



UTILITIES CO.

A Division of MDU Resources Group, Inc.

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

May 15, 2017

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

Re: Case No. PU-17-002 (Therm Billing)
Monthly Report – March 2017

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 April 2017.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of March 2017.
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 March 2017.

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,

A handwritten signature in blue ink that reads 'Tamie Aberle'.

Tamie Aberle
Director of Regulatory Affairs

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
Apr-17

Town	Heat Zone	Therm Factor
MDU-303-ALEXANDER	025	1.1353
MDU-308-ARNEGARD	025	1.1353
MDU-314-APPLE VALLEY	271	1.1144
MDU-318-BEACH	032	1.0295
MDU-319-BELFIELD	032	1.0370
MDU-323-BERTHOLD	262	1.1126
MDU-327-BISMARCK	028	1.0740
MDU-330-BOWMAN	034	0.9340
MDU-337-BURLINGTON	262	1.1366
MDU-343-CARRINGTON	273	1.1135
MDU-344-CLEVELAND	272	1.1047
MDU-364-CAVALIER	273	1.1370
MDU-365-DAWSON	271	1.1066
MDU-368-DES LACS	262	1.1206
MDU-369-DICKINSON	031	1.0493
MDU-374-FT TOTTEN	273	1.1213
MDU-375-DEVILS LAKE	273	1.1213
MDU-379-BARLOW	273	1.1135
MDU-384-EPPING	264	1.1070
MDU-387-ELDRIDGE	272	1.1125
MDU-407-GLADSTONE	031	1.0493
MDU-411-GLEN ULLIN	031	1.0569
MDU-413-GOLVA	032	1.0144
MDU-416-GARRISON	262	1.1206
MDU-417-GRAFTON	273	1.1448
MDU-429-HEBRON	031	1.0569
MDU-432-HETTINGER	903	2.3875
MDU-449-JAMESTOWN	272	1.1203
MDU-459-KILLDEER	033	1.1117
MDU-463-LANGDON	273	1.1135
MDU-469-LEFOR	031	1.0493
MDU-474-LIGNITE	263	1.0578
MDU-475-LINTON	802	1.0150
MDU-478-LINCOLN	028	1.0816
MDU-488-MCKENZIE	271	1.1144
MDU-494-MEDINA	271	1.1066
MDU-498-MANDAN	028	1.0816
MDU-500-MARMARTH	034	0.9204
MDU-505-MINOT	262	1.1366
MDU-510-MOTT	031	1.0493
MDU-512-MAX	262	1.1126
MDU-522-NEW ENGLAND	031	1.0417
MDU-524-NEW SALEM	028	1.0816
MDU-532-NEW ROCKFORD	273	1.1135
MDU-539-PARK RIVER	273	1.1370
MDU-540-PALERMO	262	1.1126
MDU-558-RAY	264	1.1070
MDU-561-REGENT	031	1.0493
MDU-563-RHAME	034	0.9069

MDU-564-RICHARDTON	031	1.0417
MDU-568-ROSS	261	1.0212
MDU-572-RUTHVILLE	262	1.1366
MDU-574-SANBORN	272	1.1203
MDU-583-SENTINEL BUTTE	032	1.0295
MDU-588-SOUTH HEART	031	1.0417
MDU-717-SPIRITWOOD	272	1.1203
MDU-590-SPRINGBROOK	264	1.1070
MDU-591-STANLEY	261	1.0286
MDU-593-STEELE	271	1.1066
MDU-598-SHEYENNE	273	1.1213
MDU-605-SURREY	262	1.1366
MDU-610-TAPPEN	271	1.1066
MDU-611-TAYLOR	031	1.0417
MDU-616-TIOGA	261	1.0360
MDU-619-TURTLE LAKE	262	1.1206
MDU-620-TRENTON	024	1.1159
MDU-624-UNDERWOOD	262	1.1206
MDU-625-VALLEY CITY	272	1.1281
MDU-629-WALHALLA	273	1.1370
MDU-632-WATFORD CITY	610	1.0985
MDU-636-WHEELOCK	264	1.0990
MDU-637-WHITE EARTH	261	1.0286
MDU-642-WILLISTON	024	1.1159
MDU-646-WASHBURN	262	1.1286
MDU-647-WILTON	262	1.1126
MDU-664-RIVERDALE	262	1.1206
MDU-691-FAIRVIEW	241	1.1235
MDU-712-MINOT AFB	262	1.1366
MDU-718-FAIRMOUNT	600	1.1149
MDU-732-NEKOMA	273	1.1135
MDU-732-MSR SITE	273	1.1134

GQ Source Number:	0602160	Specific Gravity:	0.7084
GQ Source Name:	FAIRVIEW BORDER	Dry Heat Value:	1179.05
Effective Date:	3/1/2017 9:00:00 AM	Wet Heat Value:	1158.53
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1179.05
Pressure Base:	14.730	Sample Pressure:	490.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	72.346		CO2	Carbon Dioxide	0.964
C2	Ethane	20.310	0.0000	N2	Nitrogen	3.086
C3	Propane	2.943	0.8085	O2	Oxygen	0.010
IC4	Isobutane	0.110	0.0358	He	Helium	
NC4	n-Butane	0.205	0.0646	H2	Hydrogen	
IC5	Isopentane	0.013	0.0046	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.012	0.0044	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% 0.918 GPM

Sample Date: 4/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 241

GQ Source Number:	0602225	Specific Gravity:	0.7232
GQ Source Name:	WATFORD CITY WEST BORDER	Dry Heat Value:	1198.70
Effective Date:	3/1/2017 9:00:00 AM	Wet Heat Value:	1177.83
Effective End Date	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1198.70
Pressure Base:	14.730	Sample Pressure:	539.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	69.961		CO2	Carbon Dioxide	1.023
C2	Ethane	22.168	0.0000	N2	Nitrogen	3.201
C3	Propane	3.068	0.8427	O2	Oxygen	0.010
IC4	Isobutane	0.166	0.0540	He	Helium	
NC4	n-Butane	0.346	0.1087	H2	Hydrogen	
IC5	Isopentane	0.028	0.0102	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.028	0.0100	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% 1.026 GPM

Sample Date: 4/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 25

GQ Source Daily Summary

March 2017

Number: 163

Pressure Base: 14.730

Contract Day: 1

Name: NORTH TIOGA TRNSR-ROBINSON LAKE PLT

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	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
2	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
3	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
4	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
5	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
6	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
7	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
8	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
9	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
10	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
11	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
12	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
13	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
14	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
15	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
16	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
17	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
18	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
19	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
20	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
21	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
22	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
23	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
24	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
25	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
26	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
27	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
28	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
29	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
30	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
31	0.6316	1046.4	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	
Avg	0.6316	1046.0	1065.0	0.374	3.891	84.677	9.752	1.155	0.043	0.098	0.009	0.001	0.000	0.000	0.000	0.000	0.000	1340.06	

Zone 261

GQ Source Number:	2501030	Specific Gravity:	0.6548
GQ Source Name:	LIGNITE PLANT	Dry Heat Value:	1114.70
Effective Date:	3/1/2017 9:00:00 AM	Wet Heat Value:	1095.30
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1114.70
Pressure Base:	14.730	Sample Pressure:	420.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	80.705		CO2	Carbon Dioxide	0.107
C2	Ethane	14.239	3.7968	N2	Nitrogen	3.209
C3	Propane	1.681	0.4618	O2	Oxygen	0.009
IC4	Isobutane	0.033	0.0109	He	Helium	
NC4	n-Butane	0.016	0.0052	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			H2	Water	
C8	Octanes			Neo-C5	Neopentane	
C9	Nonanes					
C10	Decanes					

Totals 100.000% 4.275 GPM

Sample Date: 4/3/2017 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 Number:	0702010	Specific Gravity:	0.6865
GQ Source Name:	EPPING BORDER	Dry Heat Value:	1158.17
Effective Date:	3/1/2017 9:00:00 AM	Wet Heat Value:	1138.02
Effective End Date:	1/18/2038 9:14:07 PM	As Deliv. Heat Value:	1158.17
Pressure Base:	14.730	Sample Pressure:	480.00
Viscosity:		Sample Temperature:	

