

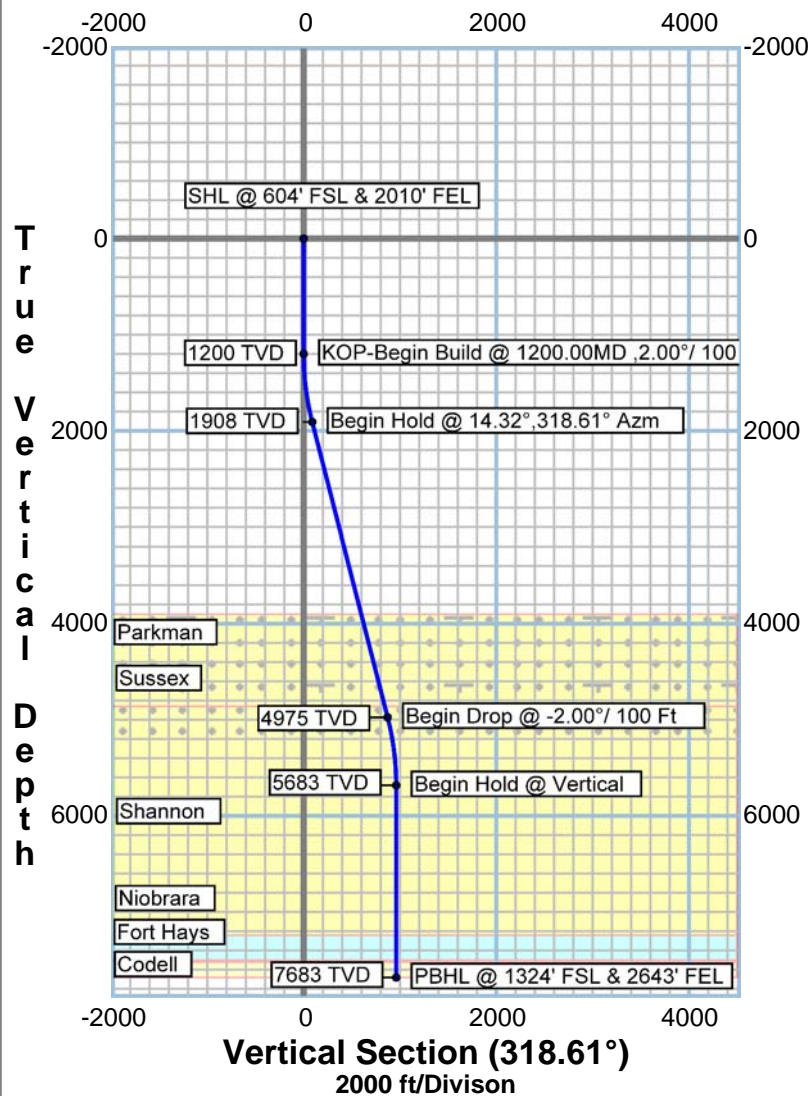


Job ID : Grant Brothers Pad
Company : Sundance Energy, Inc
Lease/Well : Grant Brothers 23-4 Ae
Location : Sec 23 T2N R68W
API JOB # : 05-123-xxxx
Rig Name : Cade 25
State/Province : CO
County/Parish : Weld
Country : USA

