

November 10, 2016

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

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

Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc., herewith submits the following information, pursuant to the Ordering paragraphs one and two of the Order issued in Case No. 11,006, dated October 20, 1987 and pursuant to the North Dakota Administrative Code 69-09-01-02, part 2.

1. Attachment A is a schedule showing the thermal billing factors by community that reflect the BTU values shown on Attachment B and were used for billing purposes in October 2016.
2. Attachment B consists of copies of the monthly Heating Value Test Reports received from our suppliers for the month of September 2016.
3. Attachment C is a listing which states the type of measuring device in place at each zone.
4. Attachment D is a monthly list of the heating value data, by zone, for the most recent 12-month period and an average thereof. It is being provided pursuant to a Staff request.
5. Attachment E provides a brief explanation of the thermal variances, where applicable, for the month of September 2016.

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

Sincerely,



Tamie Aberle
Director of Regulatory Affairs

Montana-Dakota Utilities Co.
Therm Billing Factors - North Dakota
Oct-16

| Town | Heat Zone | Therm Factor |
|----------------------|-----------|--------------|
| MDU-303-ALEXANDER | 025 | 1.1457 |
| MDU-308-ARNEGARD | 025 | 1.1457 |
| MDU-314-APPLE VALLEY | 271 | 1.1434 |
| MDU-318-BEACH | 032 | 1.0628 |
| MDU-319-BELFIELD | 032 | 1.0706 |
| MDU-323-BERTHOLD | 262 | 1.1249 |
| MDU-327-BISMARCK | 028 | 1.1434 |
| MDU-330-BOWMAN | 034 | 0.9137 |
| MDU-337-BURLINGTON | 262 | 1.1492 |
| MDU-343-CARRINGTON | 273 | 1.1424 |
| MDU-344-CLEVELAND | 272 | 1.1344 |
| MDU-364-CAVALIER | 273 | 1.1665 |
| MDU-365-DAWSON | 271 | 1.1353 |
| MDU-368-DES LACS | 262 | 1.1330 |
| MDU-369-DICKINSON | 031 | 1.0962 |
| MDU-374-FT TOTTEN | 273 | 1.1504 |
| MDU-375-DEVILS LAKE | 273 | 1.1504 |
| MDU-379-BARLOW | 273 | 1.1424 |
| MDU-384-EPPING | 264 | 1.1315 |
| MDU-387-ELDRIDGE | 272 | 1.1424 |
| MDU-407-GLADSTONE | 031 | 1.0962 |
| MDU-411-GLEN ULLIN | 031 | 1.1041 |
| MDU-413-GOLVA | 032 | 1.0471 |
| MDU-416-GARRISON | 262 | 1.1330 |
| MDU-417-GRAFTON | 273 | 1.1746 |
| MDU-429-HEBRON | 031 | 1.1041 |
| MDU-432-HETTINGER | 903 | 2.4049 |
| MDU-449-JAMESTOWN | 272 | 1.1504 |
| MDU-459-KILLDEER | 033 | 1.1173 |
| MDU-463-LANGDON | 273 | 1.1424 |
| MDU-469-LEFOR | 031 | 1.0962 |
| MDU-474-LIGNITE | 263 | 1.0721 |
| MDU-475-LINTON | 802 | 1.0218 |
| MDU-478-LINCOLN | 028 | 1.1434 |
| MDU-488-MCKENZIE | 271 | 1.1434 |
| MDU-494-MEDINA | 271 | 1.1353 |
| MDU-498-MANDAN | 028 | 1.1434 |
| MDU-500-MARMARTH | 034 | 0.9204 |
| MDU-505-MINOT | 262 | 1.1492 |
| MDU-510-MOTT | 031 | 1.0962 |
| MDU-512-MAX | 262 | 1.1249 |
| MDU-522-NEW ENGLAND | 031 | 1.0882 |
| MDU-524-NEW SALEM | 028 | 1.1192 |
| MDU-532-NEW ROCKFORD | 273 | 1.1424 |
| MDU-539-PARK RIVER | 273 | 1.1665 |
| MDU-540-PALERMO | 262 | 1.1249 |
| MDU-558-RAY | 264 | 1.1315 |
| MDU-561-REGENT | 031 | 1.0962 |
| MDU-563-RHAME | 034 | 0.9069 |

| | | |
|------------------------|-----|--------|
| MDU-564-RICHARDTON | 031 | 1.0882 |
| MDU-568-ROSS | 261 | 1.0071 |
| MDU-572-RUTHVILLE | 262 | 1.1492 |
| MDU-574-SANBORN | 272 | 1.1504 |
| MDU-583-SENTINEL BUTTE | 032 | 1.0628 |
| MDU-588-SOUTH HEART | 031 | 1.0882 |
| MDU-717-SPIRITWOOD | 272 | 1.1504 |
| MDU-590-SPRINGBROOK | 264 | 1.1315 |
| MDU-591-STANLEY | 261 | 1.0144 |
| MDU-593-STEELE | 271 | 1.1353 |
| MDU-598-SHEYENNE | 273 | 1.1504 |
| MDU-605-SURREY | 262 | 1.1492 |
| MDU-610-TAPPEN | 271 | 1.1353 |
| MDU-611-TAYLOR | 031 | 1.0882 |
| MDU-616-TIOGA | 261 | 1.0144 |
| MDU-619-TURTLE LAKE | 262 | 1.1330 |
| MDU-620-TRENTON | 024 | 1.1121 |
| MDU-624-UNDERWOOD | 262 | 1.1330 |
| MDU-625-VALLEY CITY | 272 | 1.1585 |
| MDU-629-WALHALLA | 273 | 1.1665 |
| MDU-632-WATFORD CITY | 610 | 1.1391 |
| MDU-636-WHEELOCK | 264 | 1.1234 |
| MDU-637-WHITE EARTH | 261 | 1.0144 |
| MDU-642-WILLISTON | 024 | 1.1121 |
| MDU-646-WASHBURN | 262 | 1.1411 |
| MDU-647-WILTON | 262 | 1.1249 |
| MDU-664-RIVERDALE | 262 | 1.1330 |
| MDU-691-FAIRVIEW | 241 | 1.1415 |
| MDU-712-MINOT AFB | 262 | 1.1492 |
| MDU-718-FAIRMOUNT | 600 | 1.1228 |
| MDU-732-NEKOMA | 273 | 1.1424 |
| MDU-732-MSR SITE | 273 | 1.1424 |

GQ Source Daily Summary

September 2016

Number: 251

Pressure Base: 14.730

Contract Day: 1

Name: SIDNEY BORDER-MONDAK JNCTN-SIDNEY PLANT

Temperature Base:

Contract Hour: 9

| Day | Relative Density | Heating Value Wet | Heating Value Dry | | | | | | | | | | | | | | | | |
|-----|------------------|-------------------|-------------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| | | | | CO2 | N2 | C1 | C2 | C3 | IC4 | NC4 | ICS | NC5 | C6 | C7 | C8 | C9 | C10 | Wobbe | CCT |
| 1 | 0.7416 | 1192.3 | 1213.4 | 1.225 | 3.787 | 67.768 | 22.340 | 4.441 | 0.139 | 0.266 | 0.017 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1409.02 |
| 2 | 0.7435 | 1196.1 | 1217.3 | 1.223 | 3.736 | 67.626 | 22.333 | 4.608 | 0.150 | 0.289 | 0.019 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1411.74 |
| 3 | 0.7433 | 1196.0 | 1217.2 | 1.221 | 3.732 | 67.562 | 22.553 | 4.411 | 0.162 | 0.318 | 0.021 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1411.73 |
| 4 | 0.7441 | 1197.1 | 1218.3 | 1.227 | 3.721 | 67.381 | 22.853 | 4.236 | 0.181 | 0.357 | 0.024 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1412.40 |
| 5 | 0.7412 | 1192.7 | 1213.8 | 1.228 | 3.727 | 67.529 | 23.067 | 3.911 | 0.168 | 0.329 | 0.022 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1409.86 |
| 6 | 0.7409 | 1191.4 | 1212.5 | 1.228 | 3.773 | 67.570 | 22.990 | 3.913 | 0.164 | 0.321 | 0.022 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1408.66 |
| 7 | 0.7387 | 1187.4 | 1208.4 | 1.227 | 3.808 | 68.030 | 22.473 | 3.949 | 0.161 | 0.312 | 0.021 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1406.04 |
| 8 | 0.7400 | 1189.7 | 1210.8 | 1.230 | 3.788 | 67.967 | 22.381 | 4.094 | 0.171 | 0.329 | 0.021 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1407.50 |
| 9 | 0.7376 | 1186.4 | 1207.4 | 1.231 | 3.772 | 67.915 | 22.893 | 3.734 | 0.144 | 0.278 | 0.018 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.78 |
| 10 | 0.7382 | 1187.0 | 1208.0 | 1.233 | 3.785 | 67.963 | 22.735 | 3.764 | 0.164 | 0.316 | 0.021 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.93 |
| 11 | 0.7368 | 1184.4 | 1205.4 | 1.238 | 3.798 | 68.286 | 22.374 | 3.779 | 0.166 | 0.319 | 0.021 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1404.27 |
| 12 | 0.7350 | 1182.3 | 1203.2 | 1.233 | 3.764 | 68.369 | 22.577 | 3.562 | 0.157 | 0.302 | 0.019 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1403.53 |
| 13 | 0.7385 | 1187.2 | 1208.2 | 1.232 | 3.797 | 67.794 | 22.998 | 3.662 | 0.164 | 0.316 | 0.020 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.98 |
| 14 | 0.7392 | 1188.4 | 1209.5 | 1.232 | 3.788 | 67.765 | 22.927 | 3.767 | 0.165 | 0.317 | 0.021 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1406.76 |
| 15 | 0.7395 | 1188.9 | 1209.9 | 1.232 | 3.795 | 67.829 | 22.743 | 3.857 | 0.172 | 0.331 | 0.021 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1406.93 |
| 16 | 0.7358 | 1181.8 | 1202.8 | 1.213 | 3.900 | 68.656 | 21.784 | 3.855 | 0.186 | 0.362 | 0.024 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1402.15 |
| 17 | 0.7348 | 1179.6 | 1200.5 | 1.214 | 3.935 | 68.918 | 21.449 | 3.880 | 0.189 | 0.368 | 0.025 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.51 |
| 18 | 0.7388 | 1187.3 | 1208.3 | 1.216 | 3.842 | 68.131 | 22.280 | 3.953 | 0.182 | 0.353 | 0.023 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.80 |
| 19 | 0.7380 | 1186.3 | 1207.3 | 1.224 | 3.825 | 68.062 | 22.580 | 3.738 | 0.180 | 0.349 | 0.022 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.27 |
| 20 | 0.7428 | 1194.2 | 1215.3 | 1.215 | 3.802 | 67.366 | 23.007 | 4.058 | 0.173 | 0.337 | 0.022 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1410.12 |
| 21 | 0.7508 | 1206.2 | 1227.5 | 1.209 | 3.824 | 66.923 | 22.612 | 4.630 | 0.222 | 0.482 | 0.048 | 0.049 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1416.52 |
| 22 | 0.7379 | 1185.4 | 1206.4 | 1.231 | 3.859 | 67.742 | 23.001 | 3.779 | 0.123 | 0.237 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1404.36 |
| 23 | 0.7362 | 1182.5 | 1203.5 | 1.237 | 3.867 | 68.064 | 22.673 | 3.783 | 0.121 | 0.229 | 0.014 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1402.56 |
| 24 | 0.7277 | 1182.1 | 1203.0 | 1.090 | 3.316 | 69.515 | 22.126 | 3.605 | 0.107 | 0.213 | 0.014 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1410.22 |
| 25 | 0.7237 | 1178.7 | 1199.5 | 1.062 | 3.190 | 70.053 | 22.006 | 3.354 | 0.101 | 0.206 | 0.014 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1410.05 |
| 26 | 0.7259 | 1179.9 | 1200.7 | 1.086 | 3.285 | 69.665 | 22.238 | 3.382 | 0.105 | 0.211 | 0.014 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1409.37 |
| 27 | 0.7205 | 1175.1 | 1195.9 | 1.035 | 3.152 | 70.435 | 21.955 | 3.069 | 0.108 | 0.217 | 0.015 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1408.92 |
| 28 | 0.7387 | 1186.9 | 1208.0 | 1.233 | 3.834 | 67.660 | 23.050 | 3.820 | 0.129 | 0.245 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.45 |
| 29 | 0.7403 | 1189.8 | 1210.9 | 1.222 | 3.828 | 67.362 | 23.295 | 3.915 | 0.120 | 0.230 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1407.33 |
| 30 | 0.7384 | 1186.8 | 1207.8 | 1.225 | 3.828 | 67.678 | 23.051 | 3.848 | 0.118 | 0.226 | 0.014 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.54 |
| Avg | 0.7376 | 1188.0 | 1208.7 | 1.205 | 3.729 | 68.119 | 22.578 | 3.879 | 0.153 | 0.299 | 0.020 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1407.34 |

Zone 211

GQ Source Daily Summary

September 2016

Number: 571

Pressure Base: 14.730

Contract Day: 1

Name: WILLISTON BORDER-CHARBONNEAU STATION

Temperature Base:

Contract Hour: 9

| Day | Relative Density | Heating Value Wet | Heating Value Dry | CO2 | N2 | C1 | C2 | C3 | IC4 | NC4 | IC5 | NC5 | C6 | C7 | C8 | C9 | C10 | Wobbe | CCT |
|-----|------------------|-------------------|-------------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-----|
| 1 | 0.7193 | 1188.2 | 1209.2 | 0.850 | 2.504 | 71.766 | 20.643 | 3.619 | 0.155 | 0.377 | 0.037 | 0.047 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1425.79 | |
| 2 | 0.7087 | 1173.3 | 1194.1 | 0.789 | 2.509 | 72.858 | 20.476 | 2.952 | 0.099 | 0.235 | 0.033 | 0.048 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1418.47 | |
| 3 | 0.7134 | 1177.9 | 1198.7 | 0.888 | 2.525 | 71.869 | 21.381 | 2.942 | 0.104 | 0.236 | 0.023 | 0.031 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1419.29 | |
| 4 | 0.7218 | 1191.3 | 1212.4 | 0.879 | 2.510 | 71.180 | 21.406 | 3.373 | 0.154 | 0.389 | 0.045 | 0.062 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1427.02 | |
| 5 | 0.7111 | 1173.1 | 1193.9 | 0.896 | 2.588 | 72.046 | 21.372 | 2.733 | 0.096 | 0.219 | 0.021 | 0.027 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.85 | |
| 6 | 0.7167 | 1182.4 | 1203.3 | 0.897 | 2.549 | 71.480 | 21.592 | 2.994 | 0.120 | 0.292 | 0.032 | 0.044 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1421.37 | |
| 7 | 0.7093 | 1170.2 | 1190.9 | 0.904 | 2.588 | 72.168 | 21.405 | 2.631 | 0.085 | 0.184 | 0.015 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.09 | |
| 8 | 0.7105 | 1172.3 | 1193.0 | 0.902 | 2.583 | 71.918 | 21.649 | 2.651 | 0.083 | 0.180 | 0.015 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.34 | |
| 9 | 0.7098 | 1171.2 | 1191.9 | 0.902 | 2.579 | 72.126 | 21.404 | 2.678 | 0.087 | 0.190 | 0.016 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.77 | |
| 10 | 0.7125 | 1175.9 | 1196.7 | 0.908 | 2.540 | 71.744 | 21.656 | 2.838 | 0.088 | 0.191 | 0.016 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.72 | |
| 11 | 0.7104 | 1172.5 | 1193.2 | 0.899 | 2.559 | 72.141 | 21.262 | 2.828 | 0.089 | 0.188 | 0.015 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.74 | |
| 12 | 0.7103 | 1172.0 | 1192.7 | 0.905 | 2.576 | 71.902 | 21.686 | 2.666 | 0.077 | 0.161 | 0.012 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.21 | |
| 13 | 0.7108 | 1173.0 | 1193.7 | 0.896 | 2.576 | 71.925 | 21.570 | 2.746 | 0.082 | 0.174 | 0.014 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.90 | |
| 14 | 0.7107 | 1172.1 | 1192.9 | 0.891 | 2.629 | 71.919 | 21.560 | 2.699 | 0.087 | 0.185 | 0.014 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.94 | |
| 15 | 0.7093 | 1169.4 | 1190.1 | 0.905 | 2.635 | 72.258 | 21.196 | 2.696 | 0.087 | 0.187 | 0.016 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.14 | |
| 16 | 0.7119 | 1173.9 | 1194.7 | 0.896 | 2.619 | 71.851 | 21.468 | 2.864 | 0.086 | 0.182 | 0.015 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.96 | |
| 17 | 0.7124 | 1174.5 | 1195.3 | 0.901 | 2.625 | 71.734 | 21.549 | 2.911 | 0.083 | 0.169 | 0.013 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1416.16 | |
| 18 | 0.7132 | 1176.6 | 1197.4 | 0.899 | 2.569 | 71.825 | 21.291 | 3.121 | 0.090 | 0.177 | 0.013 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.94 | |
| 19 | 0.7124 | 1175.6 | 1196.5 | 0.890 | 2.572 | 71.870 | 21.337 | 3.046 | 0.086 | 0.172 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.52 | |
| 20 | 0.7141 | 1180.1 | 1201.0 | 0.904 | 2.438 | 71.655 | 21.572 | 3.146 | 0.085 | 0.171 | 0.013 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1421.20 | |
| 21 | 0.7120 | 1175.5 | 1196.3 | 0.901 | 2.525 | 71.927 | 21.362 | 3.006 | 0.083 | 0.169 | 0.013 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.77 | |
| 22 | 0.7128 | 1177.2 | 1198.0 | 0.886 | 2.519 | 71.894 | 21.269 | 3.145 | 0.088 | 0.173 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1419.01 | |
| 23 | 0.7105 | 1172.8 | 1193.6 | 0.909 | 2.536 | 72.063 | 21.378 | 2.837 | 0.081 | 0.167 | 0.013 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1416.04 | |
| 24 | 0.7093 | 1171.0 | 1191.7 | 0.898 | 2.555 | 72.194 | 21.340 | 2.737 | 0.080 | 0.168 | 0.013 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.97 | |
| 25 | 0.7076 | 1168.4 | 1189.1 | 0.896 | 2.552 | 72.414 | 21.242 | 2.626 | 0.079 | 0.163 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.58 | |
| 26 | 0.7082 | 1169.2 | 1189.9 | 0.893 | 2.567 | 72.290 | 21.359 | 2.611 | 0.081 | 0.170 | 0.013 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.94 | |
| 27 | 0.7072 | 1167.7 | 1188.3 | 0.885 | 2.580 | 72.422 | 21.282 | 2.550 | 0.081 | 0.170 | 0.013 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.06 | |
| 28 | 0.7079 | 1169.7 | 1190.4 | 0.871 | 2.540 | 72.503 | 21.052 | 2.734 | 0.086 | 0.181 | 0.015 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.84 | |
| 29 | 0.7074 | 1168.8 | 1189.5 | 0.884 | 2.527 | 72.487 | 21.200 | 2.610 | 0.084 | 0.176 | 0.014 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.28 | |
| 30 | 0.7106 | 1173.8 | 1194.6 | 0.883 | 2.524 | 72.097 | 21.314 | 2.895 | 0.086 | 0.174 | 0.013 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.12 | |
| Avg | 0.7114 | 1174.0 | 1195.1 | 0.890 | 2.557 | 72.018 | 21.342 | 2.863 | 0.092 | 0.199 | 0.017 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1416.93 | |

Zone 24

GQ Source Analysis

| | | | |
|----------------------------|----------------------|------------------------------|---------|
| GQ Source Number: | 0602160 | Specific Gravity: | 0.7400 |
| GQ Source Name: | FAIRVIEW BORDER | Dry Heat Value: | 1210.30 |
| Effective Date: | 9/1/2016 9:00:00 AM | Wet Heat Value: | 1189.24 |
| Effective End Date: | 1/18/2038 9:14:07 PM | As Deliv. Heat Value: | |
| Pressure Base: | 14.730 | Sample Pressure: | 245.00 |
| Viscosity: | | Sample Temperature: | |

| | | <u>Mol %</u> | <u>Liquid Content</u> | | | <u>Mol %</u> |
|-----|------------|--------------|-----------------------|--------|------------------|--------------|
| C1 | Methane | 67.785 | | CO2 | Carbon Dioxide | 1.236 |
| C2 | Ethane | 22.676 | 6.0460 | N2 | Nitrogen | 3.813 |
| C3 | Propane | 3.974 | 1.0920 | O2 | Oxygen | |
| IC4 | Isobutane | 0.160 | 0.0520 | He | Helium | |
| NC4 | n-Butane | 0.318 | 0.1000 | H2 | Hydrogen | |
| IC5 | Isopentane | 0.020 | 0.0070 | H2S | Hydrogen Sulfide | |
| NC5 | n-Pentane | 0.018 | 0.0070 | 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% 7.304 GPM

Sample Date: 9/1/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: RR
H2S: ppm

Sample Remarks:

Analysis Tech: DW

Analysis Remarks:

Zone 241

GQ Source Analysis

| | | | |
|----------------------------|--------------------------|------------------------------|---------|
| GQ Source Number: | 0602225 | Specific Gravity: | 0.7297 |
| GQ Source Name: | WATFORD CITY WEST BORDER | Dry Heat Value: | 1211.13 |
| Effective Date: | 9/1/2016 9:00:00 AM | Wet Heat Value: | 1190.05 |
| Effective End Date: | 1/18/2038 9:14:07 PM | As Deliv. Heat Value: | 1211.13 |
| Pressure Base: | 14.730 | Sample Pressure: | 480.00 |
| Viscosity: | | Sample Temperature: | |

| | | <u>Mol %</u> | <u>Liquid Content</u> | | | <u>Mol %</u> |
|-----|------------|--------------|-----------------------|--------|------------------|--------------|
| C1 | Methane | 69.297 | | CO2 | Carbon Dioxide | 1.028 |
| C2 | Ethane | 22.435 | 5.9823 | N2 | Nitrogen | 3.065 |
| C3 | Propane | 3.479 | 0.9557 | O2 | Oxygen | 0.006 |
| IC4 | Isobutane | 0.198 | 0.0645 | He | Helium | |
| NC4 | n-Butane | 0.419 | 0.1318 | H2 | Hydrogen | |
| IC5 | Isopentane | 0.035 | 0.0128 | H2S | Hydrogen Sulfide | |
| NC5 | n-Pentane | 0.035 | 0.0127 | Ar | Argon | |
| C6 | Hexanes | 0.002 | 0.0011 | CO | Carbon Monoxide | |
| C7 | Heptanes | | | H2 | Water | |
| C8 | Octanes | | | Neo-C5 | Neopentane | |
| C9 | Nonanes | | | | | |
| C10 | Decanes | | | | | |

Totals 100.000% 7,161 GPM

Sample Date: 10/3/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 25

GQ Source Daily Summary

September 2016

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 | 0.6548 | 1083.2 | 1102.4 | 0.199 | 3.811 | 84.313 | 7.756 | 2.917 | 0.227 | 0.624 | 0.068 | 0.085 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1360.27 |
| 2 | 0.6556 | 1082.9 | 1102.1 | 0.367 | 3.675 | 82.207 | 11.502 | 1.783 | 0.100 | 0.264 | 0.041 | 0.060 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1359.84 |
| 3 | 0.7240 | 1186.1 | 1207.1 | 0.787 | 3.166 | 71.503 | 20.008 | 3.593 | 0.214 | 0.566 | 0.071 | 0.093 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1418.66 |
| 4 | 0.7428 | 1217.0 | 1238.6 | 0.772 | 3.060 | 70.066 | 19.973 | 4.686 | 0.314 | 0.847 | 0.120 | 0.161 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1436.84 |
| 5 | 0.7149 | 1171.0 | 1191.7 | 0.819 | 3.194 | 72.325 | 19.868 | 3.083 | 0.161 | 0.423 | 0.054 | 0.072 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1409.35 |
| 6 | 0.7216 | 1181.6 | 1202.5 | 0.821 | 3.164 | 71.558 | 20.251 | 3.407 | 0.180 | 0.473 | 0.061 | 0.083 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.59 |
| 7 | 0.7009 | 1147.7 | 1168.0 | 0.840 | 3.275 | 73.609 | 19.467 | 2.484 | 0.089 | 0.195 | 0.018 | 0.023 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1395.13 |
| 8 | 0.7041 | 1152.7 | 1173.1 | 0.851 | 3.252 | 73.109 | 19.935 | 2.489 | 0.093 | 0.219 | 0.023 | 0.030 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.03 |
| 9 | 0.7070 | 1158.1 | 1178.6 | 0.830 | 3.229 | 72.739 | 20.149 | 2.638 | 0.106 | 0.253 | 0.025 | 0.031 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1401.66 |
| 10 | 0.7062 | 1156.2 | 1176.6 | 0.852 | 3.232 | 72.781 | 20.184 | 2.578 | 0.098 | 0.227 | 0.021 | 0.027 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.20 |
| 11 | 0.7054 | 1155.0 | 1175.5 | 0.845 | 3.244 | 72.798 | 20.238 | 2.543 | 0.090 | 0.202 | 0.019 | 0.023 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.56 |
| 12 | 0.7018 | 1149.5 | 1169.8 | 0.841 | 3.249 | 73.129 | 20.182 | 2.344 | 0.073 | 0.157 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1396.44 |
| 13 | 0.7035 | 1152.7 | 1173.1 | 0.824 | 3.238 | 73.061 | 20.076 | 2.494 | 0.087 | 0.187 | 0.015 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.64 |
| 14 | 0.7053 | 1155.4 | 1175.9 | 0.813 | 3.255 | 72.852 | 20.148 | 2.605 | 0.094 | 0.201 | 0.015 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.17 |
| 15 | 0.7098 | 1160.9 | 1181.5 | 0.854 | 3.279 | 72.508 | 20.054 | 2.863 | 0.115 | 0.266 | 0.027 | 0.034 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1402.36 |
| 16 | 0.7054 | 1155.0 | 1175.4 | 0.826 | 3.275 | 72.893 | 20.009 | 2.682 | 0.089 | 0.187 | 0.017 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.49 |
| 17 | 0.7050 | 1154.4 | 1174.9 | 0.820 | 3.283 | 72.833 | 20.086 | 2.712 | 0.080 | 0.159 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.20 |
| 18 | 0.7062 | 1155.3 | 1175.8 | 0.845 | 3.301 | 72.662 | 20.229 | 2.675 | 0.081 | 0.171 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.13 |
| 19 | 0.7054 | 1154.7 | 1175.2 | 0.822 | 3.294 | 72.754 | 20.215 | 2.634 | 0.080 | 0.168 | 0.015 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.24 |
| 20 | 0.6994 | 1146.0 | 1166.3 | 0.772 | 3.346 | 73.583 | 19.614 | 2.463 | 0.068 | 0.133 | 0.010 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1394.48 |
| 21 | 0.7030 | 1150.4 | 1170.7 | 0.825 | 3.329 | 73.130 | 19.908 | 2.529 | 0.077 | 0.168 | 0.015 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1396.34 |
| 22 | 0.7033 | 1152.2 | 1172.6 | 0.797 | 3.291 | 73.098 | 19.942 | 2.574 | 0.083 | 0.182 | 0.015 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.22 |
| 23 | 0.7017 | 1148.4 | 1168.7 | 0.836 | 3.312 | 73.248 | 19.935 | 2.401 | 0.073 | 0.164 | 0.014 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1395.21 |
| 24 | 0.7038 | 1152.6 | 1173.0 | 0.819 | 3.283 | 73.006 | 20.067 | 2.524 | 0.081 | 0.181 | 0.017 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.17 |
| 25 | 0.7035 | 1152.9 | 1173.3 | 0.801 | 3.264 | 72.979 | 20.123 | 2.565 | 0.079 | 0.162 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.86 |
| 26 | 0.7033 | 1152.5 | 1172.9 | 0.820 | 3.245 | 72.987 | 20.181 | 2.509 | 0.075 | 0.155 | 0.013 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.50 |
| 27 | 0.7031 | 1152.6 | 1173.0 | 0.787 | 3.260 | 73.183 | 19.868 | 2.604 | 0.084 | 0.180 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.93 |
| 28 | 0.7059 | 1156.4 | 1176.9 | 0.810 | 3.253 | 72.717 | 20.242 | 2.667 | 0.087 | 0.188 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.81 |
| 29 | 0.7036 | 1152.4 | 1172.8 | 0.837 | 3.248 | 73.039 | 20.050 | 2.542 | 0.080 | 0.170 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.17 |
| 30 | 0.7070 | 1158.4 | 1178.9 | 0.812 | 3.238 | 72.622 | 20.240 | 2.764 | 0.091 | 0.196 | 0.017 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1402.02 |
| Avg | 0.7039 | 1153.0 | 1173.9 | 0.785 | 3.285 | 73.443 | 19.350 | 2.712 | 0.108 | 0.256 | 0.027 | 0.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.98 |