	<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>	
C1	Methane	76.158		CO2	Carbon Dioxide	0.756
C2	Ethane	17.702	4.7201	N2	Nitrogen	2.594
C3	Propane	2.535	0.6964	O2	Oxygen	0.006
IC4	Isobutane	0.078	0.0255	He	Helium	
NC4	n-Butane	0.150	0.0472	H2	Hydrogen	
IC5	Isopentane	0.010	0.0037	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.011	0.0040	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% 5.497 GPM

Sample Date: 4/3/2017 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 264

GQ Source Daily Summary

March 2017

Number: 161

Pressure Base: 14.730

Contract Day: 1

Name: N. TIOGA TRNS-CONOCO STONEVIEW TO

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	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
2	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
3	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
4	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
5	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
6	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
7	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
8	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
9	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
10	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
11	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
12	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
13	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
14	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
15	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
16	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
17	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
18	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
19	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
20	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
21	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
22	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
23	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
24	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
25	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
26	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
27	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
28	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
29	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
30	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
31	0.7045	1153.4	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	
Avg	0.7045	1153.0	1173.8	0.851	3.127	71.966	21.390	2.368	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1398.47	

Zone 265

GQ Source Daily Summary

March 2017

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	0.7053	1139.9	1160.0	0.637	4.471	72.670	19.088	2.786	0.098	0.218	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1381.31	
2	0.7080	1143.4	1163.6	0.648	4.491	72.288	19.308	2.894	0.104	0.232	0.016	0.018	0.000	0.000	0.000	0.000	0.000	1382.96	
3	0.7241	1160.7	1181.3	0.782	4.746	69.883	20.684	3.417	0.131	0.306	0.023	0.027	0.000	0.000	0.000	0.000	0.000	1388.19	
4	0.7216	1155.6	1176.1	0.734	4.896	70.149	20.424	3.353	0.122	0.280	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1384.50	
5	0.7293	1164.4	1185.0	0.791	4.997	69.066	20.965	3.677	0.137	0.317	0.022	0.026	0.000	0.000	0.000	0.000	0.000	1387.60	
6	0.7117	1146.2	1166.5	0.673	4.631	71.753	19.491	3.056	0.110	0.248	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1382.74	
7	0.6849	1121.3	1141.2	0.738	3.535	76.366	16.862	2.219	0.082	0.173	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1378.89	
8	0.6712	1103.9	1123.5	0.705	3.349	78.756	15.050	1.906	0.071	0.144	0.009	0.010	0.000	0.000	0.000	0.000	0.000	1371.41	
9	0.6756	1106.8	1126.4	0.634	3.704	77.798	15.644	1.980	0.072	0.149	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1370.37	
10	0.6737	1102.8	1122.3	0.590	3.838	78.034	15.384	1.933	0.066	0.137	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1367.34	
11	0.6811	1110.1	1129.8	0.550	4.148	76.744	16.122	2.191	0.073	0.153	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1368.92	
12	0.6897	1120.9	1140.7	0.589	4.235	75.338	17.138	2.415	0.083	0.178	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1373.60	
13	0.6895	1120.5	1140.3	0.640	4.164	75.376	17.155	2.392	0.081	0.171	0.010	0.011	0.000	0.000	0.000	0.000	0.000	1373.29	
14	0.6965	1128.2	1148.2	0.694	4.266	74.436	17.598	2.656	0.098	0.219	0.015	0.017	0.000	0.000	0.000	0.000	0.000	1375.81	
15	0.7055	1137.6	1157.8	0.684	4.555	72.893	18.562	2.914	0.108	0.245	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1378.38	
16	0.7166	1150.6	1171.0	0.755	4.698	70.956	20.034	3.141	0.115	0.262	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1383.29	
17	0.7232	1159.2	1179.7	0.839	4.665	70.041	20.612	3.377	0.126	0.294	0.021	0.024	0.000	0.000	0.000	0.000	0.000	1387.27	
18	0.7154	1152.1	1172.5	0.803	4.422	71.236	20.016	3.110	0.115	0.261	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1386.24	
19	0.7193	1155.1	1175.5	0.804	4.609	70.604	20.303	3.237	0.121	0.278	0.020	0.023	0.000	0.000	0.000	0.000	0.000	1386.01	
20	0.7174	1155.5	1176.0	0.759	4.471	70.899	20.268	3.163	0.120	0.276	0.020	0.024	0.000	0.000	0.000	0.000	0.000	1388.40	
21	0.7074	1144.2	1164.4	0.751	4.232	72.439	19.398	2.823	0.101	0.225	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1384.50	
22	0.7071	1142.2	1162.4	0.735	4.354	72.547	19.109	2.887	0.103	0.231	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1382.29	
23	0.7072	1140.7	1160.9	0.739	4.445	72.550	18.976	2.924	0.103	0.231	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1380.46	
24	0.7098	1145.0	1165.3	0.755	4.400	72.161	19.319	2.977	0.108	0.244	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1383.13	
25	0.7177	1152.9	1173.3	0.797	4.600	70.708	20.404	3.074	0.116	0.264	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1384.97	
26	0.7237	1159.4	1179.9	0.823	4.730	69.812	20.882	3.285	0.127	0.295	0.021	0.024	0.000	0.000	0.000	0.000	0.000	1386.95	
27	0.7203	1155.7	1176.2	0.774	4.708	70.226	20.719	3.148	0.118	0.270	0.018	0.020	0.000	0.000	0.000	0.000	0.000	1385.86	
28	0.7237	1159.3	1179.8	0.809	4.756	69.690	21.060	3.244	0.121	0.279	0.019	0.022	0.000	0.000	0.000	0.000	0.000	1386.88	
29	0.7239	1159.0	1179.5	0.819	4.773	69.787	20.836	3.328	0.125	0.289	0.020	0.022	0.000	0.000	0.000	0.000	0.000	1386.32	
30	0.7274	1163.3	1183.9	0.838	4.814	69.173	21.306	3.405	0.127	0.293	0.020	0.023	0.000	0.000	0.000	0.000	0.000	1388.11	
31	0.7280	1162.4	1183.0	0.832	4.929	69.011	21.348	3.432	0.125	0.285	0.018	0.019	0.000	0.000	0.000	0.000	0.000	1386.55	
Avg	0.7083	1143.0	1162.8	0.733	4.440	72.367	19.164	2.914	0.107	0.240	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1381.69	

