

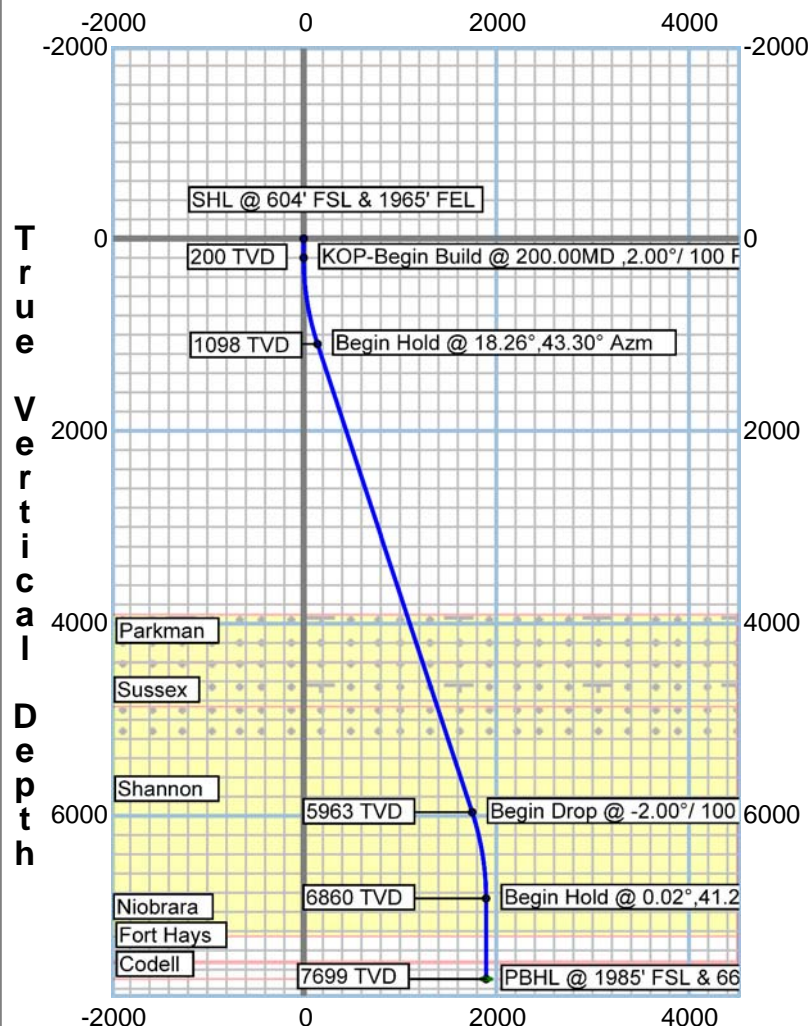


Job ID : Grant Brothers Pad
Company : Sundance Energy, Inc
Lease/Well : Grant Brothers 23-43
Location : Sec 23 T2N R68W
API JOB # : 05-123-xxxx
Rig Name : Cade 25
State/Province : CO
County/Parish : Weld
Country : USA

Latitude : 40°7'6.8412" N
Longitude : -104°58'4.6524" W
Northing : 1286484.34
Easting : 3148790.44
System Zone : US State Plane 1983
Projection Type : LAMBERT
Elevation (To MSL) : 4920 ft
RKB : 14 ft
Comment : Plan 3

