

Noble Energy (Rockies)

Garfield County, CO

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

BM 34-41C - B 4

Wellbore #1

Plan: Plan #1 Proposal

Sperry Drilling Services Proposal Report

20 October, 2009

Well Coordinates: 579,175.57 N, 1,301,230.98 E (39° 23' 51.06" N, 107° 58' 22.53" W)

Ground Level: 8,846.00 ft

Local Coordinate Origin:

Centered on Well BM 34-41C - Slot B 4

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: 43I

HALLIBURTON

Plan Report for BM 34-41C - 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
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	299.31	299.99	0.48	-0.86	0.98	2.00	2.00	0.00	299.31
400.00	3.50	299.31	399.89	2.62	-4.66	5.34	2.00	2.00	0.00	0.00
455.00	4.60	299.31	454.75	4.52	-8.05	9.23	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
500.00	5.50	299.31	499.58	6.46	-11.50	13.19	2.00	2.00	0.00	0.00
600.00	7.50	299.31	598.93	12.00	-21.37	24.51	2.00	2.00	0.00	0.00
661.19	8.72	299.31	659.51	16.22	-28.90	33.14	2.00	2.00	0.00	0.00
End Build at 661.19ft										
700.00	8.72	299.31	697.87	19.11	-34.03	39.03	0.00	0.00	0.00	0.00
800.00	8.72	299.31	796.71	26.53	-47.26	54.20	0.00	0.00	0.00	0.00
900.00	8.72	299.31	895.55	33.95	-60.49	69.36	0.00	0.00	0.00	0.00
1,000.00	8.72	299.31	994.40	41.38	-73.71	84.53	0.00	0.00	0.00	0.00
1,100.00	8.72	299.31	1,093.24	48.80	-86.94	99.70	0.00	0.00	0.00	0.00
1,200.00	8.72	299.31	1,192.08	56.23	-100.16	114.87	0.00	0.00	0.00	0.00
1,300.00	8.72	299.31	1,290.93	63.65	-113.39	130.03	0.00	0.00	0.00	0.00
1,400.00	8.72	299.31	1,389.77	71.08	-126.61	145.20	0.00	0.00	0.00	0.00
1,500.00	8.72	299.31	1,488.61	78.50	-139.84	160.37	0.00	0.00	0.00	0.00
1,600.00	8.72	299.31	1,587.46	85.93	-153.07	175.53	0.00	0.00	0.00	0.00
1,700.00	8.72	299.31	1,686.30	93.35	-166.29	190.70	0.00	0.00	0.00	0.00
1,800.00	8.72	299.31	1,785.14	100.77	-179.52	205.87	0.00	0.00	0.00	0.00
1,900.00	8.72	299.31	1,883.98	108.20	-192.74	221.04	0.00	0.00	0.00	0.00
2,000.00	8.72	299.31	1,982.83	115.62	-205.97	236.20	0.00	0.00	0.00	0.00
2,100.00	8.72	299.31	2,081.67	123.05	-219.20	251.37	0.00	0.00	0.00	0.00
2,200.00	8.72	299.31	2,180.51	130.47	-232.42	266.54	0.00	0.00	0.00	0.00
2,300.00	8.72	299.31	2,279.36	137.90	-245.65	281.70	0.00	0.00	0.00	0.00
2,380.00	8.72	299.31	2,358.43	143.84	-256.23	293.84	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,400.00	8.72	299.31	2,378.20	145.32	-258.87	296.87	0.00	0.00	0.00	0.00
2,500.00	8.72	299.31	2,477.04	152.75	-272.10	312.04	0.00	0.00	0.00	0.00
2,600.00	8.72	299.31	2,575.89	160.17	-285.32	327.21	0.00	0.00	0.00	0.00
2,700.00	8.72	299.31	2,674.73	167.60	-298.55	342.37	0.00	0.00	0.00	0.00
2,800.00	8.72	299.31	2,773.57	175.02	-311.78	357.54	0.00	0.00	0.00	0.00
2,900.00	8.72	299.31	2,872.42	182.44	-325.00	372.71	0.00	0.00	0.00	0.00
3,000.00	8.72	299.31	2,971.26	189.87	-338.23	387.88	0.00	0.00	0.00	0.00
3,100.00	8.72	299.31	3,070.10	197.29	-351.45	403.04	0.00	0.00	0.00	0.00
3,200.00	8.72	299.31	3,168.94	204.72	-364.68	418.21	0.00	0.00	0.00	0.00
3,300.00	8.72	299.31	3,267.79	212.14	-377.91	433.38	0.00	0.00	0.00	0.00
3,400.00	8.72	299.31	3,366.63	219.57	-391.13	448.54	0.00	0.00	0.00	0.00
3,470.00	8.72	299.31	3,435.82	224.76	-400.39	459.16	0.00	0.00	0.00	0.00
8.72 Inclination										
3,500.00	8.72	299.31	3,465.47	226.99	-404.36	463.71	0.00	0.00	0.00	0.00
3,600.00	8.72	299.31	3,564.32	234.42	-417.58	478.88	0.00	0.00	0.00	0.00
3,700.00	8.72	299.31	3,663.16	241.84	-430.81	494.05	0.00	0.00	0.00	0.00
3,800.00	8.72	299.31	3,762.00	249.26	-444.03	509.21	0.00	0.00	0.00	0.00
3,900.00	8.72	299.31	3,860.85	256.69	-457.26	524.38	0.00	0.00	0.00	0.00
4,000.00	8.72	299.31	3,959.69	264.11	-470.49	539.55	0.00	0.00	0.00	0.00
4,100.00	8.72	299.31	4,058.53	271.54	-483.71	554.71	0.00	0.00	0.00	0.00
4,200.00	8.72	299.31	4,157.38	278.96	-496.94	569.88	0.00	0.00	0.00	0.00
4,300.00	8.72	299.31	4,256.22	286.39	-510.16	585.05	0.00	0.00	0.00	0.00
4,400.00	8.72	299.31	4,355.06	293.81	-523.39	600.22	0.00	0.00	0.00	0.00
4,500.00	8.72	299.31	4,453.90	301.24	-536.62	615.38	0.00	0.00	0.00	0.00
4,600.00	8.72	299.31	4,552.75	308.66	-549.84	630.55	0.00	0.00	0.00	0.00
4,700.00	8.72	299.31	4,651.59	316.09	-563.07	645.72	0.00	0.00	0.00	0.00

