

March 24, 2016

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

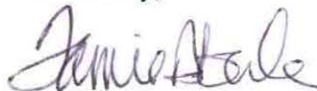
Re: Case No. PU-16-002 (Therm Billing)
Monthly Report – January 2016

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 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 February 2016.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of January 2016.
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 January 2016.

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
January 2016

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1485
MDU-308-ARNEGARD	025	1.1485
MDU-314-APPLE VALLEY	271	1.1395
MDU-318-BEACH	032	1.0323
MDU-319-BELFIELD	032	1.0398
MDU-323-BERTHOLD	262	1.1221
MDU-327-BISMARCK	028	1.0971
MDU-330-BOWMAN	034	1.0283
MDU-337-BURLINGTON	262	1.1463
MDU-343-CARRINGTON	273	1.1385
MDU-344-CLEVELAND	272	1.1305
MDU-364-CAVALIER	273	1.1626
MDU-365-DAWSON	271	1.1315
MDU-368-DES LACS	262	1.1301
MDU-369-DICKINSON	031	1.4267
MDU-374-FT TOTTEN	273	1.1378
MDU-375-DEVILS LAKE	273	1.1466
MDU-379-BARLOW	273	1.1385
MDU-384-EPPING	264	1.1145
MDU-387-ELDRIDGE	272	1.1385
MDU-407-GLADSTONE	031	1.0652
MDU-411-GLEN ULLIN	031	1.0643
MDU-413-GOLVA	032	1.0171
MDU-416-GARRISON	262	1.1301
MDU-417-GRAFTON	273	1.1706
MDU-421-HALLIDAY	031	1.0652
MDU-429-HEBRON	031	1.0652
MDU-432-HETTINGER	903	2.3875
MDU-449-JAMESTOWN	272	1.1466
MDU-459-KILLDEER	033	1.1202
MDU-463-LANGDON	273	1.1385
MDU-469-LEFOR	031	1.0652
MDU-474-LIGNITE	263	1.0293
MDU-475-LINTON	802	1.0285
MDU-478-LINCOLN	028	1.0971
MDU-488-MCKENZIE	271	1.1395
MDU-494-MEDINA	271	1.1315
MDU-498-MANDAN	028	1.0971
MDU-500-MARMARTH	034	1.0360
MDU-505-MINOT	262	1.1463
MDU-510-MOTT	031	1.0652
MDU-512-MAX	262	1.1221
MDU-522-NEW ENGLAND	031	1.0575
MDU-524-NEW SALEM	028	1.0739
MDU-532-NEW ROCKFORD	273	1.1385
MDU-539-PARK RIVER	273	1.1626
MDU-540-PALERMO	262	1.1221
MDU-558-RAY	264	1.1145
MDU-561-REGENT	031	1.0652

MDU-563-RHAME	034	1.0207
MDU-564-RICHARDTON	031	1.0652
MDU-568-ROSS	261	0.9996
MDU-572-RUTHVILLE	262	1.1463
MDU-574-SANBORN	272	1.1466
MDU-583-SENTINEL BUTTE	032	1.0323
MDU-588-SOUTH HEART	031	1.0575
MDU-717-SPIRITWOOD	272	1.1466
MDU-590-SPRINGBROOK	264	1.1145
MDU-591-STANLEY	261	1.0068
MDU-593-STEELE	271	1.1315
MDU-598-SHEYENNE	273	1.1466
MDU-605-SURREY	262	1.1463
MDU-610-TAPPEN	271	1.1315
MDU-611-TAYLOR	031	1.0575
MDU-616-TIOGA	261	1.0141
MDU-619-TURTLE LAKE	262	1.1301
MDU-620-TRENTON	024	1.1406
MDU-624-UNDERWOOD	262	1.1301
MDU-625-VALLEY CITY	272	1.1546
MDU-629-WALHALLA	273	1.1626
MDU-632-WATFORD CITY	610	1.1088
MDU-636-WHEELOCK	264	1.1065
MDU-637-WHITE EARTH	261	1.0068
MDU-642-WILLISTON	024	1.1406
MDU-646-WASHBURN	262	1.1382
MDU-647-WILTON	262	1.1221
MDU-664-RIVERDALE	262	1.1301
MDU-691-FAIRVIEW	241	1.1406
MDU-712-MINOT AFB	262	1.1463
MDU-718-FAIRMOUNT	600	1.1120
MDU-732-NEKOMA	273	1.1385
MDU-732-MSR SITE	273	1.1482

GQ Source Analysis

GQ Source Number:	0602330	Specific Gravity:	0.7120
GQ Source Name:	WILLISTON BORDER	Dry Heat Value:	1195.42
Effective Date:	1/1/2016 9:00:00 AM	Wet Heat Value:	1174.62
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1195.42
Pressure Base:	14.730	Sample Pressure:	390.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	71.600		CO2	Carbon Dioxide	0.881
C2	Ethane	21.701	5.7866	N2	Nitrogen	2.573
C3	Propane	2.891	0.7941	O2	Oxygen	0.000
IC4	Isobutane	0.100	0.0328	He	Helium	
NC4	n-Butane	0.215	0.0675	H2	Hydrogen	
IC5	Isopentane	0.017	0.0062	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.020	0.0072	Ar	Argon	
C6	Hexanes	0.002	0.0008	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 6.695 GPM

Sample Date: 2/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 24

GQ Source Analysis

GQ Source Number:	0602160	Specific Gravity:	0.7343
GQ Source Name:	FAIRVIEW BORDER	Dry Heat Value:	1199.46
Effective Date:	1/1/2016 9:00:00 AM	Wet Heat Value:	1178.58
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1199.46
Pressure Base:	14.730	Sample Pressure:	500.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	68.920		CO2	Carbon Dioxide	1.198
C2	Ethane	20.900	5.5729	N2	Nitrogen	3.933
C3	Propane	4.633	1.2727	O2	Oxygen	0.011
IC4	Isobutane	0.140	0.0457	He	Helium	
NC4	n-Butane	0.241	0.0759	H2	Hydrogen	
IC5	Isopentane	0.013	0.0048	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.010	0.0038	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%			6.976 GPM

Sample Date: 2/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 241

GQ Source Analysis

GQ Source Number:	0602230	Specific Gravity:	0.7313
GQ Source Name:	WATFORD CITY BORDER	Dry Heat Value:	1215.83
Effective Date:	12/1/2015 9:00:00 AM	Wet Heat Value:	1194.67
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1215.83
Pressure Base:	14.730	Sample Pressure:	303.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	70.368		CO2	Carbon Dioxide	1.010
C2	Ethane	20.297	5.4122	N2	Nitrogen	2.943
C3	Propane	4.498	1.2356	O2	Oxygen	0.008
IC4	Isobutane	0.260	0.0848	He	Helium	
NC4	n-Butane	0.537	0.1689	H2	Hydrogen	
IC5	Isopentane	0.039	0.0142	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.037	0.0133	Ar	Argon	
C6	Hexanes	0.002	0.0009	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 6.930 GPM