Zone 271

GQ Source Daily Summary

March 2017

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	0.7070	1139.7	1159.8	0.671	4.590	72.444	19.101	2.835	0.100	0.222	0.018	0.019	0.000					1379.43	
2	0.7061	1138.8	1159.0	0.632	4.622	72.516	19.060	2.823	0.099	0.216	0.015	0.017	0.000					1379.24	
3	0.7184	1152.5	1172.9	0.745	4.770	70.705	20.112	3.231	0.121	0.272	0.021	0.024	0.000					1383.81	
4	0.7225	1156.2	1176.6	0.758	4.912	70.033	20.485	3.349	0.127	0.289	0.022	0.026	0.000					1384.25	
5	0.7273	1159.7	1180.2	0.779	5.117	69.240	20.840	3.556	0.129	0.293	0.021	0.024	0.000					1383.88	
6	0.7235	1157.6	1178.0	0.748	4.937	69.890	20.531	3.431	0.127	0.289	0.022	0.025	0.000					1384.96	
7	0.7002	1134.0	1154.1	0.732	4.203	73.740	18.311	2.669	0.099	0.210	0.017	0.019	0.000					1379.27	
8	0.6675	1100.1	1119.6	0.721	3.213	79.346	14.765	1.748	0.064	0.124	0.009	0.009	0.000					1370.36	
9	0.6781	1106.0	1125.6	0.680	3.915	77.493	15.543	2.108	0.079	0.161	0.010	0.010	0.000					1366.91	
10	0.6750	1104.2	1123.8	0.612	3.834	77.844	15.535	1.951	0.068	0.138	0.009	0.009	0.000					1367.83	
11	0.6792	1106.2	1125.8	0.562	4.189	77.038	15.886	2.093	0.070	0.143	0.010	0.010	0.000					1365.99	
12	0.6874	1115.7	1135.4	0.577	4.358	75.722	16.703	2.357	0.082	0.175	0.013	0.013	0.000					1369.46	
13	0.6917	1121.1	1140.9	0.622	4.363	74.930	17.389	2.425	0.081	0.168	0.011	0.011	0.000					1371.83	
14	0.6923	1121.5	1141.4	0.696	4.279	75.012	17.233	2.479	0.087	0.187	0.013	0.014	0.000					1371.76	
15	0.7043	1135.3	1155.4	0.695	4.570	73.140	18.309	2.888	0.110	0.247	0.019	0.022	0.000					1376.70	
16	0.7126	1143.8	1164.1	0.713	4.802	71.558	19.506	3.024	0.110	0.246	0.019	0.022	0.000					1378.99	
17	0.7249	1158.0	1178.5	0.831	4.915	69.691	20.669	3.428	0.128	0.292	0.022	0.025	0.000					1384.18	
18	0.7170	1151.7	1172.1	0.821	4.569	70.991	20.045	3.150	0.117	0.264	0.020	0.023	0.000					1384.24	
19	0.7204	1154.7	1175.1	0.824	4.698	70.395	20.404	3.243	0.121	0.273	0.020	0.022	0.000					1384.57	
20	0.7200	1154.4	1174.9	0.788	4.739	70.514	20.212	3.290	0.125	0.285	0.021	0.025	0.000					1384.55	
21	0.7099	1145.4	1165.6	0.755	4.387	72.028	19.575	2.882	0.104	0.232	0.017	0.019	0.000					1383.50	
22	0.7077	1141.3	1161.6	0.755	4.426	72.404	19.200	2.857	0.102	0.224	0.016	0.017	0.000					1380.78	
23	0.7099	1142.5	1162.7	0.743	4.580	72.092	19.216	2.992	0.107	0.235	0.017	0.018	0.000					1380.00	
24	0.7081	1140.6	1160.8	0.751	4.516	72.378	19.082	2.899	0.105	0.233	0.017	0.019	0.000					1379.45	
25	0.7156	1149.2	1169.6	0.786	4.646	71.069	20.036	3.061	0.113	0.251	0.018	0.020	0.000					1382.56	
26	0.7232	1157.0	1177.5	0.830	4.820	69.831	20.824	3.241	0.125	0.284	0.021	0.024	0.000					1384.56	
27	0.7237	1157.0	1177.5	0.814	4.888	69.684	20.922	3.249	0.123	0.278	0.020	0.022	0.000					1384.15	
28	0.7163	1149.1	1169.4	0.766	4.750	70.867	20.183	3.033	0.112	0.251	0.018	0.021	0.000					1381.74	
29	0.7203	1152.4	1172.8	0.807	4.855	70.282	20.448	3.182	0.119	0.268	0.019	0.021	0.000					1381.94	
30	0.7272	1161.7	1182.3	0.847	4.879	69.186	21.238	3.388	0.127	0.289	0.021	0.024	0.000					1386.41	
31	0.7275	1160.6	1181.2	0.839	4.984	69.069	21.279	3.382	0.125	0.281	0.019	0.021	0.000					1384.84	
Avg	0.7085	1141.0	1161.1	0.739	4.559	72.295	19.117	2.911	0.107	0.236	0.017	0.019	0.000					1379.42	

Zone 272

GQ Source Daily Summary

March 2017

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	0.7058	1139.8	1160.0	0.659	4.489	72.609	19.098	2.796	0.100	0.216	0.016	0.017	0.000	0.000	0.000	0.000	0.000	1380.74	
2	0.7058	1139.8	1160.0	0.630	4.536	72.578	19.088	2.824	0.099	0.214	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1380.74	
3	0.7188	1154.4	1174.8	0.746	4.692	70.652	20.222	3.248	0.121	0.274	0.021	0.024	0.000	0.000	0.000	0.000	0.000	1385.69	
4	0.7225	1157.5	1178.0	0.758	4.831	70.041	20.552	3.356	0.127	0.287	0.022	0.025	0.000	0.000	0.000	0.000	0.000	1385.87	
5	0.7271	1160.8	1181.3	0.776	5.032	69.291	20.877	3.558	0.129	0.292	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1385.41	
6	0.7232	1158.3	1178.9	0.739	4.875	69.955	20.527	3.440	0.127	0.289	0.022	0.025	0.000	0.000	0.000	0.000	0.000	1386.19	
7	0.6998	1134.7	1154.8	0.728	4.128	73.821	18.321	2.659	0.098	0.209	0.017	0.018	0.000	0.000	0.000	0.000	0.000	1380.49	
8	0.6666	1100.3	1119.8	0.717	3.125	79.508	14.712	1.736	0.063	0.122	0.009	0.008	0.000	0.000	0.000	0.000	0.000	1371.55	
9	0.6773	1106.3	1125.9	0.673	3.830	77.641	15.505	2.094	0.078	0.158	0.010	0.010	0.000	0.000	0.000	0.000	0.000	1368.08	
10	0.6741	1104.4	1124.0	0.606	3.752	77.994	15.494	1.933	0.067	0.136	0.009	0.009	0.000	0.000	0.000	0.000	0.000	1368.92	
11	0.6781	1106.0	1125.6	0.556	4.106	77.231	15.803	2.075	0.069	0.140	0.010	0.009	0.000	0.000	0.000	0.000	0.000	1366.88	
12	0.6867	1116.1	1135.9	0.573	4.269	75.853	16.679	2.348	0.081	0.173	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1370.75	
13	0.6910	1121.6	1141.5	0.617	4.277	75.050	17.371	2.418	0.080	0.165	0.011	0.011	0.000	0.000	0.000	0.000	0.000	1373.12	
14	0.6916	1122.0	1141.9	0.691	4.188	75.136	17.224	2.464	0.086	0.185	0.012	0.013	0.000	0.000	0.000	0.000	0.000	1373.11	
15	0.7039	1136.0	1156.1	0.693	4.489	73.220	18.319	2.884	0.109	0.245	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1378.01	
16	0.7121	1144.6	1164.9	0.708	4.715	71.661	19.506	3.018	0.109	0.243	0.018	0.021	0.000	0.000	0.000	0.000	0.000	1380.39	
17	0.7244	1158.8	1179.3	0.827	4.825	69.795	20.667	3.422	0.128	0.290	0.021	0.024	0.000	0.000	0.000	0.000	0.000	1385.57	
18	0.7169	1152.6	1173.1	0.818	4.503	71.024	20.080	3.153	0.117	0.263	0.019	0.022	0.000	0.000	0.000	0.000	0.000	1385.49	
19	0.7200	1155.8	1176.2	0.821	4.606	70.455	20.447	3.240	0.121	0.270	0.019	0.022	0.000	0.000	0.000	0.000	0.000	1386.19	
20	0.7195	1155.2	1175.7	0.784	4.647	70.612	20.220	3.285	0.125	0.282	0.021	0.024	0.000	0.000	0.000	0.000	0.000	1386.01	
21	0.7096	1146.4	1166.7	0.752	4.302	72.090	19.602	2.884	0.104	0.230	0.016	0.018	0.000	0.000	0.000	0.000	0.000	1385.02	
22	0.7070	1141.7	1161.9	0.751	4.346	72.529	19.179	2.842	0.101	0.221	0.015	0.016	0.000	0.000	0.000	0.000	0.000	1381.87	
23	0.7094	1143.1	1163.3	0.739	4.501	72.184	19.219	2.983	0.106	0.233	0.016	0.018	0.000	0.000	0.000	0.000	0.000	1381.24	
24	0.7074	1140.9	1161.1	0.754	4.430	72.500	19.063	2.886	0.104	0.229	0.016	0.018	0.000	0.000	0.000	0.000	0.000	1380.52	
25	0.7149	1149.7	1170.1	0.782	4.556	71.199	20.020	3.045	0.113	0.249	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1383.82	
26	0.7228	1157.8	1178.3	0.826	4.735	69.910	20.842	3.236	0.125	0.282	0.021	0.023	0.000	0.000	0.000	0.000	0.000	1385.97	
27	0.7235	1158.2	1178.7	0.811	4.801	69.735	20.959	3.252	0.123	0.277	0.019	0.022	0.000	0.000	0.000	0.000	0.000	1385.74	
28	0.7213	1155.9	1176.4	0.782	4.775	70.040	20.814	3.166	0.118	0.265	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1385.16	
29	0.7221	1155.0	1175.4	0.814	4.863	69.973	20.689	3.229	0.121	0.272	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1383.21	
30	0.7290	1164.6	1185.2	0.855	4.862	68.912	21.444	3.453	0.131	0.297	0.021	0.024	0.000	0.000	0.000	0.000	0.000	1388.12	
31	0.7278	1161.7	1182.3	0.842	4.942	69.029	21.335	3.405	0.126	0.281	0.019	0.021	0.000	0.000	0.000	0.000	0.000	1385.87	
Avg	0.7084	1142.0	1162.2	0.736	4.485	72.330	19.157	2.914	0.107	0.235	0.017	0.019	0.000	0.000	0.000	0.000	0.000	1380.83	