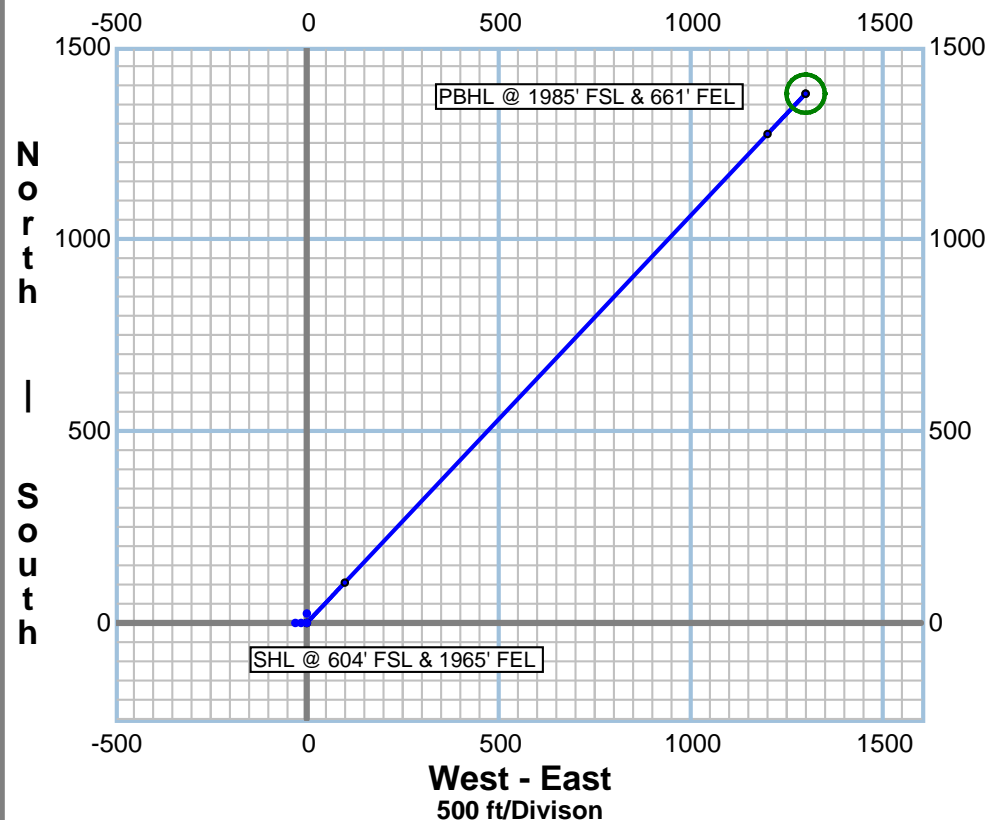


Vertical Section Plot



Vertical Section (43.30°)
2000 ft/Division

Horizontal Plot



CRITICAL POINTS - GRANT BROTHERS 23-43 PROPOSAL

| MD | Inc | Azm | TVD | EW | NS | VS | CI | Cldir | WR | BR | DLS |
|---------|-------|-------|---------|---------|---------|---------|---------|-------|--------|-------|------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1112.92 | 18.26 | 43.30 | 1097.55 | 98.92 | 104.97 | 144.23 | 144.23 | 43.30 | 0.00 | 2.01 | 2.01 |
| 6236.26 | 18.26 | 43.30 | 5962.90 | 1199.86 | 1273.26 | 1749.53 | 1749.53 | 43.30 | 0.00 | 0.00 | 0.00 |
| 7148.26 | 0.02 | 41.27 | 6859.52 | 1298.79 | 1378.25 | 1893.79 | 1893.79 | 43.30 | -15.61 | -2.00 | 2.00 |
| 7987.74 | 0.02 | 41.27 | 7699.00 | 1298.98 | 1378.47 | 1894.08 | 1894.08 | 43.30 | 0.00 | 0.00 | 0.00 |



Job ID : Grant Brothers Pad
Company : Sundance Energy, Inc
Lease/Well : Grant Brothers 23-43
Location : Sec 23 T2N R68W
API JOB # : 05-123-xxxxx
Rig Name : Cade 25
State/Province : CO
County/Parish : Weld
Country : USA

Latitude : 40°7'6.8412" N
Longitude : -104°58'4.6524" W
Northing : 1286484.34
Easting : 3148790.44
System Zone : US State Plane 1983
Projection Type : LAMBERT
Elevation (To MSL) : 4920 ft
RKB : 14 ft
Comment : Plan 3



| TARGETS | | | | | | LITHOLOGY | | | | | |
|---------|-------------------------------|------------|------------|------------|---------|-----------|------------|---------------|-------------|-----------|---------------|
| SHAPE | NAME | Easting | Northing | Subsea TVD | EW | Name | Subsea Top | Subsea Bottom | Description | Dip_Angle | Dip_Direction |
| CIRCLE | Grant Brothers 23-54 Target | 3149427.10 | 1287206.54 | 2745.00 | 640.98 | Parkman | -1025.00 | -515.00 | Parkman | 0.00 | 0.00 |
| CIRCLE | Grant Brothers 23-4 Ae Target | 3148106.00 | 1287200.80 | 2750.00 | -680.13 | Sussex | -515.00 | -70.00 | Sussex | 0.00 | 0.00 |
| CIRCLE | Grant Brothers 23-2 Ae Target | 3149412.97 | 1288529.54 | 2760.00 | 634.79 | Shannon | -70.00 | 2325.00 | Shannon | 0.00 | 0.00 |
| CIRCLE | Grant Brothers 23-43 Target | 3150081.13 | 1287870.58 | 2765.00 | 1298.98 | Niobrara | 2325.00 | 2585.00 | Niobrara | 0.00 | 0.00 |
| | | | | | | Fort Hays | 2585.00 | 2605.00 | Fort Hays | 0.00 | 0.00 |
| | | | | | | Codell | 2605.00 | 2765.00 | Codell | 0.00 | 0.00 |

Grant Brothers 23-43 Proposal

MD = 300.00
Inc = 2.00
Azm = 43.30
EW = 1.20
NS = 1.27
TVD: 299.98
DLS = 2.00
TFO = 0.00
Subsea: 4634.02
Closure = 1.75
@ CLDIR = 43.29
VSP = 126.24



MAGNETICS INFORMATION :

Magnetic Model: C:\HawkEye\IGRF2005.MIF

Date for Magnetics: 05/30/2013

Latitude: 40°07'6.8412" N

Longitude: -104°58'4.6524" W

Magnetic Declination: 8.63

Total Correction(Mag to Grid): 8.28

Field Strength (nt): 52833

B-X Component (nt): 20634

B-Y Component (nt): 3131

B-Z Component (nt): 48536

B-Horz Component (nt): 20870

Dip Angle: 66.73

METHODS OF CORRECTIONS:

* To correct from Magnetic North to True North use:

8.63°E --> TN = MN + 8.63

* To correct from True North to Grid North use:

0.34°E --> GN = TN - 0.34 : True to Grid

* To Correct from Magnetic North to Grid North use:

