

Noble Energy (Rockies)

Garfield County, CO

Sec. 35-T7S-R95W (SGV 35L PAD)

BM 35-13B - B 2

Wellbore #1

Plan: Plan #1

Sperry Drilling Services

Proposal Report

12 November, 2009

Well Coordinates: 577,355.60 N, 1,301,611.20 E (39° 23' 33.18" N, 107° 58' 17.06" W)

Ground Level: 9,203.00 ft

Local Coordinate Origin:

Centered on Well BM 35-13B - Slot B 2

Viewing Datum:

RKB - 24' @ 9227.00ft

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Plan Report for BM 35-13B - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	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
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kickoff at 225.00ft										
247.00	0.44	68.70	247.00	0.03	0.08	0.08	2.00	2.00	0.00	68.70
Build Rate = 2.00°/100ft										
274.69	0.99	68.70	274.69	0.16	0.40	0.43	2.00	2.00	0.00	0.00
End Build at 274.69ft										
300.00	0.99	68.70	299.99	0.32	0.81	0.87	0.00	0.00	0.00	0.00
400.00	0.99	68.70	399.98	0.95	2.43	2.60	0.00	0.00	0.00	0.00
500.00	0.99	68.70	499.96	1.58	4.04	4.32	0.00	0.00	0.00	0.00
600.00	0.99	68.70	599.95	2.21	5.66	6.05	0.00	0.00	0.00	0.00
700.00	0.99	68.70	699.93	2.84	7.27	7.78	0.00	0.00	0.00	0.00
800.00	0.99	68.70	799.92	3.47	8.89	9.51	0.00	0.00	0.00	0.00
900.00	0.99	68.70	899.90	4.10	10.51	11.24	0.00	0.00	0.00	0.00
1,000.00	0.99	68.70	999.89	4.73	12.12	12.97	0.00	0.00	0.00	0.00
1,100.00	0.99	68.70	1,099.87	5.36	13.74	14.69	0.00	0.00	0.00	0.00
1,200.00	0.99	68.70	1,199.86	5.99	15.35	16.42	0.00	0.00	0.00	0.00
1,300.00	0.99	68.70	1,299.84	6.62	16.97	18.15	0.00	0.00	0.00	0.00
1,400.00	0.99	68.70	1,399.83	7.25	18.59	19.88	0.00	0.00	0.00	0.00
1,500.00	0.99	68.70	1,499.81	7.88	20.20	21.61	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
1,600.00	0.99	68.70	1,599.80	8.51	21.82	23.34	0.00	0.00	0.00	0.00
1,700.00	0.99	68.70	1,699.78	9.14	23.43	25.06	0.00	0.00	0.00	0.00
1,800.00	0.99	68.70	1,799.77	9.77	25.05	26.79	0.00	0.00	0.00	0.00
1,900.00	0.99	68.70	1,899.75	10.40	26.67	28.52	0.00	0.00	0.00	0.00
2,000.00	0.99	68.70	1,999.74	11.03	28.28	30.25	0.00	0.00	0.00	0.00
2,100.00	0.99	68.70	2,099.72	11.66	29.90	31.98	0.00	0.00	0.00	0.00
2,200.00	0.99	68.70	2,199.71	12.29	31.51	33.71	0.00	0.00	0.00	0.00
2,300.00	0.99	68.70	2,299.69	12.92	33.13	35.43	0.00	0.00	0.00	0.00
2,400.00	0.99	68.70	2,399.68	13.55	34.75	37.16	0.00	0.00	0.00	0.00
2,500.00	0.99	68.70	2,499.66	14.18	36.36	38.89	0.00	0.00	0.00	0.00
2,600.00	0.99	68.70	2,599.65	14.81	37.98	40.62	0.00	0.00	0.00	0.00
2,700.00	0.99	68.70	2,699.63	15.44	39.59	42.35	0.00	0.00	0.00	0.00
2,800.00	0.99	68.70	2,799.62	16.07	41.21	44.08	0.00	0.00	0.00	0.00
2,900.00	0.99	68.70	2,899.60	16.70	42.83	45.80	0.00	0.00	0.00	0.00
3,000.00	0.99	68.70	2,999.59	17.33	44.44	47.53	0.00	0.00	0.00	0.00
3,100.00	0.99	68.70	3,099.57	17.96	46.06	49.26	0.00	0.00	0.00	0.00
3,200.00	0.99	68.70	3,199.56	18.59	47.67	50.99	0.00	0.00	0.00	0.00
3,300.00	0.99	68.70	3,299.54	19.22	49.29	52.72	0.00	0.00	0.00	0.00
3,400.00	0.99	68.70	3,399.53	19.85	50.91	54.45	0.00	0.00	0.00	0.00
3,500.00	0.99	68.70	3,499.51	20.48	52.52	56.17	0.00	0.00	0.00	0.00
3,520.00	0.99	68.70	3,519.51	20.60	52.85	56.52	0.00	0.00	0.00	0.00
0.99 Inclination										
3,600.00	0.99	68.70	3,599.50	21.11	54.14	57.90	0.00	0.00	0.00	0.00
3,700.00	0.99	68.70	3,699.48	21.74	55.75	59.63	0.00	0.00	0.00	0.00
3,800.00	0.99	68.70	3,799.47	22.37	57.37	61.36	0.00	0.00	0.00	0.00
3,900.00	0.99	68.70	3,899.45	23.00	58.99	63.09	0.00	0.00	0.00	0.00
4,000.00	0.99	68.70	3,999.44	23.63	60.60	64.82	0.00	0.00	0.00	0.00
4,100.00	0.99	68.70	4,099.42	24.26	62.22	66.54	0.00	0.00	0.00	0.00
4,200.00	0.99	68.70	4,199.41	24.89	63.83	68.27	0.00	0.00	0.00	0.00
4,300.00	0.99	68.70	4,299.39	25.52	65.45	70.00	0.00	0.00	0.00	0.00
4,400.00	0.99	68.70	4,399.38	26.15	67.07	71.73	0.00	0.00	0.00	0.00
4,500.00	0.99	68.70	4,499.36	26.78	68.68	73.46	0.00	0.00	0.00	0.00
4,600.00	0.99	68.70	4,599.35	27.41	70.30	75.19	0.00	0.00	0.00	0.00
4,700.00	0.99	68.70	4,699.33	28.04	71.91	76.91	0.00	0.00	0.00	0.00
4,800.00	0.99	68.70	4,799.32	28.67	73.53	78.64	0.00	0.00	0.00	0.00