Plan Report for BM 34-41C - 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 (°)
4,800.00	8.72	299.31	4,750.43	323.51	-576.29	660.89	0.00	0.00	0.00	0.00
4,900.00	8.72	299.31	4,849.28	330.93	-589.52	676.05	0.00	0.00	0.00	0.00
5,000.00	8.72	299.31	4,948.12	338.36	-602.74	691.22	0.00	0.00	0.00	0.00
5,100.00	8.72	299.31	5,046.96	345.78	-615.97	706.39	0.00	0.00	0.00	0.00
5,200.00	8.72	299.31	5,145.81	353.21	-629.20	721.55	0.00	0.00	0.00	0.00
5,300.00	8.72	299.31	5,244.65	360.63	-642.42	736.72	0.00	0.00	0.00	0.00
5,400.00	8.72	299.31	5,343.49	368.06	-655.65	751.89	0.00	0.00	0.00	0.00
5,500.00	8.72	299.31	5,442.34	375.48	-668.87	767.06	0.00	0.00	0.00	0.00
5,600.00	8.72	299.31	5,541.18	382.91	-682.10	782.22	0.00	0.00	0.00	0.00
5,700.00	8.72	299.31	5,640.02	390.33	-695.33	797.39	0.00	0.00	0.00	0.00
5,800.00	8.72	299.31	5,738.86	397.75	-708.55	812.56	0.00	0.00	0.00	0.00
5,900.00	8.72	299.31	5,837.71	405.18	-721.78	827.72	0.00	0.00	0.00	0.00
6,000.00	8.72	299.31	5,936.55	412.60	-735.00	842.89	0.00	0.00	0.00	0.00
6,100.00	8.72	299.31	6,035.39	420.03	-748.23	858.06	0.00	0.00	0.00	0.00
6,145.79	8.72	299.31	6,080.65	423.43	-754.29	865.00	0.00	0.00	0.00	0.00
Begin Drop at 6145.79ft										
6,200.00	7.91	299.31	6,134.29	427.27	-761.12	872.85	1.50	-1.50	0.00	180.00
6,300.00	6.41	299.31	6,233.51	433.37	-771.99	885.31	1.50	-1.50	0.00	180.00
6,400.00	4.91	299.31	6,333.02	438.20	-780.59	895.17	1.50	-1.50	0.00	180.00
6,440.00	4.31	299.31	6,372.89	439.77	-783.40	898.39	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,500.00	3.41	299.31	6,432.75	441.75	-786.92	902.43	1.50	-1.50	0.00	-180.00
6,600.00	1.91	299.31	6,532.64	444.02	-790.97	907.07	1.50	-1.50	0.00	180.00
6,700.00	0.41	299.31	6,632.62	445.01	-792.73	909.10	1.50	-1.50	0.00	180.00
6,727.38	0.00	0.00	6,660.00	445.06	-792.82	909.20	1.50	-1.50	221.66	180.00
End Drop at 6727.38ft - Williams Fork - BM 34-41C Plan #1 Driller's Tgt										
6,727.41	0.00	296.56	6,660.03	445.06	-792.82	909.20	0.01	0.00	-223,833.98	-121.72
BM 34-41C Plan #1 Zone Tgt										
6,800.00	0.06	296.56	6,732.62	445.08	-792.85	909.23	0.08	0.08	0.00	0.00