Zone 261

GQ Source Daily Summary

September 2016

Number: 091

Pressure Base: 14.730

Contract Day: 1

Name: MINOT BRDR-PALERMO BRDR-BISMARCK 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 | 0.7287 | 1142.5 | 1162.7 | 0.792 | 6.272 | 69.262 | 19.020 | 4.256 | 0.130 | 0.255 | 0.006 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1362.05 | |
| 2 | 0.7276 | 1140.3 | 1160.5 | 0.788 | 6.309 | 69.415 | 18.886 | 4.209 | 0.129 | 0.252 | 0.006 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1360.49 | |
| 3 | 0.7323 | 1146.2 | 1166.5 | 0.809 | 6.351 | 68.659 | 19.417 | 4.357 | 0.133 | 0.261 | 0.006 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1363.23 | |
| 4 | 0.7298 | 1143.3 | 1163.6 | 0.794 | 6.325 | 69.094 | 19.073 | 4.307 | 0.133 | 0.262 | 0.006 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1362.01 | |
| 5 | 0.7386 | 1153.7 | 1174.1 | 0.831 | 6.460 | 67.654 | 20.045 | 4.568 | 0.144 | 0.284 | 0.007 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.17 | |
| 6 | 0.7381 | 1153.2 | 1173.6 | 0.827 | 6.449 | 67.743 | 19.980 | 4.557 | 0.144 | 0.285 | 0.008 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.06 | |
| 7 | 0.7334 | 1148.6 | 1169.0 | 0.799 | 6.331 | 68.544 | 19.476 | 4.409 | 0.141 | 0.282 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1364.95 | |
| 8 | 0.7375 | 1157.6 | 1178.1 | 0.830 | 6.119 | 67.983 | 20.116 | 4.446 | 0.152 | 0.317 | 0.017 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.84 | |
| 9 | 0.7368 | 1153.0 | 1173.4 | 0.836 | 6.323 | 67.936 | 20.034 | 4.420 | 0.142 | 0.286 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.05 | |
| 10 | 0.7374 | 1153.0 | 1173.4 | 0.835 | 6.379 | 67.884 | 19.965 | 4.473 | 0.145 | 0.293 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.52 | |
| 11 | 0.7378 | 1154.9 | 1175.3 | 0.842 | 6.295 | 67.860 | 20.025 | 4.513 | 0.146 | 0.294 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.33 | |
| 12 | 0.7344 | 1151.5 | 1171.9 | 0.828 | 6.204 | 68.284 | 19.935 | 4.323 | 0.137 | 0.272 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.47 | |
| 13 | 0.7337 | 1150.8 | 1171.2 | 0.826 | 6.181 | 68.373 | 19.916 | 4.284 | 0.135 | 0.267 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.34 | |
| 14 | 0.7347 | 1151.7 | 1172.1 | 0.828 | 6.219 | 68.216 | 19.970 | 4.352 | 0.135 | 0.264 | 0.009 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.45 | |
| 15 | 0.7352 | 1153.9 | 1174.3 | 0.851 | 6.103 | 68.158 | 20.111 | 4.366 | 0.134 | 0.260 | 0.009 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.51 | |
| 16 | 0.7358 | 1153.1 | 1173.5 | 0.844 | 6.211 | 68.080 | 20.042 | 4.403 | 0.137 | 0.266 | 0.009 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.06 | |
| 17 | 0.7366 | 1155.0 | 1175.4 | 0.847 | 6.170 | 67.975 | 20.129 | 4.451 | 0.139 | 0.270 | 0.009 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.55 | |
| 18 | 0.7358 | 1155.5 | 1175.9 | 0.845 | 6.064 | 68.120 | 20.137 | 4.409 | 0.138 | 0.269 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.90 | |
| 19 | 0.7360 | 1156.1 | 1176.6 | 0.852 | 6.033 | 68.122 | 20.134 | 4.428 | 0.139 | 0.273 | 0.009 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.49 | |
| 20 | 0.7356 | 1155.7 | 1176.2 | 0.845 | 6.037 | 68.175 | 20.099 | 4.409 | 0.140 | 0.275 | 0.010 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.31 | |
| 21 | 0.7348 | 1154.5 | 1174.9 | 0.825 | 6.061 | 68.244 | 20.085 | 4.369 | 0.135 | 0.263 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.65 | |
| 22 | 0.7085 | 1146.9 | 1167.2 | 0.771 | 4.146 | 72.283 | 19.477 | 3.035 | 0.090 | 0.183 | 0.007 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1386.75 | |
| 23 | 0.7301 | 1155.6 | 1176.1 | 0.814 | 5.569 | 68.908 | 20.273 | 4.044 | 0.119 | 0.254 | 0.010 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1376.46 | |
| 24 | 0.7320 | 1151.9 | 1172.3 | 0.825 | 5.957 | 68.516 | 20.228 | 4.063 | 0.125 | 0.263 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.22 | |
| 25 | 0.7288 | 1150.1 | 1170.5 | 0.842 | 5.744 | 69.064 | 19.994 | 3.973 | 0.121 | 0.241 | 0.010 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.07 | |
| 26 | 0.7312 | 1149.4 | 1169.8 | 0.840 | 6.008 | 68.733 | 19.879 | 4.147 | 0.127 | 0.247 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.04 | |
| 27 | 0.7332 | 1152.7 | 1173.1 | 0.849 | 5.988 | 68.478 | 20.017 | 4.262 | 0.130 | 0.256 | 0.010 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.99 | |
| 28 | 0.7330 | 1150.6 | 1171.0 | 0.846 | 6.096 | 68.440 | 19.993 | 4.238 | 0.126 | 0.245 | 0.008 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.77 | |
| 29 | 0.7360 | 1153.7 | 1174.1 | 0.848 | 6.192 | 68.056 | 20.054 | 4.440 | 0.134 | 0.259 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.57 | |
| 30 | 0.7334 | 1153.1 | 1173.5 | 0.821 | 6.020 | 68.439 | 20.008 | 4.317 | 0.128 | 0.248 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.34 | |
| Avg | 0.7332 | 1152.0 | 1172.0 | 0.828 | 6.087 | 68.490 | 19.884 | 4.294 | 0.134 | 0.265 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.72 | |

Zone 262

GQ Source Analysis

| | | | |
|----------------------------|----------------------|------------------------------|---------|
| GQ Source Number: | 2501030 | Specific Gravity: | 0.6642 |
| GQ Source Name: | LIGNITE PLANT | Dry Heat Value: | 1128.96 |
| Effective Date: | 9/1/2016 9:00:00 AM | Wet Heat Value: | 1109.31 |
| Effective End Date: | 1/18/2038 9:14:07 PM | As Deliv. Heat Value: | 1128.96 |
| Pressure Base: | 14.730 | Sample Pressure: | 605.00 |
| Viscosity: | | Sample Temperature: | |

| | | <u>Mol %</u> | <u>Liquid Content</u> | | | <u>Mol %</u> |
|-----|------------|--------------|-----------------------|--------|------------------|--------------|
| C1 | Methane | 78.717 | | CO2 | Carbon Dioxide | 0.157 |
| C2 | Ethane | 16.322 | 4.3523 | N2 | Nitrogen | 3.168 |
| C3 | Propane | 1.577 | 0.4332 | O2 | Oxygen | 0.008 |
| IC4 | Isobutane | 0.030 | 0.0098 | He | Helium | |
| NC4 | n-Butane | 0.018 | 0.0057 | H2 | Hydrogen | |
| IC5 | Isopentane | 0.000 | 0.0000 | H2S | Hydrogen Sulfide | |
| NC5 | n-Pentane | 0.000 | 0.0000 | Ar | Argon | |
| C6 | Hexanes | 0.004 | 0.0017 | CO | Carbon Monoxide | |
| C7 | Heptanes | | | H2 | Water | |
| C8 | Octanes | | | Neo-C5 | Neopentane | |
| C9 | Nonanes | | | | | |
| C10 | Decanes | | | | | |

Totals 100.000% 4.803 GPM

Sample Date: 10/3/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 263

*** End of Report ***

GQ Source Analysis

| | | | |
|----------------------------|----------------------|------------------------------|---------|
| GQ Source Number: | 0702010 | Specific Gravity: | 0.7338 |
| GQ Source Name: | EPPING BORDER | Dry Heat Value: | 1193.67 |
| Effective Date: | 9/1/2016 9:00:00 AM | Wet Heat Value: | 1172.89 |
| Effective End Date: | 1/18/2038 9:14:07 PM | As Deliv. Heat Value: | 1193.67 |
| Pressure Base: | 14.730 | Sample Pressure: | 520.00 |
| Viscosity: | | Sample Temperature: | |

| | | <u>Mol %</u> | <u>Liquid Content</u> | | | <u>Mol %</u> |
|-----|------------|--------------|-----------------------|--------|------------------|--------------|
| C1 | Methane | 76.012 | | CO2 | Carbon Dioxide | 0.704 |
| C2 | Ethane | 17.917 | 4.7774 | N2 | Nitrogen | 2.684 |
| C3 | Propane | 2.457 | 0.6749 | O2 | Oxygen | 0.005 |
| IC4 | Isobutane | 0.067 | 0.0220 | He | Helium | |
| NC4 | n-Butane | 0.133 | 0.0420 | H2 | Hydrogen | |
| IC5 | Isopentane | 0.010 | 0.0035 | 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% 5.524 GPM

Sample Date: 10/3/2016 12:00:00 AM
Sample Type: Composite
Sample Tech: ES
H2S: ppm

Sample Remarks:

Analysis Tech: MB

Analysis Remarks:

Zone 264

GQ Source Daily Summary

September 2016

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 | ICS | NC5 | C6 | C7 | C8 | C9 | C10 | Wobbe | CCT |
| 1 | 0.7581 | 1250.6 | 1272.7 | 0.437 | 2.934 | 69.989 | 18.720 | 5.354 | 0.480 | 1.478 | 0.252 | 0.354 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1461.58 |
| 2 | 0.7029 | 1162.9 | 1183.5 | 0.433 | 3.139 | 74.300 | 18.814 | 2.786 | 0.126 | 0.288 | 0.044 | 0.069 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1411.65 |
| 3 | 0.7305 | 1196.6 | 1217.8 | 0.797 | 3.122 | 70.747 | 20.379 | 3.900 | 0.240 | 0.635 | 0.078 | 0.101 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1424.72 |
| 4 | 0.7446 | 1220.0 | 1241.6 | 0.783 | 3.034 | 69.672 | 20.481 | 4.534 | 0.314 | 0.887 | 0.125 | 0.168 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1438.56 |
| 5 | 0.7183 | 1176.3 | 1197.1 | 0.833 | 3.169 | 71.838 | 20.230 | 3.188 | 0.168 | 0.442 | 0.057 | 0.076 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1412.37 |
| 6 | 0.7235 | 1184.7 | 1205.7 | 0.829 | 3.145 | 71.241 | 20.525 | 3.449 | 0.183 | 0.481 | 0.062 | 0.085 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.42 |
| 7 | 0.7025 | 1150.1 | 1170.5 | 0.850 | 3.261 | 73.315 | 19.741 | 2.510 | 0.090 | 0.194 | 0.018 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1396.50 |
| 8 | 0.7063 | 1156.1 | 1176.6 | 0.863 | 3.232 | 72.771 | 20.206 | 2.545 | 0.097 | 0.231 | 0.024 | 0.032 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.99 |
| 9 | 0.7117 | 1165.9 | 1186.6 | 0.836 | 3.180 | 72.118 | 20.577 | 2.807 | 0.120 | 0.293 | 0.030 | 0.038 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1406.50 |
| 10 | 0.7098 | 1162.2 | 1182.7 | 0.860 | 3.198 | 72.292 | 20.523 | 2.703 | 0.108 | 0.258 | 0.025 | 0.032 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1403.83 |
| 11 | 0.7093 | 1161.3 | 1181.9 | 0.854 | 3.206 | 72.266 | 20.625 | 2.665 | 0.100 | 0.232 | 0.023 | 0.029 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1403.37 |
| 12 | 0.7052 | 1155.0 | 1175.4 | 0.850 | 3.218 | 72.649 | 20.540 | 2.448 | 0.081 | 0.180 | 0.015 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.71 |
| 13 | 0.7066 | 1157.7 | 1178.2 | 0.833 | 3.209 | 72.621 | 20.408 | 2.589 | 0.094 | 0.207 | 0.017 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1401.61 |
| 14 | 0.7067 | 1157.6 | 1178.1 | 0.824 | 3.245 | 72.632 | 20.326 | 2.635 | 0.096 | 0.208 | 0.016 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1401.33 |
| 15 | 0.7115 | 1164.0 | 1184.6 | 0.851 | 3.255 | 72.183 | 20.371 | 2.914 | 0.114 | 0.258 | 0.024 | 0.031 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1404.39 |
| 16 | 0.7066 | 1156.7 | 1177.1 | 0.836 | 3.263 | 72.698 | 20.184 | 2.702 | 0.090 | 0.188 | 0.017 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.41 |
| 17 | 0.7066 | 1156.9 | 1177.4 | 0.830 | 3.268 | 72.560 | 20.328 | 2.746 | 0.081 | 0.161 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.60 |
| 18 | 0.7068 | 1156.2 | 1176.7 | 0.850 | 3.296 | 72.555 | 20.328 | 2.682 | 0.082 | 0.172 | 0.015 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.59 |
| 19 | 0.7067 | 1156.8 | 1177.3 | 0.828 | 3.281 | 72.548 | 20.389 | 2.665 | 0.081 | 0.173 | 0.015 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.44 |
| 20 | 0.7043 | 1153.4 | 1173.8 | 0.804 | 3.304 | 72.737 | 20.367 | 2.558 | 0.070 | 0.138 | 0.010 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.68 |
| 21 | 0.7052 | 1153.8 | 1174.2 | 0.843 | 3.304 | 72.773 | 20.213 | 2.579 | 0.079 | 0.173 | 0.016 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.24 |
| 22 | 0.7044 | 1153.9 | 1174.3 | 0.804 | 3.282 | 72.917 | 20.099 | 2.592 | 0.084 | 0.187 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.17 |
| 23 | 0.7024 | 1149.7 | 1170.1 | 0.832 | 3.305 | 73.105 | 20.070 | 2.421 | 0.073 | 0.163 | 0.014 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1396.11 |
| 24 | 0.7048 | 1154.1 | 1174.5 | 0.824 | 3.274 | 72.853 | 20.196 | 2.547 | 0.082 | 0.184 | 0.018 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.04 |
| 25 | 0.7042 | 1154.0 | 1174.4 | 0.805 | 3.253 | 72.854 | 20.253 | 2.569 | 0.079 | 0.162 | 0.012 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.53 |
| 26 | 0.7045 | 1154.3 | 1174.7 | 0.825 | 3.235 | 72.819 | 20.309 | 2.538 | 0.077 | 0.165 | 0.014 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1399.56 |
| 27 | 0.7057 | 1156.1 | 1176.5 | 0.814 | 3.255 | 72.790 | 20.153 | 2.666 | 0.089 | 0.194 | 0.018 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.53 |
| 28 | 0.7070 | 1158.3 | 1178.8 | 0.816 | 3.242 | 72.519 | 20.412 | 2.697 | 0.088 | 0.190 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1401.89 |
| 29 | 0.7043 | 1153.5 | 1173.9 | 0.842 | 3.238 | 72.922 | 20.159 | 2.552 | 0.080 | 0.171 | 0.016 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.79 |
| 30 | 0.7080 | 1159.8 | 1180.3 | 0.817 | 3.233 | 72.496 | 20.321 | 2.798 | 0.093 | 0.203 | 0.018 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1402.81 |
| Avg | 0.7110 | 1165.0 | 1185.6 | 0.803 | 3.219 | 72.393 | 20.208 | 2.878 | 0.121 | 0.297 | 0.035 | 0.046 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.96 |

