

Noble Energy (Rockies)

Garfield County, CO

Sec. 35-T7S-R95W (SGV 35D2 PAD)

BM 34-41D - B 5

Wellbore #1

Plan: Plan #1 Proposal

Sperry Drilling Services Proposal Report

20 October, 2009

Well Coordinates: 579,168.12 N, 1,301,230.12 E (39° 23' 50.99" N, 107° 58' 22.54" W)

Ground Level: 8,846.00 ft

Local Coordinate Origin:

Centered on Well BM 34-41D - Slot B 5

Viewing Datum:

RKB - 24' @ 8870.00ft

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 34-41D - Plan #1 Proposal

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
BM 34-41D 100' FSL Hardline Tgt										
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										
300.00	1.50	278.52	299.99	0.15	-0.97	0.98	2.00	2.00	0.00	278.52
390.00	3.30	278.52	389.91	0.70	-4.70	4.75	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
400.00	3.50	278.52	399.89	0.79	-5.28	5.34	2.00	2.00	0.00	0.00
500.00	5.50	278.52	499.58	1.95	-13.04	13.19	2.00	2.00	0.00	0.00
600.00	7.50	278.52	598.93	3.63	-24.24	24.50	2.00	2.00	0.00	0.00
610.40	7.71	278.52	609.24	3.83	-25.60	25.88	2.00	2.00	0.00	0.00
End Build at 610.40ft										
700.00	7.71	278.52	698.03	5.61	-37.48	37.89	0.00	0.00	0.00	0.00
800.00	7.71	278.52	797.13	7.60	-50.75	51.30	0.00	0.00	0.00	0.00
900.00	7.71	278.52	896.22	9.59	-64.01	64.71	0.00	0.00	0.00	0.00
1,000.00	7.71	278.52	995.32	11.58	-77.28	78.12	0.00	0.00	0.00	0.00
1,100.00	7.71	278.52	1,094.41	13.56	-90.54	91.53	0.00	0.00	0.00	0.00
1,200.00	7.71	278.52	1,193.51	15.55	-103.81	104.94	0.00	0.00	0.00	0.00
1,300.00	7.71	278.52	1,292.61	17.54	-117.07	118.35	0.00	0.00	0.00	0.00
1,400.00	7.71	278.52	1,391.70	19.52	-130.34	131.76	0.00	0.00	0.00	0.00
1,500.00	7.71	278.52	1,490.80	21.51	-143.60	145.17	0.00	0.00	0.00	0.00
1,600.00	7.71	278.52	1,589.90	23.50	-156.86	158.58	0.00	0.00	0.00	0.00
1,700.00	7.71	278.52	1,688.99	25.48	-170.13	171.99	0.00	0.00	0.00	0.00
1,800.00	7.71	278.52	1,788.09	27.47	-183.39	185.40	0.00	0.00	0.00	0.00
1,900.00	7.71	278.52	1,887.19	29.46	-196.66	198.81	0.00	0.00	0.00	0.00
2,000.00	7.71	278.52	1,986.28	31.44	-209.92	212.22	0.00	0.00	0.00	0.00
2,100.00	7.71	278.52	2,085.38	33.43	-223.19	225.63	0.00	0.00	0.00	0.00
2,200.00	7.71	278.52	2,184.48	35.42	-236.45	239.04	0.00	0.00	0.00	0.00
2,300.00	7.71	278.52	2,283.57	37.40	-249.72	252.45	0.00	0.00	0.00	0.00
2,380.00	7.71	278.52	2,362.85	38.99	-260.33	263.18	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,400.00	7.71	278.52	2,382.67	39.39	-262.98	265.86	0.00	0.00	0.00	0.00
2,500.00	7.71	278.52	2,481.76	41.38	-276.25	279.27	0.00	0.00	0.00	0.00
2,600.00	7.71	278.52	2,580.86	43.36	-289.51	292.68	0.00	0.00	0.00	0.00
2,700.00	7.71	278.52	2,679.96	45.35	-302.77	306.09	0.00	0.00	0.00	0.00
2,800.00	7.71	278.52	2,779.05	47.34	-316.04	319.50	0.00	0.00	0.00	0.00
2,900.00	7.71	278.52	2,878.15	49.33	-329.30	332.91	0.00	0.00	0.00	0.00
3,000.00	7.71	278.52	2,977.25	51.31	-342.57	346.32	0.00	0.00	0.00	0.00
3,100.00	7.71	278.52	3,076.34	53.30	-355.83	359.73	0.00	0.00	0.00	0.00
3,200.00	7.71	278.52	3,175.44	55.29	-369.10	373.14	0.00	0.00	0.00	0.00
3,300.00	7.71	278.52	3,274.54	57.27	-382.36	386.55	0.00	0.00	0.00	0.00
3,400.00	7.71	278.52	3,373.63	59.26	-395.63	399.96	0.00	0.00	0.00	0.00
3,470.00	7.71	278.52	3,443.00	60.65	-404.91	409.35	0.00	0.00	0.00	0.00
7.71 Inclination										
3,500.00	7.71	278.52	3,472.73	61.25	-408.89	413.37	0.00	0.00	0.00	0.00
3,600.00	7.71	278.52	3,571.83	63.23	-422.16	426.78	0.00	0.00	0.00	0.00
3,700.00	7.71	278.52	3,670.92	65.22	-435.42	440.19	0.00	0.00	0.00	0.00
3,800.00	7.71	278.52	3,770.02	67.21	-448.68	453.60	0.00	0.00	0.00	0.00
3,900.00	7.71	278.52	3,869.12	69.19	-461.95	467.01	0.00	0.00	0.00	0.00
4,000.00	7.71	278.52	3,968.21	71.18	-475.21	480.42	0.00	0.00	0.00	0.00
4,100.00	7.71	278.52	4,067.31	73.17	-488.48	493.83	0.00	0.00	0.00	0.00
4,200.00	7.71	278.52	4,166.40	75.15	-501.74	507.24	0.00	0.00	0.00	0.00
4,300.00	7.71	278.52	4,265.50	77.14	-515.01	520.65	0.00	0.00	0.00	0.00
4,400.00	7.71	278.52	4,364.60	79.13	-528.27	534.06	0.00	0.00	0.00	0.00
4,500.00	7.71	278.52	4,463.69	81.11	-541.54	547.47	0.00	0.00	0.00	0.00
4,600.00	7.71	278.52	4,562.79	83.10	-554.80	560.88	0.00	0.00	0.00	0.00