Sample Date: 1/4/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 25

GQ Source Analysis

GQ Source Number:	2501030	Specific Gravity:	0.6462
GQ Source Name:	LIGNITE PLANT	Dry Heat Value:	1092.38
Effective Date:	1/1/2016 9:00:00 AM	Wet Heat Value:	1073.37
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1092.38
Pressure Base:	14.730	Sample Pressure:	388.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	81.466		CO2	Carbon Dioxide	0.113
C2	Ethane	13.880	3.7010	N2	Nitrogen	3.734
C3	Propane	0.775	0.2129	O2	Oxygen	0.011
IC4	Isobutane	0.005	0.0018	He	Helium	
NC4	n-Butane	0.009	0.0027	H2	Hydrogen	
IC5	Isopentane	0.000	0.0000	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.002	0.0006	Ar	Argon	
C6	Hexanes	0.006	0.0027	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
Totals			100.000%		3.922 GPM	

Sample Date: 2/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 263

*** End of Report ***

GQ Source Analysis

GQ Source Number:	0702010	Specific Gravity:	0.7031
GQ Source Name:	EPPING BORDER	Dry Heat Value:	1183.06
Effective Date:	1/1/2016 9:00:00 AM	Wet Heat Value:	1162.47
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1183.06
Pressure Base:	14.730	Sample Pressure:	321.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	73.132		CO2	Carbon Dioxide	0.865
C2	Ethane	20.554	5.4807	N2	Nitrogen	2.504
C3	Propane	2.597	0.7133	O2	Oxygen	0.000
IC4	Isobutane	0.094	0.0308	He	Helium	
NC4	n-Butane	0.207	0.0653	H2	Hydrogen	
IC5	Isopentane	0.019	0.0070	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.024	0.0086	Ar	Argon	
C6	Hexanes	0.003	0.0014	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					
		Totals	100.000%	6.307	GPM	

Sample Date: 2/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 264

GQ Source Daily Summary

January 2016

Number: 161

Pressure Base: 14.730

Contract Day: 1

Name: NORTH TIOGA TRANSFER-PORTAL

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	0.7123	1164.0	1184.6	0.857	3.323	71.819	20.786	2.807	0.103	0.248	0.025	0.032	0.000	0.000	0.000	0.000	0.000	1403.62	
2	0.7155	1167.8	1188.5	0.886	3.350	71.470	20.921	2.899	0.115	0.285	0.032	0.041	0.000	0.000	0.000	0.000	0.000	1405.01	
3	0.7169	1170.4	1191.1	0.885	3.324	71.389	20.913	2.964	0.126	0.318	0.035	0.046	0.000	0.000	0.000	0.000	0.000	1406.74	
4	0.7136	1165.8	1186.4	0.870	3.319	71.695	20.826	2.854	0.110	0.265	0.027	0.034	0.000	0.000	0.000	0.000	0.000	1404.45	
5	0.7150	1167.8	1188.4	0.885	3.299	71.619	20.835	2.869	0.119	0.297	0.033	0.043	0.000	0.000	0.000	0.000	0.000	1405.51	
6	0.7144	1167.3	1187.9	0.870	3.298	71.721	20.751	2.865	0.120	0.300	0.032	0.043	0.000	0.000	0.000	0.000	0.000	1405.49	
7	0.7210	1178.4	1199.3	0.839	3.278	71.369	20.388	3.433	0.168	0.421	0.046	0.059	0.000	0.000	0.000	0.000	0.000	1412.39	
8	0.7212	1177.8	1198.6	0.902	3.243	71.034	21.005	3.167	0.153	0.393	0.044	0.058	0.000	0.000	0.000	0.000	0.000	1411.45	
9	0.7205	1176.5	1197.3	0.885	3.283	71.199	20.838	3.105	0.157	0.416	0.050	0.066	0.000	0.000	0.000	0.000	0.000	1410.58	
10	0.7228	1180.5	1201.4	0.890	3.252	71.009	20.835	3.304	0.164	0.426	0.051	0.068	0.000	0.000	0.000	0.000	0.000	1413.04	
11	0.7189	1174.0	1194.7	0.884	3.289	71.364	20.789	3.027	0.148	0.388	0.047	0.063	0.000	0.000	0.000	0.000	0.000	1409.09	
12	0.7189	1174.1	1194.9	0.881	3.288	71.245	20.895	3.108	0.138	0.353	0.040	0.052	0.000	0.000	0.000	0.000	0.000	1409.28	
13	0.7106	1160.5	1181.1	0.888	3.333	72.052	20.679	2.642	0.100	0.246	0.026	0.033	0.000	0.000	0.000	0.000	0.000	1401.04	
14	0.7134	1164.7	1185.3	0.892	3.328	71.631	21.022	2.668	0.111	0.279	0.030	0.038	0.000	0.000	0.000	0.000	0.000	1403.40	
15	0.7166	1170.0	1190.7	0.885	3.316	71.378	20.994	2.891	0.128	0.326	0.036	0.047	0.000	0.000	0.000	0.000	0.000	1406.61	
16	0.7286	1188.4	1209.4	0.911	3.276	70.457	20.931	3.548	0.197	0.528	0.065	0.086	0.000	0.000	0.000	0.000	0.000	1416.86	
17	0.7247	1181.9	1202.8	0.905	3.317	70.725	20.952	3.374	0.166	0.436	0.053	0.071	0.000	0.000	0.000	0.000	0.000	1412.89	
18	0.7191	1174.3	1195.1	0.883	3.297	71.252	20.887	3.071	0.142	0.366	0.043	0.058	0.000	0.000	0.000	0.000	0.000	1409.22	
19	0.7160	1168.6	1189.3	0.891	3.331	71.452	20.933	2.897	0.120	0.297	0.033	0.044	0.000	0.000	0.000	0.000	0.000	1405.57	
20	0.7112	1161.0	1181.6	0.879	3.372	71.919	20.759	2.674	0.098	0.238	0.025	0.033	0.000	0.000	0.000	0.000	0.000	1401.04	
21	0.7102	1159.8	1180.3	0.879	3.349	71.981	20.848	2.572	0.093	0.225	0.023	0.029	0.000	0.000	0.000	0.000	0.000	1400.61	
22	0.7117	1161.9	1182.5	0.893	3.343	71.890	20.762	2.717	0.098	0.238	0.025	0.034	0.000	0.000	0.000	0.000	0.000	1401.66	
23	0.7121	1162.9	1183.5	0.900	3.308	71.748	20.947	2.717	0.097	0.231	0.022	0.028	0.000	0.000	0.000	0.000	0.000	1402.49	
24	0.7162	1168.2	1188.9	0.910	3.351	71.479	20.784	2.992	0.118	0.293	0.032	0.041	0.000	0.000	0.000	0.000	0.000	1404.83	
25	0.7111	1161.5	1182.1	0.894	3.310	71.846	20.933	2.661	0.092	0.218	0.021	0.026	0.000	0.000	0.000	0.000	0.000	1401.76	
26	0.7083	1157.6	1178.1	0.878	3.311	72.199	20.700	2.602	0.085	0.192	0.015	0.018	0.000	0.000	0.000	0.000	0.000	1399.81	
27	0.7090	1158.2	1178.7	0.897	3.313	72.085	20.836	2.556	0.083	0.190	0.018	0.023	0.000	0.000	0.000	0.000	0.000	1399.81	
28	0.7140	1166.4	1187.1	0.876	3.306	71.654	20.793	2.960	0.107	0.250	0.024	0.030	0.000	0.000	0.000	0.000	0.000	1404.86	
29	0.7158	1168.4	1189.1	0.891	3.333	71.489	20.820	3.002	0.116	0.281	0.029	0.038	0.000	0.000	0.000	0.000	0.000	1405.45	
30	0.7187	1173.0	1193.7	0.897	3.313	71.191	20.931	3.145	0.127	0.317	0.035	0.045	0.000	0.000	0.000	0.000	0.000	1408.11	
31	0.7200	1175.3	1196.1	0.888	3.304	71.008	21.017	3.259	0.130	0.320	0.033	0.041	0.000	0.000	0.000	0.000	0.000	1409.66	
Avg	0.7161	1169.0	1190.0	0.886	3.312	71.496	20.849	2.947	0.124	0.309	0.034	0.044	0.000	0.000	0.000	0.000	0.000	1406.21	