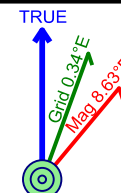
8.28°E --> GN = MN + 8.28 : Magnetic to Grid



Job Number: Grant Brothers Pad
Company: Sundance Energy, Inc
Lease/Well: Grant Brothers 23-43
Location: Sec 23 T2N R68W
Rig Name: Cade 25
State/County: CO/ Weld
Country: USA
API Number: 05-123-xxxx

Elevation : 4920.00 ft
RKB: 14.00 ft
Projection System: US State Plane 1983
Projection Group: Colorado Northern Zone
Projection Datum: GRS80
Mag. Declination: 8.63°
Grid Convergence: 0.34377 E
Date: Friday, August 02, 2013

Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 43.30°
Northing (US ft): 1286484.34 Easting (US ft): 3148790.44
Latitude: 40°07'6.8412" N Longitude: -104°58'4.6524" W
Well Location: 622.65 FSL, 1966.42 FEL, Section 23, T2N, R68W, Meridian 06, Weld County, CO
Direction Reference: True North



| Measured Depth (Ft) | INC Deg | AZM Deg | TVD (Ft) | NS (Ft) | EW (Ft) | VS (Ft) | DLS °/100Ft | Build Rate °/100Ft | Walk Rate °/100Ft | Latitude Dec. Deg | Longitude Dec. Deg |
|--|---------|---------|----------|---------|---------|---------|-------------|--------------------|-------------------|-------------------|--------------------|
| SHL @ 604' FSL & 1965' FEL | | | | | | | | | | | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.1185670 | -104.9679590 |
| KOP-Begin Build @ 200.00MD ,2.00°/ 100 Ft | | | | | | | | | | | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.1185670 | -104.9679590 |
| Begin Hold @ 18.26°,43.30° Azm | | | | | | | | | | | |
| 1112.92 | 18.26 | 43.30 | 1097.55 | 104.97 | 98.92 | 144.23 | 2.01 | 2.01 | 0.00 | 40.1188551 | -104.9676053 |
| Parkman | | | | | | | | | | | |
| 4073.45 | 18.26 | 43.30 | 3909.00 | 780.07 | 735.10 | 1071.86 | 0.00 | 0.00 | 0.00 | 40.1207084 | -104.9653304 |
| Sussex | | | | | | | | | | | |
| 4610.49 | 18.26 | 43.30 | 4419.00 | 902.53 | 850.50 | 1240.13 | 0.00 | 0.00 | 0.00 | 40.1210445 | -104.9649178 |
| Shannon | | | | | | | | | | | |
| 5079.09 | 18.26 | 43.30 | 4864.00 | 1009.39 | 951.20 | 1386.95 | 0.00 | 0.00 | 0.00 | 40.1213379 | -104.9645577 |
| Begin Drop @ -2.00°/ 100 Ft | | | | | | | | | | | |
| 6236.26 | 18.26 | 43.30 | 5962.90 | 1273.26 | 1199.86 | 1749.53 | 0.00 | 0.00 | 0.00 | 40.1220622 | -104.9636685 |
| Begin Hold @ 0.02°,41.27° Azm | | | | | | | | | | | |
| 7148.26 | 0.02 | 41.27 | 6859.52 | 1378.25 | 1298.79 | 1893.79 | 2.00 | -2.00 | -15.61 | 40.1223504 | -104.9633147 |
| Niobrara | | | | | | | | | | | |
| 7547.74 | 0.02 | 41.27 | 7259.00 | 1378.36 | 1298.88 | 1893.93 | 0.00 | 0.00 | 0.00 | 40.1223507 | -104.9633144 |
| Fort Hays | | | | | | | | | | | |
| 7807.74 | 0.02 | 41.27 | 7519.00 | 1378.42 | 1298.94 | 1894.02 | 0.00 | 0.00 | 0.00 | 40.1223509 | -104.9633141 |
| Codell | | | | | | | | | | | |
| 7827.74 | 0.02 | 41.27 | 7539.00 | 1378.43 | 1298.95 | 1894.02 | 0.00 | 0.00 | 0.00 | 40.1223509 | -104.9633141 |
| PBHL @ 1985' FSL & 661' FEL | | | | | | | | | | | |
| 7987.74 | 0.02 | 41.27 | 7699.00 | 1378.47 | 1298.98 | 1894.08 | 0.00 | 0.00 | 0.00 | 40.1223510 | -104.9633140 |

TARGET DATA

| Name | Shape | Easting (Ft) | Northing (Ft) | Subsea (Ft) | TVD (Ft) | NS (Ft) | EW (Ft) | Side A (Ft) | Side B (Ft) | Dia. (Ft) |
|-----------------------------|--------|--------------|---------------|-------------|----------|---------|---------|-------------|-------------|-----------|
| Grant Brothers 23-43 Target | CIRCLE | 3150081.1 | 1287870.6 | 2765.0 | 7698.0 | 1378.5 | 1299.0 | 100.0 | 100.0 | 100.0 |