Zone 273

GQ Source Daily Summary

March 2017

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	0.6636	1098.1	1117.5	0.308	3.605	79.090	15.487	1.402	0.038	0.062	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1371.84	
2	0.6644	1098.6	1118.1	0.301	3.654	78.973	15.515	1.443	0.040	0.065	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1371.75	
3	0.6636	1096.9	1116.3	0.279	3.717	78.989	15.556	1.361	0.034	0.055	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1370.41	
4	0.6662	1101.6	1121.1	0.281	3.675	78.486	16.082	1.375	0.036	0.058	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1373.56	
5	0.6723	1109.5	1129.1	0.325	3.704	77.441	16.894	1.524	0.039	0.065	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1372.16	
6	0.6704	1103.9	1123.5	0.370	3.790	77.916	16.258	1.540	0.042	0.074	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1377.06	
7	0.6575	1094.6	1113.9	0.669	2.696	80.872	14.259	1.359	0.049	0.085	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1373.74	
8	0.6456	1079.8	1098.9	0.662	2.483	83.023	12.603	1.116	0.038	0.065	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1367.69	
9	0.6467	1078.6	1097.7	0.559	2.817	82.624	12.785	1.112	0.036	0.059	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1364.99	
10	0.6507	1083.4	1102.6	0.493	3.002	81.819	13.363	1.213	0.038	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1366.88	
11	0.6550	1085.0	1104.2	0.374	3.489	80.915	13.741	1.366	0.039	0.065	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1364.40	
12	0.6562	1086.4	1105.6	0.368	3.530	80.638	13.993	1.363	0.038	0.061	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1364.83	
13	0.6547	1086.3	1105.5	0.456	3.256	81.032	13.838	1.307	0.039	0.064	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1366.34	
14	0.6505	1083.0	1102.2	0.493	3.010	81.817	13.395	1.181	0.036	0.060	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1366.55	
15	0.6575	1087.3	1106.5	0.358	3.611	80.221	14.455	1.262	0.034	0.054	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1364.68	
16	0.6689	1101.5	1121.0	0.425	3.714	78.168	16.126	1.451	0.041	0.068	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1370.75	
17	0.6487	1092.9	1112.2	0.665	1.976	82.229	14.123	0.909	0.033	0.057	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1380.94	
18	0.6499	1094.7	1114.1	0.613	2.058	81.841	14.544	0.858	0.029	0.051	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1381.97	
19	0.6642	1105.3	1124.9	0.513	2.911	79.143	16.058	1.263	0.038	0.066	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1380.23	
20	0.6689	1111.2	1130.9	0.445	3.095	78.100	16.973	1.282	0.036	0.063	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1382.73	
21	0.6600	1099.1	1118.6	0.545	2.844	79.975	15.320	1.211	0.036	0.063	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1376.86	
22	0.6596	1094.9	1114.3	0.478	3.161	80.120	14.768	1.354	0.040	0.071	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1372.06	
23	0.6597	1095.6	1115.0	0.482	3.122	80.097	14.814	1.387	0.034	0.058	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1372.80	
24	0.6576	1095.3	1114.7	0.507	2.904	80.452	14.783	1.263	0.031	0.053	0.003	0.003	0.000	0.000	0.000	0.000	0.000	1374.61	
25	0.6655	1105.0	1124.6	0.520	3.033	79.035	15.873	1.431	0.037	0.064	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1378.60	
26	0.6668	1107.8	1127.4	0.489	3.036	78.605	16.464	1.294	0.038	0.067	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1380.70	
27	0.6758	1118.2	1138.0	0.404	3.378	76.788	17.865	1.456	0.037	0.066	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1384.36	
28	0.6809	1122.0	1141.9	0.444	3.565	76.161	17.884	1.802	0.048	0.086	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1383.83	
29	0.6839	1121.4	1141.3	0.522	3.764	75.854	17.705	1.970	0.058	0.113	0.007	0.007	0.000	0.000	0.000	0.000	0.000	1380.06	
30	0.6767	1113.7	1133.4	0.460	3.652	76.929	17.124	1.683	0.050	0.092	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1377.83	
31	0.6756	1111.9	1131.6	0.449	3.674	77.159	16.867	1.698	0.050	0.093	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1376.72	
Avg	0.6625	1099.0	1118.3	0.460	3.223	79.500	15.339	1.362	0.039	0.067	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1373.93	

Zone 28

GQ Source Daily Summary

March 2017

Number: 271

Pressure Base: 14.730

Contract Day: 1

Name: DICKINSON BRD-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	0.6616	1095.1	1114.5	0.281	3.635	79.458	15.115	1.407	0.036	0.061	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1370.21	
2	0.6627	1096.4	1115.8	0.283	3.664	79.227	15.305	1.414	0.037	0.063	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1370.63	
3	0.6641	1098.5	1117.9	0.266	3.688	78.871	15.702	1.375	0.035	0.057	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1371.87	
4	0.6700	1106.5	1126.0	0.305	3.700	77.833	16.566	1.492	0.037	0.062	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1375.70	
5	0.6716	1106.5	1126.1	0.325	3.817	77.574	16.635	1.529	0.039	0.072	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1374.13	
6	0.6639	1097.6	1117.0	0.501	3.369	79.406	15.085	1.503	0.045	0.081	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1370.90	
7	0.6514	1087.1	1106.3	0.679	2.566	82.008	13.345	1.270	0.044	0.078	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1370.71	
8	0.6424	1073.7	1092.8	0.621	2.610	83.572	11.996	1.097	0.035	0.061	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1363.43	
9	0.6484	1080.6	1099.8	0.490	2.963	82.182	13.117	1.151	0.033	0.056	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1365.73	
10	0.6521	1083.9	1103.1	0.446	3.176	81.527	13.449	1.293	0.038	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1366.00	
11	0.6541	1083.4	1102.6	0.362	3.519	81.051	13.600	1.359	0.037	0.062	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1363.31	
12	0.6560	1086.1	1105.3	0.390	3.500	80.687	13.944	1.373	0.037	0.061	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1364.62	
13	0.6495	1081.7	1100.9	0.518	2.959	82.046	13.174	1.199	0.036	0.061	0.004	0.004	0.000	0.000	0.000	0.000	0.000	1365.94	
14	0.6551	1086.5	1105.7	0.390	3.388	80.731	14.158	1.241	0.033	0.054	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1366.14	
15	0.6649	1096.0	1115.4	0.416	3.684	78.896	15.503	1.395	0.038	0.064	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1368.01	
16	0.6474	1091.0	1110.3	0.658	1.975	82.455	13.921	0.901	0.030	0.055	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1380.00	
17	0.6485	1092.7	1112.1	0.613	2.049	82.107	14.287	0.863	0.028	0.050	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1380.94	
18	0.6635	1103.3	1122.9	0.490	2.993	79.258	15.868	1.284	0.036	0.065	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1378.60	
19	0.6657	1108.3	1127.9	0.428	2.997	78.662	16.588	1.232	0.033	0.058	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1382.40	
20	0.6590	1098.2	1117.6	0.526	2.835	80.152	15.159	1.228	0.034	0.061	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1376.74	
21	0.6561	1092.4	1111.8	0.506	2.945	80.722	14.488	1.235	0.034	0.063	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1372.51	
22	0.6598	1094.6	1114.0	0.449	3.243	80.073	14.693	1.437	0.036	0.064	0.003	0.002	0.000	0.000	0.000	0.000	0.000	1371.42	
23	0.6547	1091.7	1111.1	0.500	2.867	80.952	14.384	1.213	0.030	0.052	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1373.10	
24	0.6639	1103.1	1122.7	0.504	3.024	79.324	15.606	1.440	0.035	0.063	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1377.87	
25	0.6672	1107.7	1127.3	0.460	3.122	78.521	16.434	1.356	0.036	0.066	0.004	0.002	0.000	0.000	0.000	0.000	0.000	1380.17	
26	0.6769	1122.6	1142.4	0.320	3.346	76.317	18.578	1.351	0.030	0.055	0.002	0.001	0.000	0.000	0.000	0.000	0.000	1388.61	
27	0.6766	1116.8	1136.6	0.423	3.507	76.924	17.282	1.734	0.043	0.078	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1381.80	
28	0.6767	1113.5	1133.2	0.461	3.661	77.008	16.936	1.785	0.049	0.091	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1377.61	
29	0.6738	1109.7	1129.3	0.429	3.674	77.424	16.670	1.656	0.047	0.089	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1375.77	
30	0.6745	1110.3	1130.0	0.453	3.662	77.354	16.689	1.695	0.048	0.090	0.005	0.005	0.000	0.000	0.000	0.000	0.000	1375.88	
31	0.6807	1126.4	1146.3	0.312	3.487	75.656	18.960	1.484	0.034	0.063	0.003	0.001	0.000	0.000	0.000	0.000	0.000	1389.36	
Avg	0.6617	1098.0	1117.6	0.445	3.214	79.612	15.266	1.355	0.037	0.065	0.004	0.003	0.000	0.000	0.000	0.000	0.000	1373.87	