Zone 265

GQ Source Daily Summary

January 2016

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	0.7240	1156.9	1177.4	0.633	5.195	70.215	19.481	3.974	0.146	0.316	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1383.67	
2	0.7282	1161.1	1181.6	0.667	5.278	69.552	19.882	4.106	0.151	0.326	0.019	0.020	0.000	0.000	0.000	0.000	0.000	1384.72	
3	0.7257	1156.9	1177.4	0.656	5.316	69.956	19.518	4.050	0.148	0.318	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1382.10	
4	0.7280	1160.7	1181.2	0.692	5.249	69.580	19.889	4.080	0.148	0.321	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1384.41	
5	0.7320	1164.0	1184.6	0.721	5.376	68.963	20.186	4.229	0.148	0.332	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1384.57	
6	0.7177	1150.0	1170.3	0.596	5.077	71.046	19.181	3.673	0.122	0.271	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1381.53	
7	0.7216	1155.0	1175.4	0.603	5.127	70.385	19.660	3.788	0.125	0.277	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1383.75	
8	0.7179	1150.8	1171.2	0.577	5.076	70.958	19.303	3.667	0.120	0.266	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1382.27	
9	0.7126	1147.6	1167.9	0.519	4.866	71.686	19.123	3.424	0.111	0.241	0.014	0.015	0.000	0.000	0.000	0.000	0.000	1383.48	
10	0.7072	1141.5	1161.7	0.483	4.785	72.479	18.697	3.205	0.102	0.221	0.013	0.014	0.000	0.000	0.000	0.000	0.000	1381.42	
11	0.7061	1139.5	1159.6	0.495	4.783	72.745	18.417	3.197	0.104	0.228	0.014	0.015	0.000	0.000	0.000	0.000	0.000	1380.05	
12	0.7073	1141.9	1162.1	0.489	4.761	72.528	18.627	3.235	0.106	0.225	0.014	0.015	0.000	0.000	0.000	0.000	0.000	1381.78	
13	0.7150	1148.5	1168.8	0.557	4.978	71.408	19.098	3.547	0.119	0.260	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1382.23	
14	0.7174	1151.9	1172.3	0.561	4.985	70.993	19.440	3.605	0.120	0.263	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1384.09	
15	0.7100	1143.2	1163.5	0.513	4.897	72.075	18.825	3.322	0.107	0.233	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1380.76	
16	0.7009	1134.1	1154.2	0.457	4.679	73.440	18.150	2.963	0.093	0.195	0.012	0.012	0.000	0.000	0.000	0.000	0.000	1378.68	
17	0.6947	1126.4	1146.3	0.451	4.574	74.618	17.202	2.835	0.092	0.201	0.013	0.013	0.000	0.000	0.000	0.000	0.000	1375.40	
18	0.7049	1138.6	1158.8	0.492	4.727	72.947	18.329	3.141	0.103	0.228	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1380.20	
19	0.7087	1140.9	1161.1	0.528	4.890	72.429	18.433	3.327	0.112	0.248	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1379.25	
20	0.7137	1147.5	1167.8	0.530	4.954	71.454	19.282	3.397	0.109	0.242	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1382.35	
21	0.7185	1151.7	1172.1	0.575	5.084	70.775	19.525	3.628	0.119	0.263	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1382.76	
22	0.7135	1145.0	1165.3	0.543	5.064	71.591	18.920	3.491	0.113	0.249	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1379.62	
23	0.7055	1137.8	1158.0	0.524	4.783	72.814	18.424	3.074	0.107	0.241	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1378.66	
24	0.7193	1153.4	1173.8	0.606	5.004	70.595	19.852	3.509	0.123	0.275	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1384.08	
25	0.7260	1160.0	1180.5	0.623	5.203	69.649	20.158	3.916	0.131	0.285	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1385.56	
26	0.7167	1149.7	1170.0	0.565	5.055	71.151	19.159	3.664	0.121	0.256	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1382.02	
27	0.7326	1164.4	1185.0	0.681	5.473	68.713	20.378	4.265	0.144	0.311	0.018	0.018	0.000	0.000	0.000	0.000	0.000	1384.48	
28	0.7343	1167.3	1188.0	0.705	5.422	68.426	20.661	4.291	0.147	0.313	0.018	0.018	0.000	0.000	0.000	0.000	0.000	1386.28	
29	0.7263	1157.1	1177.6	0.642	5.382	69.615	19.930	3.987	0.132	0.281	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1381.78	
30	0.7284	1160.3	1180.9	0.647	5.373	69.350	20.064	4.101	0.137	0.293	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1383.66	
31	0.7240	1155.5	1176.0	0.621	5.293	70.014	19.704	3.924	0.133	0.280	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1382.11	
Avg	0.7174	1150.0	1170.7	0.579	5.055	71.037	19.274	3.633	0.122	0.266	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1382.18	