Zone 2b5

GQ Source Daily Summary

September 2016

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 | 0.7206 | 1132.1 | 1152.1 | 0.741 | 6.226 | 70.693 | 17.883 | 4.059 | 0.126 | 0.252 | 0.010 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1357.19 |
| 2 | 0.7378 | 1154.4 | 1174.9 | 0.821 | 6.357 | 67.889 | 19.890 | 4.588 | 0.144 | 0.289 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.75 |
| 3 | 0.7386 | 1154.5 | 1174.9 | 0.821 | 6.427 | 67.724 | 19.985 | 4.586 | 0.145 | 0.290 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.10 |
| 4 | 0.7366 | 1152.6 | 1173.0 | 0.803 | 6.375 | 68.079 | 19.752 | 4.533 | 0.145 | 0.291 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.80 |
| 5 | 0.7328 | 1149.1 | 1169.5 | 0.783 | 6.263 | 68.724 | 19.378 | 4.395 | 0.142 | 0.288 | 0.013 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.15 |
| 6 | 0.7368 | 1155.7 | 1176.1 | 0.816 | 6.194 | 68.085 | 19.972 | 4.441 | 0.148 | 0.308 | 0.017 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.16 |
| 7 | 0.7363 | 1154.6 | 1175.1 | 0.821 | 6.207 | 68.081 | 20.019 | 4.412 | 0.142 | 0.289 | 0.014 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.35 |
| 8 | 0.7367 | 1152.9 | 1173.3 | 0.821 | 6.349 | 68.039 | 19.862 | 4.458 | 0.145 | 0.297 | 0.014 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.92 |
| 9 | 0.7371 | 1154.7 | 1175.2 | 0.828 | 6.258 | 68.020 | 19.937 | 4.486 | 0.146 | 0.296 | 0.014 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.79 |
| 10 | 0.7331 | 1150.9 | 1171.3 | 0.832 | 6.110 | 68.564 | 19.789 | 4.272 | 0.135 | 0.272 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.99 |
| 11 | 0.7347 | 1152.0 | 1172.4 | 0.832 | 6.200 | 68.340 | 19.801 | 4.379 | 0.140 | 0.281 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.71 |
| 12 | 0.7330 | 1150.9 | 1171.3 | 0.831 | 6.108 | 68.533 | 19.852 | 4.250 | 0.133 | 0.267 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.03 |
| 13 | 0.7343 | 1152.0 | 1172.4 | 0.832 | 6.164 | 68.327 | 19.926 | 4.329 | 0.133 | 0.264 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.08 |
| 14 | 0.7342 | 1153.0 | 1173.4 | 0.834 | 6.082 | 68.371 | 19.967 | 4.329 | 0.133 | 0.261 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.43 |
| 15 | 0.7372 | 1155.4 | 1175.9 | 0.832 | 6.224 | 67.956 | 20.037 | 4.507 | 0.141 | 0.279 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.49 |
| 16 | 0.7355 | 1156.3 | 1176.8 | 0.830 | 6.009 | 68.222 | 20.098 | 4.404 | 0.138 | 0.273 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.17 |
| 17 | 0.7352 | 1156.0 | 1176.5 | 0.833 | 5.999 | 68.320 | 19.986 | 4.415 | 0.140 | 0.280 | 0.014 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.04 |
| 18 | 0.7347 | 1155.2 | 1175.7 | 0.831 | 5.998 | 68.373 | 19.979 | 4.382 | 0.138 | 0.273 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.63 |
| 19 | 0.7354 | 1155.9 | 1176.4 | 0.828 | 6.024 | 68.225 | 20.091 | 4.404 | 0.136 | 0.267 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.80 |
| 20 | 0.7073 | 1150.5 | 1170.9 | 0.566 | 4.117 | 72.044 | 20.236 | 2.772 | 0.086 | 0.163 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1392.81 |
| 21 | 0.7036 | 1146.2 | 1166.5 | 0.626 | 3.943 | 72.839 | 19.607 | 2.717 | 0.085 | 0.164 | 0.010 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1391.08 |
| 22 | 0.7299 | 1157.2 | 1177.6 | 0.821 | 5.443 | 69.024 | 20.302 | 4.002 | 0.119 | 0.260 | 0.014 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1378.51 |
| 23 | 0.7267 | 1151.1 | 1171.5 | 0.782 | 5.578 | 69.364 | 20.068 | 3.822 | 0.116 | 0.244 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1374.20 |
| 24 | 0.7298 | 1149.3 | 1169.6 | 0.829 | 5.903 | 68.983 | 19.839 | 4.049 | 0.123 | 0.249 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.17 |
| 25 | 0.7311 | 1150.4 | 1170.7 | 0.826 | 5.968 | 68.800 | 19.856 | 4.146 | 0.127 | 0.253 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.19 |
| 26 | 0.7326 | 1152.8 | 1173.2 | 0.831 | 5.950 | 68.625 | 19.936 | 4.244 | 0.129 | 0.257 | 0.013 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.70 |
| 27 | 0.7325 | 1150.7 | 1171.1 | 0.829 | 6.072 | 68.592 | 19.858 | 4.249 | 0.127 | 0.248 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.31 |
| 28 | 0.7349 | 1153.6 | 1174.0 | 0.831 | 6.120 | 68.277 | 19.959 | 4.401 | 0.131 | 0.257 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.46 |
| 29 | 0.7328 | 1153.1 | 1173.5 | 0.823 | 5.966 | 68.607 | 19.895 | 4.304 | 0.128 | 0.252 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.84 |
| 30 | 0.7334 | 1153.6 | 1174.1 | 0.824 | 5.986 | 68.537 | 19.893 | 4.350 | 0.130 | 0.255 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.94 |
| Avg | 0.7318 | 1152.0 | 1172.6 | 0.805 | 5.954 | 68.742 | 19.855 | 4.223 | 0.132 | 0.264 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.79 |

Zone 291

GQ Source Daily Summary

September 2016

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 | 0.7185 | 1129.1 | 1149.1 | 0.734 | 6.219 | 70.983 | 17.703 | 3.982 | 0.123 | 0.237 | 0.009 | 0.009 | 0.000 | | | | | 1355.62 | |
| 2 | 0.7357 | 1150.3 | 1170.7 | 0.818 | 6.413 | 68.171 | 19.660 | 4.501 | 0.141 | 0.275 | 0.011 | 0.010 | 0.000 | | | | | 1364.83 | |
| 3 | 0.7394 | 1154.8 | 1175.3 | 0.836 | 6.454 | 67.566 | 20.084 | 4.609 | 0.146 | 0.284 | 0.011 | 0.011 | 0.000 | | | | | 1366.80 | |
| 4 | 0.7392 | 1154.8 | 1175.3 | 0.824 | 6.453 | 67.611 | 20.046 | 4.608 | 0.147 | 0.288 | 0.011 | 0.011 | 0.000 | | | | | 1367.00 | |
| 5 | 0.7315 | 1145.2 | 1165.5 | 0.783 | 6.384 | 68.874 | 19.145 | 4.382 | 0.139 | 0.273 | 0.011 | 0.010 | 0.000 | | | | | 1362.67 | |
| 6 | 0.7375 | 1154.5 | 1174.9 | 0.821 | 6.326 | 67.877 | 20.024 | 4.493 | 0.145 | 0.287 | 0.014 | 0.014 | 0.000 | | | | | 1368.12 | |
| 7 | 0.7378 | 1158.3 | 1178.8 | 0.826 | 6.104 | 67.956 | 20.154 | 4.455 | 0.151 | 0.314 | 0.019 | 0.021 | 0.000 | | | | | 1372.45 | |
| 8 | 0.7369 | 1152.5 | 1172.9 | 0.829 | 6.371 | 67.946 | 19.963 | 4.432 | 0.144 | 0.287 | 0.014 | 0.014 | 0.000 | | | | | 1366.40 | |
| 9 | 0.7381 | 1155.0 | 1175.5 | 0.833 | 6.330 | 67.846 | 19.991 | 4.524 | 0.148 | 0.296 | 0.015 | 0.017 | 0.000 | | | | | 1368.18 | |
| 10 | 0.7354 | 1152.0 | 1172.4 | 0.838 | 6.248 | 68.175 | 19.930 | 4.374 | 0.139 | 0.272 | 0.012 | 0.013 | 0.000 | | | | | 1367.20 | |
| 11 | 0.7352 | 1153.1 | 1173.5 | 0.843 | 6.153 | 68.229 | 19.976 | 4.360 | 0.139 | 0.274 | 0.013 | 0.013 | 0.000 | | | | | 1368.69 | |
| 12 | 0.7350 | 1152.2 | 1172.6 | 0.837 | 6.205 | 68.227 | 19.950 | 4.347 | 0.138 | 0.271 | 0.012 | 0.012 | 0.000 | | | | | 1367.72 | |
| 13 | 0.7333 | 1149.9 | 1170.2 | 0.840 | 6.183 | 68.452 | 19.851 | 4.266 | 0.131 | 0.254 | 0.012 | 0.012 | 0.000 | | | | | 1366.54 | |
| 14 | 0.7359 | 1154.1 | 1174.5 | 0.843 | 6.161 | 68.092 | 20.078 | 4.403 | 0.136 | 0.262 | 0.012 | 0.012 | 0.000 | | | | | 1369.17 | |
| 15 | 0.7356 | 1153.5 | 1173.9 | 0.839 | 6.181 | 68.132 | 20.021 | 4.402 | 0.137 | 0.264 | 0.012 | 0.012 | 0.000 | | | | | 1368.70 | |
| 16 | 0.7370 | 1155.5 | 1176.0 | 0.840 | 6.184 | 67.954 | 20.103 | 4.483 | 0.140 | 0.271 | 0.012 | 0.012 | 0.000 | | | | | 1369.84 | |
| 17 | 0.7362 | 1156.2 | 1176.7 | 0.840 | 6.068 | 68.103 | 20.119 | 4.439 | 0.139 | 0.269 | 0.013 | 0.012 | 0.000 | | | | | 1371.38 | |
| 18 | 0.7362 | 1156.5 | 1177.0 | 0.839 | 6.050 | 68.134 | 20.083 | 4.449 | 0.141 | 0.276 | 0.013 | 0.014 | 0.000 | | | | | 1371.75 | |
| 19 | 0.7357 | 1155.8 | 1176.3 | 0.841 | 6.046 | 68.175 | 20.091 | 4.418 | 0.138 | 0.266 | 0.012 | 0.012 | 0.000 | | | | | 1371.35 | |
| 20 | 0.7347 | 1154.6 | 1175.0 | 0.831 | 6.041 | 68.281 | 20.071 | 4.359 | 0.135 | 0.258 | 0.012 | 0.012 | 0.000 | | | | | 1370.84 | |
| 21 | 0.6869 | 1145.3 | 1165.6 | 0.403 | 2.773 | 74.883 | 20.151 | 1.637 | 0.052 | 0.089 | 0.006 | 0.006 | 0.000 | | | | | 1406.43 | |
| 22 | 0.7225 | 1150.8 | 1171.1 | 0.813 | 5.155 | 70.123 | 19.863 | 3.699 | 0.107 | 0.216 | 0.012 | 0.012 | 0.000 | | | | | 1377.97 | |
| 23 | 0.7310 | 1156.3 | 1176.8 | 0.794 | 5.645 | 68.751 | 20.382 | 3.999 | 0.126 | 0.271 | 0.015 | 0.016 | 0.000 | | | | | 1376.38 | |
| 24 | 0.7291 | 1150.2 | 1170.5 | 0.824 | 5.792 | 69.058 | 19.939 | 4.001 | 0.120 | 0.240 | 0.013 | 0.013 | 0.000 | | | | | 1370.87 | |
| 25 | 0.7302 | 1147.7 | 1168.0 | 0.835 | 6.029 | 68.836 | 19.869 | 4.049 | 0.121 | 0.237 | 0.012 | 0.011 | 0.000 | | | | | 1366.91 | |
| 26 | 0.7319 | 1150.4 | 1170.8 | 0.838 | 6.016 | 68.686 | 19.870 | 4.184 | 0.129 | 0.251 | 0.013 | 0.013 | 0.000 | | | | | 1368.58 | |
| 27 | 0.7328 | 1151.7 | 1172.1 | 0.838 | 6.026 | 68.559 | 19.920 | 4.257 | 0.128 | 0.248 | 0.012 | 0.012 | 0.000 | | | | | 1369.21 | |
| 28 | 0.7331 | 1150.9 | 1171.3 | 0.838 | 6.103 | 68.472 | 19.933 | 4.257 | 0.127 | 0.246 | 0.012 | 0.012 | 0.000 | | | | | 1368.00 | |
| 29 | 0.7375 | 1150.4 | 1170.8 | 0.837 | 6.548 | 67.765 | 19.949 | 4.483 | 0.135 | 0.259 | 0.012 | 0.012 | 0.000 | | | | | 1363.32 | |
| 30 | 0.7339 | 1152.0 | 1172.4 | 0.831 | 6.124 | 68.377 | 19.931 | 4.337 | 0.128 | 0.247 | 0.012 | 0.012 | 0.000 | | | | | 1368.51 | |
| Avg | 0.7325 | 1152.0 | 1172.2 | 0.813 | 6.026 | 68.610 | 19.895 | 4.240 | 0.132 | 0.259 | 0.012 | 0.012 | 0.000 | | | | | 1369.71 | |

Zone 272

GQ Source Daily Summary

September 2016

Number: 061

Pressure Base: 14.730

Contract Day: 1

Name: CLEVELAND STATION-GRAFTON BORDER

Temperature Base:

Contract Hour: 9

| Day | Relative Density | Heating Value Wet | Heating Value Dry | CO2 | N2 | C1 | C2 | C3 | IC4 | NC4 | IC5 | NC5 | C6 | C7 | C8 | C9 | C10 | Wobbe | CCT |
|-----|------------------|-------------------|-------------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-----|
| 1 | 0.7188 | 1129.5 | 1149.5 | 0.736 | 6.218 | 70.936 | 17.745 | 3.989 | 0.122 | 0.236 | 0.009 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1355.81 | |
| 2 | 0.7356 | 1150.2 | 1170.5 | 0.819 | 6.414 | 68.173 | 19.663 | 4.496 | 0.141 | 0.273 | 0.011 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1364.75 | |
| 3 | 0.7392 | 1154.6 | 1175.0 | 0.831 | 6.464 | 67.589 | 20.057 | 4.606 | 0.146 | 0.284 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.63 | |
| 4 | 0.7391 | 1154.7 | 1175.1 | 0.824 | 6.456 | 67.622 | 20.037 | 4.605 | 0.147 | 0.288 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.87 | |
| 5 | 0.7314 | 1145.0 | 1165.3 | 0.783 | 6.387 | 68.890 | 19.127 | 4.380 | 0.140 | 0.273 | 0.011 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1362.54 | |
| 6 | 0.7375 | 1154.4 | 1174.9 | 0.820 | 6.324 | 67.881 | 20.028 | 4.489 | 0.145 | 0.285 | 0.013 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.10 | |
| 7 | 0.7378 | 1158.1 | 1178.6 | 0.826 | 6.117 | 67.954 | 20.142 | 4.457 | 0.151 | 0.312 | 0.019 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.18 | |
| 8 | 0.7371 | 1153.0 | 1173.4 | 0.830 | 6.367 | 67.907 | 19.989 | 4.450 | 0.144 | 0.285 | 0.014 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.70 | |
| 9 | 0.7380 | 1154.7 | 1175.1 | 0.833 | 6.338 | 67.860 | 19.977 | 4.518 | 0.147 | 0.296 | 0.015 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.93 | |
| 10 | 0.7352 | 1151.7 | 1172.1 | 0.838 | 6.248 | 68.209 | 19.902 | 4.367 | 0.139 | 0.272 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.01 | |
| 11 | 0.7352 | 1153.2 | 1173.6 | 0.845 | 6.153 | 68.225 | 19.969 | 4.368 | 0.139 | 0.274 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.71 | |
| 12 | 0.7349 | 1151.9 | 1172.3 | 0.837 | 6.205 | 68.248 | 19.939 | 4.337 | 0.138 | 0.271 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.58 | |
| 13 | 0.7331 | 1149.5 | 1169.9 | 0.840 | 6.183 | 68.485 | 19.828 | 4.256 | 0.131 | 0.254 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.36 | |
| 14 | 0.7356 | 1153.6 | 1174.0 | 0.843 | 6.171 | 68.127 | 20.048 | 4.390 | 0.136 | 0.262 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.77 | |
| 15 | 0.7355 | 1153.1 | 1173.5 | 0.840 | 6.186 | 68.156 | 20.004 | 4.390 | 0.136 | 0.263 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.41 | |
| 16 | 0.7368 | 1155.1 | 1175.6 | 0.840 | 6.193 | 67.978 | 20.084 | 4.471 | 0.140 | 0.270 | 0.013 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.49 | |
| 17 | 0.7359 | 1155.7 | 1176.1 | 0.839 | 6.076 | 68.137 | 20.093 | 4.423 | 0.139 | 0.269 | 0.013 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.98 | |
| 18 | 0.7361 | 1156.3 | 1176.8 | 0.839 | 6.051 | 68.162 | 20.061 | 4.443 | 0.142 | 0.276 | 0.014 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.60 | |
| 19 | 0.7357 | 1155.8 | 1176.3 | 0.841 | 6.046 | 68.178 | 20.087 | 4.419 | 0.138 | 0.267 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.35 | |
| 20 | 0.7348 | 1154.3 | 1174.7 | 0.833 | 6.064 | 68.268 | 20.057 | 4.363 | 0.134 | 0.258 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.40 | |
| 21 | 0.6858 | 1144.6 | 1164.9 | 0.398 | 2.719 | 75.049 | 20.100 | 1.586 | 0.050 | 0.086 | 0.006 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1406.71 | |
| 22 | 0.7219 | 1150.1 | 1170.4 | 0.811 | 5.143 | 70.207 | 19.828 | 3.667 | 0.107 | 0.214 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1377.73 | |
| 23 | 0.7312 | 1156.5 | 1177.0 | 0.796 | 5.644 | 68.739 | 20.377 | 4.016 | 0.127 | 0.271 | 0.015 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1376.46 | |
| 24 | 0.7290 | 1150.1 | 1170.5 | 0.824 | 5.784 | 69.070 | 19.945 | 3.993 | 0.120 | 0.239 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.92 | |
| 25 | 0.7302 | 1147.7 | 1168.1 | 0.836 | 6.029 | 68.837 | 19.866 | 4.050 | 0.122 | 0.237 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.91 | |
| 26 | 0.7318 | 1150.4 | 1170.7 | 0.838 | 6.015 | 68.690 | 19.872 | 4.179 | 0.128 | 0.251 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.54 | |
| 27 | 0.7328 | 1151.6 | 1172.0 | 0.838 | 6.033 | 68.547 | 19.930 | 4.253 | 0.128 | 0.247 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.08 | |
| 28 | 0.7332 | 1151.0 | 1171.4 | 0.838 | 6.107 | 68.452 | 19.948 | 4.259 | 0.127 | 0.245 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.00 | |
| 29 | 0.7355 | 1152.7 | 1173.1 | 0.838 | 6.219 | 68.140 | 19.982 | 4.413 | 0.132 | 0.253 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.86 | |
| 30 | 0.7341 | 1154.1 | 1174.6 | 0.829 | 6.007 | 68.410 | 19.982 | 4.366 | 0.130 | 0.250 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.94 | |
| Avg | 0.7323 | 1152.0 | 1172.2 | 0.813 | 6.012 | 68.637 | 19.889 | 4.233 | 0.132 | 0.259 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.84 | |

Zone 273

GQ Source Daily Summary

September 2016

Number: 041

Pressure Base: 14.730

Contract Day: 1

Name: BISMARCK STATION-GLEN ULLIN STATION

Temperature Base:

Contract Hour: 9

| Day | Relative Density | Heating Value Wet | Heating Value Dry | | | | | | | | | | | | | | | | | |
|-----|------------------|-------------------|-------------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|--|
| | | | | CO2 | N2 | C1 | C2 | C3 | IC4 | NC4 | IC5 | NC5 | C6 | C7 | C8 | C9 | C10 | Wobbe | CCT | |
| 1 | 0.7227 | 1134.9 | 1155.0 | 0.750 | 6.237 | 70.362 | 18.116 | 4.129 | 0.129 | 0.258 | 0.010 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1358.61 | |
| 2 | 0.7378 | 1154.4 | 1174.9 | 0.821 | 6.354 | 67.901 | 19.879 | 4.589 | 0.144 | 0.289 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.78 | |
| 3 | 0.7384 | 1154.2 | 1174.6 | 0.820 | 6.430 | 67.754 | 19.959 | 4.579 | 0.145 | 0.291 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.89 | |
| 4 | 0.7368 | 1152.7 | 1173.1 | 0.805 | 6.387 | 68.039 | 19.779 | 4.531 | 0.145 | 0.291 | 0.011 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.67 | |
| 5 | 0.7318 | 1147.5 | 1167.8 | 0.780 | 6.277 | 68.863 | 19.266 | 4.362 | 0.141 | 0.285 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1365.13 | |
| 6 | 0.7364 | 1155.5 | 1175.9 | 0.815 | 6.163 | 68.154 | 19.950 | 4.429 | 0.147 | 0.305 | 0.017 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.39 | |
| 7 | 0.7362 | 1154.4 | 1174.8 | 0.821 | 6.207 | 68.107 | 20.000 | 4.403 | 0.142 | 0.290 | 0.014 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.23 | |
| 8 | 0.7363 | 1152.2 | 1172.6 | 0.821 | 6.351 | 68.089 | 19.837 | 4.434 | 0.144 | 0.295 | 0.014 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1366.52 | |
| 9 | 0.7366 | 1153.7 | 1174.1 | 0.828 | 6.273 | 68.087 | 19.890 | 4.453 | 0.144 | 0.295 | 0.015 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1368.05 | |
| 10 | 0.7331 | 1150.9 | 1171.3 | 0.832 | 6.115 | 68.560 | 19.782 | 4.276 | 0.136 | 0.274 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.95 | |
| 11 | 0.7346 | 1151.9 | 1172.3 | 0.832 | 6.195 | 68.361 | 19.794 | 4.372 | 0.139 | 0.281 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.70 | |
| 12 | 0.7330 | 1150.8 | 1171.2 | 0.831 | 6.109 | 68.547 | 19.838 | 4.248 | 0.133 | 0.269 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.97 | |
| 13 | 0.7339 | 1151.2 | 1171.5 | 0.831 | 6.171 | 68.391 | 19.881 | 4.305 | 0.133 | 0.264 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.55 | |
| 14 | 0.7340 | 1152.7 | 1173.1 | 0.835 | 6.082 | 68.396 | 19.952 | 4.318 | 0.132 | 0.261 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.28 | |
| 15 | 0.7369 | 1154.8 | 1175.3 | 0.832 | 6.226 | 68.006 | 20.008 | 4.486 | 0.140 | 0.277 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.11 | |
| 16 | 0.7353 | 1155.9 | 1176.3 | 0.830 | 6.021 | 68.249 | 20.070 | 4.394 | 0.138 | 0.274 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.79 | |
| 17 | 0.7352 | 1155.9 | 1176.3 | 0.833 | 6.000 | 68.334 | 19.973 | 4.411 | 0.140 | 0.280 | 0.014 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.94 | |
| 18 | 0.7346 | 1155.1 | 1175.6 | 0.831 | 5.999 | 68.383 | 19.971 | 4.379 | 0.138 | 0.273 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.57 | |
| 19 | 0.7352 | 1155.7 | 1176.1 | 0.829 | 6.026 | 68.250 | 20.069 | 4.398 | 0.136 | 0.268 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.64 | |
| 20 | 0.7071 | 1150.3 | 1170.7 | 0.564 | 4.113 | 72.066 | 20.234 | 2.758 | 0.085 | 0.162 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1392.84 | |
| 21 | 0.7003 | 1145.3 | 1165.6 | 0.593 | 3.738 | 73.285 | 19.601 | 2.531 | 0.080 | 0.153 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1393.32 | |
| 22 | 0.7064 | 1151.0 | 1171.4 | 0.773 | 3.691 | 72.578 | 19.886 | 2.786 | 0.085 | 0.176 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1393.75 | |
| 23 | 0.6939 | 1147.5 | 1167.8 | 0.469 | 3.195 | 73.923 | 20.194 | 2.030 | 0.061 | 0.113 | 0.007 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1402.26 | |
| 24 | 0.7294 | 1149.4 | 1169.8 | 0.827 | 5.858 | 69.042 | 19.855 | 4.023 | 0.122 | 0.247 | 0.013 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.75 | |
| 25 | 0.7311 | 1150.4 | 1170.8 | 0.827 | 5.966 | 68.796 | 19.862 | 4.145 | 0.127 | 0.253 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.22 | |
| 26 | 0.7323 | 1152.3 | 1172.7 | 0.831 | 5.950 | 68.666 | 19.916 | 4.225 | 0.128 | 0.256 | 0.013 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.42 | |
| 27 | 0.7322 | 1150.2 | 1170.5 | 0.829 | 6.081 | 68.626 | 19.832 | 4.234 | 0.126 | 0.248 | 0.012 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1367.92 | |
| 28 | 0.7346 | 1153.1 | 1173.5 | 0.831 | 6.117 | 68.323 | 19.933 | 4.382 | 0.131 | 0.256 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.22 | |
| 29 | 0.7328 | 1153.2 | 1173.6 | 0.823 | 5.952 | 68.616 | 19.907 | 4.296 | 0.128 | 0.252 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.06 | |
| 30 | 0.7333 | 1153.4 | 1173.8 | 0.824 | 5.989 | 68.554 | 19.877 | 4.345 | 0.130 | 0.255 | 0.013 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.77 | |
| Avg | 0.7297 | 1152.0 | 1172.1 | 0.792 | 5.809 | 69.044 | 19.837 | 4.108 | 0.128 | 0.256 | 0.012 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.21 | |

