.182
C2	Ethane	21.768	N2	Nitrogen	3.606
C3	Propane	4.058	O2	Oxygen	0.000
IC4	Isobutane	0.140	He	Helium	
NC4	n-Butane	0.266	H2	Hydrogen	
IC5	Isopentane	0.015	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.016	Ar	Argon	
C6	Hexanes	0.000	CO	Carbon Monoxide	
C7	Heptanes		H2	Water	
C8	Octanes		Neo-C5	Neopentane	
C9	Nonanes				
C10	Decanes				

Totals 100.000% 1,255 GPM

Sample Date:
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 241

GQ Source Analysis

GQ Source Number:	2501030	Specific Gravity:	0.6695
GQ Source Name:	LIGNITE PLANT	Dry Heat Value:	1129.83
Effective Date:	9/1/2013 9:00:00 AM	Wet Heat Value:	1110.16
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1129.83
Pressure Base:	14.730	Sample Pressure:	383.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>		<u>Mol %</u>	
C1	Methane	77.052	CO2	Carbon Dioxide	0.098
C2	Ethane	17.927	N2	Nitrogen	3.711
C3	Propane	1.203	O2	Oxygen	0.000
IC4	Isobutane	0.002	He	Helium	
NC4	n-Butane	0.000	H2	Hydrogen	
IC5	Isopentane	0.000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.000	Ar	Argon	
C6	Hexanes	0.000	CO	Carbon Monoxide	
C7	Heptanes	0.005	H2O	Water	
C8	Octanes	0.003	Neo-C5	Neopentane	
C9	Nonanes				
C10	Decanes				
Totals		100.001%	5.111 GPM		

Sample Date:
Sample Type: Composite
Sample Tech: PP
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 2b3

*** End of Report ***

GQ Source Analysis

GQ Source Number:	0202080	Specific Gravity:	0.6450
GQ Source Name:	RICHARDTON-GLEN ULLIN COMPRE	Dry Heat Value:	1094.22
Effective Date:	9/1/2013 9:00:00 AM	Wet Heat Value:	1075.18
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1094.22
Pressure Base:	14.730	Sample Pressure:	1,823.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	83.781		CO2	Carbon Dioxide	0.617
C2	Ethane	10.948	2.9190	N2	Nitrogen	2.776
C3	Propane	1.712	0.4700	O2	Oxygen	
IC4	Isobutane	0.041	0.0131	He	Helium	
NC4	n-Butane	0.081	0.0250	H2	Hydrogen	
IC5	Isopentane	0.013	0.0050	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.015	0.0050	Ar	Argon	
C6	Hexanes	0.013	0.0050	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	0.003
C9	Nonanes					
C10	Decanes					
		Totals	100.000%	3.442 GPM		

Sample Date: 10/3/2013 10:56:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 311

GQ Source Daily Summary

September 2013

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 Wet	Heating Value Dry																
				CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	C6	C7	C8	C9	C10	Wobbe	CCT
1	0.6519	1096.1	1115.5	0.495	2.336	81.645	14.367	1.050	0.039	0.048	0.013	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1381.61
2	0.6528	1097.5	1116.9	0.526	2.291	81.602	14.356	1.101	0.046	0.052	0.016	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1382.39
3	0.6580	1106.1	1125.6	0.468	2.347	80.368	15.678	1.026	0.043	0.047	0.015	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1387.66
4	0.6644	1112.0	1131.7	0.666	2.292	79.191	16.846	0.870	0.054	0.050	0.021	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1388.35
5	0.6752	1124.0	1143.9	0.581	2.701	77.549	17.523	1.457	0.065	0.089	0.021	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1392.11
6	0.6530	1096.8	1116.2	0.582	2.269	81.759	14.058	1.181	0.053	0.069	0.018	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1381.28
7	0.6573	1102.1	1121.7	0.604	2.309	81.080	14.534	1.296	0.060	0.085	0.020	0.012	0.000	0.000	0.000	0.000	0.000	0.000	1383.51
8	0.6562	1100.4	1119.9	0.591	2.329	81.214	14.443	1.256	0.058	0.081	0.018	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1382.55
9	0.6504	1088.5	1107.7	0.779	2.229	82.482	13.186	1.173	0.054	0.069	0.018	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1373.57
10	0.6434	1084.9	1104.2	0.613	2.035	83.577	12.624	1.017	0.050	0.059	0.017	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1376.57
11	0.6529	1095.2	1114.6	0.591	2.334	81.792	13.934	1.196	0.054	0.071	0.017	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1379.47
12	0.6439	1085.7	1104.9	0.596	2.062	83.400	12.846	0.964	0.048	0.057	0.017	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1376.98
13	0.6520	1095.2	1114.6	0.580	2.270	81.861	14.033	1.115	0.050	0.064	0.016	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1380.37
14	0.6501	1092.8	1112.2	0.552	2.284	82.155	13.778	1.105	0.046	0.056	0.015	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1379.34
15	0.6456	1087.5	1106.8	0.554	2.178	82.947	13.243	0.959	0.045	0.051	0.015	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1377.49
16	0.6385	1079.4	1098.6	0.575	1.967	84.243	12.344	0.763	0.041	0.044	0.015	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1374.85
17	0.6411	1081.9	1101.0	0.571	2.074	83.812	12.539	0.892	0.042	0.047	0.015	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1375.08
18	0.6498	1089.6	1108.9	0.637	2.316	82.346	13.444	1.121	0.049	0.062	0.016	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1375.68
19	0.6451	1082.3	1101.4	0.726	2.184	83.368	12.512	1.078	0.048	0.060	0.016	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1371.40
20	0.6342	1071.3	1090.3	0.653	1.941	85.459	10.873	0.922	0.055	0.069	0.018	0.010	0.000	0.000	0.000	0.000	0.000	0.000	1369.06
21	0.6547	1101.7	1121.2	0.523	2.215	81.063	15.137	0.929	0.050	0.057	0.017	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1385.74
22	0.6592	1111.6	1131.3	0.449	2.152	79.831	16.751	0.698	0.049	0.042	0.020	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1393.39
23	0.6659	1117.0	1136.8	0.512	2.360	78.882	17.106	0.985	0.060	0.059	0.023	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1393.04
24	0.6775	1128.0	1148.0	0.605	2.636	76.703	18.780	1.113	0.061	0.069	0.022	0.011	0.000	0.000	0.000	0.000	0.000	0.000	1394.72
25	0.6792	1129.4	1149.4	0.540	2.805	76.736	18.234	1.488	0.071	0.089	0.024	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1394.74
26	0.6523	1092.3	1111.6	0.692	2.310	81.803	14.050	1.007	0.051	0.060	0.017	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1376.40
27	0.6380	1078.4	1097.5	0.577	1.984	84.266	12.371	0.697	0.040	0.044	0.015	0.008	0.000	0.000	0.000	0.000	0.000	0.000	1374.05
28	0.6284	1066.7	1085.6	0.564	1.814	85.976	11.075	0.486	0.034	0.032	0.013	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1369.47
29	0.6312	1070.8	1089.8	0.563	1.828	85.496	11.458	0.556	0.038	0.039	0.014	0.007	0.000	0.000	0.000	0.000	0.000	0.000	1371.69
30	0.6505	1094.0	1113.4	0.536	2.274	81.904	14.208	0.947	0.047	0.059	0.016	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1380.45
Avg	0.6518	1095.0	1114.7	0.583	2.237	81.817	14.211	1.015	0.050	0.059	0.017	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1380.77