*** End of Report***

Zone 213

GQ Source Daily Summary

January 2016

Number: 041

Pressure Base: 14.730

Contract Day: 1

Name: BISMARCK STATION-GLEN ULLIN 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	0.6707	1111.2	1130.9	0.136	3.734	77.514	17.002	1.540	0.027	0.042	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1380.86	
2	0.6729	1114.6	1134.3	0.154	3.711	77.116	17.361	1.583	0.028	0.043	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1382.78	
3	0.6678	1107.1	1126.7	0.147	3.690	78.069	16.536	1.485	0.027	0.042	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1378.84	
4	0.6656	1103.7	1123.2	0.144	3.699	78.478	16.161	1.445	0.027	0.042	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1376.78	
5	0.6699	1109.5	1129.1	0.148	3.746	77.713	16.751	1.565	0.028	0.043	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1379.54	
6	0.6726	1114.0	1133.7	0.157	3.709	77.223	17.229	1.601	0.030	0.046	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1382.39	
7	0.6727	1113.7	1133.4	0.151	3.746	77.180	17.243	1.604	0.028	0.043	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1381.93	
8	0.6728	1114.7	1134.4	0.135	3.723	77.121	17.367	1.584	0.027	0.040	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1383.00	
9	0.6714	1111.5	1131.1	0.153	3.757	77.448	16.967	1.593	0.030	0.046	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1380.47	
10	0.6696	1109.5	1129.2	0.139	3.734	77.750	16.741	1.562	0.028	0.042	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1379.86	
11	0.6652	1102.9	1122.4	0.164	3.680	78.559	16.094	1.436	0.025	0.037	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1376.20	
12	0.6699	1109.6	1129.3	0.169	3.703	77.781	16.671	1.596	0.030	0.046	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1379.75	
13	0.6693	1109.3	1129.0	0.161	3.678	77.880	16.619	1.584	0.029	0.044	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1379.98	
14	0.6746	1118.1	1137.9	0.158	3.650	76.829	17.664	1.619	0.029	0.045	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1385.41	
15	0.6721	1112.4	1132.1	0.161	3.753	77.363	17.004	1.639	0.030	0.045	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1380.92	
16	0.6631	1098.6	1118.1	0.160	3.743	79.071	15.443	1.504	0.030	0.045	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1373.10	
17	0.6578	1090.2	1109.5	0.153	3.776	79.933	14.737	1.334	0.026	0.037	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1367.99	
18	0.6663	1103.2	1122.7	0.167	3.759	78.422	16.061	1.514	0.029	0.043	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1375.46	
19	0.6671	1104.3	1123.8	0.163	3.776	78.334	16.070	1.569	0.032	0.051	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1375.96	
20	0.6726	1114.3	1134.1	0.136	3.720	77.187	17.277	1.611	0.026	0.038	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1382.82	
21	0.6747	1116.7	1136.4	0.179	3.710	77.086	17.118	1.784	0.042	0.072	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1383.52	
22	0.6719	1113.4	1133.1	0.170	3.659	77.409	17.065	1.612	0.031	0.048	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1382.37	
23	0.6748	1119.6	1139.4	0.144	3.600	76.772	17.803	1.606	0.028	0.043	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1387.01	
24	0.6710	1115.5	1135.2	0.117	3.530	77.290	17.612	1.393	0.022	0.033	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1385.88	
25	0.6743	1119.0	1138.8	0.157	3.561	76.867	17.762	1.580	0.027	0.041	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1386.92	
26	0.6690	1109.0	1128.6	0.173	3.651	77.945	16.593	1.558	0.030	0.046	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1379.85	
27	0.6734	1115.8	1135.6	0.263	3.514	77.425	16.927	1.749	0.043	0.070	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1383.79	
28	0.6780	1122.8	1142.7	0.265	3.518	76.527	17.774	1.798	0.042	0.068	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1387.71	
29	0.6716	1113.3	1133.0	0.167	3.640	77.369	17.224	1.527	0.027	0.042	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1382.60	
30	0.6746	1118.1	1137.9	0.177	3.613	76.815	17.751	1.566	0.028	0.044	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1385.49	
31	0.6741	1116.8	1136.6	0.183	3.636	76.894	17.661	1.553	0.027	0.042	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1384.41	
Avg	0.6707	1111.0	1131.0	0.163	3.681	77.593	16.912	1.571	0.029	0.045	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1381.08	

Zone 28

GQ Source Daily Summary

January 2016

Number: 271

Pressure Base: 14.730

Contract Day: 1

Name: DICKINSON STN-BELFIELD TSF-GLENULLIN STN

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	0.6712	1112.2	1131.9	0.142	3.717	77.441	17.036	1.593	0.027	0.043	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1381.52	
2	0.6694	1109.4	1129.1	0.148	3.705	77.788	16.724	1.563	0.027	0.043	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1379.97	
3	0.6656	1103.8	1123.3	0.143	3.696	78.488	16.122	1.481	0.027	0.042	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1376.89	
4	0.6661	1104.3	1123.8	0.135	3.728	78.385	16.177	1.504	0.027	0.042	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1376.96	
5	0.6702	1109.9	1129.6	0.155	3.732	77.681	16.766	1.591	0.028	0.045	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1379.84	
6	0.6713	1112.0	1131.7	0.147	3.727	77.439	17.010	1.604	0.028	0.044	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1381.24	
7	0.6700	1110.4	1130.0	0.127	3.735	77.634	16.876	1.560	0.026	0.040	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1380.52	
8	0.6725	1113.7	1133.4	0.145	3.743	77.246	17.137	1.654	0.029	0.045	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1382.06	
9	0.6706	1109.0	1128.6	0.172	3.805	77.686	16.592	1.661	0.031	0.049	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1378.21	
10	0.6703	1108.6	1128.2	0.171	3.801	77.732	16.562	1.651	0.031	0.048	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1378.05	
11	0.6673	1106.4	1126.0	0.150	3.685	78.178	16.399	1.523	0.025	0.038	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1378.44	
12	0.6679	1106.8	1126.4	0.166	3.690	78.150	16.339	1.578	0.029	0.046	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1378.32	
13	0.6727	1115.2	1134.9	0.162	3.644	77.224	17.257	1.635	0.029	0.046	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1383.70	
14	0.6730	1115.0	1134.7	0.147	3.702	77.156	17.271	1.650	0.028	0.044	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1383.19	
15	0.6683	1105.9	1125.5	0.162	3.787	78.079	16.290	1.605	0.029	0.045	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1376.82	
16	0.6571	1089.6	1108.9	0.146	3.754	80.165	14.442	1.423	0.028	0.041	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1367.98	
17	0.6597	1093.2	1112.6	0.156	3.766	79.615	14.989	1.406	0.026	0.039	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1369.76	
18	0.6649	1100.5	1120.0	0.166	3.793	78.701	15.734	1.531	0.028	0.044	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1373.57	
19	0.6702	1110.8	1130.4	0.126	3.730	77.635	16.846	1.590	0.027	0.042	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1380.82	
20	0.6728	1113.1	1132.8	0.178	3.752	77.322	16.926	1.735	0.032	0.051	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1381.07	
21	0.6706	1111.3	1131.0	0.166	3.672	77.674	16.769	1.633	0.031	0.050	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1381.09	
22	0.6731	1116.3	1136.1	0.143	3.635	77.110	17.422	1.615	0.028	0.044	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1384.79	
23	0.6710	1115.2	1135.0	0.117	3.544	77.338	17.481	1.460	0.023	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1385.59	
24	0.6684	1112.6	1132.3	0.110	3.470	77.822	17.129	1.416	0.021	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1385.00	
25	0.6713	1113.2	1132.9	0.173	3.609	77.551	16.941	1.649	0.029	0.046	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1382.75	
26	0.6697	1110.0	1129.7	0.196	3.622	77.945	16.468	1.677	0.034	0.054	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1380.40	
27	0.6774	1121.8	1141.7	0.291	3.479	76.726	17.549	1.825	0.046	0.077	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1387.14	
28	0.6721	1113.5	1133.2	0.179	3.654	77.379	17.075	1.634	0.029	0.046	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1382.36	
29	0.6712	1113.1	1132.8	0.164	3.623	77.436	17.166	1.537	0.027	0.043	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1382.70	
30	0.6729	1115.2	1134.9	0.177	3.636	77.151	17.372	1.592	0.027	0.043	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1383.54	
31	0.6736	1115.2	1135.0	0.187	3.680	77.064	17.362	1.632	0.029	0.045	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1382.91	
Avg	0.6698	1110.0	1129.6	0.160	3.688	77.772	16.717	1.587	0.029	0.045	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1380.23	