6,900.00	0.14	296.56	6,832.62	445.15	-793.01	909.40	0.08	0.08	0.00	0.00
7,000.00	0.22	296.56	6,932.62	445.29	-793.28	909.71	0.08	0.08	0.00	0.00
7,100.00	0.30	296.56	7,032.62	445.49	-793.69	910.16	0.08	0.08	0.00	0.00
7,200.00	0.38	296.56	7,132.62	445.76	-794.21	910.75	0.08	0.08	0.00	0.00
7,300.00	0.46	296.56	7,232.61	446.08	-794.87	911.48	0.08	0.08	0.00	0.00
7,400.00	0.54	296.56	7,332.61	446.47	-795.65	912.35	0.08	0.08	0.00	0.00
7,500.00	0.62	296.56	7,432.60	446.92	-796.55	913.36	0.08	0.08	0.00	0.00
7,600.00	0.70	296.56	7,532.60	447.44	-797.57	914.51	0.08	0.08	0.00	0.00
7,700.00	0.78	296.56	7,632.59	448.01	-798.73	915.79	0.08	0.08	0.00	0.00
7,709.41	0.79	296.56	7,642.00	448.07	-798.84	915.92	0.08	0.08	0.00	0.00
Top of Gas										
7,800.00	0.86	296.56	7,732.58	448.65	-800.00	917.22	0.08	0.08	0.00	0.00
7,900.00	0.94	296.56	7,832.57	449.35	-801.41	918.78	0.08	0.08	0.00	0.00
8,000.00	1.02	296.56	7,932.55	450.12	-802.93	920.49	0.08	0.08	0.00	0.00
8,100.00	1.10	296.56	8,032.54	450.94	-804.58	922.33	0.08	0.08	0.00	0.00
8,200.00	1.18	296.56	8,132.52	451.83	-806.36	924.32	0.08	0.08	0.00	0.00
8,300.00	1.26	296.56	8,232.49	452.78	-808.26	926.44	0.08	0.08	0.00	0.00
8,400.00	1.34	296.56	8,332.47	453.79	-810.29	928.71	0.08	0.08	0.00	0.00
8,500.00	1.42	296.56	8,432.44	454.87	-812.44	931.11	0.08	0.08	0.00	0.00
8,600.00	1.50	296.56	8,532.41	456.01	-814.72	933.65	0.08	0.08	0.00	0.00
8,700.00	1.58	296.56	8,632.37	457.21	-817.12	936.33	0.08	0.08	0.00	0.00
8,703.49	1.58	296.56	8,635.86	457.25	-817.20	936.43	0.08	0.08	0.00	0.00
8,800.00	1.51	296.56	8,732.33	458.41	-819.53	939.03	0.08	-0.08	0.00	180.00
8,900.00	1.43	296.56	8,832.30	459.56	-821.82	941.59	0.08	-0.08	0.00	180.00
9,000.00	1.36	296.56	8,932.27	460.65	-824.00	944.02	0.08	-0.08	0.00	180.00
9,100.00	1.28	296.56	9,032.24	461.67	-826.05	946.31	0.08	-0.08	0.00	180.00
9,200.00	1.20	296.56	9,132.22	462.64	-827.99	948.48	0.08	-0.08	0.00	180.00
9,270.79	1.15	296.56	9,203.00	463.29	-829.29	949.93	0.08	-0.08	0.00	-180.00
Cameo										
9,300.00	1.13	296.56	9,232.20	463.55	-829.81	950.51	0.08	-0.08	0.00	180.00