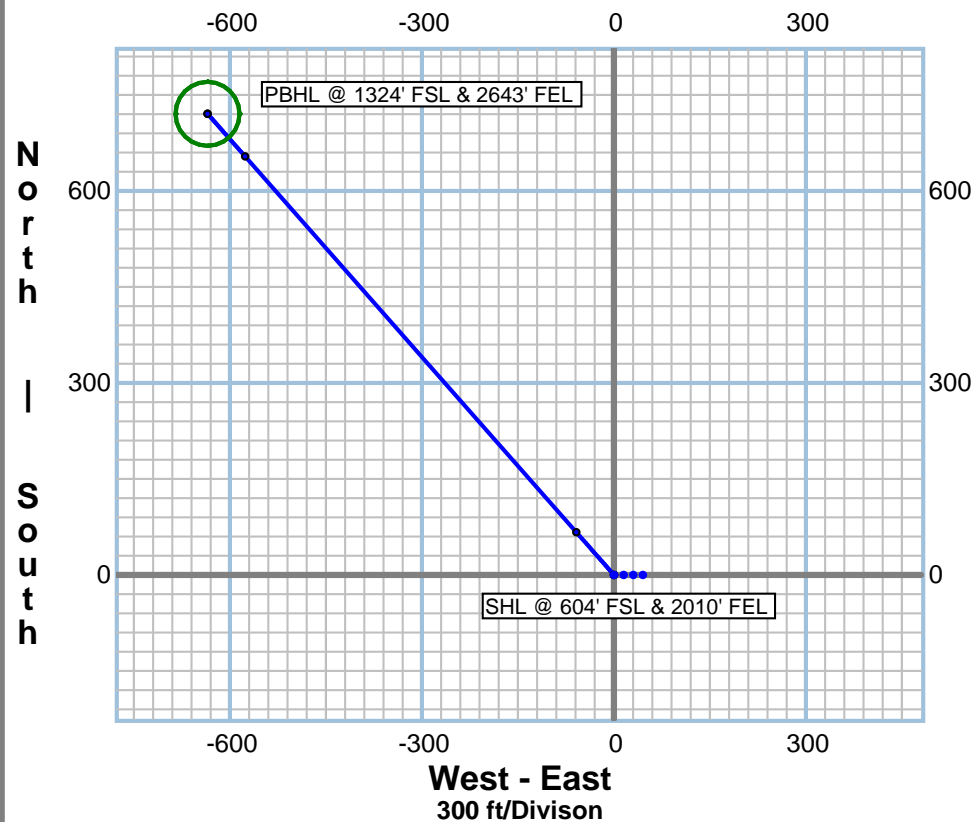
Latitude : 40°7'6.8412" N
Longitude : -104°58'5.2320" W
Northing : 1286484.07
Easting : 3148745.42
System Zone : US State Plane 1983
Projection Type : LAMBERT
Elevation (To MSL) : 4919 ft
RKB : 14 ft
Comment : Plan 3



Vertical Section Plot



Horizontal Plot



CRITICAL POINTS - GRANT BROTHERS 23-4 AE 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
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
1915.88	14.32	318.61	1908.45	-58.83	66.76	88.98	88.98	318.61	0.00	2.01	2.01
5080.26	14.32	318.61	4974.51	-576.32	653.94	871.65	871.65	318.61	0.00	0.00	0.00
5796.50	0.00	156.39	5683.32	-635.18	720.71	960.66	960.66	318.61	-997.44	-1.94	2.00
7796.17	0.00	156.39	7682.99	-635.11	720.55	960.50	960.50	318.61	0.00	0.00	0.00