Zone 31

GQ Source Daily Summary

January 2016

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	0.6681	1100.5	1119.9	0.207	4.040	78.370	15.466	1.822	0.034	0.054	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1370.11	
2	0.6612	1091.1	1110.4	0.191	3.978	79.635	14.437	1.666	0.034	0.053	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1365.61	
3	0.6603	1090.1	1109.4	0.187	3.964	79.778	14.343	1.635	0.033	0.052	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1365.22	
4	0.6664	1098.5	1118.0	0.202	3.998	78.717	15.189	1.796	0.035	0.056	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1369.51	
5	0.6681	1100.6	1120.1	0.206	4.031	78.424	15.382	1.855	0.037	0.058	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1370.29	
6	0.6684	1100.9	1120.4	0.193	4.052	78.314	15.524	1.823	0.034	0.054	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1370.49	
7	0.6684	1101.3	1120.8	0.176	4.056	78.258	15.615	1.806	0.032	0.050	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1370.96	
8	0.6683	1101.4	1120.9	0.191	4.023	78.314	15.570	1.805	0.035	0.056	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1371.10	
9	0.6667	1099.9	1119.3	0.172	3.993	78.574	15.409	1.764	0.033	0.050	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1370.86	
10	0.6605	1091.0	1110.3	0.197	3.914	79.670	14.561	1.579	0.029	0.044	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1366.18	
11	0.6665	1099.5	1118.9	0.205	3.945	78.679	15.304	1.776	0.034	0.052	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1370.60	
12	0.6653	1097.4	1116.8	0.211	3.948	78.948	15.014	1.781	0.035	0.055	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1369.25	
13	0.6696	1103.4	1123.0	0.210	3.991	78.122	15.727	1.851	0.036	0.056	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1372.32	
14	0.6678	1100.2	1119.7	0.192	4.042	78.410	15.460	1.805	0.034	0.052	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1370.20	
15	0.6616	1091.0	1110.3	0.201	4.008	79.622	14.345	1.729	0.036	0.054	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1365.05	
16	0.6503	1074.7	1093.7	0.181	3.976	81.567	12.777	1.421	0.029	0.043	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1356.20	
17	0.6608	1090.2	1109.6	0.204	3.973	79.659	14.476	1.602	0.032	0.048	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1364.97	
18	0.6633	1093.9	1113.3	0.197	3.993	79.256	14.764	1.690	0.036	0.057	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1366.98	
19	0.6684	1101.6	1121.1	0.197	4.009	78.341	15.507	1.852	0.034	0.052	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1371.28	
20	0.6706	1104.1	1123.7	0.230	4.010	78.243	15.324	2.039	0.051	0.092	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1372.15	
21	0.6670	1099.0	1118.5	0.222	3.995	78.719	15.078	1.877	0.039	0.062	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1369.47	
22	0.6679	1100.4	1119.9	0.194	4.044	78.424	15.395	1.854	0.033	0.051	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1370.25	
23	0.6604	1086.2	1105.5	0.231	4.139	79.928	13.856	1.732	0.038	0.066	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1360.30	
24	0.6702	1102.2	1121.7	0.253	4.051	78.229	15.341	2.011	0.040	0.066	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1370.22	
25	0.6650	1095.5	1114.9	0.233	4.001	79.114	14.677	1.871	0.037	0.059	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1367.21	
26	0.6697	1101.5	1121.0	0.354	3.897	78.567	14.994	2.023	0.056	0.096	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1369.81	
27	0.6720	1105.0	1124.5	0.293	3.995	78.007	15.486	2.094	0.044	0.072	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1371.75	
28	0.6660	1095.8	1115.2	0.246	4.062	78.854	14.914	1.824	0.036	0.057	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1366.52	
29	0.6702	1101.9	1121.4	0.260	4.065	78.083	15.588	1.904	0.037	0.058	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1369.82	
30	0.6680	1098.1	1117.6	0.261	4.081	78.478	15.244	1.838	0.036	0.056	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1367.43	
31	0.6655	1094.0	1113.4	0.269	4.086	79.035	14.634	1.874	0.037	0.059	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1364.81	
Avg	0.6659	1097.0	1116.6	0.218	4.012	78.850	15.013	1.806	0.036	0.058	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1368.29	

