

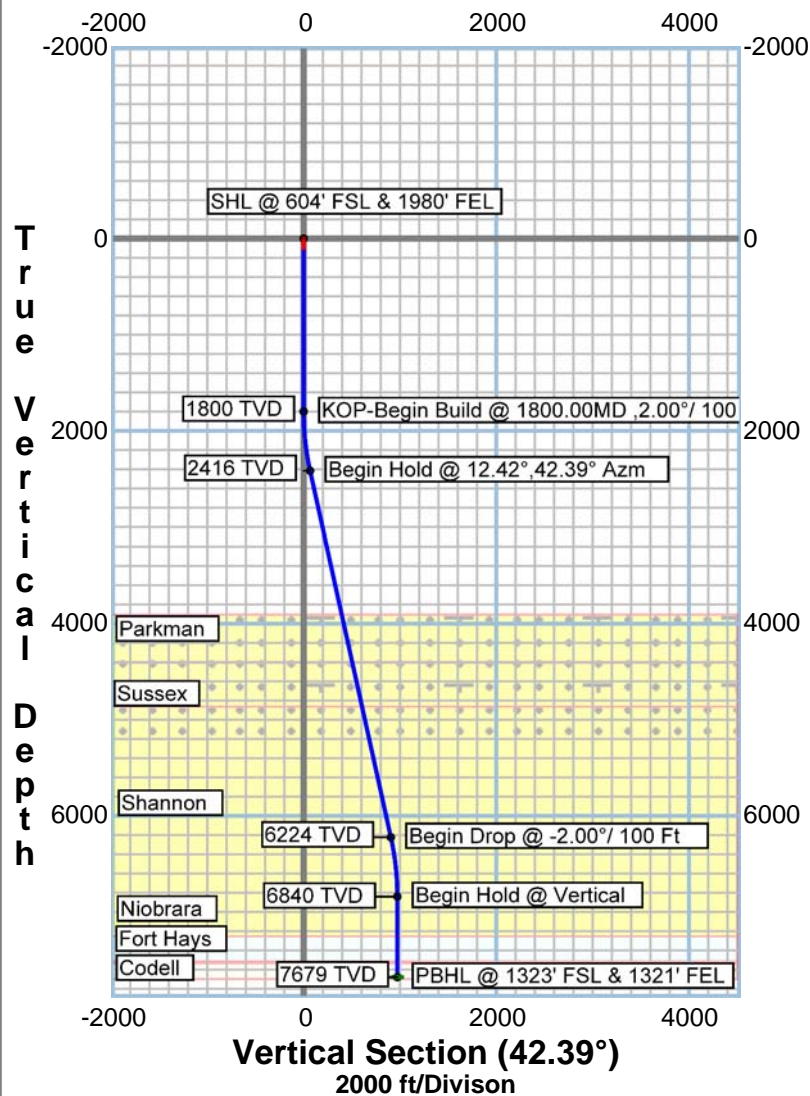


Job ID : Grant Brothers Pad
Company : Sundance Energy, Inc
Lease/Well : Grant Brothers 23-54
Location : Sec 23 T2N R68W
API JOB # : 05-123-xxxxx
Rig Name : Cade 25
State/Province : CO
County/Parish : Weld
Country : USA