Plan Report for BM 34-41D - Plan #1 Proposal

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 (°)
4,700.00	7.71	278.52	4,661.89	85.09	-568.06	574.29	0.00	0.00	0.00	0.00
4,800.00	7.71	278.52	4,760.98	87.08	-581.33	587.70	0.00	0.00	0.00	0.00
4,900.00	7.71	278.52	4,860.08	89.06	-594.59	601.11	0.00	0.00	0.00	0.00
5,000.00	7.71	278.52	4,959.18	91.05	-607.86	614.52	0.00	0.00	0.00	0.00
5,100.00	7.71	278.52	5,058.27	93.04	-621.12	627.93	0.00	0.00	0.00	0.00
5,200.00	7.71	278.52	5,157.37	95.02	-634.39	641.33	0.00	0.00	0.00	0.00
5,300.00	7.71	278.52	5,256.47	97.01	-647.65	654.74	0.00	0.00	0.00	0.00
5,400.00	7.71	278.52	5,355.56	99.00	-660.92	668.15	0.00	0.00	0.00	0.00
5,500.00	7.71	278.52	5,454.66	100.98	-674.18	681.56	0.00	0.00	0.00	0.00
5,600.00	7.71	278.52	5,553.75	102.97	-687.45	694.97	0.00	0.00	0.00	0.00
5,700.00	7.71	278.52	5,652.85	104.96	-700.71	708.38	0.00	0.00	0.00	0.00
5,800.00	7.71	278.52	5,751.95	106.94	-713.97	721.79	0.00	0.00	0.00	0.00
5,900.00	7.71	278.52	5,851.04	108.93	-727.24	735.20	0.00	0.00	0.00	0.00
6,000.00	7.71	278.52	5,950.14	110.92	-740.50	748.61	0.00	0.00	0.00	0.00
6,100.00	7.71	278.52	6,049.24	112.90	-753.77	762.02	0.00	0.00	0.00	0.00
6,184.20	7.71	278.52	6,132.68	114.58	-764.94	773.31	0.00	0.00	0.00	0.00
Begin Drop at 6184.20ft										
6,200.00	7.47	278.52	6,148.34	114.89	-767.00	775.40	1.50	-1.50	0.00	180.00
6,300.00	5.97	278.52	6,247.65	116.62	-778.57	787.10	1.50	-1.50	0.00	180.00
6,400.00	4.47	278.52	6,347.23	117.97	-787.57	796.20	1.50	-1.50	0.00	180.00
6,440.00	3.87	278.52	6,387.12	118.40	-790.45	799.11	1.50	-1.50	0.00	-180.00
Drop Rate = 1.50°/100ft										
6,500.00	2.97	278.52	6,447.02	118.93	-793.99	802.69	1.50	-1.50	0.00	180.00
6,600.00	1.47	278.52	6,546.94	119.50	-797.82	806.56	1.50	-1.50	0.00	180.00
6,698.07	0.00	0.00	6,645.00	119.69	-799.07	807.82	1.50	-1.50	83.08	180.00
End Drop at 6698.07ft - Williams Fork - BM 34-41D Plan #1 Driller's Tgt - BM 34-41D Plan #1 Zone Tgt										
6,700.00	0.00	296.57	6,646.93	119.69	-799.07	807.82	0.08	0.08	-3,292.35	-63.48
6,800.00	0.08	296.57	6,746.93	119.72	-799.13	807.89	0.08	0.08	0.00	0.00