Zone 31

GQ Source Daily Summary

March 2017

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	0.6613	1094.7	1114.1	0.345	3.529	79.822	14.601	1.588	0.040	0.064	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.08	
2	0.6612	1094.9	1114.3	0.341	3.517	79.820	14.631	1.578	0.040	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1370.37	
3	0.6611	1094.7	1114.1	0.341	3.529	79.842	14.596	1.581	0.039	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1370.20	
4	0.6611	1094.5	1113.9	0.341	3.529	79.842	14.596	1.581	0.039	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1369.93	
5	0.6605	1094.3	1113.6	0.341	3.529	79.842	14.596	1.581	0.039	0.063	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1370.28	
6	0.6603	1093.9	1113.3	0.380	3.443	80.026	14.465	1.569	0.041	0.066	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1370.07	
7	0.6590	1092.6	1111.9	0.393	3.372	80.299	14.291	1.531	0.040	0.064	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1369.77	
8	0.6605	1093.9	1113.3	0.351	3.496	79.966	14.510	1.566	0.039	0.062	0.006	0.004	0.000	0.000	0.000	0.000	0.000	1369.87	
9	0.6605	1093.7	1113.1	0.348	3.518	79.949	14.502	1.571	0.039	0.062	0.006	0.004	0.000	0.000	0.000	0.000	0.000	1369.59	
10	0.6606	1093.6	1112.9	0.342	3.546	79.930	14.491	1.579	0.039	0.062	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1369.28	
11	0.6604	1093.4	1112.8	0.338	3.542	79.955	14.484	1.569	0.039	0.062	0.006	0.004	0.000	0.000	0.000	0.000	0.000	1369.30	
12	0.6596	1092.7	1112.1	0.339	3.508	80.092	14.414	1.537	0.039	0.062	0.006	0.004	0.000	0.000	0.000	0.000	0.000	1369.26	
13	0.6604	1092.8	1112.1	0.342	3.576	79.978	14.405	1.587	0.039	0.063	0.006	0.004	0.000	0.000	0.000	0.000	0.000	1368.48	
14	0.6494	1070.2	1089.1	0.318	3.954	82.001	12.171	1.444	0.040	0.062	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1351.50	
15	0.6467	1068.3	1087.3	0.382	3.711	82.605	11.810	1.378	0.040	0.064	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1352.04	
16	0.6600	1083.1	1102.3	0.538	3.820	80.414	13.373	1.703	0.051	0.090	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1356.89	
17	0.6634	1087.6	1106.9	0.595	3.779	79.911	13.738	1.809	0.055	0.100	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1359.02	
18	0.6640	1088.9	1108.2	0.591	3.770	79.812	13.812	1.847	0.056	0.100	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1359.94	
19	0.6638	1090.6	1109.9	0.631	3.581	79.934	13.830	1.862	0.054	0.097	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1362.30	
20	0.6628	1089.8	1109.1	0.655	3.506	80.107	13.760	1.808	0.054	0.097	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1362.23	
21	0.6621	1088.9	1108.2	0.639	3.519	80.226	13.650	1.805	0.053	0.096	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1361.85	
22	0.6602	1085.9	1105.2	0.619	3.550	80.525	13.398	1.759	0.050	0.089	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1360.12	
23	0.6580	1082.1	1101.2	0.589	3.621	80.883	13.042	1.727	0.046	0.082	0.005	0.004	0.000	0.000	0.000	0.000	0.000	1357.59	
24	0.6649	1090.3	1109.6	0.612	3.737	79.712	13.860	1.918	0.053	0.096	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1360.73	
25	0.6723	1099.2	1118.7	0.629	3.864	78.450	14.737	2.142	0.059	0.108	0.006	0.006	0.000	0.000	0.000	0.000	0.000	1364.31	
26	0.6772	1106.7	1126.3	0.636	3.851	77.744	15.201	2.365	0.067	0.122	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1368.66	
27	0.6751	1104.2	1123.7	0.638	3.810	77.947	15.258	2.148	0.066	0.121	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1367.63	
28	0.6752	1104.2	1123.8	0.638	3.811	77.953	15.237	2.160	0.066	0.122	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1367.67	
29	0.6731	1101.0	1120.5	0.622	3.834	78.353	14.848	2.139	0.067	0.123	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1365.77	
30	0.6716	1098.7	1118.1	0.615	3.845	78.612	14.622	2.104	0.066	0.123	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1364.43	
31	0.6744	1102.9	1122.4	0.605	3.873	78.007	15.207	2.117	0.063	0.116	0.007	0.006	0.000	0.000	0.000	0.000	0.000	1366.73	
Avg	0.6632	1092.0	1111.7	0.487	3.647	79.760	14.198	1.763	0.049	0.085	0.006	0.005	0.000	0.000	0.000	0.000	0.000	1365.03	