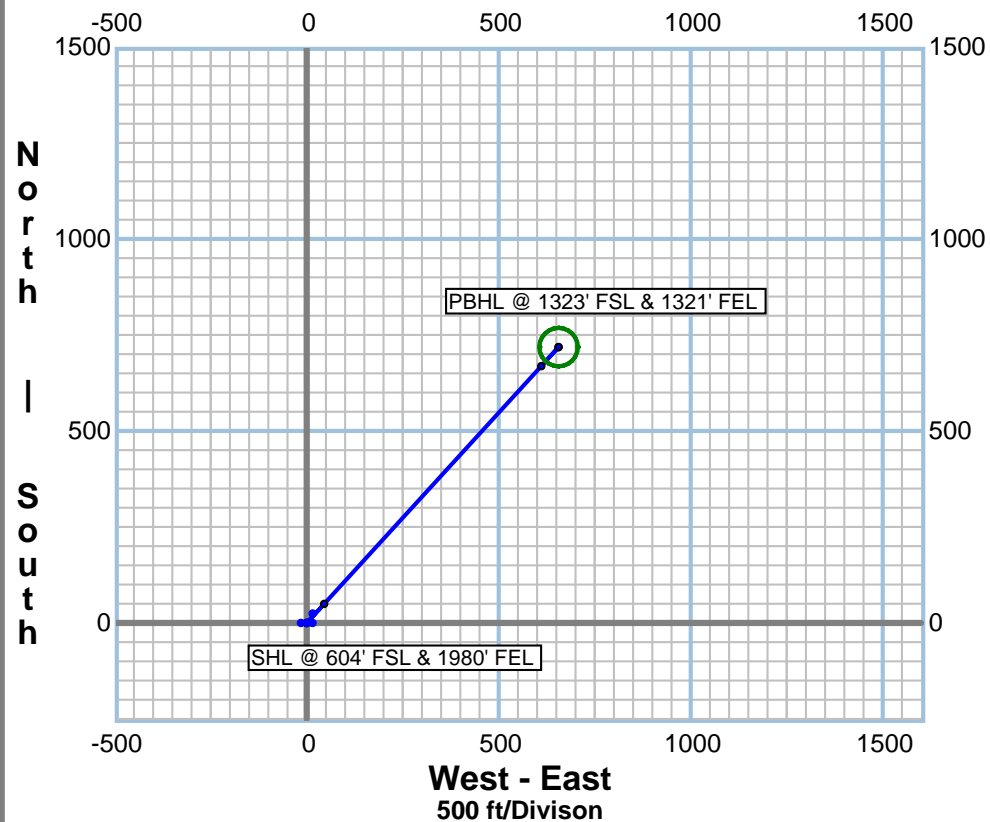
Latitude : 40°7'6.8412" N
Longitude : -104°58'4.8432" W
Northing : 1286484.25
Easting : 3148775.62
System Zone : US State Plane 1983
Projection Type : LAMBERT
Elevation (To MSL) : 4920 ft
RKB : 14 ft
Comment : Plan 3



Vertical Section Plot



Horizontal Plot



CRITICAL POINTS - GRANT BROTHERS 23-54 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
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
2420.81	12.42	42.39	2415.96	45.17	49.49	67.01	67.01	42.39	0.00	2.46	2.46
6320.08	12.42	42.39	6223.98	610.56	668.89	905.65	905.65	42.39	0.00	0.00	0.00
6941.08	0.00	132.03	6840.13	655.77	718.39	972.69	972.69	42.39	8165.43	-1.74	2.00
7779.95	0.00	132.03	7679.00	655.80	718.36	972.69	972.69	42.39	0.00	0.00	0.00