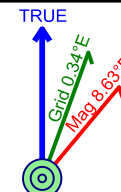
| LITHOLOGY DATA | | | | | | |
|----------------|-------------|----------|--------------|-----------------|-----------------|---------------------|
| Name | Description | Pattern | TVD Top (Ft) | TVD Bottom (Ft) | Dip Angle (deg) | Dip Direction (deg) |
| Parkman | Parkman | SANDSTON | 3909 | 4419 | 0.0 | 0.0 |
| Sussex | Sussex | SANDSTON | 4419 | 4864 | 0.0 | 0.0 |
| Shannon | Shannon | SANDSTON | 4864 | 7259 | 0.0 | 0.0 |
| Niobrara | Niobrara | CHALK | 7259 | 7519 | 0.0 | 0.0 |
| Fort Hays | Fort Hays | LIMESTON | 7519 | 7539 | 0.0 | 0.0 |
| Codell | Codell | SANDSTON | 7539 | 7699 | 0.0 | 0.0 |






Job Number: Grant Brothers Pad
Company: Sundance Energy, Inc
Lease/Well: Grant Brothers 23-43
Location: Sec 23 T2N R68W
Rig Name: Cade 25
State/County: CO/ Weld
Country: USA
API Number: 05-123-xxxx



Elevation : 4920.00 ft
RKB: 14.00 ft
Projection System: US State Plane 1983
Projection Group: Colorado Northern Zone
Projection Datum: GRS80
Mag. Declination: 8.63°
Grid Convergence: 0.34377 E
Date: Friday, August 02, 2013


Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 43.30°
Northing (US ft): 1286484.34 Easting (US ft): 3148790.44
Latitude: 40°07'6.8412" N Longitude: -104°58'4.6524" W
Well Location: 622.65 FSL, 1966.42 FEL, Section 23, T2N, R68W, Meridian 06, Weld County, CO
Direction Reference: True North



| Measured Depth (Ft) | INC Deg | AZM Deg | TVD (Ft) | NS (Ft) | EW (Ft) | VS (Ft) | DLS °/100Ft | Build Rate °/100Ft | Walk Rate °/100Ft | Latitude Dec. Deg | Longitude Dec. Deg |
|--|---------|---------|----------|---------|---------|---------|-------------|--------------------|-------------------|-------------------|--------------------|
| SHL @ 604' FSL & 1965' FEL | | | | | | | | | | | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.1185670 | -104.9679590 |
| KOP-Begin Build @ 200.00MD ,2.00°/ 100 Ft | | | | | | | | | | | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.1185670 | -104.9679590 |
| 220.00 | 0.40 | 43.29 | 220.00 | 0.05 | 0.05 | 0.07 | 2.00 | 2.00 | 216.45 | 40.1185671 | -104.9679588 |
| 240.00 | 0.80 | 43.30 | 240.00 | 0.20 | 0.19 | 0.28 | 2.00 | 2.00 | 0.02 | 40.1185675 | -104.9679583 |
| 260.00 | 1.20 | 43.30 | 260.00 | 0.46 | 0.43 | 0.63 | 2.00 | 2.00 | 0.01 | 40.1185682 | -104.9679575 |
| 280.00 | 1.60 | 43.30 | 279.99 | 0.81 | 0.77 | 1.12 | 2.00 | 2.00 | 0.00 | 40.1185692 | -104.9679563 |
| 300.00 | 2.00 | 43.30 | 299.98 | 1.27 | 1.20 | 1.75 | 2.00 | 2.00 | 0.00 | 40.1185705 | -104.9679547 |
| 320.00 | 2.40 | 43.30 | 319.96 | 1.83 | 1.72 | 2.51 | 2.00 | 2.00 | 0.00 | 40.1185720 | -104.9679528 |
| 340.00 | 2.80 | 43.30 | 339.94 | 2.49 | 2.35 | 3.42 | 2.00 | 2.00 | 0.00 | 40.1185738 | -104.9679506 |
| 360.00 | 3.20 | 43.30 | 359.92 | 3.25 | 3.06 | 4.47 | 2.00 | 2.00 | 0.00 | 40.1185759 | -104.9679481 |
| 380.00 | 3.60 | 43.30 | 379.88 | 4.11 | 3.88 | 5.65 | 2.00 | 2.00 | 0.00 | 40.1185783 | -104.9679451 |
| 400.00 | 4.00 | 43.30 | 399.84 | 5.08 | 4.79 | 6.98 | 2.00 | 2.00 | 0.00 | 40.1185809 | -104.9679419 |
| 420.00 | 4.40 | 43.30 | 419.78 | 6.15 | 5.79 | 8.44 | 2.00 | 2.00 | 0.00 | 40.1185839 | -104.9679383 |
| 440.00 | 4.80 | 43.30 | 439.72 | 7.31 | 6.89 | 10.05 | 2.00 | 2.00 | 0.00 | 40.1185871 | -104.9679344 |
| 460.00 | 5.20 | 43.30 | 459.64 | 8.58 | 8.09 | 11.79 | 2.00 | 2.00 | 0.00 | 40.1185905 | -104.9679301 |
| 480.00 | 5.60 | 43.30 | 479.55 | 9.95 | 9.38 | 13.67 | 2.00 | 2.00 | 0.00 | 40.1185943 | -104.9679255 |
| 500.00 | 6.00 | 43.30 | 499.45 | 11.42 | 10.76 | 15.69 | 2.00 | 2.00 | 0.00 | 40.1185983 | -104.9679205 |
| 520.00 | 6.40 | 43.30 | 519.33 | 12.99 | 12.24 | 17.85 | 2.00 | 2.00 | 0.00 | 40.1186027 | -104.9679152 |
| 540.00 | 6.80 | 43.30 | 539.20 | 14.67 | 13.82 | 20.15 | 2.00 | 2.00 | 0.00 | 40.1186073 | -104.9679096 |
| 560.00 | 7.20 | 43.30 | 559.05 | 16.44 | 15.49 | 22.59 | 2.00 | 2.00 | 0.00 | 40.1186121 | -104.9679036 |
| 580.00 | 7.60 | 43.30 | 578.89 | 18.32 | 17.26 | 25.17 | 2.00 | 2.00 | 0.00 | 40.1186173 | -104.9678973 |
| 600.00 | 8.00 | 43.30 | 598.70 | 20.29 | 19.12 | 27.88 | 2.00 | 2.00 | 0.00 | 40.1186227 | -104.9678906 |
| 620.00 | 8.40 | 43.30 | 618.50 | 22.37 | 21.08 | 30.73 | 2.00 | 2.00 | 0.00 | 40.1186284 | -104.9678836 |
| 640.00 | 8.80 | 43.30 | 638.27 | 24.54 | 23.13 | 33.72 | 2.00 | 2.00 | 0.00 | 40.1186344 | -104.9678763 |
| 660.00 | 9.20 | 43.30 | 658.03 | 26.82 | 25.27 | 36.85 | 2.00 | 2.00 | 0.00 | 40.1186406 | -104.9678686 |
| 680.00 | 9.60 | 43.30 | 677.76 | 29.20 | 27.51 | 40.12 | 2.00 | 2.00 | 0.00 | 40.1186471 | -104.9678606 |

