



MONTANA-DAKOTA

UTILITIES CO.

A Division of MDU Resources Group, Inc.

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

February 18, 2015

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

Re: Case No. 11,006 (Therm Billing)
Monthly Report – December 2014

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 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 January 2015.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of December 2014.
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 December 2014.

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 2015

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1343
MDU-308-ARNEGARD	025	1.1343
MDU-314-APPLE VALLEY	271	1.1192
MDU-318-BEACH	032	1.0193
MDU-319-BELFIELD	032	1.0268
MDU-323-BERTHOLD	262	1.1041
MDU-327-BISMARCK	028	1.0692
MDU-330-BOWMAN	034	0.9990
MDU-337-BURLINGTON	262	1.1279
MDU-343-CARRINGTON	273	1.1173
MDU-344-CLEVELAND	272	1.1085
MDU-364-CAVALIER	273	1.1409
MDU-365-DAWSON	271	1.1114
MDU-368-DES LACS	262	1.1121
MDU-369-DICKINSON	031	1.0521
MDU-374-FT TOTTEN	273	1.1252
MDU-375-DEVILS LAKE	273	1.1252
MDU-379-BARLOW	273	1.1173
MDU-384-EPPING	264	1.1145
MDU-387-ELDRIDGE	272	1.1164
MDU-407-GLADSTONE	031	1.0549
MDU-411-GLEN ULLIN	311	1.0522
MDU-413-GOLVA	032	1.0043
MDU-416-GARRISON	262	1.1121
MDU-417-GRAFTON	273	1.1488
MDU-429-HEBRON	311	1.0522
MDU-432-HETTINGER	903	2.3875
MDU-449-JAMESTOWN	272	1.1242
MDU-459-KILLDEER	033	1.1126
MDU-463-LANGDON	273	1.1173
MDU-469-LEFOR	031	1.0521
MDU-474-LIGNITE	263	1.0407
MDU-475-LINTON	802	1.0179
MDU-478-LINCOLN	028	1.0768
MDU-494-MEDINA	271	1.1114
MDU-498-MANDAN	028	1.0768
MDU-500-MARMARTH	034	1.0064
MDU-505-MINOT	262	1.1279
MDU-510-MOTT	031	1.0521
MDU-512-MAX	262	1.1041
MDU-522-NEW ENGLAND	031	1.0445
MDU-524-NEW SALEM	028	1.0541
MDU-532-NEW ROCKFORD	273	1.1173
MDU-539-PARK RIVER	273	1.1409
MDU-540-PALERMO	262	1.1041
MDU-558-RAY	264	1.1145
MDU-561-REGENT	031	1.0521
MDU-563-RHAME	034	0.9916
MDU-564-RICHARDTON	311	1.0370

MDU-568-ROSS	261	0.9705
MDU-572-RUTHVILLE	262	1.1279
MDU-574-SANBORN	272	1.1242
MDU-583-SENTINEL BUTTE	032	1.0193
MDU-588-SOUTH HEART	031	1.0445
MDU-717-SPIRITWOOD	272	1.1242
MDU-590-SPRINGBROOK	264	1.1145
MDU-591-STANLEY	261	0.9776
MDU-593-STEELE	271	1.1114
MDU-598-SHEYENNE	273	1.1252
MDU-605-SURREY	262	1.1279
MDU-610-TAPPEN	271	1.1114
MDU-611-TAYLOR	031	1.0473
MDU-616-TIOGA	261	0.9705
MDU-619-TURTLE LAKE	262	1.1121
MDU-620-TRENTON	024	1.1225
MDU-624-UNDERWOOD	262	1.1121
MDU-625-VALLEY CITY	272	1.1321
MDU-629-WALHALLA	273	1.1409
MDU-632-WATFORD CITY	610	1.1287
MDU-636-WHEELOCK	264	1.1065
MDU-637-WHITE EARTH	261	0.9776
MDU-642-WILLISTON	024	1.1225
MDU-646-WASHBURN	262	1.1200
MDU-647-WILTON	262	1.1041
MDU-664-RIVERDALE	262	1.1121
MDU-691-FAIRVIEW	241	1.1444
MDU-712-MINOT AFB	262	1.1279
MDU-718-FAIRMOUNT	600	1.1110
MDU-732-MSR SITE	273	1.1173

GQ Source Analysis

GQ Source Number:	0602160	Specific Gravity:	0.7308
GQ Source Name:	FAIRVIEW BORDER	Dry Heat Value:	1203.02
Effective Date:	11/1/2014 9:00:00 AM	Wet Heat Value:	1182.08
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1203.02
Pressure Base:	14.730	Sample Pressure:	364.00
Viscosity:		Sample Temperature:	

	Mol %	Liquid Content		Mol %	
C1	Methane	68.806	CO2	Carbon Dioxide	1.026
C2	Ethane	22.087	N2	Nitrogen	3.656
C3	Propane	4.092	O2	Oxygen	0.011
IC4	Isobutane	0.103	He	Helium	
NC4	n-Butane	0.200	H2	Hydrogen	
IC5	Isopentane	0.010	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.009	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%	7.117 GPM		

Sample Date: 12/1/2014 12:00:00 AM
 Sample Type: Composite
 Sample Tech: Rocky Robson
 H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 241

GQ Source Analysis

GQ Source Number:	0602230	Specific Gravity:	0.7250
GQ Source Name:	WATFORD CITY BORDER	Dry Heat Value:	1200.95
Effective Date:	12/1/2014 9:00:00 AM	Wet Heat Value:	1180.05
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1200.95
Pressure Base:	14.730	Sample Pressure:	127.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	68.718		CO2	Carbon Dioxide	0.983
C2	Ethane	24.009	6.4018	N2	Nitrogen	3.319
C3	Propane	2.537	0.6969	O2	Oxygen	0.000
IC4	Isobutane	0.132	0.0431	He	Hellum	
NC4	n-Butane	0.255	0.0801	H2	Hydrogen	
IC5	Isopentane	0.023	0.0083	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.024	0.0086	Ar	Argon	
C6	Hexanes	0.002	0.0000	CO	Carbon Monoxide	
C7	Heptanes			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 7.239 GPM