Zone 28

GQ Source Daily Summary

September 2016

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 | 0.6868 | 1158.5 | 1179.0 | 0.001 | 2.584 | 73.659 | 22.680 | 1.049 | 0.010 | 0.016 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.61 | |
| 2 | 0.6838 | 1152.5 | 1172.9 | 0.089 | 2.522 | 74.448 | 21.817 | 1.083 | 0.015 | 0.024 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1418.45 | |
| 3 | 0.6750 | 1134.4 | 1154.5 | 0.329 | 2.435 | 76.708 | 19.232 | 1.207 | 0.031 | 0.051 | 0.004 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.18 | |
| 4 | 0.6698 | 1124.7 | 1144.6 | 0.238 | 2.678 | 77.480 | 18.459 | 1.070 | 0.026 | 0.043 | 0.003 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1398.52 | |
| 5 | 0.6737 | 1129.1 | 1149.1 | 0.258 | 2.739 | 76.855 | 18.866 | 1.192 | 0.031 | 0.053 | 0.003 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.01 | |
| 6 | 0.6816 | 1136.1 | 1156.2 | 0.405 | 2.834 | 75.927 | 19.066 | 1.604 | 0.054 | 0.098 | 0.006 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.44 | |
| 7 | 0.6906 | 1151.5 | 1171.9 | 0.413 | 2.730 | 74.224 | 20.755 | 1.707 | 0.057 | 0.103 | 0.006 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1410.19 | |
| 8 | 0.6931 | 1154.7 | 1175.1 | 0.454 | 2.710 | 73.869 | 20.993 | 1.794 | 0.060 | 0.109 | 0.007 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1411.47 | |
| 9 | 0.6938 | 1157.1 | 1177.6 | 0.431 | 2.662 | 73.717 | 21.217 | 1.786 | 0.061 | 0.112 | 0.007 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.73 | |
| 10 | 0.6907 | 1154.5 | 1174.9 | 0.308 | 2.720 | 73.896 | 21.369 | 1.567 | 0.046 | 0.083 | 0.005 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.68 | |
| 11 | 0.6927 | 1157.9 | 1178.4 | 0.307 | 2.698 | 73.514 | 21.762 | 1.581 | 0.046 | 0.083 | 0.005 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.88 | |
| 12 | 0.6921 | 1156.8 | 1177.3 | 0.311 | 2.700 | 73.681 | 21.561 | 1.599 | 0.048 | 0.087 | 0.006 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.14 | |
| 13 | 0.6909 | 1154.6 | 1175.0 | 0.334 | 2.693 | 73.982 | 21.205 | 1.633 | 0.052 | 0.092 | 0.005 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.60 | |
| 14 | 0.6920 | 1158.3 | 1178.8 | 0.317 | 2.591 | 73.699 | 21.669 | 1.580 | 0.049 | 0.086 | 0.005 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1417.09 | |
| 15 | 0.6778 | 1140.2 | 1160.4 | 0.261 | 2.447 | 76.040 | 19.985 | 1.179 | 0.031 | 0.051 | 0.004 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1409.50 | |
| 16 | 0.6755 | 1134.9 | 1155.0 | 0.410 | 2.324 | 76.918 | 18.890 | 1.333 | 0.043 | 0.073 | 0.005 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.29 | |
| 17 | 0.6825 | 1147.2 | 1167.5 | 0.249 | 2.479 | 75.243 | 20.592 | 1.345 | 0.033 | 0.053 | 0.003 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.22 | |
| 18 | 0.6835 | 1148.9 | 1169.2 | 0.211 | 2.534 | 74.890 | 21.003 | 1.284 | 0.028 | 0.046 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.23 | |
| 19 | 0.6802 | 1142.9 | 1163.2 | 0.306 | 2.439 | 75.751 | 20.099 | 1.301 | 0.036 | 0.061 | 0.004 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1410.33 | |
| 20 | 0.6792 | 1141.3 | 1161.5 | 0.355 | 2.372 | 76.096 | 19.706 | 1.350 | 0.041 | 0.071 | 0.005 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1409.30 | |
| 21 | 0.6837 | 1148.9 | 1169.2 | 0.217 | 2.545 | 74.789 | 21.147 | 1.227 | 0.028 | 0.045 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.01 | |
| 22 | 0.6848 | 1151.2 | 1171.6 | 0.171 | 2.577 | 74.474 | 21.525 | 1.174 | 0.027 | 0.046 | 0.003 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.73 | |
| 23 | 0.6915 | 1154.7 | 1175.1 | 0.562 | 2.392 | 74.604 | 20.271 | 1.938 | 0.078 | 0.137 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.10 | |
| 24 | 0.6957 | 1158.9 | 1179.4 | 0.509 | 2.610 | 73.710 | 20.952 | 1.983 | 0.078 | 0.141 | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1414.02 | |
| 25 | 0.6967 | 1164.9 | 1185.5 | 0.277 | 2.693 | 72.728 | 22.518 | 1.643 | 0.047 | 0.083 | 0.005 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1420.36 | |
| 26 | 0.6882 | 1159.2 | 1179.7 | 0.000 | 2.667 | 73.348 | 22.934 | 1.025 | 0.010 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.09 | |
| 27 | 0.6927 | 1163.5 | 1184.1 | 0.135 | 2.623 | 72.988 | 22.834 | 1.341 | 0.028 | 0.047 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.68 | |
| 28 | 0.6951 | 1164.6 | 1185.2 | 0.165 | 2.742 | 72.627 | 22.932 | 1.442 | 0.033 | 0.056 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1421.51 | |
| 29 | 0.7022 | 1170.1 | 1190.8 | 0.415 | 2.684 | 72.220 | 22.489 | 1.987 | 0.068 | 0.123 | 0.008 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1421.04 | |
| 30 | 0.6963 | 1158.1 | 1178.6 | 0.358 | 2.945 | 73.120 | 21.565 | 1.839 | 0.058 | 0.104 | 0.006 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1412.42 | |
| Avg | 0.6871 | 1151.0 | 1171.4 | 0.293 | 2.612 | 74.507 | 21.003 | 1.461 | 0.042 | 0.073 | 0.004 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1413.16 | |

Zone 31

GQ Source Daily Summary

September 2016

Number: 051

Pressure Base: 14.730

Contract Day: 1

Name: CABIN CREEK STATION-BELFIELD TRANSFER

Temperature Base:

Contract Hour: 9

| Day | Relative Density | Heating Value Wet | Heating Value Dry | | | | | | | | | | | | | | | | |
|-----|------------------|-------------------|-------------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| | | | | CO2 | N2 | C1 | C2 | C3 | IC4 | NC4 | ICS | NC5 | C6 | C7 | C8 | C9 | C10 | Wobbe | CCT |
| 1 | 0.6551 | 1100.5 | 1120.0 | 0.867 | 1.802 | 81.967 | 13.657 | 1.500 | 0.071 | 0.116 | 0.011 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1383.70 |
| 2 | 0.6411 | 1073.5 | 1092.5 | 0.828 | 2.186 | 84.645 | 10.730 | 1.405 | 0.071 | 0.116 | 0.010 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1364.38 |
| 3 | 0.6322 | 1055.9 | 1074.6 | 0.704 | 2.607 | 86.066 | 9.200 | 1.240 | 0.064 | 0.104 | 0.009 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1351.58 |
| 4 | 0.6693 | 1103.6 | 1123.1 | 0.873 | 2.934 | 79.843 | 13.824 | 2.204 | 0.106 | 0.190 | 0.014 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.84 |
| 5 | 0.6763 | 1114.4 | 1134.2 | 0.924 | 2.858 | 78.665 | 14.838 | 2.365 | 0.115 | 0.207 | 0.014 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1379.09 |
| 6 | 0.6924 | 1138.8 | 1159.0 | 1.050 | 2.688 | 76.037 | 17.084 | 2.729 | 0.134 | 0.245 | 0.017 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1392.83 |
| 7 | 0.7064 | 1160.7 | 1181.2 | 1.155 | 2.518 | 73.653 | 19.205 | 3.025 | 0.146 | 0.265 | 0.018 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1405.37 |
| 8 | 0.6996 | 1151.2 | 1171.6 | 1.077 | 2.572 | 74.868 | 18.120 | 2.920 | 0.144 | 0.264 | 0.019 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.63 |
| 9 | 0.7074 | 1163.0 | 1183.6 | 1.135 | 2.496 | 73.518 | 19.344 | 3.044 | 0.150 | 0.275 | 0.020 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1407.21 |
| 10 | 0.7001 | 1152.6 | 1173.0 | 1.067 | 2.542 | 74.771 | 18.253 | 2.928 | 0.143 | 0.260 | 0.018 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1401.93 |
| 11 | 0.6930 | 1141.9 | 1162.2 | 1.016 | 2.608 | 75.921 | 17.275 | 2.769 | 0.137 | 0.245 | 0.016 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1395.98 |
| 12 | 0.7140 | 1175.0 | 1195.8 | 1.195 | 2.291 | 72.506 | 20.269 | 3.247 | 0.162 | 0.293 | 0.020 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1415.22 |
| 13 | 0.6985 | 1150.3 | 1170.7 | 0.999 | 1.755 | 81.588 | 13.523 | 1.849 | 0.098 | 0.163 | 0.013 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1400.73 |
| 14 | 0.6840 | 1128.8 | 1148.8 | 0.999 | 1.755 | 81.595 | 13.518 | 1.848 | 0.098 | 0.163 | 0.013 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1389.04 |
| 15 | 0.6625 | 1107.8 | 1127.4 | 1.011 | 1.723 | 81.715 | 13.441 | 1.827 | 0.096 | 0.162 | 0.014 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1385.16 |
| 16 | 0.6633 | 1110.8 | 1130.5 | 1.005 | 1.732 | 81.132 | 13.847 | 1.975 | 0.104 | 0.176 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1388.03 |
| 17 | 0.6634 | 1110.6 | 1130.3 | 1.004 | 1.750 | 81.082 | 13.904 | 1.949 | 0.104 | 0.180 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1387.75 |
| 18 | 0.6638 | 1111.3 | 1131.0 | 1.008 | 1.740 | 81.047 | 13.913 | 1.977 | 0.105 | 0.181 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1388.17 |
| 19 | 0.6633 | 1110.2 | 1129.9 | 1.010 | 1.760 | 81.050 | 13.950 | 1.933 | 0.100 | 0.172 | 0.013 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1387.31 |
| 20 | 0.6659 | 1114.4 | 1134.2 | 1.009 | 1.748 | 80.690 | 14.198 | 2.033 | 0.108 | 0.186 | 0.016 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1389.87 |
| 21 | 0.6657 | 1114.3 | 1134.0 | 1.008 | 1.739 | 80.726 | 14.173 | 2.030 | 0.109 | 0.187 | 0.015 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1389.91 |
| 22 | 0.6944 | 1152.0 | 1172.4 | 1.100 | 1.992 | 75.944 | 17.715 | 2.807 | 0.146 | 0.260 | 0.019 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1406.95 |
| 23 | 0.7078 | 1166.5 | 1187.1 | 1.116 | 2.351 | 73.626 | 19.235 | 3.174 | 0.164 | 0.295 | 0.020 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1411.00 |
| 24 | 0.7206 | 1185.8 | 1206.8 | 1.198 | 2.247 | 71.547 | 20.956 | 3.509 | 0.179 | 0.323 | 0.022 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1421.65 |
| 25 | 0.7215 | 1187.2 | 1208.2 | 1.205 | 2.241 | 71.382 | 21.098 | 3.526 | 0.180 | 0.326 | 0.022 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.39 |
| 26 | 0.7171 | 1180.0 | 1200.9 | 1.186 | 2.293 | 72.058 | 20.559 | 3.388 | 0.170 | 0.307 | 0.020 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1418.10 |
| 27 | 0.6857 | 1126.0 | 1145.9 | 0.863 | 3.133 | 76.832 | 16.268 | 2.554 | 0.115 | 0.209 | 0.014 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1383.78 |
| 28 | 0.6954 | 1139.3 | 1159.5 | 0.814 | 3.305 | 74.814 | 18.109 | 2.620 | 0.112 | 0.201 | 0.013 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1390.40 |
| 29 | 0.6917 | 1136.6 | 1156.8 | 0.813 | 3.122 | 75.457 | 17.769 | 2.524 | 0.104 | 0.185 | 0.013 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1390.81 |
| 30 | 0.6861 | 1131.0 | 1151.0 | 0.849 | 2.882 | 76.593 | 16.927 | 2.444 | 0.101 | 0.179 | 0.013 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1389.55 |
| Avg | 0.6846 | 1133.0 | 1153.2 | 1.003 | 2.312 | 77.711 | 16.163 | 2.445 | 0.121 | 0.215 | 0.016 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1393.71 |

Zone 32

GQ Source Daily Summary

September 2016

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 | 0.6896 | 1162.1 | 1182.6 | 0.003 | 2.621 | 73.079 | 23.233 | 1.039 | 0.009 | 0.014 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1424.16 |
| 2 | 0.6896 | 1161.9 | 1182.4 | 0.004 | 2.629 | 73.057 | 23.279 | 1.007 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.95 |
| 3 | 0.6906 | 1161.6 | 1182.1 | 0.006 | 2.746 | 72.811 | 23.414 | 0.999 | 0.009 | 0.013 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.47 |
| 4 | 0.6904 | 1161.8 | 1182.3 | 0.005 | 2.713 | 72.821 | 23.469 | 0.973 | 0.008 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.95 |
| 5 | 0.6902 | 1161.5 | 1182.1 | 0.004 | 2.710 | 72.896 | 23.382 | 0.984 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.86 |
| 6 | 0.6908 | 1162.2 | 1182.8 | 0.002 | 2.733 | 72.769 | 23.474 | 0.997 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.03 |
| 7 | 0.6915 | 1163.3 | 1183.9 | 0.004 | 2.725 | 72.642 | 23.595 | 1.009 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.72 |
| 8 | 0.6917 | 1163.7 | 1184.3 | 0.004 | 2.721 | 72.624 | 23.605 | 1.021 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.94 |
| 9 | 0.6904 | 1161.9 | 1182.5 | 0.004 | 2.710 | 72.826 | 23.454 | 0.988 | 0.008 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.11 |
| 10 | 0.6913 | 1163.0 | 1183.6 | 0.004 | 2.724 | 72.702 | 23.518 | 1.027 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.56 |
| 11 | 0.6914 | 1163.2 | 1183.8 | 0.004 | 2.724 | 72.683 | 23.529 | 1.035 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.65 |
| 12 | 0.6908 | 1162.1 | 1182.6 | 0.004 | 2.733 | 72.752 | 23.517 | 0.970 | 0.009 | 0.013 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.92 |
| 13 | 0.6906 | 1162.1 | 1182.7 | 0.005 | 2.711 | 72.822 | 23.445 | 0.994 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.17 |
| 14 | 0.6897 | 1160.9 | 1181.5 | 0.005 | 2.701 | 72.966 | 23.332 | 0.978 | 0.008 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.64 |
| 15 | 0.6907 | 1162.0 | 1182.6 | 0.004 | 2.725 | 72.802 | 23.445 | 0.998 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1422.99 |
| 16 | 0.6910 | 1162.5 | 1183.1 | 0.004 | 2.722 | 72.755 | 23.481 | 1.015 | 0.009 | 0.013 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.31 |
| 17 | 0.6919 | 1164.3 | 1185.0 | 0.006 | 2.692 | 72.719 | 23.411 | 1.146 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1424.59 |
| 18 | 0.6910 | 1162.8 | 1183.3 | 0.006 | 2.706 | 72.793 | 23.426 | 1.044 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.57 |
| 19 | 0.6907 | 1162.3 | 1182.9 | 0.004 | 2.706 | 72.792 | 23.479 | 1.001 | 0.008 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.37 |
| 20 | 0.6909 | 1163.4 | 1184.0 | 0.004 | 2.661 | 72.787 | 23.510 | 1.014 | 0.009 | 0.013 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1424.43 |
| 21 | 0.6915 | 1163.5 | 1184.2 | 0.003 | 2.709 | 72.642 | 23.621 | 1.001 | 0.009 | 0.014 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1424.04 |
| 22 | 0.6907 | 1162.4 | 1183.0 | 0.004 | 2.704 | 72.768 | 23.537 | 0.963 | 0.009 | 0.014 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.42 |
| 23 | 0.6918 | 1163.4 | 1184.0 | 0.002 | 2.752 | 72.570 | 23.653 | 0.996 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.46 |
| 24 | 0.6916 | 1163.1 | 1183.7 | 0.001 | 2.746 | 72.599 | 23.642 | 0.993 | 0.008 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.41 |
| 25 | 0.6923 | 1163.6 | 1184.2 | 0.001 | 2.784 | 72.546 | 23.568 | 1.071 | 0.011 | 0.017 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.26 |
| 26 | 0.6903 | 1164.6 | 1185.2 | 0.001 | 2.538 | 72.918 | 23.510 | 1.008 | 0.010 | 0.015 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1426.51 |
| 27 | 0.6920 | 1165.2 | 1185.8 | 0.001 | 2.663 | 72.597 | 23.653 | 1.061 | 0.009 | 0.014 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1425.46 |
| 28 | 0.6931 | 1165.0 | 1185.7 | 0.001 | 2.775 | 72.376 | 23.746 | 1.078 | 0.009 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1424.16 |
| 29 | 0.6963 | 1167.1 | 1187.8 | 0.000 | 2.945 | 71.766 | 24.117 | 1.149 | 0.010 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.48 |
| 30 | 0.6961 | 1167.2 | 1187.8 | 0.001 | 2.932 | 71.805 | 24.089 | 1.144 | 0.011 | 0.018 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.65 |
| Avg | 0.6913 | 1163.0 | 1183.7 | 0.003 | 2.722 | 72.689 | 23.538 | 1.023 | 0.009 | 0.014 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1423.64 |