Plan Report for BM 34-41C - 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 (°)
9,400.00	1.05	296.56	9,332.18	464.40	-831.51	952.40	0.08	-0.08	0.00	180.00
9,500.00	0.97	296.56	9,432.17	465.19	-833.09	954.17	0.08	-0.08	0.00	180.00
9,600.00	0.90	296.56	9,532.15	465.92	-834.55	955.80	0.08	-0.08	0.00	180.00
9,643.85	0.86	296.56	9,576.00	466.22	-835.15	956.48	0.08	-0.08	0.00	180.00
Rollins										
9,700.00	0.82	296.56	9,632.14	466.59	-835.89	957.30	0.08	-0.08	0.00	-180.00
9,800.00	0.75	296.56	9,732.13	467.20	-837.12	958.67	0.08	-0.08	0.00	180.00
9,900.00	0.67	296.56	9,832.13	467.76	-838.22	959.90	0.08	-0.08	0.00	180.00
9,991.88	0.60	296.56	9,924.00	468.21	-839.13	960.92	0.08	-0.08	0.00	180.00
Cozzette										
10,000.00	0.59	296.56	9,932.12	468.25	-839.21	961.01	0.08	-0.08	0.00	-180.00
10,100.00	0.52	296.56	10,032.11	468.68	-840.08	961.97	0.08	-0.08	0.00	180.00
10,200.00	0.44	296.56	10,132.11	469.06	-840.83	962.81	0.08	-0.08	0.00	180.00
10,288.89	0.37	296.56	10,221.00	469.34	-841.39	963.44	0.08	-0.08	0.00	-180.00
Corcora										
10,300.00	0.37	296.56	10,232.11	469.37	-841.46	963.51	0.08	-0.08	0.00	180.00
10,400.00	0.29	296.56	10,332.11	469.63	-841.97	964.08	0.08	-0.08	0.00	180.00
10,500.00	0.21	296.56	10,432.11	469.82	-842.36	964.52	0.08	-0.08	0.00	180.00
10,529.89	0.19	296.56	10,462.00	469.87	-842.45	964.63	0.08	-0.08	0.00	180.00
Mancos										
10,600.00	0.14	296.56	10,532.11	469.96	-842.63	964.83	0.08	-0.08	0.00	-180.00
10,700.00	0.06	296.56	10,632.11	470.04	-842.79	965.00	0.08	-0.08	0.00	180.00
10,779.89	0.00	0.00	10,712.00	470.06	-842.82	965.04	0.08	-0.08	79.41	180.00
Total Depth = 10779.89ft - BM 34-41C 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
455.00	454.75	4.52	-8.05	Build Rate = 2.00°/100ft
661.19	659.51	16.22	-28.90	End Build at 661.19ft
3,470.00	3,435.82	224.76	-400.39	8.72 Inclination
6,145.79	6,080.65	423.43	-754.29	Begin Drop at 6145.79ft
6,440.00	6,372.89	439.77	-783.40	Drop Rate = 1.50°/100ft
6,727.38	6,660.00	445.06	-792.82	End Drop at 6727.38ft
10,779.89	10,712.00	470.06	-842.82	Total Depth = 10779.89ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	BM 34-41C Plan #1 BH Tgt	299.15	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,779.89	Plan #1 Proposal	MWD