Plan Report for BM 35-13B - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
4,900.00	0.99	68.70	4,899.30	29.30	75.15	80.37	0.00	0.00	0.00	0.00
5,000.00	0.99	68.70	4,999.29	29.93	76.76	82.10	0.00	0.00	0.00	0.00
5,100.00	0.99	68.70	5,099.27	30.56	78.38	83.83	0.00	0.00	0.00	0.00
5,200.00	0.99	68.70	5,199.26	31.19	79.99	85.56	0.00	0.00	0.00	0.00
5,300.00	0.99	68.70	5,299.24	31.82	81.61	87.28	0.00	0.00	0.00	0.00
5,400.00	0.99	68.70	5,399.23	32.45	83.23	89.01	0.00	0.00	0.00	0.00
5,500.00	0.99	68.70	5,499.21	33.08	84.84	90.74	0.00	0.00	0.00	0.00
5,600.00	0.99	68.70	5,599.20	33.71	86.46	92.47	0.00	0.00	0.00	0.00
5,700.00	0.99	68.70	5,699.18	34.34	88.07	94.20	0.00	0.00	0.00	0.00
5,800.00	0.99	68.70	5,799.17	34.97	89.69	95.93	0.00	0.00	0.00	0.00
5,900.00	0.99	68.70	5,899.15	35.60	91.31	97.65	0.00	0.00	0.00	0.00
6,000.00	0.99	68.70	5,999.14	36.23	92.92	99.38	0.00	0.00	0.00	0.00
6,100.00	0.99	68.70	6,099.12	36.86	94.54	101.11	0.00	0.00	0.00	0.00
6,200.00	0.99	68.70	6,199.11	37.49	96.15	102.84	0.00	0.00	0.00	0.00
6,300.00	0.99	68.70	6,299.09	38.12	97.77	104.57	0.00	0.00	0.00	0.00
6,400.00	0.99	68.70	6,399.08	38.75	99.39	106.30	0.00	0.00	0.00	0.00
6,500.00	0.99	68.70	6,499.06	39.38	101.00	108.02	0.00	0.00	0.00	0.00
6,600.00	0.99	68.70	6,599.05	40.01	102.62	109.75	0.00	0.00	0.00	0.00
6,700.00	0.99	68.70	6,699.03	40.64	104.23	111.48	0.00	0.00	0.00	0.00
6,800.00	0.99	68.70	6,799.02	41.27	105.85	113.21	0.00	0.00	0.00	0.00
6,900.00	0.99	68.70	6,899.00	41.90	107.47	114.94	0.00	0.00	0.00	0.00
6,930.75	0.99	68.70	6,929.75	42.09	107.96	115.47	0.00	0.00	0.00	0.00
Begin Drop at 6930.75ft										
6,960.00	0.56	68.70	6,958.99	42.24	108.33	115.86	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,996.74	0.00	68.70	6,995.73	42.30	108.50	116.04	1.50	-1.50	0.00	-180.00
BM 35-13B Plan #1 Zone Tgt										
6,997.01	0.00	0.00	6,996.00	42.30	108.50	116.04	1.50	-1.50	0.00	-180.00
End Drop at 6997.01ft - Williams Fork - BM 35-13B Plan #1 Driller's Tgt										