Zone 33

GQ Source Analysis

| | | | |
|----------------------------|----------------------|------------------------------|--------|
| 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:

Zone 34

GQ Source Daily Summary

September 2016

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 | 0.6771 | 1113.1 | 1132.8 | 1.006 | 2.909 | 76.065 | 19.453 | 0.551 | 0.006 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1376.66 | |
| 2 | 0.6768 | 1112.4 | 1132.1 | 1.007 | 2.920 | 76.143 | 19.347 | 0.569 | 0.005 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1376.11 | |
| 3 | 0.6764 | 1111.8 | 1131.5 | 0.997 | 2.928 | 76.212 | 19.282 | 0.571 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1375.87 | |
| 4 | 0.6754 | 1110.0 | 1129.7 | 1.000 | 2.946 | 76.379 | 19.124 | 0.540 | 0.004 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1374.56 | |
| 5 | 0.6747 | 1108.1 | 1127.7 | 1.012 | 2.981 | 76.464 | 19.053 | 0.481 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.88 | |
| 6 | 0.6749 | 1108.1 | 1127.7 | 1.018 | 2.984 | 76.458 | 19.033 | 0.498 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.75 | |
| 7 | 0.6738 | 1106.6 | 1126.2 | 1.021 | 2.976 | 76.641 | 18.888 | 0.466 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.90 | |
| 8 | 0.6749 | 1108.1 | 1127.7 | 1.016 | 2.990 | 76.471 | 18.996 | 0.518 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.71 | |
| 9 | 0.6739 | 1106.6 | 1126.2 | 1.019 | 2.985 | 76.612 | 18.918 | 0.457 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.85 | |
| 10 | 0.6731 | 1105.4 | 1125.0 | 1.013 | 2.989 | 76.755 | 18.797 | 0.437 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.23 | |
| 11 | 0.6726 | 1104.4 | 1123.9 | 1.015 | 2.999 | 76.834 | 18.732 | 0.412 | 0.003 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.50 | |
| 12 | 0.6726 | 1103.6 | 1123.1 | 1.005 | 3.066 | 76.800 | 18.719 | 0.402 | 0.003 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1369.46 | |
| 13 | 0.6732 | 1105.5 | 1125.0 | 1.009 | 3.006 | 76.762 | 18.732 | 0.481 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.14 | |
| 14 | 0.6737 | 1106.8 | 1126.4 | 1.017 | 2.958 | 76.728 | 18.760 | 0.525 | 0.005 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.31 | |
| 15 | 0.6745 | 1107.8 | 1127.4 | 1.015 | 2.970 | 76.554 | 18.939 | 0.511 | 0.005 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.78 | |
| 16 | 0.6741 | 1107.3 | 1126.9 | 1.016 | 2.967 | 76.618 | 18.879 | 0.509 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.51 | |
| 17 | 0.6748 | 1108.4 | 1128.1 | 1.018 | 2.960 | 76.586 | 18.812 | 0.614 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1373.22 | |
| 18 | 0.6745 | 1107.9 | 1127.5 | 1.015 | 2.968 | 76.634 | 18.773 | 0.599 | 0.005 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.85 | |
| 19 | 0.6730 | 1105.3 | 1124.8 | 1.012 | 2.990 | 76.813 | 18.695 | 0.480 | 0.004 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.13 | |
| 20 | 0.6742 | 1107.7 | 1127.3 | 1.007 | 2.959 | 76.747 | 18.631 | 0.644 | 0.005 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.95 | |
| 21 | 0.6736 | 1106.5 | 1126.1 | 1.009 | 2.970 | 76.779 | 18.677 | 0.555 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.15 | |
| 22 | 0.6733 | 1106.3 | 1125.9 | 1.020 | 2.942 | 76.839 | 18.644 | 0.546 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1372.14 | |
| 23 | 0.6750 | 1108.6 | 1128.3 | 1.012 | 2.975 | 76.427 | 19.072 | 0.506 | 0.003 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1373.26 | |
| 24 | 0.6761 | 1109.7 | 1129.4 | 1.019 | 3.000 | 76.389 | 18.898 | 0.684 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1373.49 | |
| 25 | 0.6748 | 1107.3 | 1126.9 | 1.021 | 3.026 | 76.593 | 18.720 | 0.630 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1371.77 | |
| 26 | 0.6733 | 1105.3 | 1124.9 | 1.020 | 3.008 | 76.803 | 18.627 | 0.533 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1370.85 | |
| 27 | 0.6772 | 1111.6 | 1131.3 | 1.017 | 2.989 | 76.678 | 18.121 | 1.168 | 0.012 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1374.63 | |
| 28 | 0.6808 | 1118.0 | 1137.8 | 1.011 | 2.946 | 75.852 | 19.097 | 1.055 | 0.018 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1378.93 | |
| 29 | 0.6785 | 1114.5 | 1134.2 | 1.012 | 2.948 | 76.200 | 18.847 | 0.975 | 0.008 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1376.89 | |
| 30 | 0.6805 | 1118.1 | 1137.9 | 1.008 | 2.920 | 75.911 | 19.051 | 1.092 | 0.008 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1379.32 | |
| Avg | 0.6750 | 1109.0 | 1128.3 | 1.013 | 2.972 | 76.525 | 18.877 | 0.600 | 0.005 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1373.29 | |

Zone 43

Sep-16

ZONE 610

Watford City

Effective 2-3-16

01325

Watford City West Border

01312

Watford City East Border

Weighted

| Begin Date | End Date | BTU | | | BTU | | | AVG | |
|------------|-----------|-------|-------|---------|-----|-------|---------|--------|-----------|
| | | MCF | DK | Zone 25 | MCF | DK | Zone 43 | | |
| 9/1/2016 | 9/2/2016 | 48 | 58 | 1.211 | 9 | 10 | 1.133 | 1.199 | 9/1/2016 |
| 9/2/2016 | 9/3/2016 | 56 | 68 | 1.211 | 1 | 2 | 1.132 | 1.210 | 9/2/2016 |
| 9/3/2016 | 9/4/2016 | 29 | 35 | 1.211 | 1 | 1 | 1.132 | 1.208 | 9/3/2016 |
| 9/4/2016 | 9/5/2016 | 51 | 61 | 1.211 | 1 | 1 | 1.130 | 1.209 | 9/4/2016 |
| 9/5/2016 | 9/6/2016 | 96 | 117 | 1.211 | 7 | 8 | 1.128 | 1.205 | 9/5/2016 |
| 9/6/2016 | 9/7/2016 | 85 | 103 | 1.211 | 14 | 16 | 1.128 | 1.199 | 9/6/2016 |
| 9/7/2016 | 9/8/2016 | 105 | 127 | 1.211 | 16 | 18 | 1.126 | 1.200 | 9/7/2016 |
| 9/8/2016 | 9/9/2016 | 110 | 134 | 1.211 | 15 | 16 | 1.128 | 1.201 | 9/8/2016 |
| 9/9/2016 | 9/10/2016 | 112 | 136 | 1.211 | 15 | 17 | 1.126 | 1.201 | 9/9/2016 |
| 9/10/2016 | 9/11/2016 | 76 | 92 | 1.211 | 9 | 10 | 1.125 | 1.202 | 9/10/2016 |
| 9/11/2016 | 9/12/2016 | 91 | 111 | 1.211 | 5 | 6 | 1.124 | 1.206 | 9/11/2016 |
| 9/12/2016 | 9/13/2016 | 196 | 238 | 1.211 | 30 | 33 | 1.123 | 1.199 | 9/12/2016 |
| 9/13/2016 | 9/14/2016 | 171 | 207 | 1.211 | 24 | 27 | 1.125 | 1.200 | 9/13/2016 |
| 9/14/2016 | 9/15/2016 | 128 | 156 | 1.211 | 132 | 149 | 1.126 | 1.168 | 9/14/2016 |
| 9/15/2016 | 9/16/2016 | 125 | 151 | 1.211 | 13 | 15 | 1.127 | 1.203 | 9/15/2016 |
| 9/16/2016 | 9/17/2016 | 96 | 117 | 1.211 | 15 | 17 | 1.127 | 1.200 | 9/16/2016 |
| 9/17/2016 | 9/18/2016 | 50 | 61 | 1.211 | 6 | 7 | 1.128 | 1.202 | 9/17/2016 |
| 9/18/2016 | 9/19/2016 | 91 | 110 | 1.211 | 9 | 10 | 1.128 | 1.204 | 9/18/2016 |
| 9/19/2016 | 9/20/2016 | 98 | 119 | 1.211 | 17 | 19 | 1.125 | 1.198 | 9/19/2016 |
| 9/20/2016 | 9/21/2016 | 106 | 128 | 1.211 | 23 | 26 | 1.127 | 1.196 | 9/20/2016 |
| 9/21/2016 | 9/22/2016 | 155 | 188 | 1.211 | 27 | 30 | 1.126 | 1.198 | 9/21/2016 |
| 9/22/2016 | 9/23/2016 | 174 | 211 | 1.211 | 55 | 62 | 1.126 | 1.191 | 9/22/2016 |
| 9/23/2016 | 9/24/2016 | 153 | 186 | 1.211 | 43 | 49 | 1.128 | 1.193 | 9/23/2016 |
| 9/24/2016 | 9/25/2016 | 170 | 206 | 1.211 | 41 | 46 | 1.129 | 1.195 | 9/24/2016 |
| 9/25/2016 | 9/26/2016 | 190 | 231 | 1.211 | 43 | 49 | 1.127 | 1.195 | 9/25/2016 |
| 9/26/2016 | 9/27/2016 | 162 | 197 | 1.211 | 53 | 60 | 1.125 | 1.190 | 9/26/2016 |
| 9/27/2016 | 9/28/2016 | 113 | 137 | 1.211 | 54 | 62 | 1.131 | 1.185 | 9/27/2016 |
| 9/28/2016 | 9/29/2016 | 105 | 127 | 1.211 | 88 | 100 | 1.138 | 1.178 | 9/28/2016 |
| 9/29/2016 | 9/30/2016 | 105 | 128 | 1.211 | 72 | 82 | 1.134 | 1.180 | 9/29/2016 |
| 9/30/2016 | 10/1/2016 | 130 | 158 | 1.211 | 66 | 75 | 1.138 | 1.186 | 9/30/2016 |
| | | 3,377 | 4,098 | | 904 | 1,023 | 1.1283 | 1.1967 | |