Sample Date: 1/2/2015 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 25

GQ Source Analysis

GQ Source Number:	2501030	Specific Gravity:	0.6516
GQ Source Name:	LIGNITE PLANT	Dry Heat Value:	1094.26
Effective Date:	12/1/2014 9:00:00 AM	Wet Heat Value:	1075.21
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1094.26
Pressure Base:	14.730	Sample Pressure:	390.00
Viscosity:		Sample Temperature:	

	Mol %	Liquid Content		Mol %
C1 Methane	80.379		CO2 Carbon Dioxide	0.122
C2 Ethane	14.487	3.8629	N2 Nitrogen	4.125
C3 Propane	0.883	0.2426	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	0.000	0.0000	CO Carbon Monoxide	
C7 Heptanes			H2O Water	
C8 Octanes			Neo-C5 Neopentane	
C9 Nonanes				
C10 Decanes				

Totals 99.996% 4.105 GPM

Sample Date: 1/2/2015 12:00:00 AM
 Sample Type: Composite
 Sample Tech: ES
 H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 263

*** End of Report ***

GQ Source Daily Summary

December 2014

Number: 043

Pressure Base: 14.730

Contract Day: 1

Name: BISMARCK STATION-CLEVELAND 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	0.7049	1139.6	1159.8	0.511	4.642	72.844	18.630	3.018	0.108	0.220	0.014	0.013	0.000	0.000	0.000	0.000	0.000	1381.36	
2	0.6923	1120.2	1140.0	0.521	4.625	75.244	16.429	2.832	0.103	0.214	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1370.12	
3	0.6978	1127.7	1147.6	0.559	4.627	74.310	17.187	2.962	0.106	0.218	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1373.83	
4	0.6909	1120.7	1140.5	0.523	4.459	75.501	16.373	2.807	0.101	0.206	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1372.12	
5	0.7080	1136.7	1156.8	0.585	4.991	72.811	17.744	3.444	0.126	0.267	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1374.87	
6	0.7129	1139.8	1160.0	0.583	5.269	72.053	17.944	3.700	0.133	0.285	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1373.82	
7	0.7170	1143.1	1163.3	0.600	5.421	71.485	18.104	3.912	0.141	0.304	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1373.91	
8	0.7151	1142.8	1163.1	0.582	5.286	71.794	18.023	3.842	0.140	0.300	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1375.41	
9	0.7131	1139.1	1159.3	0.568	5.347	72.122	17.699	3.795	0.138	0.299	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1372.85	
10	0.7233	1149.1	1169.5	0.618	5.617	70.582	18.446	4.203	0.155	0.342	0.018	0.018	0.000	0.000	0.000	0.000	0.000	1375.12	
11	0.7249	1148.3	1168.6	0.623	5.810	70.370	18.319	4.334	0.159	0.350	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1372.60	
12	0.7259	1150.1	1170.5	0.626	5.790	70.173	18.529	4.339	0.159	0.349	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1373.83	
13	0.7298	1154.9	1175.4	0.646	5.834	69.536	18.968	4.452	0.165	0.363	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1375.86	
14	0.7304	1156.1	1176.6	0.647	5.818	69.489	18.961	4.513	0.169	0.369	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1376.70	
15	0.7217	1146.9	1167.2	0.606	5.624	70.863	18.171	4.214	0.156	0.335	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1373.95	
16	0.7041	1129.7	1149.7	0.529	5.140	73.449	17.061	3.406	0.124	0.261	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1370.10	
17	0.6954	1123.7	1143.6	0.484	4.756	74.690	16.753	2.958	0.107	0.223	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1371.40	
18	0.6963	1130.9	1151.0	0.523	4.339	74.278	17.857	2.672	0.097	0.207	0.014	0.014	0.000	0.000	0.000	0.000	0.000	1379.35	
19	0.7059	1138.1	1158.3	0.586	4.707	72.822	18.424	3.079	0.111	0.240	0.015	0.015	0.000	0.000	0.000	0.000	0.000	1378.64	
20	0.7126	1141.6	1161.9	0.610	5.088	72.000	18.310	3.552	0.130	0.277	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1376.35	
21	0.7255	1153.8	1174.3	0.638	5.511	70.202	18.865	4.253	0.158	0.336	0.018	0.018	0.000	0.000	0.000	0.000	0.000	1378.61	
22	0.7316	1159.0	1179.5	0.652	5.746	69.256	19.281	4.493	0.167	0.366	0.019	0.019	0.000	0.000	0.000	0.000	0.000	1378.98	
23	0.7243	1148.6	1168.9	0.627	5.736	70.360	18.520	4.231	0.155	0.337	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1373.47	
24	0.7258	1150.0	1170.3	0.634	5.777	70.067	18.753	4.249	0.153	0.331	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1373.75	
25	0.7230	1147.6	1167.9	0.622	5.681	70.488	18.579	4.126	0.149	0.321	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1373.53	
26	0.7134	1141.1	1161.3	0.568	5.258	71.870	18.212	3.645	0.133	0.282	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1374.95	
27	0.7082	1137.6	1157.7	0.562	4.996	72.702	17.903	3.408	0.126	0.267	0.017	0.017	0.000	0.000	0.000	0.000	0.000	1375.69	
28	0.7007	1131.9	1151.9	0.513	4.713	73.822	17.482	3.092	0.114	0.233	0.016	0.015	0.000	0.000	0.000	0.000	0.000	1376.12	
29	0.6953	1125.7	1145.6	0.492	4.610	74.694	16.941	2.913	0.106	0.215	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1373.94	
30	0.6918	1120.7	1140.5	0.496	4.587	75.350	16.361	2.852	0.106	0.217	0.015	0.014	0.000	0.000	0.000	0.000	0.000	1371.19	
31	0.7021	1130.0	1150.0	0.547	4.906	73.774	17.095	3.271	0.120	0.255	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1372.46	
Avg	0.7117	1140.0	1159.7	0.577	5.184	72.226	17.933	3.631	0.133	0.283	0.016	0.016	0.000	0.000	0.000	0.000	0.000	1374.67	