7,000.00	0.00	243.43	6,998.99	42.30	108.50	116.04	0.09	0.09	0.00	243.43
7,100.00	0.09	243.43	7,098.99	42.27	108.42	115.96	0.09	0.09	0.00	0.00
7,200.00	0.18	243.43	7,198.99	42.16	108.21	115.72	0.09	0.09	0.00	0.00
7,300.00	0.27	243.43	7,298.99	41.98	107.85	115.33	0.09	0.09	0.00	0.00
7,400.00	0.36	243.43	7,398.99	41.73	107.36	114.79	0.09	0.09	0.00	0.00
7,500.00	0.45	243.43	7,498.99	41.41	106.72	114.08	0.09	0.09	0.00	0.00
7,600.00	0.54	243.43	7,598.98	41.03	105.94	113.23	0.09	0.09	0.00	0.00
7,700.00	0.63	243.43	7,698.98	40.57	105.03	112.22	0.09	0.09	0.00	0.00
7,800.00	0.72	243.43	7,798.97	40.04	103.97	111.06	0.09	0.09	0.00	0.00
7,900.00	0.81	243.43	7,898.96	39.44	102.77	109.74	0.09	0.09	0.00	0.00
8,000.00	0.90	243.43	7,998.95	38.77	101.43	108.26	0.09	0.09	0.00	0.00
8,086.06	0.98	243.43	8,085.00	38.14	100.17	106.87	0.09	0.09	0.00	0.00
Top of Gas										
8,100.00	0.99	243.43	8,098.94	38.03	99.95	106.63	0.09	0.09	0.00	0.00
8,200.00	1.08	243.43	8,198.92	37.22	98.33	104.85	0.09	0.09	0.00	0.00
8,300.00	1.17	243.43	8,298.90	36.34	96.57	102.91	0.09	0.09	0.00	0.00
8,400.00	1.26	243.43	8,398.88	35.39	94.67	100.82	0.09	0.09	0.00	0.00
8,500.00	1.35	243.43	8,498.85	34.37	92.63	98.57	0.09	0.09	0.00	0.00
8,600.00	1.44	243.43	8,598.82	33.28	90.45	96.17	0.09	0.09	0.00	0.00
8,700.00	1.53	243.43	8,698.79	32.12	88.13	93.62	0.09	0.09	0.00	0.00
8,800.00	1.62	243.43	8,798.75	30.88	85.66	90.91	0.09	0.09	0.00	0.00
8,863.46	1.68	243.43	8,862.18	30.07	84.03	89.11	0.09	0.09	0.00	0.00
8,900.00	1.65	243.43	8,898.71	29.59	83.08	88.06	0.09	-0.09	0.00	180.00
9,000.00	1.56	243.43	8,998.67	28.34	80.57	85.30	0.09	-0.09	0.00	180.00
9,100.00	1.48	243.43	9,098.64	27.15	78.20	82.69	0.09	-0.09	0.00	180.00
9,200.00	1.39	243.43	9,198.60	26.04	75.97	80.23	0.09	-0.09	0.00	180.00
9,300.00	1.30	243.43	9,298.58	24.98	73.87	77.92	0.09	-0.09	0.00	180.00
9,400.00	1.22	243.43	9,398.55	24.00	71.90	75.75	0.09	-0.09	0.00	180.00
9,402.45	1.21	243.43	9,401.00	23.98	71.85	75.70	0.09	-0.09	0.00	-180.00
Cameo										