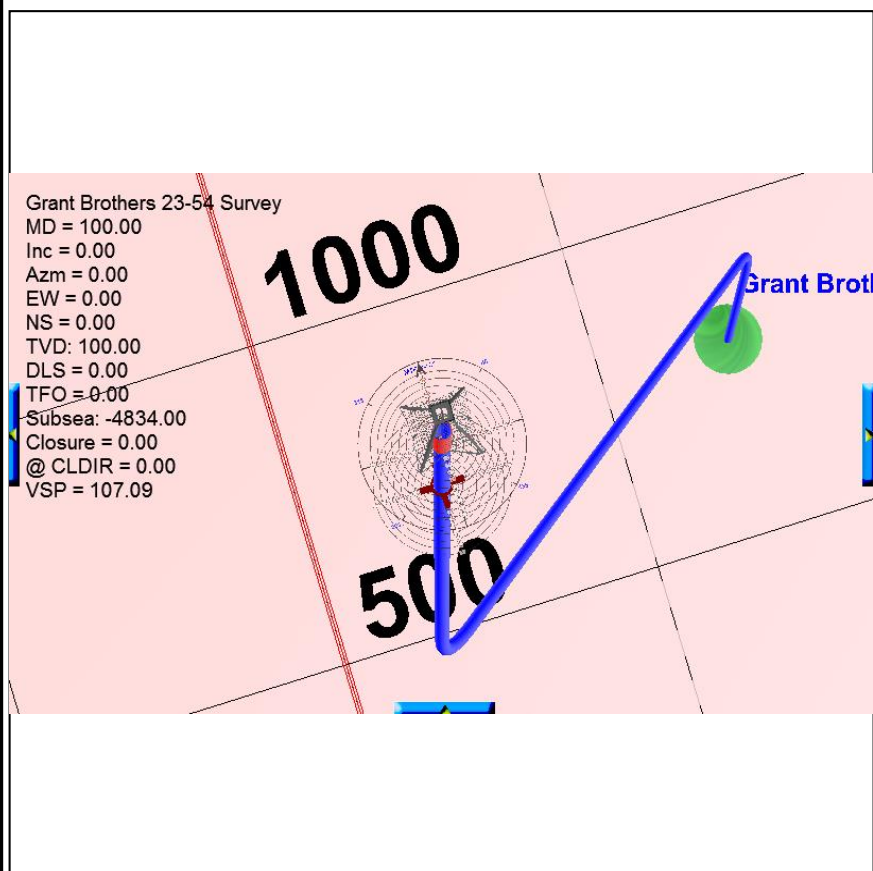


Job ID : Grant Brothers Pad
Company : Sundance Energy, Inc
Lease/Well : Grant Brothers 23-54
Location : Sec 23 T2N R68W
API JOB # : 05-123-xxxxx
Rig Name : Cade 25
State/Province : CO
County/Parish : Weld
Country : USA

Latitude : 40°7'6.8412" N
Longitude : -104°58'4.8432" W
Northing : 1286484.25
Easting : 3148775.62
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	655.80	Parkman	-1033.00	-533.00	Parkman	0.00	0.00
CIRCLE	Grant Brothers 23-4 Ae Target	3148106.00	1287200.80	2750.00	-665.31	Sussex	-533.00	-75.00	Sussex	0.00	0.00
CIRCLE	Grant Brothers 23-2 Ae Target	3149412.97	1288529.54	2760.00	649.61	Shannon	-75.00	2305.00	Shannon	0.00	0.00
CIRCLE	Grant Brothers 23-43 Target	3150081.13	1287870.58	2765.00	1313.80	Niobrara	2305.00	2565.00	Niobrara	0.00	0.00
						Fort Hays	2565.00	2585.00	Fort Hays	0.00	0.00
						Codell	2585.00	2765.00	Codell	0.00	0.00



MAGNETICS INFORMATION :

Magnetic Model: C:\HawkEye\IGRF2005.MIF

Date for Magnetics: 05/30/2013

Latitude: 40°07'6.8412" N

Longitude: -104°58'4.8432" 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:

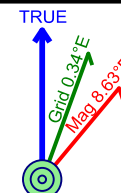
8.28°E --> GN = MN + 8.28 : Magnetic to Grid



Job Number: Grant Brothers Pad
Company: Sundance Energy, Inc
Lease/Well: Grant Brothers 23-54
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: 0.34373 E
Date: Friday, August 02, 2013

Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 42.39°
Northing (US ft): 1286484.25 Easting (US ft): 3148775.62
Latitude: 40°07'6.8412" N Longitude: -104°58'4.8432" W
Well Location: 622.62 FSL, 1981.24 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 & 1980' FEL											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9680120
KOP-Begin Build @ 1800.00MD ,2.00°/ 100 Ft											
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9680120
Begin Hold @ 12.42°,42.39° Azm											
2420.81	12.42	42.39	2415.96	49.49	45.17	67.01	2.46	2.46	0.00	40.1187028	-104.9678505
Parkman											
3941.44	12.42	42.39	3901.00	291.04	265.66	394.06	0.00	0.00	0.00	40.1193659	-104.9670621
Sussex											
4453.42	12.42	42.39	4401.00	372.37	339.90	504.17	0.00	0.00	0.00	40.1195892	-104.9667966
Shannon											
4922.39	12.42	42.39	4859.00	446.86	407.90	605.04	0.00	0.00	0.00	40.1197937	-104.9665535
Begin Drop @ -2.00°/ 100 Ft											
6320.08	12.42	42.39	6223.98	668.89	610.56	905.65	0.00	0.00	0.00	40.1204032	-104.9658288
Begin Hold @ Vertical											
6941.08	0.00	132.03	6840.13	718.39	655.77	972.69	2.00	-1.74	8165.43	40.1205391	-104.9656671
Niobrara											
7339.95	0.00	132.03	7239.00	718.38	655.79	972.69	0.00	0.00	0.00	40.1205390	-104.9656670
Fort Hays											
7599.95	0.00	132.03	7499.00	718.37	655.80	972.69	0.00	0.00	0.00	40.1205390	-104.9656670
Codell											
7619.95	0.00	132.03	7519.00	718.37	655.80	972.69	0.00	0.00	0.00	40.1205390	-104.9656670
PBHL @ 1323' FSL & 1321' FEL Grant Brothers 23-54 Target											
7779.95	0.00	132.03	7679.00	718.36	655.80	972.69	0.00	0.00	0.00	40.1205390	-104.9656670