Zone 32

GQ Source Daily Summary

March 2017

Number: 111

Pressure Base: 14.730

Contract Day: 1

Name: LITTLE KNIFE PLANT

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	0.6894	1156.3	1176.8	0.000	2.967	72.760	23.494	0.762	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.22	
2	0.6899	1155.8	1176.2	0.000	3.040	72.668	23.501	0.775	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.13	
3	0.6906	1156.3	1176.8	0.000	3.074	72.558	23.541	0.810	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.05	
4	0.6897	1155.3	1175.8	0.000	3.046	72.732	23.412	0.793	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.81	
5	0.6897	1155.8	1176.3	0.000	3.017	72.717	23.473	0.777	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.44	
6	0.6893	1154.9	1175.4	0.000	3.034	72.713	23.541	0.695	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.74	
7	0.6892	1152.1	1172.5	0.000	3.205	72.610	23.557	0.610	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1412.29	
8	0.6909	1157.3	1177.8	0.000	3.037	72.461	23.716	0.768	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.05	
9	0.6895	1156.2	1176.7	0.000	2.977	72.750	23.484	0.772	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.09	
10	0.6905	1157.6	1178.1	0.000	2.987	72.576	23.641	0.764	0.010	0.018	0.001	0.002	0.000	0.000	0.000	0.000	0.000	1417.72	
11	0.6904	1157.6	1178.1	0.000	2.976	72.546	23.715	0.747	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.86	
12	0.6895	1156.5	1177.0	0.000	2.962	72.718	23.565	0.739	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.40	
13	0.6899	1155.5	1176.0	0.000	3.056	72.640	23.538	0.750	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.83	
14	0.6905	1155.5	1175.9	0.000	3.113	72.552	23.529	0.789	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.17	
15	0.6911	1156.9	1177.4	0.000	3.090	72.456	23.610	0.827	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.23	
16	0.6905	1155.9	1176.4	0.000	3.091	72.560	23.531	0.802	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.67	
17	0.6901	1155.6	1176.0	0.000	3.069	72.602	23.564	0.749	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.71	
18	0.6895	1154.3	1174.7	0.000	3.090	72.722	23.422	0.750	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1414.77	
19	0.6898	1155.5	1176.0	0.000	3.047	72.674	23.505	0.758	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.91	
20	0.6900	1155.1	1175.6	0.000	3.086	72.621	23.531	0.745	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.27	
21	0.6892	1153.6	1174.0	0.000	3.108	72.746	23.413	0.717	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1414.17	
22	0.6899	1155.0	1175.4	0.000	3.089	72.643	23.492	0.760	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.18	
23	0.6907	1156.1	1176.6	0.000	3.097	72.506	23.595	0.786	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.69	
24	0.6905	1155.2	1175.6	0.000	3.131	72.531	23.550	0.771	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1414.83	
25	0.6903	1155.2	1175.7	0.000	3.116	72.569	23.523	0.776	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1414.99	
26	0.6903	1155.3	1175.8	0.000	3.110	72.570	23.526	0.778	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.12	
27	0.6903	1155.8	1176.3	0.000	3.075	72.584	23.549	0.776	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.77	
28	0.6903	1156.0	1176.5	0.000	3.063	72.574	23.580	0.767	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1416.03	
29	0.6902	1155.8	1176.3	0.000	3.073	72.585	23.559	0.767	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.80	
30	0.6904	1155.9	1176.4	0.000	3.077	72.551	23.586	0.770	0.007	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.83	
31	0.6926	1159.0	1179.6	0.000	3.091	72.307	23.625	0.956	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1417.40	
Avg	0.6901	1156.0	1176.2	0.000	3.064	72.606	23.544	0.768	0.007	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1415.88	

Zone 33

GQ Source Number:	1202160	Specific Gravity:	0.5840
GQ Source Name:	BOWMAN BORDER	Dry Heat Value:	996.12
Effective Date:	6/1/2016 9:00:00 AM	Wet Heat Value:	978.78
Effective End Date:	1/18/2038 9:14:00 PM	As Deliv. Heat Value:	996.12
Pressure Base:	14.730	Sample Pressure:	380.00
Viscosity:		Sample Temperature:	

		<u>Mol %</u>	<u>Liquid Content</u>			<u>Mol %</u>
C1	Methane	94.019		CO2	Carbon Dioxide	0.232
C2	Ethane	1.995	0.5321	N2	Nitrogen	3.460
C3	Propane	0.226	0.0621	O2	Oxygen	0.020
IC4	Isobutane	0.020	0.0066	He	Helium	
NC4	n-Butane	0.022	0.0068	H2	Hydrogen	
IC5	Isopentane	0.003	0.0010	H2S	Hydrogen Sulfide	
NC5	n-Pentane	0.002	0.0007	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% 0.609 GPM

Sample Date: 7/1/2016 12:00:00 AM
Sample Type: Spot
Sample Tech: MG
H2S: ppm

Sample Remarks:

Analysis Tech: MB
Analysis Remarks: Inactive

Zone 34

GQ Source Daily Summary

March 2017

Number: 471

Pressure Base: 14.730

Contract Day:

Name: SPRING CREEK I - SAX VALVE I

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	0.6368	1039.3	1057.7	1.109	3.452	84.512	10.206	0.677	0.016	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1325.42	
2	0.6345	1034.9	1053.3	1.118	3.489	84.937	9.776	0.639	0.015	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1322.24	
3	0.6382	1042.7	1061.1	1.062	3.446	84.243	10.476	0.723	0.018	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1328.29	
4	0.6472	1056.4	1075.1	1.105	3.391	82.576	12.035	0.833	0.021	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1336.40	
5	0.6477	1057.3	1076.1	1.096	3.402	82.345	12.359	0.756	0.016	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1337.02	
6	0.6554	1071.3	1090.3	1.070	3.307	80.909	13.790	0.873	0.019	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1346.76	
7	0.6563	1072.1	1091.0	1.075	3.344	80.706	13.956	0.867	0.019	0.032	0.001	0.000	0.000	0.000	0.000	0.000	0.000	1346.72	
8	0.6523	1065.4	1084.3	1.085	3.353	81.466	13.243	0.809	0.016	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1342.52	
9	0.6425	1048.7	1067.2	1.106	3.423	83.343	11.396	0.697	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1331.44	
10	0.6479	1059.0	1077.8	1.091	3.321	82.342	12.422	0.785	0.015	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1338.96	
11	0.6550	1070.9	1089.9	1.075	3.286	81.002	13.696	0.893	0.018	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1346.69	
12	0.6536	1068.6	1087.6	1.069	3.300	81.268	13.444	0.872	0.018	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1345.29	
13	0.6741	1104.1	1123.7	1.020	3.154	76.796	18.333	0.666	0.011	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1368.45	
14	0.6730	1102.3	1121.9	1.012	3.168	76.816	18.485	0.511	0.003	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.52	
15	0.6728	1102.2	1121.7	1.009	3.167	76.816	18.516	0.483	0.003	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1367.49	
16	0.6742	1104.9	1124.4	1.012	3.128	76.614	18.688	0.548	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1369.44	
17	0.6738	1104.0	1123.6	1.004	3.151	76.691	18.593	0.550	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1368.81	
18	0.6759	1098.6	1118.0	1.020	3.206	77.353	17.778	0.632	0.004	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1359.96	
19	0.6743	1094.0	1113.4	1.020	3.154	76.796	18.333	0.666	0.011	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1355.91	
20	0.6727	1091.7	1111.1	1.019	3.206	77.642	16.930	1.130	0.026	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1354.67	
21	0.6721	1092.7	1112.0	1.019	3.206	77.642	16.930	1.130	0.026	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1356.44	
22	0.6465	1059.2	1077.9	1.101	3.399	82.069	12.668	0.722	0.015	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1340.64	
23	0.6608	1081.7	1100.9	1.056	3.208	79.984	14.644	1.042	0.024	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1354.19	
24	0.6670	1091.6	1111.0	1.044	3.202	78.708	15.942	1.039	0.023	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1360.30	
25	0.6702	1097.2	1116.7	1.030	3.182	78.122	16.492	1.104	0.025	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1364.03	
26	0.6707	1098.1	1117.5	1.031	3.174	78.014	16.615	1.096	0.025	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1364.59	
27	0.6703	1096.8	1116.2	1.033	3.213	78.127	16.426	1.126	0.026	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1363.40	
28	0.6726	1100.9	1120.3	1.019	3.206	77.642	16.930	1.130	0.026	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1366.06	
29	0.6887	1130.7	1150.7	0.983	2.957	74.119	20.937	0.977	0.010	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1386.62	
30	0.6843	1122.3	1142.2	0.990	3.050	74.667	20.609	0.677	0.004	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1380.72	
31	0.6820	1118.0	1137.8	0.994	3.084	75.076	20.223	0.616	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1377.83	
Avg	0.6627	1083.0	1102.3	1.048	3.249	79.334	15.512	0.815	0.015	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1354.03	