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

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,380.00	2,358.43	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,727.38	6,660.00	Williams Fork		0.00	
7,709.41	7,642.00	Top of Gas		0.00	
9,270.79	9,203.00	Cameo		0.00	
9,643.85	9,576.00	Rollins		0.00	
9,991.88	9,924.00	Cozzette		0.00	
10,288.89	10,221.00	Corcora		0.00	
10,529.89	10,462.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 34-41C Plan #1 BH Tgt	10,712.00	470.06	-842.82	Point
BM 34-41C Plan #1 Driller's Tgt	6,660.00	445.06	-792.82	Rectangle
BM 34-41C Plan #1 Zone Tgt	6,660.00	470.06	-842.82	Rectangle

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35D2 PAD) - BM 34-41C - 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 34-41C - Slot B 4

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: 0.99994927

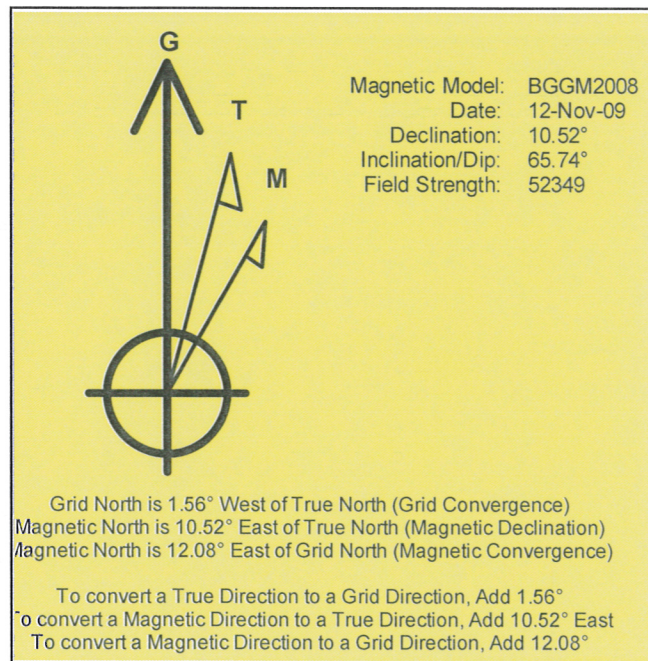
Grid Coordinates of Well: 579,175.57 ft N, 1,301,230.98 ft E

Geographical Coordinates of Well: 39° 23' 51.06" N, 107° 58' 22.53" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,779.89ft
the Bottom Hole Displacement is 965.04ft in the Direction of 299.15° (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 34-41C
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
661.19	8.72	299.31	659.51	16.22	-28.90	2.00	299.31	33.14
6145.79	8.72	299.31	6080.65	423.43	-754.29	0.00	0.00	865.00
6727.38	0.00	0.00	6660.00	445.06	-792.82	1.50	180.00	909.20
8703.49	1.58	296.56	8635.86	457.25	-817.20	0.08	296.56	936.43
10779.89	0.00	0.00	10712.00	470.06	-842.82	0.08	180.00	965.04

BM 34-41C Plan #1 Driller's Tgt

BM 34-41C Plan #1 BH Tgt

WELL DETAILS: BM 34-41C

Ground Level: 8846.00
Northing 579175.57 Easting 1301230.98 Latitude 39° 23' 51.062 N Longitude 107° 58' 22.532 W B 4

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 34-41C Plan #1 Driller's Tgt	6660.00	445.06	-792.82	Rectangle (Sides: L25.00 W25.00)
BM 34-41C Plan #1 Zone Tgt	6660.00	470.06	-842.82	Rectangle (Sides: L100.00 W200.00)
BM 34-41C Plan #1 BH Tgt	10712.00	470.06	-842.82	Point



Azimuths to Grid North
True North: 1.56°
Magnetic North: 12.08°
Magnetic Field
Strength: 52348.8snT
Dip Angle: 65.74°
Date: 11/12/2009
Model: BGGM2008

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6660.00	6727.38	Williams Fork
7642.00	7709.41	Top of Gas
9203.00	9270.79	Cameo
9576.00	9643.85	Rollins
9924.00	9991.88	Cozzette
10221.00	10288.89	Corcora
10462.00	10529.89	Mancos

West(-)/East(+) (500 ft/in)