Zone 32

GQ Source Daily Summary

January 2016

Number: 111

Pressure Base: 14.730

Contract Day: 1

Name: LITTLE KNIFE PLANT-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	0.6884	1162.0	1182.5	0.002	2.520	73.120	23.505	0.837	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.25	
2	0.6877	1160.6	1181.2	0.002	2.537	73.221	23.418	0.807	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.33	
3	0.6878	1160.6	1181.2	0.002	2.540	73.194	23.461	0.788	0.006	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.29	
4	0.6882	1161.7	1182.2	0.001	2.517	73.175	23.449	0.835	0.008	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1425.13	
5	0.6876	1160.8	1181.4	0.001	2.510	73.244	23.439	0.791	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.76	
6	0.6875	1160.6	1181.2	0.001	2.513	73.269	23.403	0.795	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.60	
7	0.6881	1161.7	1182.3	0.002	2.507	73.168	23.476	0.830	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.26	
8	0.6871	1159.6	1180.1	0.002	2.541	73.301	23.388	0.751	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.68	
9	0.6867	1159.0	1179.5	0.002	2.539	73.366	23.339	0.737	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.41	
10	0.6870	1159.6	1180.1	0.001	2.534	73.345	23.328	0.775	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.78	
11	0.6874	1160.2	1180.8	0.002	2.534	73.282	23.367	0.797	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.12	
12	0.6890	1162.6	1183.2	0.002	2.532	73.088	23.440	0.919	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.48	
13	0.6891	1162.6	1183.2	0.002	2.541	73.105	23.382	0.948	0.008	0.013	0.000	0.001	0.000	0.000	0.000	0.000	0.000	1425.36	
14	0.6873	1160.1	1180.6	0.001	2.532	73.313	23.323	0.813	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.08	
15	0.6885	1161.9	1182.5	0.011	2.515	73.139	23.462	0.850	0.008	0.013	0.000	0.001	0.000	0.000	0.000	0.000	0.000	1425.12	
16	0.6890	1162.7	1183.3	0.002	2.529	73.095	23.430	0.921	0.009	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.55	
17	0.6887	1162.3	1182.9	0.002	2.528	73.127	23.431	0.890	0.008	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1425.33	
18	0.6889	1162.6	1183.2	0.001	2.524	73.157	23.335	0.957	0.010	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.58	
19	0.6878	1161.1	1181.6	0.001	2.522	73.231	23.393	0.836	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.74	
20	0.6885	1162.1	1182.7	0.001	2.519	73.141	23.443	0.875	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.35	
21	0.6885	1161.9	1182.5	0.001	2.527	73.130	23.465	0.858	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.15	
22	0.6890	1162.6	1183.2	0.002	2.532	73.123	23.369	0.952	0.008	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.47	
23	0.6885	1162.0	1182.6	0.001	2.524	73.157	23.415	0.883	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.23	
24	0.6883	1162.0	1182.6	0.001	2.505	73.194	23.409	0.868	0.008	0.013	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1425.43	
25	0.6875	1160.8	1181.3	0.001	2.506	73.305	23.356	0.801	0.010	0.018	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1424.76	
26	0.6878	1161.3	1181.8	0.001	2.507	73.240	23.406	0.829	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.03	
27	0.6880	1161.4	1182.0	0.001	2.514	73.218	23.403	0.845	0.007	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.02	
28	0.6892	1162.8	1183.4	0.002	2.542	73.069	23.418	0.948	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.48	
29	0.6895	1163.4	1184.0	0.002	2.535	73.025	23.459	0.954	0.009	0.015	0.001	0.001	0.000	0.000	0.000	0.000	0.000	1425.88	
30	0.6887	1162.2	1182.8	0.002	2.535	73.136	23.390	0.917	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1425.22	
31	0.6885	1161.4	1182.0	0.002	2.565	73.151	23.367	0.896	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.45	
Avg	0.6882	1161.0	1182.1	0.002	2.527	73.188	23.409	0.855	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1424.91	

Zone 33

GQ Source Analysis

GQ Source Number:	1202160	Specific Gravity:	0.6900
GQ Source Name:	BOWMAN BORDER	Dry Heat Value:	1103.21
Effective Date:	1/1/2016 9:00:00 AM	Wet Heat Value:	1084.01
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1103.21
Pressure Base:	14.730	Sample Pressure:	342.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	74.170		CO2	Carbon Dioxide	0.862
C2	Ethane	16.899	0.0000	N2	Nitrogen	6.061
C3	Propane	1.790	0.4918	O2	Oxygen	0.021
IC4	Isobutane	0.055	0.0181	He	Helium	
NC4	n-Butane	0.120	0.0378	H2	Hydrogen	
IC5	Isopentane	0.008	0.0028	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.013	0.0046	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%		0.555 GPM	

Sample Date: 2/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: MG
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 34