Zone 43

Watford City

01325

Watford City West Border

01312

Watford City East Border

Weighted

Begin Date	End Date	BTU			BTU			AVG BTU	
		MCF	DK	Zone 25	MCF	DK	Zone 43		
3/1/2017	3/2/2017	713	855	1.199	395	417	1.058	1.149	3/1/2017
3/2/2017	3/3/2017	714	855	1.199	396	418	1.053	1.147	3/2/2017
3/3/2017	3/4/2017	576	691	1.199	206	219	1.061	1.163	3/3/2017
3/4/2017	3/5/2017	481	576	1.199	228	244	1.075	1.159	3/4/2017
3/5/2017	3/6/2017	449	539	1.199	235	253	1.076	1.157	3/5/2017
3/6/2017	3/7/2017	768	921	1.199	469	512	1.090	1.158	3/6/2017
3/7/2017	3/8/2017	799	958	1.199	583	637	1.091	1.153	3/7/2017
3/8/2017	3/9/2017	745	893	1.199	564	611	1.084	1.149	3/8/2017
3/9/2017	3/10/2017	820	983	1.199	633	675	1.067	1.141	3/9/2017
3/10/2017	3/11/2017	850	1018	1.199	697	751	1.078	1.144	3/10/2017
3/11/2017	3/12/2017	759	910	1.199	471	513	1.090	1.157	3/11/2017
3/12/2017	3/13/2017	809	969	1.199	476	518	1.088	1.158	3/12/2017
3/13/2017	3/14/2017	790	947	1.199	446	500	1.124	1.172	3/13/2017
3/14/2017	3/15/2017	692	830	1.199	203	228	1.122	1.182	3/14/2017
3/15/2017	3/16/2017	490	587	1.199	154	173	1.122	1.181	3/15/2017
3/16/2017	3/17/2017	516	619	1.199	125	141	1.124	1.184	3/16/2017
3/17/2017	3/18/2017	576	691	1.199	146	164	1.124	1.184	3/17/2017
3/18/2017	3/19/2017	372	445	1.199	87	98	1.118	1.184	3/18/2017
3/19/2017	3/20/2017	423	507	1.199	84	94	1.113	1.185	3/19/2017
3/20/2017	3/21/2017	552	662	1.199	172	191	1.111	1.178	3/20/2017
3/21/2017	3/22/2017	656	786	1.199	184	205	1.112	1.180	3/21/2017
3/22/2017	3/23/2017	482	577	1.199	108	117	1.078	1.177	3/22/2017
3/23/2017	3/24/2017	425	509	1.199	104	114	1.101	1.180	3/23/2017
3/24/2017	3/25/2017	364	437	1.199	91	101	1.111	1.181	3/24/2017
3/25/2017	3/26/2017	302	362	1.199	81	90	1.117	1.182	3/25/2017
3/26/2017	3/27/2017	309	370	1.199	85	95	1.118	1.182	3/26/2017
3/27/2017	3/28/2017	368	441	1.199	91	101	1.116	1.183	3/27/2017
3/28/2017	3/29/2017	403	482	1.199	112	126	1.120	1.182	3/28/2017
3/29/2017	3/30/2017	310	372	1.199	100	116	1.151	1.187	3/29/2017
3/30/2017	3/31/2017	284	340	1.199	144	164	1.142	1.180	3/30/2017
3/31/2017	4/1/2017	415	498	1.199	72	82	1.138	1.190	3/31/2017
		17,212	20,630		7,942	8,668	1.1024	1.1706	

ROW ID	LOCATION DESCRIPTION	GROSS HEATING VALUE (BTU/CF)	SPECIFIC GRAVITY	WOBBE (calc)	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	ChangeTimestamp	NOTES
11587	GLEN ULLIN	1051.2	0.6055	1350.9	-78.5	1.3138	0.8299	90.3354	7.0351	0.336	0.0128	0.0075	0	0	0	0	0.1163	0.0137	2/28/2017	3/1/2017	3/1/2017 3:01:12 PM	
11587	GLEN ULLIN	1051.6	0.6058	1351.1	-78.2	1.2912	0.8519	90.2768	7.0816	0.339	0.0129	0.0075	0	0	0	0	0.1254	0.0152	3/1/2017	3/2/2017	3/2/2017 3:00:58 PM	
11587	GLEN ULLIN	1049.7	0.6044	1350.2	-79.1	1.2805	0.8463	90.6259	6.7486	0.3569	0.0148	0.009	0.0001	0.0004	0	0	0.1056	0.0129	3/2/2017	3/3/2017	3/3/2017 3:01:14 PM	
11587	GLEN ULLIN	1050	0.6045	1350.5	-79.1	1.2694	0.8431	90.5656	6.8338	0.3352	0.0143	0.0086	0	0.0003	0	0	0.1161	0.0147	3/3/2017	3/4/2017	3/4/2017 3:04:34 PM	
11587	GLEN ULLIN	1052.9	0.6065	1351.9	-77.5	1.2912	0.8414	90.1804	7.1957	0.3502	0.0136	0.0078	0	0	0	0	0.1062	0.014	3/4/2017	3/5/2017	3/5/2017 3:01:33 PM	
11587	GLEN ULLIN	1054.2	0.6075	1352.6	-76.7	1.3178	0.8306	89.9498	7.3986	0.3558	0.012	0.0071	0	0	0	0	0.1121	0.0158	3/5/2017	3/6/2017	3/6/2017 3:01:48 PM	
11587	GLEN ULLIN	1055.1	0.6081	1353.1	-76	1.3409	0.8173	89.8238	7.4866	0.3748	0.0142	0.0083	0.0001	0.0001	0	0	0.1178	0.0164	3/6/2017	3/7/2017	3/7/2017 3:01:03 PM	
11587	GLEN ULLIN	1053.4	0.6067	1352.4	-77.5	1.2942	0.8315	90.0441	7.346	0.3222	0.011	0.0071	0.0001	0.0002	0	0	0.1255	0.0177	3/7/2017	3/8/2017	3/8/2017 3:05:17 PM	
11587	GLEN ULLIN	1050.5	0.6039	1351.8	-79.9	1.2565	0.7984	90.5461	6.9632	0.284	0.0078	0.0054	0	0	0	0	0.1229	0.0167	3/8/2017	3/9/2017	3/9/2017 3:02:31 PM	
11587	GLEN ULLIN	1048.7	0.6027	1350.9	-80.7	1.2407	0.801	90.8119	6.6747	0.3036	0.0104	0.0066	0	0	0	0	0.1366	0.0155	3/9/2017	3/10/2017	3/10/2017 3:02:01 PM	
11587	GLEN ULLIN	1049	0.6026	1351.3	-80.7	1.2062	0.8117	90.816	6.6953	0.2957	0.0102	0.0068	0	0.0001	0	0	0.1435	0.0151	3/10/2017	3/11/2017	3/11/2017 3:02:34 PM	
11587	GLEN ULLIN	1051.3	0.6046	1352.1	-78.6	1.2729	0.8002	90.4385	6.958	0.3478	0.0126	0.0084	0.0001	0.0005	0	0	0.1442	0.0169	3/11/2017	3/12/2017	3/12/2017 3:02:51 PM	
11587	GLEN ULLIN	1050.8	0.6048	1351.1	-78.9	1.3015	0.8099	90.4585	6.9426	0.3359	0.0117	0.0077	0.0001	0.0003	0	0.0001	0.1167	0.0168	3/12/2017	3/13/2017	3/13/2017 3:00:53 PM	
11587	GLEN ULLIN	1049	0.6034	1350.5	-79.9	1.2813	0.8048	90.7349	6.7147	0.315	0.0117	0.0081	0.0004	0.0007	0	0.0003	0.1132	0.0178	3/13/2017	3/14/2017	3/14/2017 3:02:31 PM	
11587	GLEN ULLIN	1052.8	0.6059	1352.5	-78.2	1.2595	0.8268	90.2566	7.2066	0.315	0.0104	0.0067	0	0.0001	0	0	0.1047	0.0152	3/14/2017	3/15/2017	3/15/2017 3:01:13 PM	
11587	GLEN ULLIN	1052.8	0.6059	1352.5	-78.2	1.2595	0.8268	90.2566	7.2066	0.315	0.0104	0.0067	0	0.0001	0	0	0.1047	0.0152	3/14/2017	3/16/2017	3/16/2017 3:01:24 PM	
11587	GLEN ULLIN	1054.7	0.6075	1353.2	-76.7	1.3377	0.8026	89.9145	7.4607	0.3459	0.0115	0.0073	0.0001	0.0003	0	0	0.1055	0.0158	3/16/2017	3/17/2017	3/17/2017 3:01:29 PM	
11587	GLEN ULLIN	1055.1	0.6075	1353.7	-76.5	1.3114	0.8062	89.8958	7.4903	0.3418	0.0131	0.0082	0.0001	0.0005	0	0	0.1174	0.016	3/17/2017	3/18/2017	3/18/2017 3:01:44 PM	
11587	GLEN ULLIN	1055.7	0.6084	1353.5	-76	1.321	0.8285	89.7184	7.6366	0.3389	0.0117	0.0073	0	0.0002	0	0	0.1204	0.0164	3/18/2017	3/19/2017	3/19/2017 3:02:00 PM	
11587	GLEN ULLIN	1056	0.6086	1353.6	-75.9	1.3239	0.8308	89.6806	7.6702	0.344	0.0099	0.0064	0	0.0001	0	0	0.1168	0.017	3/19/2017	3/20/2017	3/20/2017 3:04:06 PM	
11587	GLEN ULLIN	1057.8	0.6094	1355	-75.1	1.2984	0.8203	89.547	7.8407	0.3496	0.0104	0.0066	0.0001	0.0001	0	0	0.1114	0.0166	3/20/2017	3/21/2017	3/21/2017 3:01:07 PM	
11587	GLEN ULLIN	1058.1	0.6097	1355.1	-74.7	1.3074	0.823	89.4782	7.8705	0.365	0.0117	0.0071	0.0001	0.0001	0	0	0.1216	0.0164	3/21/2017	3/22/2017	3/22/2017 3:04:05 PM	
11587	GLEN ULLIN	1056.9	0.6089	1354.4	-75	1.2988	0.8284	89.6595	7.667	0.3768	0.0145	0.0095	0.0003	0.0007	0	0.0001	0.1271	0.0169	3/22/2017	3/23/2017	3/23/2017 3:02:30 PM	
11587	GLEN ULLIN	1057.8	0.6094	1355	-74.7	1.2877	0.8301	89.5787	7.7547	0.391	0.0122	0.008	0.0001	0.0003	0	0.0001	0.1224	0.0163	3/23/2017	3/24/2017	3/24/2017 3:02:30 PM	
11587	GLEN ULLIN	1055.8	0.6082	1353.9	-75.6	1.3253	0.8115	89.7792	7.536	0.3839	0.0142	0.0085	0	0.0002	0	0	0.125	0.0162	3/24/2017	3/25/2017	3/25/2017 3:03:47 PM	
11587	GLEN ULLIN	1056.7	0.609	1354.1	-74.9	1.3497	0.8057	89.6771	7.5978	0.417	0.0137	0.0085	0.0001	0.0001	0	0	0.1129	0.0174	3/25/2017	3/26/2017	3/26/2017 3:04:32 PM	
11587	GLEN ULLIN	1059.8	0.6109	1356	-73.2	1.316	0.8235	89.3045	7.9732	0.4229	0.015	0.0092	0	0.0003	0	0	0.1191	0.016	3/26/2017	3/27/2017	3/27/2017 3:03:45 PM	
11587	GLEN ULLIN	1059.7	0.6106	1356.1	-73.5	1.2953	0.8256	89.3546	7.9474	0.414	0.0149	0.0091	0	0.0001	0	0	0.1225	0.0154	3/27/2017	3/28/2017	3/28/2017 3:02:35 PM	
11587	GLEN ULLIN	1060.3	0.6115	1356	-72.9	1.3336	0.8279	89.1881	8.0821	0.4157	0.0146	0.0087	0	0	0	0	0.1144	0.0154	3/28/2017	3/29/2017	3/29/2017 3:04:41 PM	
11587	GLEN ULLIN	1060.8	0.6114	1356.7	-72.8	1.2986	0.8251	89.2488	8.053	0.4329	0.0135	0.0088	0	0.0002	0	0	0.1054	0.0159	3/29/2017	3/30/2017	3/30/2017 3:02:49 PM	
11587	GLEN ULLIN	1060.8	0.6114	1356.7	-72.6	1.3218	0.8138	89.2354	8.0396	0.4429	0.0148	0.0094	0.0002	0.0006	0	0	0.1072	0.0145	3/30/2017	3/31/2017	3/31/2017 3:04:45 PM	
11587	GLEN ULLIN	1059.2	0.6107	1355.4	-73.6	1.3402	0.8163	89.377	7.9047	0.4226	0.0135	0.0089	0.0001	0.0005	0	0	0.1018	0.0159	3/31/2017	4/1/2017	4/1/2017 3:04:51 PM	