Zone 32

GQ Source Analysis

GQ Source Number:	1202160	Specific Gravity:	0.7958
GQ Source Name:	BOWMAN BORDER	Dry Heat Value:	1144.90
Effective Date:	9/1/2013 9:00:00 AM	Wet Heat Value:	1125.00
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1109.77
Pressure Base:	14.730	Sample Pressure:	
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>		<u>Mol %</u>		
C1	Methane	53.937	CO2	Carbon Dioxide	1.868	
C2	Ethane	27.394	7.3040	N2	Nitrogen	13.975
C3	Propane	2.485	0.6830	O2	Oxygen	
IC4	Isobutane	0.074	0.0240	He	Helium	
NC4	n-Butane	0.225	0.0710	H2	Hydrogen	
IC5	Isopentane	0.010	0.0040	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.026	0.0090	Ar	Argon	
C6	Hexanes	0.006	0.0020	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 8.097 GPM

Sample Date: 10/1/2013 10:58:00 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	SEPT 13	AUG 13	JULY 13	JUNE 13	MAY 13	APR 13	MAR 13	FEB 13	JAN 13	DEC 12	NOV 12	OCT 12	ZONE
MT/ND	211	Sidney Area	1205	1206	1208	1209	1212	1201	1213	1206	1202	1203	1200	1201	1200	211
ND	24	Williston Area	1201	1199	1196	1198	1196	1197	1216	1204	1204	1204	1203	1199	1195	24
ND	25	Watford City Area	1189	1198	1193	1193	1188	1154	1200	1201	1196	1192	1192	1188	1176	25
ND/MT	241	Fairview Area	1198	1202	1203	1205	1205	1203	1203	1195	1196	1191	1191	1192	1189	241
ND	261	Williston - Tioga - Minot Line	1159	1180	1165	1172	1156	1159	1163	1123	1139	1160	1162	1162	1164	261
ND	262	Minot Area	1175	1196	1185	1191	1181	1177	1172	1170	1168	1163	1165	1165	1171	262
ND	263	Tioga - Portal	1117	1130	1130	1130	1127	1123	1117	1116	1116	1069	1069	1135	1140	263
ND	264	Williston - Ray	1201	1199	1196	1198	1196	1197	1216	1204	1204	1204	1203	1199	1195	264
ND	271	Bismarck - Cleveland	1167	1199	1187	1191	1183	1175	1167	1145	1144	1137	1147	1154	1170	271
ND	272	Cleveland - Mapleton	1168	1199	1187	1192	1183	1178	1169	1147	1145	1138	1148	1155	1171	272
ND	273	Cleveland - Grafton	1168	1199	1188	1192	1184	1177	1169	1146	1145	1138	1149	1155	1171	273
ND	28	Bismarck - Cabin Creek	1144	1199	1187	1191	1182	1173	1117	1102	1100	1108	1114	1104	1149	28
ND	31	Dickinson Area	1115	1079	1098	1112	1130	1163	1117	1103	1098	1105	1110	1111	1152	31
ND	311	Taylor Take-Off - Glen Ullin Comp		1094	1135	1188	1097	1163	1117	1103	1098	1105	1110			
ND/MT	32	Cabin Creek - Dickinson	1102	1115	1135	1142	1094	1100	1088	1089	1086	1094	1099	1056	1121	32
ND	33	Killdeer	1179	1183	1182	1183	1180	1179	1177	1176	1177	1177	1176	1177	1177	33
ND	34	Bowman Area	1139	1145	1127	1140	1121	1136	1146	1144	1147	1143	1142	1142	1140	34
ND	35	Baker Field - North Dakota	979	0	0	0	0	0	0	0	0	979	979	979	979	35

**THERMAL ZONE VARIANCE
DOCUMENTATION**

September 2013

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
32	-20	Mix of gas in the area
311	-41	Mix of gas in the area