| Measured Depth (Ft) | INC Deg | AZM Deg | TVD (Ft) | NS (Ft) | EW (Ft) | VS (Ft) | DLS °/100Ft | Build Rate °/100Ft | Walk Rate °/100Ft | Latitude Dec. Deg | Longitude Dec. Deg |
|--|------------|------------|-------------|------------|------------|------------|----------------|--------------------------|-------------------------|-------------------------|--------------------------|
| 700.00 | 10.00 | 43.30 | 697.47 | 31.68 | 29.85 | 43.52 | 2.00 | 2.00 | 0.00 | 40.1186539 | -104.9678523 |
| 720.00 | 10.40 | 43.30 | 717.15 | 34.25 | 32.28 | 47.07 | 2.00 | 2.00 | 0.00 | 40.1186610 | -104.9678436 |
| 740.00 | 10.80 | 43.30 | 736.81 | 36.93 | 34.80 | 50.74 | 2.00 | 2.00 | 0.00 | 40.1186684 | -104.9678346 |
| 760.00 | 11.20 | 43.30 | 756.44 | 39.71 | 37.42 | 54.56 | 2.00 | 2.00 | 0.00 | 40.1186760 | -104.9678252 |
| 780.00 | 11.60 | 43.30 | 776.05 | 42.58 | 40.13 | 58.51 | 2.00 | 2.00 | 0.00 | 40.1186839 | -104.9678155 |
| 800.00 | 12.00 | 43.30 | 795.62 | 45.56 | 42.93 | 62.60 | 2.00 | 2.00 | 0.00 | 40.1186921 | -104.9678055 |
| 820.00 | 12.40 | 43.30 | 815.17 | 48.64 | 45.83 | 66.83 | 2.00 | 2.00 | 0.00 | 40.1187005 | -104.9677951 |
| 840.00 | 12.80 | 43.30 | 834.69 | 51.81 | 48.82 | 71.19 | 2.00 | 2.00 | 0.00 | 40.1187092 | -104.9677844 |
| 860.00 | 13.20 | 43.30 | 854.18 | 55.09 | 51.91 | 75.69 | 2.00 | 2.00 | 0.00 | 40.1187182 | -104.9677734 |
| 880.00 | 13.60 | 43.30 | 873.63 | 58.46 | 55.09 | 80.33 | 2.00 | 2.00 | 0.00 | 40.1187275 | -104.9677620 |
| 900.00 | 14.00 | 43.30 | 893.06 | 61.93 | 58.36 | 85.10 | 2.00 | 2.00 | 0.00 | 40.1187370 | -104.9677503 |
| 920.00 | 14.40 | 43.30 | 912.44 | 65.50 | 61.73 | 90.00 | 2.00 | 2.00 | 0.00 | 40.1187468 | -104.9677383 |
| 940.00 | 14.80 | 43.30 | 931.80 | 69.17 | 65.18 | 95.05 | 2.00 | 2.00 | 0.00 | 40.1187569 | -104.9677259 |
| 960.00 | 15.20 | 43.30 | 951.12 | 72.94 | 68.73 | 100.22 | 2.00 | 2.00 | 0.00 | 40.1187672 | -104.9677132 |
| 980.00 | 15.60 | 43.30 | 970.40 | 76.80 | 72.38 | 105.53 | 2.00 | 2.00 | 0.00 | 40.1187778 | -104.9677002 |
| 1000.00 | 16.00 | 43.30 | 989.64 | 80.77 | 76.11 | 110.98 | 2.00 | 2.00 | 0.00 | 40.1187887 | -104.9676869 |
| 1020.00 | 16.40 | 43.30 | 1008.85 | 84.83 | 79.94 | 116.56 | 2.00 | 2.00 | 0.00 | 40.1187999 | -104.9676732 |
| 1040.00 | 16.80 | 43.30 | 1028.01 | 88.99 | 83.86 | 122.27 | 2.00 | 2.00 | 0.00 | 40.1188113 | -104.9676592 |
| 1060.00 | 17.20 | 43.30 | 1047.14 | 93.24 | 87.87 | 128.12 | 2.00 | 2.00 | 0.00 | 40.1188230 | -104.9676448 |
| 1080.00 | 17.60 | 43.30 | 1066.23 | 97.59 | 91.97 | 134.10 | 2.00 | 2.00 | 0.00 | 40.1188349 | -104.9676302 |
| 1100.00 | 18.00 | 43.30 | 1085.27 | 102.04 | 96.16 | 140.21 | 2.00 | 2.00 | 0.00 | 40.1188471 | -104.9676152 |
| Begin Hold @ 18.26°,43.30° Azm | | | | | | | | | | | |
| 1112.92 | 18.26 | 43.30 | 1097.55 | 104.97 | 98.92 | 144.23 | 2.01 | 2.01 | 0.00 | 40.1188551 | -104.9676053 |
|  Parkman | | | | | | | | | | | |
| 4073.45 | 18.26 | 43.30 | 3909.00 | 780.07 | 735.10 | 1071.86 | 0.00 | 0.00 | 0.00 | 40.1207084 | -104.9653304 |
|  Sussex | | | | | | | | | | | |
| 4610.49 | 18.26 | 43.30 | 4419.00 | 902.53 | 850.50 | 1240.13 | 0.00 | 0.00 | 0.00 | 40.1210445 | -104.9649178 |
|  Shannon | | | | | | | | | | | |
| 5079.09 | 18.26 | 43.30 | 4864.00 | 1009.39 | 951.20 | 1386.95 | 0.00 | 0.00 | 0.00 | 40.1213379 | -104.9645577 |
| Begin Drop @ -2.00°/ 100 Ft | | | | | | | | | | | |
| 6236.26 | 18.26 | 43.30 | 5962.90 | 1273.26 | 1199.86 | 1749.53 | 0.00 | 0.00 | 0.00 | 40.1220622 | -104.9636685 |
| 6256.26 | 17.86 | 43.30 | 5981.91 | 1277.77 | 1204.11 | 1755.73 | 2.00 | -2.00 | 0.00 | 40.1220746 | -104.9636533 |
| 6276.26 | 17.46 | 43.30 | 6000.97 | 1282.19 | 1208.27 | 1761.80 | 2.00 | -2.00 | 0.00 | 40.1220867 | -104.9636384 |
| 6296.26 | 17.06 | 43.30 | 6020.07 | 1286.51 | 1212.34 | 1767.73 | 2.00 | -2.00 | 0.00 | 40.1220986 | -104.9636238 |
| 6316.26 | 16.66 | 43.30 | 6039.21 | 1290.73 | 1216.32 | 1773.53 | 2.00 | -2.00 | 0.00 | 40.1221101 | -104.9636096 |
| 6336.26 | 16.26 | 43.30 | 6058.39 | 1294.85 | 1220.21 | 1779.20 | 2.00 | -2.00 | 0.00 | 40.1221215 | -104.9635957 |
| 6356.26 | 15.86 | 43.30 | 6077.61 | 1298.88 | 1224.00 | 1784.73 | 2.00 | -2.00 | 0.00 | 40.1221325 | -104.9635821 |
| 6376.26 | 15.46 | 43.30 | 6096.87 | 1302.81 | 1227.70 | 1790.13 | 2.00 | -2.00 | 0.00 | 40.1221433 | -104.9635689 |
| 6396.26 | 15.06 | 43.30 | 6116.16 | 1306.64 | 1231.31 | 1795.39 | 2.00 | -2.00 | 0.00 | 40.1221538 | -104.9635560 |
| 6416.26 | 14.66 | 43.30 | 6135.49 | 1310.37 | 1234.83 | 1800.52 | 2.00 | -2.00 | 0.00 | 40.1221641 | -104.9635434 |
| 6436.26 | 14.26 | 43.30 | 6154.86 | 1314.01 | 1238.26 | 1805.52 | 2.00 | -2.00 | 0.00 | 40.1221740 | -104.9635312 |
| 6456.26 | 13.86 | 43.30 | 6174.26 | 1317.54 | 1241.59 | 1810.37 | 2.00 | -2.00 | 0.00 | 40.1221838 | -104.9635192 |