6,900.00	0.16	296.57	6,846.93	119.82	-799.32	808.09	0.08	0.08	0.00	0.00
7,000.00	0.24	296.57	6,946.93	119.97	-799.64	808.43	0.08	0.08	0.00	0.00
7,100.00	0.32	296.57	7,046.93	120.19	-800.08	808.90	0.08	0.08	0.00	0.00
7,200.00	0.40	296.57	7,146.92	120.48	-800.64	809.50	0.08	0.08	0.00	0.00
7,300.00	0.48	296.57	7,246.92	120.82	-801.33	810.24	0.08	0.08	0.00	0.00
7,400.00	0.56	296.57	7,346.92	121.23	-802.15	811.11	0.08	0.08	0.00	0.00
7,500.00	0.64	296.57	7,446.91	121.70	-803.09	812.12	0.08	0.08	0.00	0.00
7,600.00	0.72	296.57	7,546.90	122.23	-804.15	813.25	0.08	0.08	0.00	0.00
7,680.10	0.79	296.57	7,627.00	122.70	-805.09	814.26	0.08	0.08	0.00	0.00
Top of Gas										
7,700.00	0.80	296.57	7,646.89	122.82	-805.34	814.53	0.08	0.08	0.00	0.00
7,800.00	0.88	296.57	7,746.88	123.48	-806.65	815.93	0.08	0.08	0.00	0.00
7,900.00	0.96	296.57	7,846.87	124.20	-808.09	817.47	0.08	0.08	0.00	0.00
8,000.00	1.04	296.57	7,946.86	124.98	-809.65	819.14	0.08	0.08	0.00	0.00
8,100.00	1.12	296.57	8,046.84	125.83	-811.34	820.95	0.08	0.08	0.00	0.00
8,200.00	1.20	296.57	8,146.82	126.73	-813.15	822.89	0.08	0.08	0.00	0.00
8,300.00	1.28	296.57	8,246.79	127.70	-815.09	824.96	0.08	0.08	0.00	0.00
8,400.00	1.36	296.57	8,346.77	128.73	-817.16	827.17	0.08	0.08	0.00	0.00
8,500.00	1.44	296.57	8,446.74	129.83	-819.34	829.51	0.08	0.08	0.00	0.00
8,600.00	1.52	296.57	8,546.70	130.98	-821.66	831.98	0.08	0.08	0.00	0.00
8,674.00	1.58	296.57	8,620.67	131.88	-823.45	833.90	0.08	0.08	0.00	0.00
8,700.00	1.56	296.57	8,646.67	132.20	-824.08	834.58	0.08	-0.08	0.00	180.00
8,800.00	1.48	296.57	8,746.63	133.39	-826.46	837.12	0.08	-0.08	0.00	180.00
8,900.00	1.41	296.57	8,846.60	134.52	-828.72	839.54	0.08	-0.08	0.00	180.00
9,000.00	1.33	296.57	8,946.57	135.59	-830.86	841.83	0.08	-0.08	0.00	180.00
9,100.00	1.26	296.57	9,046.55	136.60	-832.88	843.99	0.08	-0.08	0.00	180.00
9,200.00	1.18	296.57	9,146.52	137.55	-834.78	846.03	0.08	-0.08	0.00	180.00
9,241.49	1.15	296.57	9,188.00	137.92	-835.54	846.83	0.08	-0.08	0.00	180.00
Cameo										
9,300.00	1.10	296.57	9,246.50	138.44	-836.56	847.93	0.08	-0.08	0.00	-180.00
9,400.00	1.03	296.57	9,346.49	139.27	-838.23	849.71	0.08	-0.08	0.00	180.00