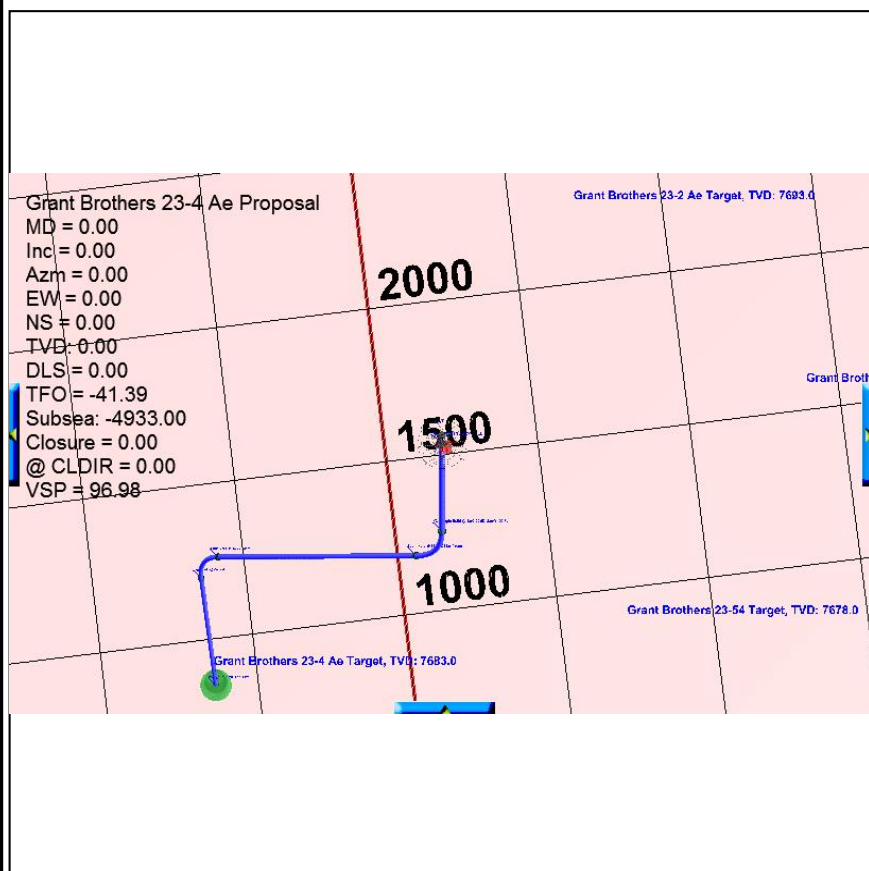


Job ID : Grant Brothers Pad
Company : Sundance Energy, Inc
Lease/Well : Grant Brothers 23-4 Ae
Location : Sec 23 T2N R68W
API JOB # : 05-123-xxxxx
Rig Name : Cade 25
State/Province : CO
County/Parish : Weld
Country : USA

Latitude : 40°7'6.8412" N
Longitude : -104°58'5.2320" W
Northing : 1286484.07
Easting : 3148745.42
System Zone : US State Plane 1983
Projection Type : LAMBERT
Elevation (To MSL) : 4919 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	686.00	Parkman	-1030.00	-530.00	Parkman	0.00	0.00
CIRCLE	Grant Brothers 23-4 Ae Target	3148106.00	1287200.80	2750.00	-635.11	Sussex	-530.00	-72.00	Sussex	0.00	0.00
CIRCLE	Grant Brothers 23-2 Ae Target	3149412.97	1288529.54	2760.00	679.81	Shannon	-72.00	2310.00	Shannon	0.00	0.00
CIRCLE	Grant Brothers 23-43 Target	3150081.13	1287870.58	2765.00	1344.00	Niobrara	2310.00	2570.00	Niobrara	0.00	0.00
						Fort Hays	2570.00	2590.00	Fort Hays	0.00	0.00
						Codell	2590.00	2750.00	Codell	0.00	0.00



MAGNETICS INFORMATION :

Magnetic Model: C:\HawkEye\IGRF2005.MIF

Date for Magnetics: 05/31/2013

Latitude: 40°07'6.8412" N

Longitude: -104°58'5.2320" W

Magnetic Declination: 8.63

Total Correction(Mag to Grid): 8.28

Field Strength (nt): 52832

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:

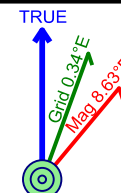
8.28°E --> GN = MN + 8.28 : Magnetic to Grid



Job Number: Grant Brothers Pad
Company: Sundance Energy, Inc
Lease/Well: Grant Brothers 23-4 Ae
Location: Sec 23 T2N R68W
Rig Name: Cade 25
State/County: CO/ Weld
Country: USA
API Number: 05-123-xxxx

Elevation : 4919.00 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: 0.34366 E
Date: Friday, August 02, 2013

Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 318.61°
Northing (US ft): 1286484.07 Easting (US ft): 3148745.42
Latitude: 40°07'6.8412" N Longitude: -104°58'5.2320" W
Well Location: 622.58 FSL, 2011.44 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 & 2010' FEL											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9681200
KOP-Begin Build @ 1200.00MD ,2.00°/ 100 Ft											
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9681200
Begin Hold @ 14.32°,318.61° Azm											
1915.88	14.32	318.61	1908.45	66.76	-58.83	88.98	2.01	2.01	0.00	40.1187503	-104.9683304
Parkman											
3974.39	14.32	318.61	3903.00	448.73	-395.47	598.13	0.00	0.00	0.00	40.1197988	-104.9695341
Sussex											
4490.42	14.32	318.61	4403.00	544.49	-479.86	725.76	0.00	0.00	0.00	40.1200617	-104.9698359
Shannon											
4963.11	14.32	318.61	4861.00	632.20	-557.16	842.68	0.00	0.00	0.00	40.1203025	-104.9701123
Begin Drop @ -2.00°/ 100 Ft											
5080.26	14.32	318.61	4974.51	653.94	-576.32	871.65	0.00	0.00	0.00	40.1203621	-104.9701808
Begin Hold @ Vertical											
5796.50	0.00	156.39	5683.32	720.71	-635.18	960.66	2.00	-1.94	-997.44	40.1205454	-104.9703913
Niobrara											
7356.18	0.00	156.39	7243.00	720.58	-635.12	960.53	0.00	0.00	0.00	40.1205451	-104.9703911
Fort Hays											
7616.18	0.00	156.39	7503.00	720.56	-635.11	960.51	0.00	0.00	0.00	40.1205450	-104.9703910
Codell											
7636.18	0.00	156.39	7523.00	720.56	-635.11	960.51	0.00	0.00	0.00	40.1205450	-104.9703910
PBHL @ 1324' FSL & 2643' FEL Grant Brothers 23-4 Ae Target											
7796.17	0.00	156.39	7682.99	720.55	-635.11	960.50	0.00	0.00	0.00	40.1205450	-104.9703910

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 23-4 Ae Target	CIRCLE	3148106.0	1287200.8	2750.0	7683.0	720.6	-635.1	100.0	200.0	100.0

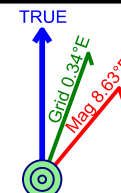
LITHOLOGY DATA						
Name	Description	Pattern	TVD Top (Ft)	TVD Bottom (Ft)	Dip Angle (deg)	Dip Direction (deg)
Parkman	Parkman	SANDSTON	3903	4403	0.0	0.0
Sussex	Sussex	SANDSTON	4403	4861	0.0	0.0
Shannon	Shannon	SANDSTON	4861	7243	0.0	0.0
Niobrara	Niobrara	CHALK	7243	7503	0.0	0.0
Fort Hays	Fort Hays	LIMESTON	7503	7523	0.0	0.0
Codell	Codell	SANDSTON	7523	7683	0.0	0.0






Job Number: Grant Brothers Pad
Company: Sundance Energy, Inc
Lease/Well: Grant Brothers 23-4 Ae
Location: Sec 23 T2N R68W
Rig Name: Cade 25
State/County: CO/ Weld
Country: USA
API Number: 05-123-xxxx




Elevation : 4919.00 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: 0.34366 E
Date: Friday, August 02, 2013

Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 318.61°
Northing (US ft): 1286484.07 Easting (US ft): 3148745.42
Latitude: 40°07'6.8412" N Longitude: -104°58'5.2320" W
Well Location: 622.58 FSL, 2011.44 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 & 2010' FEL											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9681200
KOP-Begin Build @ 1200.00MD ,2.00°/ 100 Ft											
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9681200
1220.00	0.40	318.62	1220.00	0.05	-0.05	0.07	2.00	2.00	-206.90	40.1185671	-104.9681202
1240.00	0.80	318.61	1240.00	0.21	-0.18	0.28	2.00	2.00	-0.02	40.1185676	-104.9681206
1260.00	1.20	318.61	1260.00	0.47	-0.42	0.63	2.00	2.00	-0.01	40.1185683	-104.9681215
1280.00	1.60	318.61	1279.99	0.84	-0.74	1.12	2.00	2.00	0.00	40.1185693	-104.9681226
1300.00	2.00	318.61	1299.98	1.31	-1.15	1.75	2.00	2.00	0.00	40.1185706	-104.9681241
1320.00	2.40	318.61	1319.96	1.89	-1.66	2.51	2.00	2.00	0.00	40.1185722	-104.9681259
1340.00	2.80	318.61	1339.94	2.57	-2.26	3.42	2.00	2.00	0.00	40.1185740	-104.9681281
1360.00	3.20	318.61	1359.92	3.35	-2.95	4.47	2.00	2.00	0.00	40.1185762	-104.9681305
1380.00	3.60	318.61	1379.88	4.24	-3.74	5.65	2.00	2.00	0.00	40.1185786	-104.9681334
1400.00	4.00	318.61	1399.84	5.24	-4.61	6.98	2.00	2.00	0.00	40.1185814	-104.9681365
1420.00	4.40	318.61	1419.78	6.34	-5.58	8.44	2.00	2.00	0.00	40.1185844	-104.9681399
1440.00	4.80	318.61	1439.72	7.54	-6.64	10.05	2.00	2.00	0.00	40.1185877	-104.9681437
1460.00	5.20	318.61	1459.64	8.85	-7.80	11.79	2.00	2.00	0.00	40.1185913	-104.9681479
1480.00	5.60	318.61	1479.55	10.26	-9.04	13.67	2.00	2.00	0.00	40.1185952	-104.9681523
1500.00	6.00	318.61	1499.45	11.78	-10.38	15.69	2.00	2.00	0.00	40.1185993	-104.9681571
1520.00	6.40	318.61	1519.33	13.40	-11.80	17.85	2.00	2.00	0.00	40.1186038	-104.9681622
1540.00	6.80	318.61	1539.20	15.12	-13.32	20.15	2.00	2.00	0.00	40.1186085	-104.9681676
1560.00	7.20	318.61	1559.05	16.95	-14.94	22.59	2.00	2.00	0.00	40.1186135	-104.9681734
1580.00	7.60	318.61	1578.89	18.88	-16.64	25.17	2.00	2.00	0.00	40.1186188	-104.9681795
1600.00	8.00	318.61	1598.70	20.92	-18.43	27.88	2.00	2.00	0.00	40.1186244	-104.9681859
1620.00	8.40	318.61	1618.50	23.06	-20.32	30.73	2.00	2.00	0.00	40.1186303	-104.9681926
1640.00	8.80	318.61	1638.27	25.30	-22.30	33.72	2.00	2.00	0.00	40.1186364	-104.9681997
1660.00	9.20	318.61	1658.03	27.65	-24.37	36.85	2.00	2.00	0.00	40.1186429	-104.9682071
1680.00	9.60	318.61	1677.76	30.10	-26.53	40.12	2.00	2.00	0.00	40.1186496	-104.9682148