| Measured Depth (Ft) | INC Deg | AZM Deg | TVD (Ft) | NS (Ft) | EW (Ft) | VS (Ft) | DLS °/100Ft | Build Rate °/100Ft | Walk Rate °/100Ft | Latitude Dec. Deg | Longitude Dec. Deg |
|--|------------|------------|-------------|------------|------------|------------|----------------|--------------------------|-------------------------|-------------------------|--------------------------|
| 6476.26 | 13.46 | 43.30 | 6193.69 | 1320.98 | 1244.83 | 1815.10 | 2.00 | -2.00 | 0.00 | 40.1221932 | -104.9635077 |
| 6496.26 | 13.06 | 43.30 | 6213.16 | 1324.32 | 1247.97 | 1819.69 | 2.00 | -2.00 | 0.00 | 40.1222024 | -104.9634964 |
| 6516.26 | 12.66 | 43.30 | 6232.66 | 1327.56 | 1251.03 | 1824.14 | 2.00 | -2.00 | 0.00 | 40.1222112 | -104.9634855 |
| 6536.26 | 12.26 | 43.30 | 6252.19 | 1330.70 | 1253.99 | 1828.45 | 2.00 | -2.00 | 0.00 | 40.1222199 | -104.9634749 |
| 6556.26 | 11.86 | 43.30 | 6271.75 | 1333.74 | 1256.85 | 1832.63 | 2.00 | -2.00 | 0.00 | 40.1222282 | -104.9634647 |
| 6576.26 | 11.46 | 43.30 | 6291.33 | 1336.68 | 1259.62 | 1836.67 | 2.00 | -2.00 | 0.00 | 40.1222363 | -104.9634547 |
| 6596.26 | 11.06 | 43.30 | 6310.95 | 1339.52 | 1262.30 | 1840.58 | 2.00 | -2.00 | 0.00 | 40.1222441 | -104.9634452 |
| 6616.26 | 10.66 | 43.30 | 6330.59 | 1342.27 | 1264.89 | 1844.35 | 2.00 | -2.00 | 0.00 | 40.1222516 | -104.9634359 |
| 6636.26 | 10.26 | 43.30 | 6350.26 | 1344.91 | 1267.38 | 1847.98 | 2.00 | -2.00 | 0.00 | 40.1222589 | -104.9634270 |
| 6656.26 | 9.86 | 43.30 | 6369.95 | 1347.45 | 1269.77 | 1851.47 | 2.00 | -2.00 | 0.00 | 40.1222659 | -104.9634185 |
| 6676.26 | 9.46 | 43.30 | 6389.67 | 1349.89 | 1272.07 | 1854.83 | 2.00 | -2.00 | 0.00 | 40.1222726 | -104.9634102 |
| 6696.26 | 9.06 | 43.30 | 6409.41 | 1352.24 | 1274.28 | 1858.05 | 2.00 | -2.00 | 0.00 | 40.1222790 | -104.9634023 |
| 6716.26 | 8.66 | 43.30 | 6429.17 | 1354.48 | 1276.39 | 1861.13 | 2.00 | -2.00 | 0.00 | 40.1222851 | -104.9633948 |
| 6736.26 | 8.26 | 43.30 | 6448.95 | 1356.62 | 1278.41 | 1864.07 | 2.00 | -2.00 | 0.00 | 40.1222910 | -104.9633876 |
| 6756.26 | 7.86 | 43.30 | 6468.75 | 1358.66 | 1280.33 | 1866.87 | 2.00 | -2.00 | 0.00 | 40.1222966 | -104.9633807 |
| 6776.26 | 7.46 | 43.30 | 6488.57 | 1360.60 | 1282.16 | 1869.54 | 2.00 | -2.00 | 0.00 | 40.1223020 | -104.9633741 |
| 6796.26 | 7.06 | 43.30 | 6508.41 | 1362.44 | 1283.89 | 1872.07 | 2.00 | -2.00 | 0.00 | 40.1223070 | -104.9633679 |