Plan Report for BM 34-41D - Plan #1 Proposal

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	0.95	296.57	9,446.47	140.04	-839.77	851.37	0.08	-0.08	0.00	180.00
9,600.00	0.88	296.57	9,546.46	140.76	-841.20	852.89	0.08	-0.08	0.00	180.00
9,614.54	0.86	296.57	9,561.00	140.86	-841.40	853.10	0.08	-0.08	0.00	180.00
Rollins										
9,700.00	0.80	296.57	9,646.45	141.41	-842.51	854.29	0.08	-0.08	0.00	-180.00
9,800.00	0.72	296.57	9,746.44	142.01	-843.70	855.56	0.08	-0.08	0.00	180.00
9,900.00	0.65	296.57	9,846.43	142.54	-844.77	856.71	0.08	-0.08	0.00	180.00
9,962.57	0.60	296.57	9,909.00	142.85	-845.38	857.36	0.08	-0.08	0.00	-180.00
Cozzette										
10,000.00	0.57	296.57	9,946.43	143.02	-845.72	857.73	0.08	-0.08	0.00	180.00
10,100.00	0.50	296.57	10,046.42	143.43	-846.55	858.62	0.08	-0.08	0.00	180.00
10,200.00	0.42	296.57	10,146.42	143.79	-847.27	859.38	0.08	-0.08	0.00	180.00
10,259.58	0.37	296.57	10,206.00	143.97	-847.63	859.77	0.08	-0.08	0.00	180.00
Corcora										
10,300.00	0.34	296.57	10,246.42	144.09	-847.86	860.02	0.08	-0.08	0.00	-180.00
10,400.00	0.27	296.57	10,346.41	144.33	-848.34	860.53	0.08	-0.08	0.00	180.00
10,500.00	0.19	296.57	10,446.41	144.50	-848.69	860.91	0.08	-0.08	0.00	180.00
10,500.59	0.19	296.57	10,447.00	144.51	-848.70	860.91	0.00	0.00	0.00	0.00
Mancos										
10,600.00	0.11	296.57	10,546.41	144.62	-848.93	861.16	0.08	-0.08	0.00	180.00
10,700.00	0.04	296.57	10,646.41	144.68	-849.05	861.29	0.08	-0.08	0.00	180.00
10,750.59	0.00	360.00	10,697.00	144.69	-849.07	861.31	0.08	-0.08	0.00	180.00
BM 34-41D 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
390.00	389.91	0.70	-4.70	Build Rate = 2.00°/100ft
610.40	609.24	3.83	-25.60	End Build at 610.40ft
3,470.00	3,443.00	60.65	-404.91	7.71 Inclination
6,184.20	6,132.68	114.58	-764.94	Begin Drop at 6184.20ft
6,440.00	6,387.12	118.40	-790.45	Drop Rate = 1.50°/100ft
6,698.07	6,645.00	119.69	-799.07	End Drop at 6698.07ft
10,750.59	10,697.00	144.69	-849.07	Total Depth = 10750.59ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	BM 34-41D Plan #1 BH Tgt	279.67	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,750.59	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,380.00	2,362.85	8 5/8" Casing Pt.	8-5/8	11