| ROW ID | LOCATION DESCRIPTION | GROSS HEATING VALUE (BTU/CF) | SPECIFIC GRAVITY | WOBBE (cal/c) | 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 | 1059.2 | 0.6108 | 1355.3 | -54.8 | 1.3154 | 0.8437 | 89.6361 | 7.217 | 0.655 | 0.0554 | 0.0435 | 0.0074 | 0.0098 | 0 | 0.0045 | 0.1928 | 0.0183 | 8/31/2016 | 9/1/2016 | 9/1/2016 2:49:44 PM | |
| 11587 | GLEN ULLIN | 1060.5 | 0.6118 | 1355.9 | -57.6 | 1.3396 | 0.8342 | 89.4003 | 7.4738 | 0.6411 | 0.0507 | 0.0381 | 0.0065 | 0.0084 | 0 | 0.0036 | 0.1851 | 0.0182 | 9/1/2016 | 9/2/2016 | 9/2/2016 2:50:18 PM | |
| 11587 | GLEN ULLIN | 1055.1 | 0.6081 | 1353.1 | -66.3 | 1.3432 | 0.8164 | 89.9761 | 7.0753 | 0.5234 | 0.0366 | 0.0274 | 0.0042 | 0.0055 | 0 | 0.0022 | 0.1728 | 0.0183 | 9/2/2016 | 9/3/2016 | 9/3/2016 2:49:31 PM | |
| 11587 | GLEN ULLIN | 1057.6 | 0.61 | 1354.1 | -69.5 | 1.3276 | 0.849 | 89.5775 | 7.5161 | 0.4887 | 0.031 | 0.0234 | 0.0033 | 0.0046 | 0 | 0.0014 | 0.1598 | 0.0184 | 9/3/2016 | 9/4/2016 | 9/4/2016 2:49:47 PM | |
| 11587 | GLEN ULLIN | 1058.8 | 0.6109 | 1354.7 | -70.3 | 1.331 | 0.8523 | 89.3938 | 7.6955 | 0.4898 | 0.0303 | 0.0212 | 0.0033 | 0.0041 | 0 | 0.0009 | 0.1598 | 0.0169 | 9/4/2016 | 9/5/2016 | 9/5/2016 2:49:16 PM | |
| 11587 | GLEN ULLIN | 1056.6 | 0.6093 | 1353.6 | -71.2 | 1.3201 | 0.8496 | 89.6406 | 7.4857 | 0.4544 | 0.028 | 0.0205 | 0.0028 | 0.0039 | 0 | 0.0012 | 0.1759 | 0.017 | 9/5/2016 | 9/6/2016 | 9/6/2016 2:50:39 PM | |
| 11587 | GLEN ULLIN | 1055.4 | 0.6087 | 1352.8 | -74.1 | 1.355 | 0.8395 | 89.6996 | 7.4674 | 0.4164 | 0.0225 | 0.0154 | 0.0022 | 0.0028 | 0 | 0 | 0.1612 | 0.0189 | 9/6/2016 | 9/7/2016 | 9/7/2016 2:50:56 PM | |
| 11587 | GLEN ULLIN | 1052.1 | 0.6068 | 1350.6 | -76 | 1.3582 | 0.8474 | 90.019 | 7.1115 | 0.4107 | 0.019 | 0.0129 | 0.0018 | 0.002 | 0 | 0 | 0.1977 | 0.021 | 9/7/2016 | 9/8/2016 | 9/8/2016 2:49:38 PM | |
| 11587 | GLEN ULLIN | 1049.7 | 0.6039 | 1350.8 | -77.3 | 1.261 | 0.8241 | 90.6735 | 6.5937 | 0.4135 | 0.0223 | 0.0167 | 0.0019 | 0.0029 | 0 | 0.0004 | 0.171 | 0.0253 | 9/8/2016 | 9/9/2016 | 9/9/2016 2:53:02 PM | |
| 11587 | GLEN ULLIN | 1051.5 | 0.6054 | 1351.5 | -75.5 | 1.3015 | 0.8223 | 90.3658 | 6.8402 | 0.4231 | 0.0257 | 0.0192 | 0.0025 | 0.0034 | 0 | 0.0007 | 0.1756 | 0.0254 | 9/9/2016 | 9/10/2016 | 9/10/2016 2:49:57 PM | |
| 11587 | GLEN ULLIN | 1059 | 0.6107 | 1355.2 | -62.4 | 1.2759 | 0.8727 | 89.5614 | 7.4766 | 0.5465 | 0.0412 | 0.0319 | 0.0046 | 0.0065 | 0 | 0.0027 | 0.1644 | 0.0254 | 9/10/2016 | 9/11/2016 | 9/11/2016 2:50:23 PM | |
| 11587 | GLEN ULLIN | 1057.1 | 0.6092 | 1354.4 | -62.8 | 1.2737 | 0.8492 | 89.8435 | 7.2313 | 0.5303 | 0.0412 | 0.0318 | 0.0051 | 0.0069 | 0 | 0.0028 | 0.1656 | 0.0254 | 9/11/2016 | 9/12/2016 | 9/12/2016 2:50:18 PM | |
| 11587 | GLEN ULLIN | 1059.1 | 0.6105 | 1355.5 | -60.9 | 1.2715 | 0.8578 | 89.6503 | 7.4298 | 0.5444 | 0.0417 | 0.0334 | 0.005 | 0.0072 | 0 | 0.0033 | 0.137 | 0.0252 | 9/12/2016 | 9/13/2016 | 9/13/2016 2:50:59 PM | |
| 11587 | GLEN ULLIN | 1061 | 0.6115 | 1356.8 | -58.7 | 1.2621 | 0.8491 | 89.6532 | 7.4767 | 0.582 | 0.0455 | 0.036 | 0.0056 | 0.0079 | 0 | 0.0035 | 0.0603 | 0.018 | 9/13/2016 | 9/14/2016 | 9/14/2016 2:50:44 PM | |
| 11587 | GLEN ULLIN | 1061.6 | 0.6119 | 1357.2 | -56.6 | 1.2862 | 0.8328 | 89.4136 | 7.5681 | 0.6154 | 0.0493 | 0.0391 | 0.0063 | 0.0087 | 0 | 0.004 | 0.1597 | 0.0183 | 9/14/2016 | 9/15/2016 | 9/15/2016 2:51:22 PM | |
| 11587 | GLEN ULLIN | 1059 | 0.6104 | 1355.5 | -62.5 | 1.2949 | 0.8418 | 89.6028 | 7.4522 | 0.5521 | 0.0406 | 0.0314 | 0.0046 | 0.0065 | 0 | 0.0028 | 0.1677 | 0.0193 | 9/15/2016 | 9/16/2016 | 9/16/2016 2:50:22 PM | |
| 11587 | GLEN ULLIN | 1059.1 | 0.6103 | 1355.7 | -62.1 | 1.2821 | 0.8356 | 89.6392 | 7.4007 | 0.5685 | 0.0414 | 0.0321 | 0.0051 | 0.0069 | 0 | 0.0029 | 0.1672 | 0.0194 | 9/16/2016 | 9/17/2016 | 9/17/2016 2:51:24 PM | |
| 11587 | GLEN ULLIN | 1058.8 | 0.6102 | 1355.5 | -66 | 1.2956 | 0.8333 | 89.6168 | 7.457 | 0.5453 | 0.036 | 0.0278 | 0.0041 | 0.0058 | 0 | 0.002 | 0.1576 | 0.0194 | 9/17/2016 | 9/18/2016 | 9/18/2016 2:49:36 PM | |
| 11587 | GLEN ULLIN | 1061 | 0.6119 | 1356.4 | -59.1 | 1.3096 | 0.8393 | 89.3571 | 7.627 | 0.5863 | 0.0457 | 0.0357 | 0.0055 | 0.0077 | 0 | 0.0034 | 0.1641 | 0.0194 | 9/18/2016 | 9/19/2016 | 9/19/2016 2:49:27 PM | |
| 11587 | GLEN ULLIN | 1059.2 | 0.6106 | 1355.5 | -62.3 | 1.3024 | 0.8416 | 89.5583 | 7.4761 | 0.5535 | 0.0412 | 0.0324 | 0.0046 | 0.0067 | 0 | 0.0028 | 0.1623 | 0.0194 | 9/19/2016 | 9/20/2016 | 9/20/2016 2:49:44 PM | |
| 11587 | GLEN ULLIN | 1057.9 | 0.61 | 1354.6 | -63.7 | 1.2982 | 0.8508 | 89.6889 | 7.3589 | 0.54 | 0.0397 | 0.0309 | 0.0042 | 0.0062 | 0 | 0.0026 | 0.1615 | 0.0194 | 9/20/2016 | 9/21/2016 | 9/21/2016 2:50:34 PM | |
| 11587 | GLEN ULLIN | 1057 | 0.6093 | 1354.1 | -62.8 | 1.3001 | 0.849 | 89.8321 | 7.2245 | 0.5321 | 0.0419 | 0.0327 | 0.0049 | 0.007 | 0 | 0.0028 | 0.1544 | 0.0194 | 9/21/2016 | 9/22/2016 | 9/22/2016 2:50:56 PM | |
| 11587 | GLEN ULLIN | 1060.9 | 0.6117 | 1356.4 | -55.1 | 1.3067 | 0.838 | 89.4591 | 7.5012 | 0.601 | 0.0532 | 0.042 | 0.0072 | 0.0096 | 0 | 0.0043 | 0.1588 | 0.0164 | 9/22/2016 | 9/23/2016 | 9/23/2016 2:50:59 PM | |
| 11587 | GLEN ULLIN | 1057.6 | 0.6095 | 1354.7 | -59.2 | 1.296 | 0.8367 | 89.826 | 7.2038 | 0.5584 | 0.0469 | 0.0365 | 0.0057 | 0.008 | 0 | 0.0035 | 0.1602 | 0.0187 | 9/23/2016 | 9/24/2016 | 9/24/2016 2:50:16 PM | |
| 11587 | GLEN ULLIN | 1057.3 | 0.6093 | 1354.5 | -59.8 | 1.2627 | 0.8606 | 89.8806 | 7.1583 | 0.5517 | 0.0475 | 0.0374 | 0.0057 | 0.0081 | 0 | 0.0034 | 0.1648 | 0.0171 | 9/24/2016 | 9/25/2016 | 9/25/2016 2:50:23 PM | |
| 11587 | GLEN ULLIN | 1053.4 | 0.6067 | 1352.4 | -64.1 | 1.2221 | 0.878 | 90.3411 | 6.8037 | 0.4873 | 0.0398 | 0.0315 | 0.0045 | 0.0065 | 0 | 0.0027 | 0.1653 | 0.0171 | 9/25/2016 | 9/26/2016 | 9/26/2016 2:50:57 PM | |
| 11587 | GLEN ULLIN | 1056.9 | 0.6094 | 1353.9 | -62.6 | 1.2638 | 0.8832 | 89.8554 | 7.1773 | 0.5447 | 0.0435 | 0.034 | 0.0048 | 0.0069 | 0 | 0.0028 | 0.1622 | 0.0179 | 9/26/2016 | 9/27/2016 | 9/27/2016 2:50:00 PM | |
| 11587 | GLEN ULLIN | 1066.2 | 0.6154 | 1359.2 | -50.2 | 1.2634 | 0.8812 | 88.978 | 7.8306 | 0.7332 | 0.0678 | 0.0529 | 0.0091 | 0.0119 | 0 | 0.0053 | 0.151 | 0.0171 | 9/27/2016 | 9/28/2016 | 9/28/2016 2:51:25 PM | |
| 11587 | GLEN ULLIN | 1067 | 0.6151 | 1360.5 | -49.9 | 1.2199 | 0.8597 | 89.0295 | 7.848 | 0.7377 | 0.0654 | 0.051 | 0.0089 | 0.0116 | 0 | 0.0054 | 0.1451 | 0.0171 | 9/28/2016 | 9/29/2016 | 9/29/2016 2:50:39 PM | |
| 11587 | GLEN ULLIN | 1061.3 | 0.6119 | 1356.8 | -57.3 | 1.2777 | 0.85 | 89.485 | 7.4733 | 0.6354 | 0.0536 | 0.0404 | 0.0066 | 0.0088 | 0 | 0.0035 | 0.1478 | 0.0172 | 9/29/2016 | 9/30/2016 | 9/30/2016 2:51:17 PM | |
| 11587 | GLEN ULLIN | 1056.5 | 0.6089 | 1353.9 | -69.1 | 1.3097 | 0.8364 | 89.9291 | 7.2521 | 0.4867 | 0.0346 | 0.0261 | 0.0036 | 0.0051 | 0 | 0.0016 | 0.1012 | 0.0136 | 9/30/2016 | 10/1/2016 | 10/1/2016 2:50:20 PM | |

31 record(s) retrieved

FORM 802

| NORTH DAKOTA HEATING VALUE ZONES | | |
|----------------------------------|---------------------------------|--------------------------------|
| ZONES | MEASURING DEVICE | LOCATION |
| 211 | Chromatograph | Sidney Area |
| 24 | Monthly Sampler | Williston Area |
| 241 | Monthly Sampler | Fairview Area |
| 25 | Monthly Sampler | Watford City Area |
| 261 | Chromatograph | Williston – Tioga – Minot Line |
| 262 | Chromatograph | Minot Area |
| 263 | Monthly Sampler | Tioga – Portal |
| 264 | Monthly Sampler | Williston – Ray |
| 265 | Chromatograph | North Tioga |
| 271 | Chromatograph | Bismarck – Cleveland |
| 272 | Chromatograph | Cleveland – Mapleton |
| 273 | Chromatograph | Cleveland – Grafton |
| 28 | Chromatograph | Bismarck |
| 31 | Chromatograph | Dickinson |
| 32 | Chromatograph | Cabin Creek – Dickinson |
| 33 | Chromatograph | Killdeer |
| 34 | Monthly Sampler | Bowman Area |
| 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 | SEPT 16 | AUG 16 | JULY 16 | JUNE 16 | MAY 16 | APR 16 | MAR 16 | FEB 16 | JAN 16 | DEC 15 | NOV 15 | OCT 15 | ZONE |
|-------|------|-----------------------------------|------------------|---------|--------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| MT/ND | 211 | Sidney Area | 1205 | 1209 | 1210 | 1208 | 1206 | 1205 | 1207 | 1213 | 1209 | 1207 | 1204 | 1195 | 1188 | 211 |
| ND | 24 | Williston Area | 1189 | 1195 | 1169 | 1197 | 1191 | 1182 | 1196 | 1194 | 1195 | 1199 | 1199 | 1183 | 1177 | 24 |
| ND | 25 | Watford City Border | 1213 | 1211 | 1213 | 1211 | 1206 | 1209 | 1211 | 1211 | 1213 | 1216 | 1216 | 1223 | 1216 | 25 |
| ND/MT | 241 | Fairview Area | 1199 | 1210 | 1200 | 1202 | 1197 | 1202 | 1207 | 1201 | 1201 | 1199 | 1199 | 1184 | 1182 | 241 |
| ND | 261 | Williston - Tioga - Minot Line | 1104 | 1174 | 1074 | 1206 | 1182 | 1179 | 1186 | 1048 | 1035 | 1052 | 1066 | 1047 | 1000 | 261 |
| ND | 262 | Minot Area | 1195 | 1172 | 1191 | 1208 | 1208 | 1208 | 1206 | 1189 | 1190 | 1189 | 1188 | 1192 | 1198 | 262 |
| ND | 263 | Tioga - Portal | 1094 | 1129 | 1127 | 1118 | 1116 | 947 | 1105 | 1082 | 1107 | 1092 | 1082 | 1112 | 1112 | 263 |
| ND | 264 | Williston - Ray | 1183 | 1194 | 1198 | 1169 | 1183 | 1184 | 1190 | 1189 | 1181 | 1183 | 1180 | 1178 | 1162 | 264 |
| ND | 265 | North Tioga Transfer - Portal | 1182 | 1186 | 1166 | 1177 | 1170 | 1173 | 1190 | 1186 | 1187 | 1190 | 1188 | 1189 | 1180 | 265 |
| ND | 271 | Bismarck - Cleveland | 1192 | 1173 | 1185 | 1208 | 1208 | 1208 | 1206 | 1186 | 1181 | 1172 | 1181 | 1192 | 1199 | 271 |
| ND | 272 | Cleveland - Mapleton | 1190 | 1172 | 1184 | 1207 | 1207 | 1206 | 1204 | 1185 | 1180 | 1171 | 1180 | 1191 | 1197 | 272 |
| ND | 273 | Cleveland - Grafton | 1190 | 1172 | 1184 | 1207 | 1206 | 1206 | 1201 | 1185 | 1179 | 1171 | 1180 | 1190 | 1197 | 273 |
| ND | 28 | Bismarck - Cabin Creek | 1173 | 1172 | 1185 | 1208 | 1208 | 1202 | 1190 | 1154 | 1142 | 1131 | 1137 | 1148 | 1196 | 28 |
| ND | 31 | Dickinson Area | 1139 | 1171 | 1169 | 1124 | 1128 | 1117 | 1114 | 1144 | 1139 | 1130 | 1136 | 1135 | 1161 | 31 |
| ND | 311 | Taylor Take-Off - Glen Ullin Comp | 1163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1147 | 1179 | 311 |
| ND/MT | 32 | Cabin Creek - Dickinson | 1133 | 1153 | 1150 | 1157 | 1153 | 1137 | 1129 | 1121 | 1125 | 1117 | 1117 | 1111 | 1120 | 32 |
| ND | 33 | Killdeer | 1184 | 1184 | 1183 | 1184 | 1185 | 1184 | 1181 | 1181 | 1183 | 1182 | 1186 | 1185 | 1186 | 33 |
| ND | 34 | Bowman Area | 1035 | 996 | 996 | 996 | 996 | 980 | 982 | 979 | 1082 | 1103 | 1121 | 1102 | 1084 | 34 |
| ND | 43 | Spring Creek - Garden Crk Plant | 1101 | 1128 | 1109 | 1089 | 1087 | 1102 | 1143 | 1112 | 1091 | 1087 | 1092 | 1088 | 1083 | 43 |
| ND | 610 | MDU-Watford City BTU | 1182 | 1197 | 1206 | 1203 | 1186 | 1184 | 1174 | 1153 | 1140 | 1155 | 1174 | 1197 | 1211 | 610 |
| ND | 802 | Linton | 1061 | 1058 | 1059 | 1054 | 1065 | 1062 | 1062 | 1057 | 1056 | 1060 | 1066 | 1073 | 1064 | 802 |
| ND | 903 | Hettinger Propane | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 2549 | 903 |

**THERMAL ZONE VARIANCE
DOCUMENTATION**

September 2016

| <i>ZONE</i> | <i>BTU VARIANCE</i> | <i>REASON</i> |
|--------------------|--------------------------------|----------------------|
| 24 | 26 | Directional Changes |
| 261 | 100 | Supply Changes |
| 265 | 20 | Supply Changes |