| 6816.26 | 6.66 | 43.30 | 6528.27 | 1364.18 | 1285.53 | 1874.45 | 2.00 | -2.00 | 0.00 | 40.1223118 | -104.9633621 |
| 6836.26 | 6.26 | 43.30 | 6548.14 | 1365.82 | 1287.08 | 1876.70 | 2.00 | -2.00 | 0.00 | 40.1223163 | -104.9633566 |
| 6856.26 | 5.86 | 43.30 | 6568.03 | 1367.35 | 1288.52 | 1878.82 | 2.00 | -2.00 | 0.00 | 40.1223205 | -104.9633514 |
| 6876.26 | 5.46 | 43.29 | 6587.93 | 1368.79 | 1289.88 | 1880.79 | 2.00 | -2.00 | 0.00 | 40.1223244 | -104.9633466 |
| 6896.26 | 5.06 | 43.29 | 6607.85 | 1370.12 | 1291.13 | 1882.62 | 2.00 | -2.00 | 0.00 | 40.1223281 | -104.9633421 |
| 6916.26 | 4.66 | 43.29 | 6627.78 | 1371.36 | 1292.30 | 1884.32 | 2.00 | -2.00 | 0.00 | 40.1223315 | -104.9633379 |
| 6936.26 | 4.26 | 43.29 | 6647.72 | 1372.49 | 1293.36 | 1885.87 | 2.00 | -2.00 | 0.00 | 40.1223346 | -104.9633341 |
| 6956.26 | 3.86 | 43.29 | 6667.67 | 1373.52 | 1294.33 | 1887.29 | 2.00 | -2.00 | 0.00 | 40.1223374 | -104.9633306 |
| 6976.26 | 3.46 | 43.29 | 6687.63 | 1374.45 | 1295.21 | 1888.56 | 2.00 | -2.00 | -0.01 | 40.1223400 | -104.9633275 |
| 6996.26 | 3.06 | 43.29 | 6707.59 | 1375.28 | 1295.99 | 1889.70 | 2.00 | -2.00 | -0.01 | 40.1223422 | -104.9633247 |
| 7016.26 | 2.66 | 43.29 | 6727.57 | 1376.00 | 1296.67 | 1890.70 | 2.00 | -2.00 | -0.01 | 40.1223442 | -104.9633223 |
| 7036.26 | 2.26 | 43.28 | 6747.55 | 1376.63 | 1297.26 | 1891.56 | 2.00 | -2.00 | -0.01 | 40.1223459 | -104.9633201 |
| 7056.26 | 1.86 | 43.28 | 6767.54 | 1377.15 | 1297.75 | 1892.28 | 2.00 | -2.00 | -0.02 | 40.1223474 | -104.9633184 |
| 7076.26 | 1.46 | 43.27 | 6787.53 | 1377.57 | 1298.15 | 1892.86 | 2.00 | -2.00 | -0.03 | 40.1223485 | -104.9633170 |
| 7096.26 | 1.06 | 43.26 | 6807.52 | 1377.89 | 1298.45 | 1893.30 | 2.00 | -2.00 | -0.05 | 40.1223494 | -104.9633159 |
| 7116.26 | 0.66 | 43.24 | 6827.52 | 1378.11 | 1298.66 | 1893.60 | 2.00 | -2.00 | -0.12 | 40.1223500 | -104.9633152 |
| 7136.26 | 0.26 | 43.15 | 6847.52 | 1378.23 | 1298.77 | 1893.76 | 2.00 | -2.00 | -0.47 | 40.1223503 | -104.9633148 |
| Begin Hold @ 0.02°, 41.27° Azm | | | | | | | | | | | |
| 7148.26 | 0.02 | 41.27 | 6859.52 | 1378.25 | 1298.79 | 1893.79 | 2.00 | -2.00 | -15.61 | 40.1223504 | -104.9633147 |
|  Niobrara | | | | | | | | | | | |
| 7547.74 | 0.02 | 41.27 | 7259.00 | 1378.36 | 1298.88 | 1893.93 | 0.00 | 0.00 | 0.00 | 40.1223507 | -104.9633144 |
|  Fort Hays | | | | | | | | | | | |
| 7807.74 | 0.02 | 41.27 | 7519.00 | 1378.42 | 1298.94 | 1894.02 | 0.00 | 0.00 | 0.00 | 40.1223509 | -104.9633141 |