Zone 271

GQ Source Daily Summary

December 2014

Number: 063

Pressure Base: 14.730

Contract Day: 1

Name: CLEVELAND STATION-MAPLETON

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	0.7077	1142.5	1162.8	0.533	4.696	72.389	18.909	3.108	0.112	0.226	0.015	0.013	0.000					1382.15	
2	0.6923	1118.9	1138.8	0.503	4.727	75.137	16.501	2.800	0.099	0.204	0.014	0.013	0.000					1368.62	
3	0.6932	1121.4	1141.2	0.532	4.622	75.075	16.590	2.828	0.104	0.215	0.017	0.017	0.000					1370.67	
4	0.6950	1123.1	1143.0	0.540	4.673	74.742	16.807	2.908	0.102	0.202	0.014	0.013	0.000					1370.99	
5	0.7012	1131.4	1151.5	0.580	4.685	73.899	17.274	3.165	0.117	0.248	0.016	0.016	0.000					1375.11	
6	0.7093	1134.4	1154.5	0.572	5.273	72.595	17.569	3.562	0.128	0.270	0.016	0.015	0.000					1370.84	
7	0.7156	1140.5	1160.7	0.599	5.454	71.671	17.963	3.843	0.139	0.297	0.017	0.017	0.000					1372.06	
8	0.7153	1141.1	1161.3	0.590	5.399	71.754	17.926	3.858	0.140	0.299	0.017	0.017	0.000					1373.13	
9	0.7110	1136.0	1156.1	0.563	5.346	72.422	17.510	3.708	0.134	0.286	0.016	0.016	0.000					1371.15	
10	0.7189	1144.1	1164.3	0.600	5.543	71.214	18.128	4.012	0.147	0.321	0.018	0.018	0.000					1373.24	
11	0.7255	1148.8	1169.1	0.632	5.827	70.234	18.441	4.329	0.157	0.345	0.017	0.018	0.000					1372.58	
12	0.7246	1147.2	1167.5	0.622	5.853	70.371	18.322	4.298	0.157	0.343	0.017	0.018	0.000					1371.54	
13	0.7271	1150.6	1171.0	0.636	5.857	69.927	18.702	4.337	0.159	0.348	0.017	0.018	0.000					1373.28	
14	0.7299	1153.8	1174.3	0.649	5.906	69.546	18.847	4.486	0.168	0.366	0.017	0.017	0.000					1374.45	
15	0.7231	1146.8	1167.1	0.617	5.747	70.633	18.211	4.262	0.158	0.341	0.016	0.016	0.000					1372.47	
16	0.7090	1132.9	1153.0	0.552	5.366	72.730	17.261	3.648	0.133	0.280	0.015	0.014	0.000					1369.31	
17	0.6989	1125.3	1145.2	0.508	4.949	74.174	16.861	3.134	0.113	0.232	0.015	0.014	0.000					1369.90	
18	0.6921	1124.6	1144.5	0.489	4.388	74.988	17.216	2.596	0.095	0.200	0.014	0.014	0.000					1375.72	
19	0.6998	1132.2	1152.2	0.563	4.535	73.690	18.084	2.786	0.100	0.214	0.014	0.014	0.000					1377.39	
20	0.7088	1137.4	1157.6	0.601	5.001	72.493	18.168	3.329	0.120	0.256	0.016	0.016	0.000					1374.95	
21	0.7241	1152.5	1172.9	0.639	5.462	70.295	19.002	4.094	0.151	0.319	0.018	0.018	0.000					1378.31	
22	0.7289	1155.2	1175.7	0.643	5.731	69.682	18.983	4.409	0.163	0.350	0.019	0.019	0.000					1377.13	
23	0.7245	1148.1	1168.4	0.630	5.779	70.333	18.484	4.243	0.156	0.338	0.018	0.018	0.000					1372.71	
24	0.7250	1147.8	1168.1	0.634	5.839	70.183	18.599	4.230	0.153	0.328	0.017	0.017	0.000					1371.89	
25	0.7235	1145.8	1166.1	0.630	5.820	70.435	18.426	4.183	0.150	0.322	0.017	0.017	0.000					1370.97	
26	0.7160	1141.8	1162.1	0.584	5.431	71.439	18.350	3.740	0.136	0.287	0.016	0.016	0.000					1373.34	
27	0.7068	1133.6	1153.7	0.559	5.107	72.948	17.566	3.399	0.125	0.263	0.017	0.016	0.000					1372.29	
28	0.7023	1131.5	1151.5	0.533	4.852	73.594	17.470	3.166	0.117	0.239	0.016	0.015	0.000					1374.12	
29	0.6950	1124.3	1144.2	0.487	4.679	74.701	16.887	2.901	0.104	0.211	0.015	0.013	0.000					1372.49	
30	0.6914	1119.3	1139.1	0.497	4.627	75.419	16.261	2.846	0.105	0.215	0.015	0.014	0.000					1369.98	
31	0.6960	1123.1	1143.0	0.522	4.792	74.680	16.623	3.014	0.110	0.228	0.015	0.015	0.000					1370.05	
Avg	0.7107	1137.0	1157.4	0.575	5.225	72.368	17.805	3.588	0.131	0.277	0.016	0.016	0.000					1372.99	