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 23-54 Target	CIRCLE	3149427.1	1287206.5	2745.0	7679.0	718.4	655.8	100.0	200.0	100.0

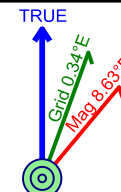
LITHOLOGY DATA						
Name	Description	Pattern	TVD Top (Ft)	TVD Bottom (Ft)	Dip Angle (deg)	Dip Direction (deg)
Parkman	Parkman	SANDSTON	3901	4401	0.0	0.0
Sussex	Sussex	SANDSTON	4401	4859	0.0	0.0
Shannon	Shannon	SANDSTON	4859	7239	0.0	0.0
Niobrara	Niobrara	CHALK	7239	7499	0.0	0.0
Fort Hays	Fort Hays	LIMESTON	7499	7519	0.0	0.0
Codell	Codell	SANDSTON	7519	7699	0.0	0.0






Job Number: Grant Brothers Pad
Company: Sundance Energy, Inc
Lease/Well: Grant Brothers 23-54
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: 0.34373 E
Date: Friday, August 02, 2013

Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 42.39°
Northing (US ft): 1286484.25 Easting (US ft): 3148775.62
Latitude: 40°07'6.8412" N Longitude: -104°58'4.8432" W
Well Location: 622.62 FSL, 1981.24 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 & 1980' FEL											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9680120
KOP-Begin Build @ 1800.00MD ,2.00°/ 100 Ft											
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.00	0.00	40.1185670	-104.9680120
1820.00	0.40	42.38	1820.00	0.05	0.05	0.07	2.00	2.00	211.90	40.1185671	-104.9680118
1840.00	0.80	42.39	1840.00	0.21	0.19	0.28	2.00	2.00	0.02	40.1185676	-104.9680113
1860.00	1.20	42.39	1860.00	0.47	0.42	0.63	2.00	2.00	0.01	40.1185683	-104.9680105
1880.00	1.60	42.39	1879.99	0.83	0.75	1.12	2.00	2.00	0.00	40.1185693	-104.9680093
1900.00	2.00	42.39	1899.98	1.29	1.18	1.75	2.00	2.00	0.00	40.1185705	-104.9680078
1920.00	2.40	42.39	1919.96	1.86	1.69	2.51	2.00	2.00	0.00	40.1185721	-104.9680059
1940.00	2.80	42.39	1939.94	2.53	2.31	3.42	2.00	2.00	0.00	40.1185739	-104.9680038
1960.00	3.20	42.39	1959.92	3.30	3.01	4.47	2.00	2.00	0.00	40.1185760	-104.9680012
1980.00	3.60	42.39	1979.88	4.18	3.81	5.65	2.00	2.00	0.00	40.1185785	-104.9679984
2000.00	4.00	42.39	1999.84	5.16	4.70	6.98	2.00	2.00	0.00	40.1185811	-104.9679952
2020.00	4.40	42.39	2019.78	6.24	5.69	8.44	2.00	2.00	0.00	40.1185841	-104.9679916
2040.00	4.80	42.39	2039.72	7.42	6.77	10.05	2.00	2.00	0.00	40.1185874	-104.9679878
2060.00	5.20	42.39	2059.64	8.71	7.95	11.79	2.00	2.00	0.00	40.1185909	-104.9679836
2080.00	5.60	42.39	2079.55	10.10	9.22	13.67	2.00	2.00	0.00	40.1185947	-104.9679790
2100.00	6.00	42.39	2099.45	11.59	10.58	15.70	2.00	2.00	0.00	40.1185988	-104.9679742
2120.00	6.40	42.39	2119.33	13.19	12.04	17.86	2.00	2.00	0.00	40.1186032	-104.9679690
2140.00	6.80	42.39	2139.20	14.89	13.59	20.15	2.00	2.00	0.00	40.1186079	-104.9679634
2160.00	7.20	42.39	2159.05	16.69	15.23	22.59	2.00	2.00	0.00	40.1186128	-104.9679575
2180.00	7.60	42.39	2178.89	18.59	16.97	25.17	2.00	2.00	0.00	40.1186180	-104.9679513
2200.00	8.00	42.39	2198.70	20.59	18.80	27.88	2.00	2.00	0.00	40.1186235	-104.9679448
2220.00	8.40	42.39	2218.50	22.70	20.72	30.73	2.00	2.00	0.00	40.1186293	-104.9679379
2240.00	8.80	42.39	2238.27	24.91	22.74	33.73	2.00	2.00	0.00	40.1186354	-104.9679307
2260.00	9.20	42.39	2258.03	27.22	24.84	36.85	2.00	2.00	0.00	40.1186417	-104.9679232
2280.00	9.60	42.39	2277.76	29.63	27.05	40.12	2.00	2.00	0.00	40.1186483	-104.9679153