Plan Report for BM 35-13B - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
9,500.00	1.13	243.43	9,498.53	23.08	70.07	73.74	0.09	-0.09	0.00	180.00
9,600.00	1.04	243.43	9,598.51	22.24	68.37	71.87	0.09	-0.09	0.00	180.00
9,700.00	0.96	243.43	9,698.50	21.45	66.81	70.15	0.09	-0.09	0.00	180.00
9,800.00	0.87	243.43	9,798.49	20.74	65.38	68.58	0.09	-0.09	0.00	180.00
9,883.52	0.80	243.43	9,882.00	20.19	64.29	67.38	0.09	-0.09	0.00	180.00
Rollins										
9,900.00	0.79	243.43	9,898.48	20.09	64.09	67.15	0.09	-0.09	0.00	180.00
10,000.00	0.70	243.43	9,998.47	19.51	62.93	65.88	0.09	-0.09	0.00	180.00
10,100.00	0.61	243.43	10,098.46	19.00	61.90	64.75	0.09	-0.09	0.00	180.00
10,189.54	0.54	243.43	10,188.00	18.60	61.10	63.87	0.09	-0.09	0.00	180.00
Cozzette										
10,200.00	0.53	243.43	10,198.46	18.56	61.01	63.77	0.09	-0.09	0.00	-180.00
10,300.00	0.44	243.43	10,298.45	18.18	60.26	62.94	0.09	-0.09	0.00	180.00
10,400.00	0.35	243.43	10,398.45	17.87	59.64	62.26	0.09	-0.09	0.00	180.00
10,428.55	0.33	243.43	10,427.00	17.79	59.49	62.09	0.09	-0.09	0.00	180.00
Corcora										
10,500.00	0.27	243.43	10,498.45	17.63	59.15	61.72	0.09	-0.09	0.00	-180.00
10,560.55	0.22	243.43	10,559.00	17.51	58.92	61.47	0.09	-0.09	0.00	-180.00
Mancos										
10,600.00	0.18	243.43	10,598.45	17.45	58.80	61.34	0.09	-0.09	0.00	180.00
10,700.00	0.10	243.43	10,698.45	17.34	58.59	61.10	0.09	-0.09	0.00	180.00
10,800.00	0.01	243.43	10,798.45	17.30	58.50	61.01	0.09	-0.09	0.00	180.00
10,810.55	0.00	0.00	10,809.00	17.30	58.50	61.01	0.09	-0.09	1,104.93	179.98
Total Depth = 10810.55ft - BM 35-13B Plan #1 BH Tgt										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
225.00	225.00	0.00	0.00	Kickoff at 225.00ft
247.00	247.00	0.03	0.08	Build Rate = 2.00°/100ft
274.69	274.69	0.16	0.40	End Build at 274.69ft
3,520.00	3,519.51	20.60	52.85	0.99 Inclination
6,930.75	6,929.75	42.09	107.96	Begin Drop at 6930.75ft
6,960.00	6,958.99	42.24	108.33	Drop Rate = 1.50°/100ft
6,997.01	6,996.00	42.30	108.50	End Drop at 6997.01ft
10,810.55	10,809.00	17.30	58.50	Total Depth = 10810.55ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	BM 35-13B Plan #1 BH Tgt	73.53	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,810.37	Plan #1	MWD