Zone 272

GQ Source Daily Summary

December 2014

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	0.6628	1101.6	1121.1	0.353	3.241	79.420	15.506	1.361	0.046	0.056	0.011	0.006	0.000	0.000	0.000	0.000	0.000	1377.12	
2	0.6606	1098.0	1117.4	0.347	3.265	79.823	15.132	1.307	0.048	0.059	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1374.86	
3	0.6538	1088.9	1108.1	0.364	3.156	81.019	14.259	1.090	0.044	0.048	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1370.51	
4	0.6579	1094.9	1114.3	0.309	3.261	80.131	15.061	1.131	0.042	0.047	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1373.76	
5	0.6522	1083.6	1102.8	0.283	3.451	81.205	13.835	1.122	0.040	0.047	0.010	0.006	0.000	0.000	0.000	0.000	0.000	1365.54	
6	0.6546	1086.9	1106.1	0.289	3.468	80.761	14.212	1.168	0.039	0.046	0.010	0.006	0.000	0.000	0.000	0.000	0.000	1367.18	
7	0.6556	1089.0	1108.3	0.306	3.407	80.586	14.441	1.154	0.041	0.047	0.011	0.007	0.000	0.000	0.000	0.000	0.000	1368.79	
8	0.6581	1093.3	1112.6	0.321	3.358	80.093	14.981	1.140	0.041	0.047	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1371.56	
9	0.6588	1095.5	1114.9	0.271	3.367	80.008	14.990	1.248	0.043	0.054	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1373.60	
10	0.6587	1095.8	1115.2	0.285	3.318	80.079	14.930	1.266	0.046	0.057	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1374.03	
11	0.6524	1086.7	1106.0	0.294	3.262	81.139	14.159	1.046	0.040	0.042	0.012	0.006	0.000	0.000	0.000	0.000	0.000	1369.28	
12	0.6596	1099.1	1118.5	0.313	3.159	79.880	15.358	1.168	0.047	0.054	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1377.23	
13	0.6616	1103.2	1122.8	0.338	3.062	79.363	16.082	1.047	0.043	0.044	0.014	0.007	0.000	0.000	0.000	0.000	0.000	1380.30	
14	0.6617	1103.6	1123.1	0.318	3.070	79.422	15.944	1.141	0.043	0.043	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1380.77	
15	0.6554	1092.0	1111.4	0.284	3.237	80.620	14.627	1.121	0.043	0.050	0.012	0.006	0.000	0.000	0.000	0.000	0.000	1372.79	
16	0.6550	1089.6	1108.9	0.277	3.359	80.680	14.425	1.155	0.041	0.047	0.011	0.006	0.000	0.000	0.000	0.000	0.000	1370.17	
17	0.6559	1090.3	1109.6	0.268	3.419	80.542	14.434	1.231	0.041	0.049	0.010	0.006	0.000	0.000	0.000	0.000	0.000	1370.03	
18	0.6600	1095.7	1115.1	0.271	3.471	79.941	14.753	1.437	0.047	0.063	0.010	0.006	0.000	0.000	0.000	0.000	0.000	1372.52	
19	0.6643	1102.6	1122.2	0.327	3.357	79.278	15.369	1.531	0.052	0.066	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1376.85	
20	0.6621	1102.3	1121.8	0.409	3.053	79.577	15.607	1.222	0.052	0.055	0.016	0.009	0.000	0.000	0.000	0.000	0.000	1378.61	
21	0.6663	1107.5	1127.1	0.551	2.915	78.942	16.193	1.254	0.056	0.063	0.017	0.009	0.000	0.000	0.000	0.000	0.000	1380.78	
22	0.6666	1106.7	1126.3	0.631	2.867	78.941	16.214	1.202	0.057	0.060	0.019	0.010	0.000	0.000	0.000	0.000	0.000	1379.50	
23	0.6660	1109.9	1129.6	0.300	3.124	78.634	16.575	1.248	0.046	0.053	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1384.09	
24	0.6624	1101.6	1121.1	0.344	3.220	79.415	15.637	1.260	0.047	0.057	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1377.52	
25	0.6592	1096.1	1115.5	0.346	3.251	80.054	14.988	1.234	0.048	0.057	0.014	0.008	0.000	0.000	0.000	0.000	0.000	1373.94	
26	0.6629	1102.3	1121.8	0.319	3.259	79.308	15.709	1.287	0.046	0.052	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1377.89	
27	0.6619	1101.9	1121.4	0.339	3.166	79.438	15.761	1.179	0.046	0.050	0.014	0.007	0.000	0.000	0.000	0.000	0.000	1378.36	
28	0.6647	1106.3	1125.9	0.319	3.186	78.983	16.078	1.312	0.047	0.054	0.013	0.007	0.000	0.000	0.000	0.000	0.000	1381.03	
29	0.6591	1094.5	1113.8	0.285	3.432	80.044	14.794	1.325	0.045	0.056	0.011	0.007	0.000	0.000	0.000	0.000	0.000	1371.99	
30	0.6515	1081.3	1100.4	0.300	3.504	81.436	13.467	1.178	0.043	0.054	0.011	0.007	0.000	0.000	0.000	0.000	0.000	1363.32	
31	0.6503	1079.8	1099.0	0.292	3.484	81.607	13.384	1.133	0.039	0.045	0.010	0.006	0.000	0.000	0.000	0.000	0.000	1362.83	
Avg	0.6591	1096.0	1115.6	0.331	3.263	80.012	15.061	1.216	0.045	0.052	0.012	0.007	0.000	0.000	0.000	0.000	0.000	1374.09	

Zone 28

GQ Source Analysis

GQ Source Number:	0202080	Specific Gravity:	0.6585
GQ Source Name:	RICHARDTON-GLEN ULLIN COMPRE	Dry Heat Value:	1113.65
Effective Date:	12/1/2014 9:00:00 AM	Wet Heat Value:	1094.27
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	1113.65
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	60.085	CO2	Carbon Dioxide	0.327
C2	Ethane	14.902	N2	Nitrogen	3.330
C3	Propane	1.226	O2	Oxygen	
IC4	Isobutane	0.043	He	Helium	
NC4	n-Butane	0.050	H2	Hydrogen	
IC5	Isopentane	0.012	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.007	Ar	Argon	
C6	Hexanes	0.018	CO	Carbon Monoxide	
C7	Heptanes		H2	Water	
C8	Octanes		Neo-C5	Neopentane	0.000
C9	Nonanes				
C10	Decanes				

Totals 100.000% 4.355 GPM

Sample Date: 5/1/2014 10:29:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 311