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
1700.00	10.00	318.61	1697.47	32.65	-28.78	43.52	2.00	2.00	0.00	40.1186566	-104.9682229
1720.00	10.40	318.61	1717.15	35.31	-31.12	47.07	2.00	2.00	0.00	40.1186639	-104.9682313
1740.00	10.80	318.61	1736.81	38.07	-33.55	50.74	2.00	2.00	0.00	40.1186715	-104.9682400
1760.00	11.20	318.61	1756.44	40.93	-36.07	54.56	2.00	2.00	0.00	40.1186794	-104.9682490
1780.00	11.60	318.61	1776.05	43.90	-38.69	58.51	2.00	2.00	0.00	40.1186875	-104.9682583
1800.00	12.00	318.61	1795.62	46.97	-41.39	62.60	2.00	2.00	0.00	40.1186959	-104.9682680
1820.00	12.40	318.61	1815.17	50.14	-44.19	66.83	2.00	2.00	0.00	40.1187046	-104.9682780
1840.00	12.80	318.61	1834.69	53.41	-47.07	71.19	2.00	2.00	0.00	40.1187136	-104.9682883
1860.00	13.20	318.61	1854.18	56.79	-50.05	75.69	2.00	2.00	0.00	40.1187229	-104.9682989
1880.00	13.60	318.61	1873.63	60.26	-53.11	80.33	2.00	2.00	0.00	40.1187324	-104.9683099
1900.00	14.00	318.61	1893.06	63.84	-56.26	85.10	2.00	2.00	0.00	40.1187423	-104.9683212
Begin Hold @ 14.32°,318.61° Azm											
1915.88	14.32	318.61	1908.45	66.76	-58.83	88.98	2.01	2.01	0.00	40.1187503	-104.9683304
 Parkman											
3974.39	14.32	318.61	3903.00	448.73	-395.47	598.13	0.00	0.00	0.00	40.1197988	-104.9695341
 Sussex											
4490.42	14.32	318.61	4403.00	544.49	-479.86	725.76	0.00	0.00	0.00	40.1200617	-104.9698359
 Shannon											
4963.11	14.32	318.61	4861.00	632.20	-557.16	842.68	0.00	0.00	0.00	40.1203025	-104.9701123
Begin Drop @ -2.00°/ 100 Ft											
5080.26	14.32	318.61	4974.51	653.94	-576.32	871.65	0.00	0.00	0.00	40.1203621	-104.9701808
5100.26	13.92	318.61	4993.91	657.60	-579.54	876.53	2.00	-2.00	0.00	40.1203722	-104.9701923
5120.26	13.52	318.61	5013.34	661.16	-582.68	881.27	2.00	-2.00	0.00	40.1203819	-104.9702035
5140.26	13.12	318.61	5032.80	664.61	-585.73	885.88	2.00	-2.00	0.00	40.1203914	-104.9702144
5160.26	12.72	318.61	5052.29	667.97	-588.68	890.35	2.00	-2.00	0.00	40.1204006	-104.9702250
5180.26	12.32	318.61	5071.82	671.22	-591.55	894.69	2.00	-2.00	0.00	40.1204096	-104.9702352
5200.26	11.92	318.61	5091.37	674.37	-594.33	898.89	2.00	-2.00	0.00	40.1204182	-104.9702452
5220.26	11.52	318.61	5110.96	677.42	-597.01	902.95	2.00	-2.00	0.00	40.1204266	-104.9702548
5240.26	11.12	318.61	5130.57	680.36	-599.61	906.88	2.00	-2.00	0.00	40.1204347	-104.9702641
5260.26	10.72	318.61	5150.20	683.21	-602.11	910.67	2.00	-2.00	0.00	40.1204425	-104.9702730
5280.26	10.32	318.61	5169.87	685.95	-604.53	914.32	2.00	-2.00	0.00	40.1204500	-104.9702817
5300.26	9.92	318.61	5189.56	688.58	-606.85	917.83	2.00	-2.00	0.00	40.1204572	-104.9702900
5320.26	9.52	318.61	5209.27	691.12	-609.09	921.21	2.00	-2.00	0.00	40.1204642	-104.9702979
5340.26	9.12	318.61	5229.01	693.54	-611.23	924.45	2.00	-2.00	0.00	40.1204709	-104.9703056
5360.26	8.72	318.61	5248.76	695.87	-613.28	927.55	2.00	-2.00	0.00	40.1204772	-104.9703129
5380.26	8.32	318.61	5268.54	698.09	-615.24	930.51	2.00	-2.00	0.00	40.1204833	-104.9703199
5400.26	7.92	318.61	5288.34	700.21	-617.10	933.34	2.00	-2.00	0.00	40.1204892	-104.9703266
5420.26	7.52	318.60	5308.16	702.23	-618.88	936.02	2.00	-2.00	0.00	40.1204947	-104.9703330
5440.26	7.12	318.60	5328.00	704.14	-620.57	938.57	2.00	-2.00	0.00	40.1204999	-104.9703390
5460.26	6.72	318.60	5347.85	705.95	-622.16	940.98	2.00	-2.00	0.00	40.1205049	-104.9703447
5480.26	6.32	318.60	5367.72	707.65	-623.66	943.25	2.00	-2.00	0.00	40.1205096	-104.9703501
5500.26	5.92	318.60	5387.61	709.25	-625.07	945.38	2.00	-2.00	0.00	40.1205140	-104.9703551