32 record(s) retrieved

For 2017

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
43	Chromatograph	Spring Creek
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	MAR 17	FEB 17	JAN 17	DEC 16	NOV 16	OCT 16	SEPT 16	AUG 16	JULY 16	JUNE 16	MAY 16	APR 16	ZONE
MT/ND	211	Sidney Border - MonDak Tfr - Sidney Plt	1202	1194	1195	1199	1199	1200	1193	1209	1210	1208	1206	1205	1207	211
ND	24	Williston Border - Charbonneau Station	1184	1171	1173	1189	1190	1187	1169	1195	1169	1197	1191	1182	1196	24
ND	25	Watford City West Border	1205	1199	1202	1198	1193	1200	1206	1211	1213	1211	1206	1209	1211	25
ND	28	Bismarck Station - Glen Ullin Station	1159	1118	1121	1115	1112	1122	1152	1172	1185	1208	1208	1202	1190	28
ND	31	Dickinson Brd - Belfield Tfr - G Ullin Stn	1130	1118	1119	1113	1110	1120	1153	1171	1169	1124	1128	1117	1114	31
ND/MT	32	Cabin Creek Station - Belfied Transfer	1131	1112	1114	1118	1118	1099	1137	1153	1150	1157	1153	1137	1129	32
ND	33	Little Knife Plant	1183	1176	1177	1181	1200	1179	1182	1184	1183	1184	1185	1184	1181	33
ND	34	Bowman Border	994	996	996	996	996	996	996	996	996	996	996	980	982	34
ND	43	Spring Creek - Garden Crk Plant	1108	1102	1075	1121	1122	1114	1109	1128	1109	1089	1087	1102	1143	43
ND/MT	241	Fairview Border	1195	1179	1181	1196	1200	1193	1170	1210	1200	1202	1197	1202	1207	241
ND	261	N Tioga Transfer - Robinson Lake Plant	1114	1065	1089	1105	1096	1034	981	1174	1074	1206	1182	1179	1186	261
ND	262	Minot Bdr - Palermo Bdr - Bismarck Stn	1178	1181	1178	1152	1144	1147	1141	1172	1191	1208	1208	1208	1206	262
ND	263	Lignite Plant	1103	1115	1112	1103	1110	1138	1120	1129	1127	1118	1116	947	1105	263
ND	264	Epping Border	1178	1158	1172	1186	1186	1158	1157	1194	1198	1169	1183	1184	1190	264
ND	265	Cty Line Plt - Conoco Stoneview Takeoff	1177	1174	1175	1184	1170	1182	1180	1186	1166	1177	1170	1173	1190	265
ND	271	Bismarck Station - Cleveland Station	1170	1163	1155	1129	1127	1140	1142	1173	1185	1208	1208	1208	1206	271
ND	272	Cleveland Station - Mapleton	1169	1161	1153	1128	1126	1139	1142	1172	1184	1207	1207	1206	1204	272
ND	273	Cleveland Station - Grafton Border	1169	1162	1154	1128	1127	1139	1142	1172	1184	1207	1206	1206	1201	273
ND	610	MDU-Watford City BTU	1181	1171	1163	1170	1162	1176	1179	1197	1206	1203	1186	1184	1174	610
ND	802	Linton	1056	1054	1052	1049	1051	1058	1053	1058	1059	1054	1065	1062	1062	802
ND	903	Hettinger Propane	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	2549	903

**THERMAL ZONE VARIANCE
DOCUMENTATION**

March 2017

<i>ZONE</i>	<i>BTU VARIANCE</i>	<i>REASON</i>
43	27	Operational Changes
261	-24	Blending of Supply