GQ Source Daily Summary

December 2014

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	0.6551	1084.3	1103.5	0.185	3.828	80.722	13.680	1.494	0.034	0.051	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1363.41	
2	0.6539	1081.8	1101.0	0.179	3.881	80.884	13.531	1.438	0.032	0.049	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1361.46	
3	0.6549	1082.2	1101.3	0.143	4.003	80.780	13.415	1.561	0.035	0.056	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1360.93	
4	0.6459	1066.8	1085.7	0.154	4.082	82.387	11.926	1.369	0.030	0.046	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1350.86	
5	0.6507	1074.2	1093.3	0.163	4.067	81.503	12.733	1.449	0.031	0.047	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1355.26	
6	0.6540	1078.1	1097.2	0.189	4.096	80.985	13.087	1.549	0.034	0.053	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1356.74	
7	0.6513	1076.3	1095.3	0.124	4.051	81.262	13.111	1.380	0.027	0.039	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1357.26	
8	0.6577	1087.3	1106.5	0.125	3.981	80.333	13.774	1.677	0.039	0.064	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1364.44	
9	0.6500	1075.8	1094.8	0.108	3.982	81.650	12.690	1.483	0.032	0.049	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1358.00	
10	0.6566	1085.3	1104.5	0.101	4.040	80.366	13.837	1.563	0.033	0.053	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1363.04	
11	0.6573	1087.3	1106.6	0.091	3.998	80.228	13.984	1.626	0.028	0.040	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1364.86	
12	0.6595	1091.3	1110.6	0.081	3.971	79.910	14.227	1.730	0.031	0.046	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1367.62	
13	0.6497	1075.7	1094.7	0.085	3.998	81.655	12.705	1.477	0.030	0.046	0.002	0.002	0.000	0.000	0.000	0.000	0.000	1358.15	
14	0.6504	1076.8	1095.9	0.099	3.974	81.610	12.704	1.514	0.035	0.057	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1358.84	
15	0.6498	1075.0	1094.0	0.135	3.971	81.678	12.688	1.446	0.031	0.045	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1357.20	
16	0.6540	1081.5	1100.7	0.136	3.967	81.025	13.157	1.612	0.037	0.059	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1361.05	
17	0.6613	1092.5	1111.8	0.163	3.950	79.830	14.086	1.845	0.044	0.073	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1367.18	
18	0.6632	1094.4	1113.8	0.184	3.980	79.535	14.246	1.936	0.043	0.068	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1367.59	
19	0.6665	1098.6	1118.0	0.201	4.006	79.010	14.602	2.050	0.046	0.077	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1369.43	
20	0.6630	1095.6	1115.0	0.100	4.014	79.360	14.581	1.844	0.036	0.058	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1369.29	
21	0.6679	1104.3	1123.9	0.091	3.956	78.514	15.358	1.961	0.042	0.071	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1375.16	
22	0.6615	1093.5	1112.9	0.113	3.974	79.689	14.295	1.815	0.040	0.066	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1368.35	
23	0.6558	1082.1	1101.3	0.157	4.068	80.763	13.202	1.699	0.039	0.064	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1359.90	
24	0.6604	1090.1	1109.4	0.131	4.062	79.826	14.120	1.762	0.036	0.057	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1365.07	
25	0.6613	1092.7	1112.0	0.116	4.004	79.624	14.411	1.750	0.035	0.055	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1367.51	
26	0.6654	1099.9	1119.4	0.108	3.962	78.944	14.993	1.888	0.038	0.061	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1372.25	
27	0.6654	1099.8	1119.3	0.113	3.963	78.963	14.956	1.894	0.040	0.065	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1372.12	
28	0.6530	1079.0	1098.1	0.152	4.009	81.200	12.958	1.574	0.038	0.060	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1358.84	
29	0.6463	1067.3	1086.2	0.180	4.042	82.419	11.869	1.392	0.035	0.054	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1351.13	
30	0.6446	1064.9	1083.7	0.175	4.040	82.664	11.695	1.344	0.031	0.045	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1349.83	
31	0.6462	1066.6	1085.5	0.179	4.085	82.408	11.834	1.407	0.032	0.047	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1350.26	
Avg	0.6559	1084.0	1103.1	0.137	4.000	80.636	13.499	1.630	0.035	0.056	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1362.03	

Zone 32

GQ Source Daily Summary

December 2014

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	0.6854	1157.6	1178.1	0.001	2.504	73.437	23.502	0.543	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.02	
2	0.6864	1158.9	1179.4	0.002	2.518	73.434	23.287	0.739	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.58	
3	0.6845	1155.8	1176.2	0.002	2.534	73.589	23.335	0.527	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.66	
4	0.6846	1155.7	1176.1	0.002	2.546	73.594	23.302	0.544	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.46	
5	0.6855	1157.2	1177.7	0.002	2.537	73.427	23.460	0.561	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.42	
6	0.6852	1156.8	1177.3	0.002	2.534	73.497	23.379	0.574	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.23	
7	0.6850	1156.5	1177.0	0.003	2.531	73.523	23.378	0.553	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.08	
8	0.6860	1157.9	1178.4	0.002	2.538	73.472	23.312	0.633	0.012	0.024	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1422.79	
9	0.6851	1157.2	1177.7	0.003	2.502	73.504	23.420	0.559	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.80	
10	0.6857	1158.2	1178.8	0.003	2.496	73.414	23.485	0.589	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.44	
11	0.6859	1158.0	1178.5	0.004	2.526	73.375	23.488	0.595	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.98	
12	0.6860	1158.5	1179.1	0.003	2.505	73.362	23.517	0.600	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.52	
13	0.6856	1157.8	1178.3	0.002	2.511	73.386	23.551	0.537	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.04	
14	0.6855	1157.4	1177.9	0.002	2.521	73.389	23.562	0.514	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.74	
15	0.6857	1157.5	1178.0	0.002	2.533	73.376	23.531	0.545	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.64	
16	0.6851	1156.7	1177.2	0.002	2.533	73.481	23.432	0.539	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.17	
17	0.6859	1157.8	1178.3	0.003	2.537	73.319	23.592	0.535	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.74	
18	0.6860	1158.0	1178.5	0.002	2.534	73.316	23.587	0.548	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.90	
19	0.6865	1158.7	1179.2	0.003	2.543	73.240	23.615	0.586	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.17	
20	0.6873	1159.9	1180.4	0.002	2.543	73.128	23.684	0.629	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1423.85	
21	0.6860	1157.8	1178.3	0.003	2.546	73.327	23.541	0.570	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.67	
22	0.6858	1157.5	1178.0	0.003	2.548	73.352	23.530	0.553	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.46	
23	0.6861	1157.9	1178.4	0.003	2.547	73.323	23.539	0.574	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.68	
24	0.6858	1157.6	1178.1	0.002	2.545	73.343	23.551	0.547	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.56	
25	0.6857	1156.7	1177.2	0.002	2.588	73.337	23.533	0.528	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.61	
26	0.6859	1157.6	1178.1	0.002	2.553	73.323	23.561	0.548	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.46	
27	0.6858	1157.3	1177.8	0.002	2.559	73.334	23.556	0.536	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.24	
28	0.6858	1157.4	1177.9	0.002	2.556	73.311	23.600	0.518	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.34	
29	0.6860	1157.6	1178.1	0.002	2.563	73.296	23.580	0.545	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.36	
30	0.6858	1157.5	1178.0	0.002	2.545	73.375	23.496	0.568	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.50	
31	0.6856	1156.9	1177.3	0.003	2.571	73.383	23.477	0.553	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1421.84	
Avg	0.6857	1158.0	1178.0	0.002	2.537	73.386	23.496	0.564	0.006	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1422.61	