| Measured Depth (Ft) | INC Deg | AZM Deg | TVD (Ft) | NS (Ft) | EW (Ft) | VS (Ft) | DLS °/100Ft | Build Rate °/100Ft | Walk Rate °/100Ft | Latitude Dec. Deg | Longitude Dec. Deg |
|---|-------------|-----------------|------------------|--------------------|--------------------|------------------------|----------------|--------------------------|-------------------------|-------------------------|--------------------------|
|  Codell | | | | | | | | | | | |
| 7827.74 | 0.02 | 41.27 | 7539.00 | 1378.43 | 1298.95 | 1894.02 | 0.00 | 0.00 | 0.00 | 40.1223509 | -104.9633141 |
| PBHL @ 1985' FSL & 661' FEL | | | | | | | | | | | |
| 7987.74 | 0.02 | 41.27 | 7699.00 | 1378.47 | 1298.98 | 1894.08 | 0.00 | 0.00 | 0.00 | 40.1223510 | -104.9633140 |
| TARGET DATA | | | | | | | | | | | |
| Name | Shape | Easting (Ft) | Northing (Ft) | Subsea (Ft) | TVD (Ft) | NS (Ft) | EW (Ft) | Side A (Ft) | Side B (Ft) | Dia. (Ft) | |
| Grant Brothers 23-43 Target | CIRCLE | 3150081.1 | 1287870.6 | 2765.0 | 7698.0 | 1378.5 | 1299.0 | 100.0 | 100.0 | 100.0 | |
| LITHOLOGY DATA | | | | | | | | | | | |
| Name | Description | Pattern | TVD Top (Ft) | TVD Bottom (Ft) | Dip Angle (deg) | Dip Direction (deg) | | | | | |
| Parkman | Parkman | SANDSTON | 3909 | 4419 | 0.0 | 0.0 | | | | | |
| Sussex | Sussex | SANDSTON | 4419 | 4864 | 0.0 | 0.0 | | | | | |
| Shannon | Shannon | SANDSTON | 4864 | 7259 | 0.0 | 0.0 | | | | | |
| Niobrara | Niobrara | CHALK | 7259 | 7519 | 0.0 | 0.0 | | | | | |
| Fort Hays | Fort Hays | LIMESTON | 7519 | 7539 | 0.0 | 0.0 | | | | | |
| Codell | Codell | SANDSTON | 7539 | 7699 | 0.0 | 0.0 | | | | | |