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
2300.00	10.00	42.39	2297.47	32.15	29.34	43.52	2.00	2.00	0.00	40.1186552	-104.9679071
2320.00	10.40	42.39	2317.15	34.76	31.73	47.07	2.00	2.00	0.00	40.1186624	-104.9678985
2340.00	10.80	42.39	2336.81	37.48	34.21	50.75	2.00	2.00	0.00	40.1186699	-104.9678897
2360.00	11.20	42.39	2356.44	40.30	36.78	54.56	2.00	2.00	0.00	40.1186776	-104.9678805
2380.00	11.60	42.39	2376.05	43.22	39.45	58.51	2.00	2.00	0.00	40.1186856	-104.9678709
2400.00	12.00	42.39	2395.62	46.24	42.21	62.60	2.00	2.00	0.00	40.1186939	-104.9678611
2420.00	12.40	42.39	2415.17	49.36	45.05	66.83	2.00	2.00	0.00	40.1187025	-104.9678509
Begin Hold @ 12.42° 42.39° Azm											
2420.81	12.42	42.39	2415.96	49.49	45.17	67.01	2.46	2.46	0.00	40.1187028	-104.9678505
 Parkman											
3941.44	12.42	42.39	3901.00	291.04	265.66	394.06	0.00	0.00	0.00	40.1193659	-104.9670621
 Sussex											
4453.42	12.42	42.39	4401.00	372.37	339.90	504.17	0.00	0.00	0.00	40.1195892	-104.9667966
 Shannon											
4922.39	12.42	42.39	4859.00	446.86	407.90	605.04	0.00	0.00	0.00	40.1197937	-104.9665535
Begin Drop @ -2.00°/ 100 Ft											
6320.08	12.42	42.39	6223.98	668.89	610.56	905.65	0.00	0.00	0.00	40.1204032	-104.9658288
6340.08	12.02	42.39	6243.53	672.01	613.42	909.88	2.00	-2.00	0.00	40.1204117	-104.9658186
6360.08	11.62	42.39	6263.10	675.04	616.18	913.98	2.00	-2.00	0.00	40.1204200	-104.9658087
6380.08	11.22	42.39	6282.71	677.96	618.85	917.94	2.00	-2.00	0.00	40.1204281	-104.9657991
6400.08	10.82	42.39	6302.34	680.79	621.42	921.76	2.00	-2.00	0.00	40.1204358	-104.9657899
6420.08	10.42	42.39	6321.99	683.51	623.91	925.44	2.00	-2.00	0.00	40.1204433	-104.9657810
6440.08	10.02	42.39	6341.68	686.13	626.30	928.99	2.00	-2.00	0.00	40.1204505	-104.9657725
6460.08	9.62	42.39	6361.38	688.65	628.60	932.40	2.00	-2.00	0.00	40.1204574	-104.9657643
6480.08	9.22	42.39	6381.11	691.07	630.81	935.68	2.00	-2.00	0.00	40.1204640	-104.9657564
6500.08	8.82	42.40	6400.87	693.38	632.92	938.81	2.00	-2.00	0.00	40.1204704	-104.9657488
6520.08	8.42	42.40	6420.64	695.60	634.94	941.81	2.00	-2.00	0.00	40.1204765	-104.9657416
6540.08	8.02	42.40	6440.44	697.71	636.87	944.67	2.00	-2.00	0.00	40.1204823	-104.9657347
6560.08	7.62	42.40	6460.25	699.72	638.71	947.39	2.00	-2.00	0.01	40.1204878	-104.9657281
6580.08	7.22	42.40	6480.08	701.62	640.45	949.97	2.00	-2.00	0.01	40.1204930	-104.9657219
6600.08	6.82	42.40	6499.93	703.43	642.10	952.42	2.00	-2.00	0.01	40.1204980	-104.9657160
6620.08	6.42	42.40	6519.80	705.13	643.65	954.72	2.00	-2.00	0.01	40.1205027	-104.9657104
6640.08	6.02	42.40	6539.68	706.73	645.11	956.89	2.00	-2.00	0.01	40.1205070	-104.9657052
6660.08	5.62	42.41	6559.58	708.23	646.48	958.92	2.00	-2.00	0.01	40.1205112	-104.9657003
6680.08	5.22	42.41	6579.49	709.62	647.75	960.81	2.00	-2.00	0.01	40.1205150	-104.9656958
6700.08	4.82	42.41	6599.41	710.92	648.93	962.56	2.00	-2.00	0.01	40.1205185	-104.9656915
6720.08	4.42	42.41	6619.35	712.11	650.02	964.17	2.00	-2.00	0.02	40.1205218	-104.9656877
6740.08	4.02	42.42	6639.29	713.19	651.01	965.64	2.00	-2.00	0.02	40.1205248	-104.9656841
6760.08	3.62	42.42	6659.25	714.18	651.91	966.97	2.00	-2.00	0.02	40.1205275	-104.9656809
6780.08	3.22	42.43	6679.21	715.06	652.72	968.17	2.00	-2.00	0.03	40.1205299	-104.9656780
6800.08	2.82	42.43	6699.18	715.83	653.43	969.22	2.00	-2.00	0.04	40.1205320	-104.9656755
6820.08	2.42	42.44	6719.16	716.51	654.05	970.13	2.00	-2.00	0.05	40.1205339	-104.9656733