Zone 33

GQ Source Analysis

GQ Source Number:	1202160	Specific Gravity:	0.7140
GQ Source Name:	BOWMAN BORDER	Dry Heat Value:	1088.51
Effective Date:	12/1/2014 9:00:00 AM	Wet Heat Value:	1069.57
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1088.51
Pressure Base:	14.730	Sample Pressure:	
Viscosity:		Sample Temperature:	

	Mol %	Liquid Content		Mol %	
C1	Methane	70.395	CO2	Carbon Dioxide	1.760
C2	Ethane	17.766	N2	Nitrogen	7.888
C3	Propane	1.926	O2	Oxygen	
IC4	Isobutane	0.061	He	Helium	
NC4	n-Butane	0.165	H2	Hydrogen	
IC5	Isopentane	0.009	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.023	Ar	Argon	
C6	Hexanes	0.007	CO	Carbon Monoxide	
C7	Heptanes		H2O	Water	
C8	Octanes		Neo-C5	Neopentane	
C9	Nonanes				
C10	Decanes				
Totals		100.000%	5.352 GPM		

Sample Date: 4/1/2014 1:01:00 PM
Sample Type: Composite
Sample Tech: MIKE GENTILINI
H2S: ppm

Sample Remarks:

Analysis Tech: MIKE GENTILINI

Analysis Remarks:

Zone 34

Dec-14

ZONE 610

Watford City
01320
Watford City Border

01312
Watford City East Border

Weighted

Begin Date	End Date	MCF	DK	BTU Zone 25	MCF	DK	BTU Zone 43	AVG BTU	
12/1/2014	12/2/2014	766	925	1.201	628	739	1.177	1.190	12/1/2014
12/2/2014	12/3/2014	744	892	1.201	718	845	1.178	1.190	12/2/2014
12/3/2014	12/4/2014	701	840	1.201	711	838	1.179	1.190	12/3/2014
12/4/2014	12/5/2014	685	821	1.201	764	908	1.187	1.194	12/4/2014
12/5/2014	12/6/2014	666	798	1.201	425	501	1.178	1.192	12/5/2014
12/6/2014	12/7/2014	558	668	1.201	525	619	1.179	1.190	12/6/2014
12/7/2014	12/8/2014	606	727	1.201	474	563	1.187	1.195	12/7/2014
12/8/2014	12/9/2014	653	782	1.201	600	719	1.199	1.200	12/8/2014
12/9/2014	12/10/2014	549	658	1.201	833	986	1.185	1.191	12/9/2014
12/10/2014	12/11/2014	497	596	1.201	723	855	1.183	1.190	12/10/2014
12/11/2014	12/12/2014	464	556	1.201	432	511	1.183	1.192	12/11/2014
12/12/2014	12/13/2014	433	519	1.201	144	169	1.177	1.195	12/12/2014
12/13/2014	12/14/2014	448	537	1.201	618	729	1.180	1.189	12/13/2014
12/14/2014	12/15/2014	594	713	1.201	387	457	1.181	1.193	12/14/2014
12/15/2014	12/16/2014	632	757	1.201	200	240	1.202	1.201	12/15/2014
12/16/2014	12/17/2014	656	786	1.201	586	697	1.190	1.196	12/16/2014
12/17/2014	12/18/2014	670	803	1.201	717	851	1.187	1.194	12/17/2014
12/18/2014	12/19/2014	627	751	1.201	475	564	1.189	1.196	12/18/2014
12/19/2014	12/20/2014	600	719	1.201	149	176	1.186	1.198	12/19/2014
12/20/2014	12/21/2014	543	651	1.201	137	163	1.189	1.199	12/20/2014
12/21/2014	12/22/2014	531	636	1.201	90	108	1.195	1.200	12/21/2014
12/22/2014	12/23/2014	627	751	1.201	152	182	1.194	1.200	12/22/2014
12/23/2014	12/24/2014	630	755	1.201	141	170	1.202	1.201	12/23/2014
12/24/2014	12/25/2014	566	679	1.201	146	175	1.198	1.200	12/24/2014
12/25/2014	12/26/2014	643	771	1.201	170	203	1.195	1.200	12/25/2014
12/26/2014	12/27/2014	652	781	1.201	185	220	1.190	1.199	12/26/2014
12/27/2014	12/28/2014	636	763	1.201	252	298	1.180	1.195	12/27/2014
12/28/2014	12/29/2014	779	934	1.201	285	336	1.178	1.195	12/28/2014
12/29/2014	12/30/2014	877	1052	1.201	379	446	1.176	1.193	12/29/2014
12/30/2014	12/31/2014	866	1038	1.201	435	511	1.173	1.192	12/30/2014
12/31/2014	1/1/2015	682	817	1.201	303	356	1.177	1.194	12/31/2014
		19,581	23,476		12,784	15,135	1.1856	1.1949	