Plan Report for BM 34-41D - Plan #1 Proposal

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,698.07	6,645.00	Williams Fork		0.00	
7,680.10	7,627.00	Top of Gas		0.00	
9,241.49	9,188.00	Cameo		0.00	
9,614.54	9,561.00	Rollins		0.00	
9,962.57	9,909.00	Cozzette		0.00	
10,259.58	10,206.00	Corcora		0.00	
10,500.59	10,447.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 34-41D Plan #1 BH Tgt	10,697.00	144.69	-849.07	Point
BM 34-41D Plan #1 Driller's Tgt	6,645.00	119.69	-799.07	Rectangle
BM 34-41D Plan #1 Zone Tgt	6,645.00	144.69	-849.07	Rectangle
BM 34-41D 100' FSL Hardline Tgt	0.00	0.00	0.00	Polygon

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35D2 PAD) - BM 34-41D - 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' @ 8870.00ft. Northing and Easting are relative to BM 34-41D - Slot B 5

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: 0.99994926

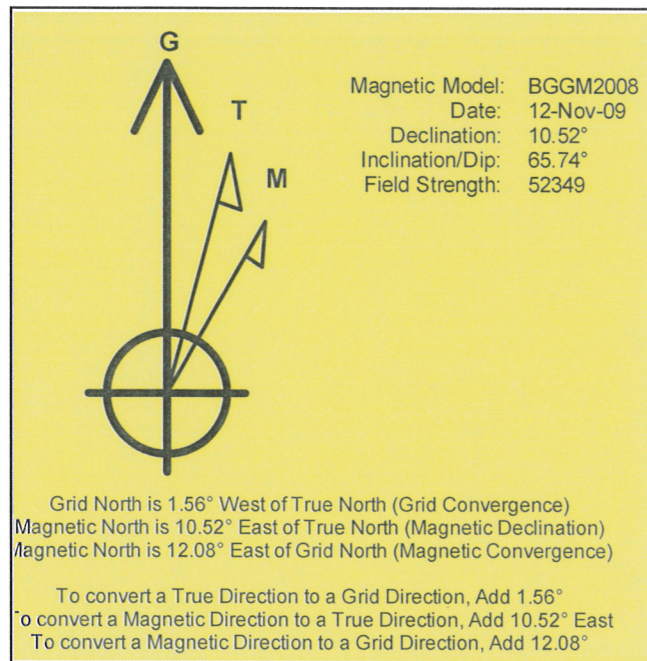
Grid Coordinates of Well: 579,168.12 ft N, 1,301,230.12 ft E

Geographical Coordinates of Well: 39° 23' 50.99" N, 107° 58' 22.54" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,750.59ft the Bottom Hole Displacement is 861.31ft in the Direction of 279.67° (Grid).

Magnetic Convergence at surface is: -12.08° (12 November 2009, , BGGM2008)



Project: Garfield County, CO
Site: Sec. 35-T7S-R95W (SGV 35D2 PAD)
Well: BM 34-41D
Wellbore: Wellbore #1
Plan: Plan #1 Proposal

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
610.40	7.71	278.52	609.24	3.83	-25.60	2.00	278.52	25.88
6184.20	7.71	278.52	6132.68	114.58	-764.94	0.00	0.00	773.31
6698.07	0.00	0.00	6645.00	119.69	-799.07	1.50	180.00	807.82
8674.00	1.58	296.57	8620.67	131.88	-823.45	0.08	296.57	833.90
10750.59	0.00	360.00	10697.00	144.69	-849.07	0.08	180.00	861.31

WELL DETAILS: BM 34-41D

Ground Level:	8846.00	Latitude	39° 23' 50.988 N
North	579168.12	Longitude	107° 58' 22.541 W

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 34-41D 100' FSL Hardline Tgt	0.00	0.00	0.00	Polygon
BM 34-41D Plan #1 Driller's Tgt	6645.00	119.69	-799.07	Rectangle (Sides: L25.00 W25.00)
BM 34-41D Plan #1 Zone Tgt	6645.00	144.69	-849.07	Rectangle (Sides: L100.00 W200.00)
BM 34-41D Plan #1 BH Tgt	10697.00	144.69	-849.07	Point



Azimuths to Grid North
True North: 1.56°
Magnetic North: 12.08°
Magnetic Field
Strength: 52348.7snT
Dip Angle: 65.74°
Date: 11/12/2009
Model: BGGM2008

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6645.00	6698.07	Williams Fork
7627.00	7680.10	Top of Gas
9188.00	9241.49	Cameo
9561.00	9614.54	Rollins
9909.00	9962.57	Cozzette
10206.00	10259.58	Corcora
10447.00	10500.59	Mancos