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	
6840.08	2.02	42.46	6739.15	717.08	654.57	970.91	2.00	-2.00	0.07	40.1205355	-104.9656714	
6860.08	1.62	42.48	6759.14	717.55	655.00	971.54	2.00	-2.00	0.10	40.1205367	-104.9656699	
6880.08	1.22	42.51	6779.13	717.91	655.33	972.04	2.00	-2.00	0.16	40.1205377	-104.9656687	
6900.08	0.82	42.58	6799.13	718.18	655.57	972.40	2.00	-2.00	0.32	40.1205385	-104.9656678	
6920.08	0.42	42.76	6819.13	718.34	655.72	972.61	2.00	-2.00	0.94	40.1205389	-104.9656673	
6940.08	0.02	50.45	6839.13	718.39	655.77	972.69	2.00	-2.00	38.41	40.1205391	-104.9656671	
Begin Hold @ Vertical												
6941.08	0.00	132.03	6840.13	718.39	655.77	972.69	2.00	-1.74	8165.43	40.1205391	-104.9656671	
 Niobrara	7339.95	0.00	132.03	7239.00	718.38	655.79	972.69	0.00	0.00	0.00	40.1205390	-104.9656670
 Fort Hays	7599.95	0.00	132.03	7499.00	718.37	655.80	972.69	0.00	0.00	0.00	40.1205390	-104.9656670
 Codell	7619.95	0.00	132.03	7519.00	718.37	655.80	972.69	0.00	0.00	0.00	40.1205390	-104.9656670
PBHL @ 1323' FSL & 1321' FEL  Grant Brothers 23-54 Target												
7779.95	0.00	132.03	7679.00	718.36	655.80	972.69	0.00	0.00	0.00	40.1205390	-104.9656670	
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 23-54 Target	CIRCLE	3149427.1	1287206.5	2745.0	7679.0	718.4	655.8	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	3901	4401	0.0	0.0						
Sussex	Sussex	SANDSTON	4401	4859	0.0	0.0						
Shannon	Shannon	SANDSTON	4859	7239	0.0	0.0						
Niobrara	Niobrara	CHALK	7239	7499	0.0	0.0						
Fort Hays	Fort Hays	LIMESTON	7499	7519	0.0	0.0						
Codell	Codell	SANDSTON	7519	7699	0.0	0.0						