Gas Quality

| Gas Quality Download - Chromatograph |

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (cal)	CRICONDENTHERM (deg F)	NITROGEN (mole percent)	CARBON DIOXIDE (mole percent)	METHANE (mole percent)	ETHANE (mole percent)	PROPANE (mole percent)	NORMAL BUTANE (mole percent)	ISO BUTANE (mole percent)	PENTANE (mole percent)	ISO PENTANE (mole percent)	NEO PENTANE (mole percent)	HEXANES PLUS (mole percent)	HYDROGEN (mole percent)	HELIUM (mole percent)	PRODUCTION DATE	POSTING DATE	ChangeImstemp	NOTES
11587	GLEN ULLIN	1054.7	0.6063	1354.5	-58.2	1.1434	0.8532	90.4472	6.7461	0.5154	0.0439	0.0343	0.0063	0.0082	0	0.0041	0.1837	0.014	11/30/2014	12/1/2014	12/1/2014 2:18:17 PM	
11587	GLEN ULLIN	1050.7	0.6036	1352.3	-60.9	1.1542	0.841	90.8946	6.3655	0.4579	0.0398	0.0312	0.0056	0.0075	0	0.0037	0.1849	0.014	12/1/2014	12/2/2014	12/2/2014 2:18:29 PM	
11587	GLEN ULLIN	1052.5	0.6054	1352.7	-60.5	1.1603	0.8747	90.5939	6.6033	0.4863	0.0392	0.0311	0.0054	0.0074	0	0.0038	0.1826	0.014	12/2/2014	12/3/2014	12/3/2014 2:18:29 PM	
11587	GLEN ULLIN	1055.9	0.6074	1354.8	-55.2	1.165	0.8633	90.2528	6.903	0.5183	0.0476	0.0376	0.0072	0.0094	0	0.005	0.1765	0.014	12/3/2014	12/4/2014	12/4/2014 2:18:11 PM	
11587	GLEN ULLIN	1060.8	0.6105	1357.6	-54.2	1.139	0.88	89.7546	7.3895	0.567	0.0488	0.0392	0.0071	0.0095	0	0.0049	0.1468	0.014	12/4/2014	12/5/2014	12/5/2014 2:18:10 PM	
11587	GLEN ULLIN	1056.3	0.6085	1354.1	-56.1	1.1653	0.9117	90.1175	6.9867	0.5292	0.0485	0.0383	0.0069	0.0093	0	0.0047	0.1691	0.014	12/5/2014	12/6/2014	12/6/2014 2:18:43 PM	
11587	GLEN ULLIN	1055.1	0.6081	1353	-62.4	1.1796	0.9288	90.1	7.0487	0.4781	0.039	0.0297	0.0048	0.0067	0	0.0031	0.1669	0.014	12/6/2014	12/7/2014	12/7/2014 2:18:36 PM	
11587	GLEN ULLIN	1054.6	0.6078	1352.7	-66.7	1.2051	0.9156	90.0994	7.0742	0.4619	0.0329	0.0248	0.0036	0.0052	0	0.0024	0.1611	0.014	12/7/2014	12/8/2014	12/8/2014 2:18:16 PM	
11587	GLEN ULLIN	1056	0.6089	1353.4	-63.7	1.2289	0.9043	89.9398	7.1428	0.5215	0.0375	0.0283	0.0041	0.0059	0	0.0028	0.1708	0.014	12/8/2014	12/9/2014	12/9/2014 2:18:33 PM	
11587	GLEN ULLIN	1054	0.6073	1352.5	-62.9	1.2226	0.8947	90.2113	6.9411	0.471	0.0374	0.0287	0.0044	0.0062	0	0.0031	0.1644	0.014	12/9/2014	12/10/2014	12/10/2014 2:18:58 PM	
11587	GLEN ULLIN	1054.4	0.6078	1352.5	-61.8	1.2006	0.9201	90.1311	7.0023	0.4719	0.0382	0.0294	0.0048	0.0067	0	0.0034	0.1772	0.014	12/10/2014	12/11/2014	12/11/2014 2:18:43 PM	
11587	GLEN ULLIN	1055.3	0.6082	1353.1	-57.2	1.242	0.8885	90.0667	7.0035	0.5065	0.0456	0.0352	0.0065	0.0086	0	0.0044	0.1773	0.014	12/11/2014	12/12/2014	12/12/2014 2:18:41 PM	
11587	GLEN ULLIN	1054.6	0.6079	1352.5	-58.4	1.2472	0.8941	90.0776	7.0056	0.4803	0.0426	0.033	0.0059	0.008	0	0.0041	0.1868	0.014	12/12/2014	12/13/2014	12/13/2014 2:19:06 PM	
11587	GLEN ULLIN	1054.3	0.6077	1352.5	-60.8	1.2491	0.8875	90.096	7.0104	0.4703	0.0409	0.0311	0.0054	0.0073	0	0.0035	0.1825	0.014	12/13/2014	12/14/2014	12/14/2014 2:18:56 PM	
11587	GLEN ULLIN	1057.1	0.6096	1353.9	-57.3	1.2635	0.8844	89.8155	7.2322	0.5142	0.0477	0.0366	0.0065	0.0088	0	0.0042	0.1701	0.0157	12/14/2014	12/15/2014	12/15/2014 2:18:58 PM	
11587	GLEN ULLIN	1058.3	0.6099	1355.1	-56.9	1.2872	0.8398	89.7581	7.2584	0.5664	0.0477	0.0366	0.0066	0.0088	0	0.0041	0.1688	0.0157	12/15/2014	12/16/2014	12/16/2014 2:18:32 PM	
11587	GLEN ULLIN	1055.3	0.6081	1353.3	-57.4	1.2546	0.8673	90.1268	6.9063	0.5492	0.0475	0.0368	0.0066	0.0088	0	0.0042	0.1789	0.016	12/16/2014	12/17/2014	12/17/2014 2:18:43 PM	
11587	GLEN ULLIN	1057.8	0.6095	1355	-55.3	1.2229	0.8762	89.9143	7.1095	0.5779	0.051	0.0402	0.0072	0.0096	0	0.0046	0.1732	0.0162	12/17/2014	12/18/2014	12/18/2014 2:18:28 PM	
11587	GLEN ULLIN	1055.1	0.6081	1353	-55.3	1.2218	0.9012	90.185	6.8567	0.5376	0.0505	0.0404	0.0074	0.0098	0	0.0048	0.1692	0.0162	12/18/2014	12/19/2014	12/19/2014 2:18:23 PM	
11587	GLEN ULLIN	1054.8	0.6073	1353.5	-55.4	1.2338	0.8443	90.2632	6.7914	0.5407	0.0501	0.0397	0.0075	0.0098	0	0.0048	0.1791	0.0162	12/19/2014	12/20/2014	12/20/2014 2:18:31 PM	
11587	GLEN ULLIN	1061.2	0.6114	1357.2	-48.3	1.2605	0.8377	89.6373	7.3058	0.639	0.0647	0.0508	0.0099	0.0129	0	0.0067	0.1597	0.0162	12/20/2014	12/21/2014	12/21/2014 2:18:26 PM	
11587	GLEN ULLIN	1058.5	0.6099	1355.4	-52.6	1.2793	0.8337	89.8588	7.1335	0.599	0.0546	0.0429	0.0083	0.0106	0	0.0054	0.1588	0.0162	12/21/2014	12/22/2014	12/22/2014 2:18:42 PM	
11587	GLEN ULLIN	1058.8	0.6108	1354.8	-53.8	1.3036	0.8613	89.6847	7.2682	0.5949	0.0519	0.0408	0.0077	0.01	0	0.0051	0.1577	0.0162	12/22/2014	12/23/2014	12/23/2014 2:18:23 PM	
11587	GLEN ULLIN	1060	0.6113	1355.7	-52.9	1.2804	0.8619	89.6462	7.2864	0.642	0.0525	0.0416	0.0077	0.0101	0	0.0053	0.1526	0.0162	12/23/2014	12/24/2014	12/24/2014 2:18:29 PM	
11587	GLEN ULLIN	1057.1	0.6095	1354.1	-57	1.3272	0.8372	89.8646	7.1141	0.5855	0.0461	0.0361	0.0065	0.0085	0	0.0041	0.1542	0.0162	12/24/2014	12/25/2014	12/25/2014 2:18:33 PM	
11587	GLEN ULLIN	1057.1	0.6096	1353.9	-62.8	1.3316	0.8402	89.7628	7.2398	0.5594	0.0382	0.0296	0.005	0.0066	0	0.0028	0.1689	0.0162	12/25/2014	12/26/2014	12/26/2014 2:18:40 PM	
11587	GLEN ULLIN	1049.9	0.6046	1350.3	-77.7	1.3029	0.8349	90.5183	6.713	0.4072	0.02	0.014	0.0014	0.0021	0	0.0001	0.1711	0.0162	12/26/2014	12/27/2014	12/27/2014 2:18:49 PM	
11587	GLEN ULLIN	1050.6	0.6051	1350.6	-77.3	1.2968	0.8419	90.4003	6.8387	0.3914	0.0201	0.0142	0.0017	0.0024	0	0.0001	0.1794	0.0162	12/27/2014	12/28/2014	12/28/2014 2:19:02 PM	
11587	GLEN ULLIN	1047.6	0.603	1349.1	-79.4	1.2706	0.851	90.7664	6.5378	0.3402	0.0184	0.0134	0.0015	0.0023	0	0.0002	0.1845	0.0162	12/28/2014	12/29/2014	12/29/2014 2:18:56 PM	
11587	GLEN ULLIN	1045.9	0.6012	1348.9	-80.2	1.1753	0.8638	91.209	6.1547	0.3623	0.0194	0.0149	0.0018	0.0027	0	0.0003	0.1843	0.0162	12/29/2014	12/30/2014	12/30/2014 2:18:36 PM	
11587	GLEN ULLIN	1046.6	0.601	1350.1	-76.4	1.1327	0.8547	91.2621	6.173	0.3444	0.0229	0.0181	0.0025	0.0037	0	0.0013	0.1713	0.0162	12/30/2014	12/31/2014	12/31/2014 2:18:49 PM	