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
5520.26	5.52	318.60	5407.51	710.75	-626.39	947.38	2.00	-2.00	-0.01	40.1205181	-104.9703598
5540.26	5.12	318.60	5427.42	712.14	-627.62	949.23	2.00	-2.00	-0.01	40.1205219	-104.9703642
5560.26	4.72	318.60	5447.35	713.42	-628.75	950.95	2.00	-2.00	-0.01	40.1205254	-104.9703683
5580.26	4.32	318.60	5467.29	714.61	-629.79	952.52	2.00	-2.00	-0.01	40.1205287	-104.9703720
5600.26	3.92	318.59	5487.24	715.68	-630.74	953.96	2.00	-2.00	-0.01	40.1205316	-104.9703754
5620.26	3.52	318.59	5507.19	716.66	-631.60	955.26	2.00	-2.00	-0.01	40.1205343	-104.9703785
5640.26	3.12	318.59	5527.16	717.53	-632.37	956.42	2.00	-2.00	-0.02	40.1205367	-104.9703812
5660.26	2.72	318.58	5547.13	718.29	-633.04	957.43	2.00	-2.00	-0.02	40.1205388	-104.9703836
5680.26	2.32	318.58	5567.11	718.95	-633.62	958.31	2.00	-2.00	-0.03	40.1205406	-104.9703857
5700.26	1.92	318.57	5587.10	719.50	-634.11	959.05	2.00	-2.00	-0.04	40.1205421	-104.9703874
5720.26	1.52	318.56	5607.09	719.95	-634.51	959.65	2.00	-2.00	-0.06	40.1205433	-104.9703889
5740.26	1.12	318.54	5627.09	720.30	-634.82	960.12	2.00	-2.00	-0.10	40.1205443	-104.9703900
5760.26	0.72	318.49	5647.08	720.54	-635.03	960.44	2.00	-2.00	-0.22	40.1205450	-104.9703907
5780.26	0.32	318.34	5667.08	720.68	-635.15	960.62	2.00	-2.00	-0.76	40.1205453	-104.9703911
Begin Hold @ Vertical											
5796.50	0.00	156.39	5683.32	720.71	-635.18	960.66	2.00	-1.94	-997.44	40.1205454	-104.9703913
 Niobrara											
7356.18	0.00	156.39	7243.00	720.58	-635.12	960.53	0.00	0.00	0.00	40.1205451	-104.9703911
 Fort Hays											
7616.18	0.00	156.39	7503.00	720.56	-635.11	960.51	0.00	0.00	0.00	40.1205450	-104.9703910
 Codell											
7636.18	0.00	156.39	7523.00	720.56	-635.11	960.51	0.00	0.00	0.00	40.1205450	-104.9703910
PBHL @ 1324' FSL & 2643' FEL Grant Brothers 23-4 Ae Target											
7796.17	0.00	156.39	7682.99	720.55	-635.11	960.50	0.00	0.00	0.00	40.1205450	-104.9703910
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 23-4 Ae Target	CIRCLE	3148106.0	1287200.8	2750.0	7683.0	720.6	-635.1	100.0	200.0	100.0	
LITHOLOGY DATA											
Name	Description	Pattern	TVD Top (Ft)	TVD Bottom (Ft)	Dip Angle (deg)	Dip Direction (deg)					
Parkman	Parkman	SANDSTON	3903	4403	0.0	0.0					
Sussex	Sussex	SANDSTON	4403	4861	0.0	0.0					
Shannon	Shannon	SANDSTON	4861	7243	0.0	0.0					
Niobrara	Niobrara	CHALK	7243	7503	0.0	0.0					
Fort Hays	Fort Hays	LIMESTON	7503	7523	0.0	0.0					
Codell	Codell	SANDSTON	7523	7683	0.0	0.0					