Watford City

01320

Watford City Border

01312

Watford City East Border

Weighted

Begin Date	End Date	BTU			BTU			AVG BTU	
		MCF	DK	Zone 25	MCF	DK	Zone 43		
1/1/2016	1/2/2016	532	646	1.216	515	563	1.095	1.156	1/1/2016
1/2/2016	1/3/2016	557	677	1.216	618	678	1.098	1.154	1/2/2016
1/3/2016	1/4/2016	568	691	1.216	537	592	1.102	1.161	1/3/2016
1/4/2016	1/5/2016	540	656	1.216	644	704	1.095	1.150	1/4/2016
1/5/2016	1/6/2016	565	687	1.216	527	568	1.077	1.149	1/5/2016
1/6/2016	1/7/2016	555	675	1.216	492	529	1.074	1.149	1/6/2016
1/7/2016	1/8/2016	588	714	1.216	586	633	1.081	1.149	1/7/2016
1/8/2016	1/9/2016	698	849	1.216	655	712	1.087	1.154	1/8/2016
1/9/2016	1/10/2016	757	920	1.216	767	839	1.094	1.155	1/9/2016
1/10/2016	1/11/2016	680	827	1.216	598	653	1.091	1.158	1/10/2016
1/11/2016	1/12/2016	682	830	1.216	631	691	1.095	1.158	1/11/2016
1/12/2016	1/13/2016	616	749	1.216	556	606	1.090	1.156	1/12/2016
1/13/2016	1/14/2016	495	601	1.216	450	496	1.102	1.162	1/13/2016
1/14/2016	1/15/2016	579	704	1.216	523	576	1.101	1.161	1/14/2016
1/15/2016	1/16/2016	714	869	1.216	722	777	1.078	1.147	1/15/2016
1/16/2016	1/17/2016	815	991	1.216	830	896	1.080	1.147	1/16/2016
1/17/2016	1/18/2016	780	948	1.216	850	913	1.074	1.142	1/17/2016
1/18/2016	1/19/2016	681	828	1.216	718	776	1.080	1.146	1/18/2016
1/19/2016	1/20/2016	602	732	1.216	626	677	1.081	1.147	1/19/2016
1/20/2016	1/21/2016	621	755	1.216	616	662	1.074	1.145	1/20/2016
1/21/2016	1/22/2016	617	750	1.216	514	555	1.080	1.154	1/21/2016
1/22/2016	1/23/2016	507	616	1.216	338	366	1.083	1.163	1/22/2016
1/23/2016	1/24/2016	493	600	1.216	374	402	1.077	1.156	1/23/2016
1/24/2016	1/25/2016	544	662	1.216	417	451	1.080	1.157	1/24/2016
1/25/2016	1/26/2016	594	722	1.216	444	479	1.079	1.157	1/25/2016
1/26/2016	1/27/2016	539	656	1.216	416	452	1.088	1.160	1/26/2016
1/27/2016	1/28/2016	503	611	1.216	361	392	1.087	1.162	1/27/2016
1/28/2016	1/29/2016	459	558	1.216	332	360	1.082	1.160	1/28/2016
1/29/2016	1/30/2016	456	554	1.216	336	367	1.091	1.163	1/29/2016
1/30/2016	1/31/2016	481	585	1.216	342	376	1.099	1.167	1/30/2016
1/31/2016	2/1/2016	509	619	1.216	361	396	1.098	1.167	1/31/2016
		18,327	22,282		16,696	18,137	1.0869	1.1552	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (cal/cf)	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	Changestimestamp	NOTES
11587	GLEN ULLIN	1064.2	0.6129	1359.3	-64.4	1.2982	0.7861	89.2362	7.5493	0.8352	0.0401	0.0307	0.0028	0.0042	0	0.0011	0.1989	0.0173	12/31/2015	1/1/2016	1/1/2016 2:35:36 PM	
11587	GLEN ULLIN	1069.2	0.6163	1362	-59.1	1.2939	0.8037	88.6924	7.9998	0.9134	0.0494	0.0369	0.0035	0.0053	0	0.002	0.1831	0.0173	1/1/2016	1/2/2016	1/2/2016 2:37:05 PM	
11587	GLEN ULLIN	1068	0.6155	1361.3	-60.5	1.3049	0.7966	88.8653	7.8138	0.9354	0.0467	0.035	0.003	0.0046	0	0.0015	0.1772	0.0186	1/2/2016	1/3/2016	1/3/2016 2:36:28 PM	
11587	GLEN ULLIN	1060.9	0.6105	1357.8	-66.4	1.2962	0.7692	89.6962	7.1747	0.7986	0.0369	0.0283	0.0028	0.004	0	0.0011	0.1752	0.0171	1/3/2016	1/4/2016	1/4/2016 2:35:24 PM	
11587	GLEN ULLIN	1061	0.6104	1358.1	-65.7	1.2591	0.7799	89.7096	7.1999	0.7739	0.0381	0.0287	0.003	0.0044	0	0.0014	0.1849	0.0171	1/4/2016	1/5/2016	1/5/2016 2:35:40 PM	
11587	GLEN ULLIN	1067.5	0.6149	1361.3	-61.4	1.2582	0.8056	89.0418	7.7315	0.9037	0.0482	0.0352	0.003	0.0045	0	0.0013	0.1499	0.0171	1/5/2016	1/6/2016	1/6/2016 2:37:05 PM	
11587	GLEN ULLIN	1067.2	0.6149	1361	-60.6	1.2739	0.8024	89.0206	7.7127	0.9073	0.0506	0.0364	0.0036	0.0052	0	0.0016	0.1676	0.0171	1/6/2016	1/7/2016	1/7/2016 2:36:55 PM	
11587	GLEN ULLIN	1062.7	0.6118	1358.6	-65.8	1.2626	0.8035	89.3885	7.5321	0.746	0.0335	0.025	0.0025	0.0038	0	0.0013	0.1833	0.0171	1/7/2016	1/8/2016	1/8/2016 2:37:58 PM	
11587	GLEN ULLIN	1061.1	0.611	1357.5	-69	1.2875	0.7969	89.4133	7.5631	0.6708	0.0272	0.0197	0.0018	0.0028	0	0.0006	0.1988	0.0171	1/8/2016	1/9/2016	1/9/2016 2:37:28 PM	
11587	GLEN ULLIN	1059.9	0.6103	1356.8	-71.1	1.2954	0.7953	89.4274	7.6266	0.5961	0.0197	0.0137	0.0007	0.0012	0	0.0004	0.2057	0.0196	1/9/2016	1/10/2016	1/10/2016 2:37:31 PM	
11587	GLEN ULLIN	1061.2	0.6106	1358	-68.9	1.2461	0.7966	89.461	7.5976	0.6262	0.0273	0.0204	0.0021	0.0032	0	0.0011	0.202	0.0172	1/10/2016	1/11/2016	1/11/2016 2:36:31 PM	
11587	GLEN ULLIN	1060.9	0.6101	1358.2	-70.8	1.1971	0.8115	89.5278	7.632	0.5815	0.0228	0.0157	0.0014	0.0021	0	0.0003	0.1915	0.0172	1/11/2016	1/12/2016	1/12/2016 2:37:26 PM	
11587	GLEN ULLIN	1058.6	0.6088	1356.7	-72.8	1.2439	0.7922	89.6948	7.4839	0.5365	0.0202	0.0138	0.001	0.0017	0	0	0.1956	0.0172	1/12/2016	1/13/2016	1/13/2016 2:37:27 PM	
11587	GLEN ULLIN	1060.4	0.6105	1357.1	-71.6	1.2792	0.8022	89.3704	7.7365	0.5641	0.0188	0.0124	0.0006	0.0011	0	0	0.1961	0.0172	1/13/2016	1/14/2016	1/14/2016 2:38:46 PM	
11587	GLEN ULLIN	1058.9	0.61	1355.7	-72.9	1.2967	0.8183	89.4682	7.6798	0.5162	0.0157	0.0105	0.0001	0.0004	0	0	0.1769	0.0178	1/14/2016	1/15/2016	1/15/2016 2:38:46 PM	
11587	GLEN ULLIN	1055.5	0.6075	1354.2	-75.2	1.2827	0.8087	89.9012	7.3098	0.4761	0.0131	0.0085	0	0.0001	0	0	0.1836	0.0172	1/15/2016	1/16/2016	1/16/2016 2:37:51 PM	
11587	GLEN ULLIN	1053.6	0.6068	1352.5	-75.9	1.3645	0.7861	90.0312	7.1094	0.4887	0.0129	0.0087	0	0.0002	0	0	0.1789	0.0195	1/16/2016	1/17/2016	1/17/2016 2:38:56 PM	
11587	GLEN ULLIN	1052.3	0.6055	1352.4	-77	1.298	0.801	90.3007	6.9236	0.4642	0.0128	0.0084	0.0001	0.0002	0	0	0.1733	0.0196	1/17/2016	1/18/2016	1/18/2016 2:37:06 PM	
11587	GLEN ULLIN	1055.5	0.6076	1354.2	-74.8	1.294	0.8021	89.942	7.2333	0.5098	0.0154	0.0102	0.0002	0.0004	0	0	0.1743	0.0196	1/18/2016	1/19/2016	1/19/2016 2:37:12 PM	
11587	GLEN ULLIN	1057.4	0.6086	1355.4	-73.4	1.2558	0.8187	89.8166	7.3531	0.5419	0.0181	0.0123	0.0005	0.0011	0	0.0001	0.1651	0.0196	1/19/2016	1/20/2016	1/20/2016 2:37:46 PM	
11587	GLEN ULLIN	1054.2	0.6067	1353.4	-75.9	1.2962	0.7982	90.0797	7.1456	0.4642	0.0151	0.01	0.0003	0.0006	0	0.0001	0.1727	0.0196	1/20/2016	1/21/2016	1/21/2016 2:38:55 PM	
11587	GLEN ULLIN	1056.1	0.6076	1354.8	-74.7	1.2552	0.8064	89.9292	7.2915	0.4925	0.0151	0.0102	0.0005	0.0007	0	0	0.1811	0.0196	1/21/2016	1/22/2016	1/22/2016 2:37:48 PM	
11587	GLEN ULLIN	1055.6	0.6071	1354.7	-75.5	1.2126	0.8292	90.0117	7.2728	0.4585	0.0129	0.0092	0.0002	0.0005	0	0.0001	0.1751	0.0196	1/22/2016	1/23/2016	1/23/2016 2:36:04 PM	
11587	GLEN ULLIN	1058.4	0.6092	1356	-73.3	1.2148	0.8412	89.6597	7.5728	0.4894	0.0168	0.0121	0.0007	0.0014	0	0	0.1746	0.0196	1/23/2016	1/24/2016	1/24/2016 2:36:19 PM	
11587	GLEN ULLIN	1059.5	0.61	1356.5	-72.6	1.2253	0.8422	89.513	7.693	0.5085	0.017	0.0117	0.0007	0.0011	0	0	0.1704	0.0196	1/24/2016	1/25/2016	1/25/2016 2:37:20 PM	
11587	GLEN ULLIN	1058.1	0.6088	1356.1	-73.9	1.223	0.826	89.6865	7.5633	0.4852	0.0133	0.009	0	0.0004	0	0	0.177	0.0196	1/25/2016	1/26/2016	1/26/2016 2:36:16 PM	
11587	GLEN ULLIN	1057.1	0.6084	1355.3	-74.5	1.2447	0.8223	89.7367	7.4927	0.4804	0.0114	0.0074	0	0	0	0	0.1871	0.0196	1/26/2016	1/27/2016	1/27/2016 2:36:53 PM	
11587	GLEN ULLIN	1058.7	0.6096	1355.9	-73.6	1.2411	0.8359	89.5438	7.6898	0.4798	0.0125	0.008	0	0	0	0	0.1719	0.0196	1/27/2016	1/28/2016	1/28/2016 2:38:20 PM	
11587	GLEN ULLIN	1059.8	0.6108	1356	-72.4	1.3048	0.8296	89.2847	7.8458	0.5111	0.0147	0.0094	0	0.0003	0	0	0.1812	0.0196	1/28/2016	1/29/2016	1/29/2016 2:37:59 PM	
11587	GLEN ULLIN	1057.9	0.609	1355.6	-73.4	1.2787	0.8066	89.7344	7.4417	0.5387	0.0163	0.0107	0.0002	0.0005	0	0.0001	0.1548	0.0196	1/29/2016	1/30/2016	1/30/2016 2:38:36 PM	
11587	GLEN ULLIN	1060.7	0.6107	1357.3	-72.3	1.2888	0.7959	89.3718	7.8669	0.4974	0.0172	0.011	0.0003	0.0008	0	0	0.1325	0.0196	1/30/2016	1/31/2016	1/31/2016 2:38:41 PM	
11587	GLEN ULLIN	1060.8	0.6109	1357.3	-72.8	1.2926	0.7998	89.3456	7.9502	0.4635	0.0155	0.0093	0	0	0	0	0.1049	0.0196	1/31/2016	2/1/2016	2/1/2016 2:38:23 PM	