31 record(s) retrieved

Zone 802

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
600	Chromatograph	Hankinson Area
610	Monthly Sampler & Chromatograph	Watford City
802	Chromatograph	Linton

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	DEC 14	NOV 14	OCT 14	SEPT 14	AUG 14	JULY 14	JUNE 14	MAY 14	APR 14	MAR 14	FEB 14	JAN 14	ZONE
MT/ND	211	Sidney Area	1208	1214	1215	1211	1204	1209	1212	1207	1212	1198	1204	1205	1208	211
ND	24	Williston Area	1184	1180	1182	1190	1189	1186	1184	1183	1180	1177	1181	1177	1201	24
ND	25	Watford City Border	1215	1201	1199	1207	1217	1205	1219	1226	1241	1221	1220	1205	1218	25
ND/MT	241	Fairview Area	1201	1203	1203	1197	1205	1201	1208	1202	1204	1194	1197	1197	1203	241
ND	261	Williston - Tioga - Minot Line	1102	1035	1058	1021	1027	1013	1094	1115	1118	1181	1187	1185	1189	261
ND	262	Minot Area	1173	1169	1171	1155	1150	1149	1154	1166	1161	1196	1201	1200	1201	262
ND	263	Tioga - Portal	1081	1094	1097	1103	1103	1089	1098	1078	1062	1074	1058	1051	1063	263
ND	264	Williston - Ray	1184	1180	1182	1190	1189	1186	1184	1183	1180	1177	1181	1177	1201	264
ND	271	Bismarck - Cleveland	1156	1160	1159	1155	1147	1148	1152	1164	1162	1192	1159	1127	1144	271
ND	272	Cleveland - Mapleton	1155	1157	1157	1154	1146	1148	1151	1163	1162	1192	1158	1127	1144	272
ND	273	Cleveland - Grafton	1155	1158	1158	1154	1146	1148	1151	1163	1162	1190	1158	1127	1144	273
ND	28	Bismarck - Cabin Creek	1125	1116	1118	1140	1147	1148	1151	1163	1155	1135	1077	1072	1081	28
ND	31	Dickinson Area	1131	1122	1125	1154	1170	1174	1176	1171	1140	1102	1079	1073	1082	31
ND	311	Taylor Take-Off - Glen Ullin Comp	1118	1114	1121	1116	1130	1114	1131	1138	1105	1091	1072	1197	1092	311
ND/MT	32	Cabin Creek - Dickinson	1109	1103	1110	1144	1164	1134	1147	1134	1100	1077	1061	1056	1070	32
ND	33	Killdeer	1181	1178	1176	1180	1182	1182	1183	1183	1183	1183	1180	1181	1182	33
ND	34	Bowman Area	1098	1089	1116	1136	1128	1127	1130	1119	1123	1030	1059	1047	1073	34
ND	610	MDU-Watford City BTU	1201	1195	1193	1205	1210	1204	1204	1195						
ND	802	Linton	1049	1055	1054	1051	1054	1060	1050	1047	1047	1044	1045	1039	1042	802

**THERMAL ZONE VARIANCE
DOCUMENTATION**

December 2014

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
261	-23	Processing issues
34	-27	Blending with new gas