Plan Report for BM 35-13B - Plan #1

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,499.81	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,997.01	6,996.00	Williams Fork		0.00	
8,086.06	8,085.00	Top of Gas		0.00	
9,402.45	9,401.00	Cameo		0.00	
9,883.52	9,882.00	Rollins		0.00	
10,189.54	10,188.00	Cozzette		0.00	
10,428.55	10,427.00	Corcora		0.00	
10,560.55	10,559.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 35-13B Plan #1 Zone Tgt	6,996.00	17.30	58.50	Rectangle
BM 35-13B Plan #1 Driller's Tgt	6,996.00	42.30	108.50	Rectangle
BM 35-13B Plan #1 BH Tgt	10,809.00	17.30	58.50	Point

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35L PAD) - BM 35-13B - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to RKB - 24' @ 9227.00ft. Northing and Easting are relative to BM 35-13B - Slot B 2

Coordinate System is US State Plane 1927 (Exact solution), Colorado Central 502 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 0.99994882

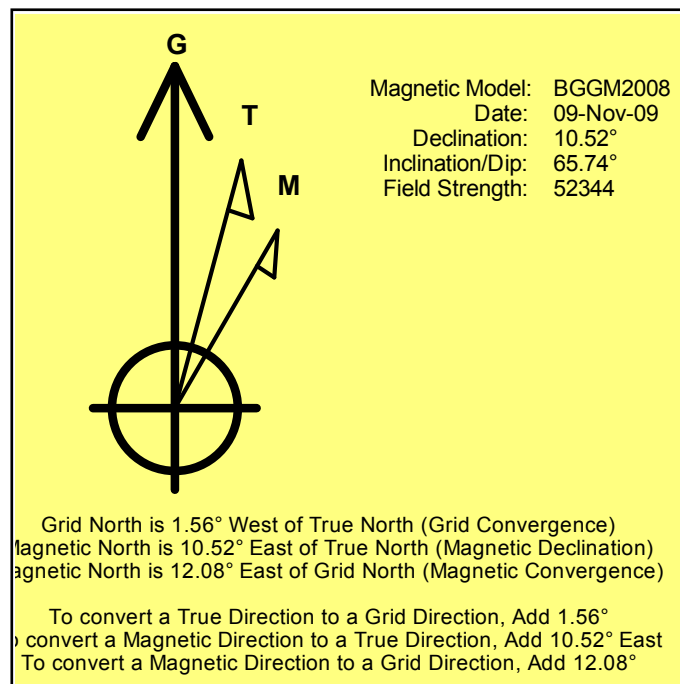
Grid Coordinates of Well: 577,355.60 ft N, 1,301,611.20 ft E

Geographical Coordinates of Well: 39° 23' 33.18" N, 107° 58' 17.06" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,810.55ft
the Bottom Hole Displacement is 61.01ft in the Direction of 73.53° (Grid).

Magnetic Convergence at surface is: -12.08° (9 November 2009, , BGGM2008)



Project: Garfield County, CO
Site: Sec. 35-T7S-R95W (SGV 35L PAD)
Well: BM 35-13B
Wellbore: Wellbore #1
Plan: Plan #1

Noble Energy (Rockies)

HALLIBURTON

SECTION DETAILS

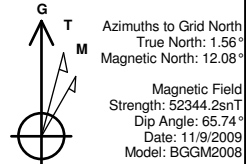
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	
274.69	0.99	68.70	274.69	0.16	0.40	2.00	68.70	0.43	
6930.75	0.99	68.70	6929.75	42.09	107.96	0.00	0.00	115.47	BM 35-13B Plan #1 Driller's Tgt
6997.01	0.00	0.00	6996.00	42.30	108.50	1.50	180.00	116.04	
8863.46	1.68	243.43	8862.18	30.07	84.03	0.09	243.43	89.11	
10810.55	0.00	0.00	10809.00	17.30	58.50	0.09	180.00	61.01	BM 35-13B Plan #1 BH Tgt

WELL DETAILS: BM 35-13B

Ground Level: 9203.00
Northing: 0.007355.60
Easting: 1301611.20
Latitude: 39° 23' 33.182 N
Longitude: 107° 58' 17.060 W
B 2

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 35-13B Plan #1 Driller's Tgt	6996.00	42.30	108.50	Rectangle (Sides: L25.00 W25.00)
BM 35-13B Plan #1 Zone Tgt	6996.00	17.30	58.50	Rectangle (Sides: L100.00 W200.00)
BM 35-13B Plan #1 BH Tgt	10809.00	17.30	58.50	Point



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6996.00	6997.01	Williams Fork
8085.00	8086.06	Top of Gas
9401.00	9402.45	Cameo
9882.00	9883.52	Rollins
10188.00	10189.54	Cozzette
10427.00	10428.55	Corcora
10559.00	10560.55	Mancos