Zone 802

NORTH DAKOTA HEATING VALUE ZONES		
ZONES	MEASURING DEVICE	LOCATION
211	Chromatograph	Sidney Area
24	Monthly Sampler	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	Monthly Sampler	Williston – Ray
265	Chromatograph	North Tioga
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	Monthly Sampler	Bowman Area
600	Chromatograph	Hankinson Area
610	Monthly Sampler & Chromatograph	Watford City
802	Chromatograph	Linton

MONTANA DAKOTA UTILITIES CO
 NORTH DAKOTA
 HEATING VALUE DATA

STATE	ZONE	ZONE BOUNDARY	12 MONTH AVERAGE	JAN 16	DEC 15	NOV 15	OCT 15	SEPT 15	AUG 15	JULY 15	JUNE 15	MAY 15	APRIL 15	MAR 15	FEB 15	ZONE
MT/ND	211	Sidney Area	1201	1207	1204	1195	1188	1193	1196	1199	1205	1202	1204	1205	1209	211
ND	24	Williston Area	1184	1195	1199	1183	1177	1166	1179	1185	1187	1206	1174	1171	1180	24
ND	25	Watford City Border	1208	1216	1216	1223	1216	1198	1198	1188	1207	1220	1212	1207	1196	25
ND/MT	241	Fairview Area	1193	1199	1199	1184	1182	1177	1188	1195	1195	1197	1198	1196	1202	241
ND	261	Williston - Tioga - Minot Line	1025	1052	1066	1047	1000	1042	1015	1028	1026	1006	1021	992	1004	261
ND	262	Minot Area	1190	1189	1188	1192	1198	1201	1201	1201	1185	1188	1188	1175	1173	262
ND	263	Tioga - Portal	1103	1092	1082	1112	1112	1104	1117	1121	1107	1090	1090	1084	1121	263
ND	264	Williston - Ray	1173	1183	1180	1178	1162	1154	1146	1170	1187	1189	1174	1171	1180	264
ND	265	North Tioga Transfer - Portal	1188	1190	1188	1189	1180	1188	1188	1191	1187	1187	1183	1187	1197	265
ND	271	Bismarck - Cleveland	1185	1172	1181	1192	1199	1203	1199	1201	1186	1189	1186	1171	1139	271
ND	272	Cleveland - Mapleton	1184	1171	1180	1191	1197	1202	1199	1200	1186	1188	1185	1169	1137	272
ND	273	Cleveland - Grafton	1183	1171	1180	1190	1197	1203	1199	1200	1185	1189	1182	1167	1137	273
ND	28	Bismarck - Cabin Creek	1165	1131	1137	1148	1196	1203	1200	1201	1186	1189	1170	1133	1089	28
ND	31	Dickinson Area	1139	1130	1136	1135	1161	1161	1145	1181	1127	1129	1136	1139	1091	31
ND	311	Taylor Take-Off - Glen Ullin Comp	1149	0	0	1147	1179	1168	1158	1200	1168	1171	1096	1115	1090	311
ND/MT	32	Cabin Creek - Dickinson	1136	1117	1117	1111	1120	1176	1173	1181	1169	1165	1118	1110	1079	32
ND	33	Killdeer	1184	1182	1186	1185	1186	1186	1191	1185	1183	1183	1180	1179	1177	33
ND	34	Bowman Area	1107	1103	1121	1102	1084	1025	1133	1121	1130	1130	1123	1099	1068	34
ND	610	MDU-Watford City BTU	1188	1155	1174	1197	1211	1197	1197	1145	1175	1216	1202	1192	1190	
ND	802	Linton	1061	1060	1066	1073	1064	1055	1055	1057	1068	1064	1064	1054	1054	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

**THERMAL ZONE VARIANCE
DOCUMENTATION**

January 2016

ZONE	<i>BTU VARIANCE</i>	<i>REASON</i>
		No Variance greater than 20 for this time period